Air Quality Analysis Supporting Documentation

The Proposed Action is recapitalization of the T-38C Talon flight training program at Columbus Air Force Base (AFB) with T-7A Red Hawk aircraft. For Alternative 1, Columbus AFB would receive 61 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in 61 T-7A aircraft being delivered to Columbus AFB; however, T-7A operations would be performed at an intensity approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Columbus AFB would receive 77 T-7A aircraft and perform T-7A operations at an intensity identical to Alternative 2. Alternative 3 also incorporates a MILCON project alternative to construct 12 additional shelters for the T-7A aircraft. Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in the EIS provides analysis to evaluate future capacity needs. The No Action Alternative would not implement T-7A recapitalization at Columbus AFB.

Recapitalization would entail introduction of T-7A aircraft and flight operations at Columbus AFB and associated special use airspace to replace all T-38C aircraft assigned to the installation; introduction of nighttime (between 10 a.m. and 7 a.m.) T-7A flight operations; changes to the number of personnel and dependents in the Columbus AFB region; and construction and upgrade of operations, support, and maintenance facilities.

The Air Conformity Applicability Model (ACAM) version 5.0.17b was used to perform an analysis to assess the potential air quality impacts associated with the Proposed Action and alternatives in accordance with Air Force Manual 32-7002, *Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process* (EIAP, 32 Code of Federal Regulations [CFR] Part 989) and the General Conformity Rule (40 Code of Federal Regulations Part 93, Subpart B). This appendix provides the ACAM results.

This appendix is presented in four sections corresponding to the four separate air quality Regions of Influence (ROI) based on regulatory requirements and the physical spatial distribution of the emissions sources associated with the Proposed Action and alternatives. The four ROIs are as follows:

• **<u>ROI 1: Columbus AFB</u>** – includes all Columbus AFB airfield operations and construction actions

Counties included:

Lowndes, MS

Clay, MS

Monroe, MS

• **ROI 2: Birmingham and Birmingham 2 MOAs** – includes aircraft operations within Birmingham and Birmingham 2 MOAs

Counties included:

Bibb, AL

Dallas, AL

Greene, AL

Hale, AL

Marengo, AL Perry, AL

Sumter, AL

ROI 3: Range R-4404 – includes aircraft operations within Range R-4404 <u>Counties included:</u>

Noxubee County, MS

• **<u>ROI 4: MTRs</u>** – includes aircraft operations within IR-066, IR-068, IR-091, VR-1014, and VR-1031

Counties included:

| Autauga, AL | Marengo, AL | Carroll, MS | Quitman, MS |
|----------------|----------------|----------------|----------------|
| Bibb, AL | Marion, AL | Chickasaw, MS | Sunflower, MS |
| Blount, AL | Perry, AL | Clay, MS | Tallahatchie, |
| Chilton, AL | Pickens, AL | Coahoma, MS | MS |
| Choctaw, AL | Shelby, AL | Grenada, MS | Tate, MS |
| Clarke, AL | St. Clair, AL | Itawamba, MS | Tippah, MS |
| Clay, AL | Talladega, AL | Kemper, MS | Tishomingo, MS |
| Colbert, AL | Tallapoosa, AL | Lafayette, MS | Tunica, MS |
| Coosa, AL | Tuscaloosa, AL | Lee, MS | Union, MS |
| Cullman, AL | Walker, AL | Leflore, MS | Webster, MS |
| Dallas, AL | Wilcox, AL | Lowndes, MS | Yalobusha, MS |
| Elmore, AL | Winston, AL | Marshall, MS | Chester, TN |
| Franklin, AL | Lee, AR | Monroe, MS | Decatur, TN |
| Greene, AL | Phillips, AR | Montgomery, MS | Hardeman, TN |
| Hale, AL | Alcorn, MS | Noxubee, MS | Hardin, TN |
| Jefferson, AL | Benton, MS | Panola, MS | Lawrence, TN |
| Lauderdale, AL | Bolivar, MS | Pontotoc, MS | McNairy, TN |
| Lawrence, AL | Calhoun, MS | Prentiss, MS | Wayne, TN |
| | | | |

Columbus AFB is in Lowndes County, Mississippi. In addition to Lowndes County, Columbus AFB airfield operations below 3,000 feet occur in Monroe and Clay Counties. Lowndes, Monroe, and Clay Counties have been designated as in attainment for all criteria pollutants. The table below outlines the attainment status and the *de minimis* threshold under the General Conformity Rule for the counties within ROIs 2, 3 and 4 (i.e., counties underlying the MTRs, MOAs, and Range R-4404).

| County | Airspace | Attainment Status | <i>de minimis</i> Threshold |
|-----------------------|--|---|--|
| Autauga County, AL | VR-1031 | Unclassifiable/Attainment | None |
| Bibb County, AL | VR-1031, Birmingham 2 MOA | Unclassifiable/Attainment | None |
| Blount County, AL | IR-066, VR-1014 | Unclassifiable/Attainment | None |
| Chilton County, AL | VR-1031 | Unclassifiable/Attainment | None |
| Choctaw County, AL | VR-1031 | Unclassifiable/Attainment | None |
| Clarke County, AL | VR-1031 | Unclassifiable/Attainment | None |
| Clay County, AL | VR-1031 | Unclassifiable/Attainment | None |
| Colbert County, AL | IR-066 | Unclassifiable/Attainment | None |
| Coosa County, AL | VR-1031 | Unclassifiable/Attainment | None |
| Cullman County, AL | IR-066, VR-1014 | Unclassifiable/Attainment | None |
| Dallas County, AL | VR-1031, Birmingham 2 MOA | Unclassifiable/Attainment | None |
| Elmore County, AL | VR-1031 | Unclassifiable/Attainment | None |
| Franklin County, AL | IR-066, VR-1014 | Unclassifiable/Attainment | None |
| Greene County, AL | VR-1031, Birmingham MOA, Birmingham 2 MOA | Unclassifiable/Attainment | None |
| Hale County, AL | VR-1031, Birmingham MOA, Birmingham 2 MOA | Unclassifiable/Attainment | None |
| Jefferson County, AL | VR-1014 | Maintenance for the PM _{2.5} NAAQS | 100 tpy for PM _{2.5} 100 tpy for NO _X 100 tpy for VOCs 100 tpy for SO _X 100 tpy for NH ₃ |
| Lauderdale County, AL | IR-066 | Unclassifiable/Attainment | None |
| Lawrence County, AL | VR-1014 | Unclassifiable/Attainment | None |
| Marengo County, AL | VR-1031, Birmingham MOA, Birmingham 2 MOA | Unclassifiable/Attainment | None |
| Marion County, AL | IR-066, VR-1014 | Unclassifiable/Attainment | None |
| Perry County, AL | VR-1031, Birmingham 2 MOA | Unclassifiable/Attainment | None |
| Pickens County, AL | VR-1014, VR-1031 | Unclassifiable/Attainment | None |

| County | Airspace | Attainment Status | <i>de minimis</i> Threshold |
|--------------------------|-------------------------------------|---|--|
| Shelby County, AL | VR-1031 | Maintenance for the PM _{2.5} NAAQS | 100 tpy for PM _{2.5} 100 tpy for NO _X 100 tpy for VOCs 100 tpy for SO _X 100 tpy for NH ₃ |
| St. Clair County, AL | VR-1031 | Unclassifiable/Attainment | None |
| Sumter County, AL | Birmingham MOA, Birmingham 2 MOA | Unclassifiable/Attainment | None |
| Talladega County, AL | VR-1031 | Unclassifiable/Attainment | None |
| Tallapoosa County, AL | VR-1031 | Unclassifiable/Attainment | None |
| Tuscaloosa County, AL | VR-1014, VR-1031 | Unclassifiable/Attainment | None |
| Walker County, AL | IR-066, VR-1014 | Maintenance for the PM _{2.5} NAAQS | 100 tpy for PM _{2.5} 100 tpy for NO _X 100 tpy for VOCs 100 tpy for SO _X 100 tpy for NH ₃ |
| Wilcox County, AL | VR-1031 | Unclassifiable/Attainment | None |
| Winston County, AL | IR-066, VR-1031 | Unclassifiable/Attainment | None |
| Lee County, AR | IR-068 | Unclassifiable/Attainment | None |
| Phillips County, AR | IR-068 | Unclassifiable/Attainment | None |
| Alcorn County, MS | IR-066 | Unclassifiable/Attainment | None |
| Benton County, MS | IR-066, IR-091 | Unclassifiable/Attainment | None |
| Bolivar County, MS | IR-068 | Unclassifiable/Attainment | None |
| Calhoun County, MS | IR-068, IR-091 | Unclassifiable/Attainment | None |
| Carroll County, MS | IR-068, IR-091 | Unclassifiable/Attainment | None |
| Chickasaw County, MS | IR-091 | Unclassifiable/Attainment | None |
| Clay County, MS | IR-091 | Unclassifiable/Attainment | None |
| Coahoma County, MS | IR-068 | Unclassifiable/Attainment | None |
| Grenada County, MS | IR-068, IR-091 | Unclassifiable/Attainment | None |
| Itawamba County, MS | IR-066, VR-1014 | Unclassifiable/Attainment | None |
| Kemper County, MS | VR-1031 | Unclassifiable/Attainment | None |
| Lafayette County, MS | IR-091 | Unclassifiable/Attainment | None |
| Lee County, MS | IR-066 | Unclassifiable/Attainment | None |
| Leflore County, MS | IR-068 | Unclassifiable/Attainment | None |
| Lowndes County, MS | VR-1031 | Unclassifiable/Attainment | None |
| Marshall County, MS | IR-091 | Unclassifiable/Attainment | None |
| Monroe County, MS | IR-066, VR-1014 | Unclassifiable/Attainment | None |
| Montgomery County, MS | IR-068, IR-091 | Unclassifiable/Attainment | None |
| Noxubee County, MS | VR-1031, R-4404 | Unclassifiable/Attainment | None |
| Panola County, MS | IR-068, IR-091 | Unclassifiable/Attainment | None |
| Pontotoc County, MS | IR-091 | Unclassifiable/Attainment | None |
| Prentiss County, MS | IR-066 | Unclassifiable/Attainment | None |

| County | Airspace | Attainment Status | de <i>minimis</i> Threshold |
|----------------------------|----------------|---------------------------|--------------------------------|
| Quitman County, MS | IR-068, IR-091 | Unclassifiable/Attainment | None |
| Sunflower County, MS | IR-068 | Unclassifiable/Attainment | None |
| Tallahatchie County, MS | IR-068, IR-091 | Unclassifiable/Attainment | None |
| Tate County, MS | IR-091 | Unclassifiable/Attainment | None |
| Tippah County, MS | IR-066 | Unclassifiable/Attainment | None |
| Tishomingo County, MS | IR-066 | Unclassifiable/Attainment | None |
| Tunica County, MS | IR-068 | Unclassifiable/Attainment | None |
| Union County, MS | IR-066, IR-091 | Unclassifiable/Attainment | None |
| Webster County, MS | IR-068, IR-091 | Unclassifiable/Attainment | None |
| Yalobusha County, MS | IR-068 | Unclassifiable/Attainment | None |
| Chester County, TN | IR-066 | Unclassifiable/Attainment | None |
| Decatur County, TN | IR-066 | Unclassifiable/Attainment | None |
| Hardeman County, TN | IR-066 | Unclassifiable/Attainment | None |
| Hardin County, TN | IR-066 | Unclassifiable/Attainment | None |
| Lawrence County, TN | IR-066 | Unclassifiable/Attainment | None |
| McNairy County, TN | IR-066 | Unclassifiable/Attainment | None |
| Wayne County, TN | IR-066 | Unclassifiable/Attainment | None |

Sources: (1) 40 CFR § 93.153 (2) USEPA. 2022. Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants: Alabama, Arkansas, Mississippi, and Tennessee. As of June 30, 2022.

Key: NAAQS = National Ambient Air Quality Standard; NH_3 = ammonia; NO_X = nitrogen oxides; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter; SO_X = sulfur oxides; tpy = tons per year; VOCs = volatile organic compounds

The emission factors presented in this Appendix are imbedded within ACAM and come from the following DAF documents: (1) *Air Emissions Guide for Air Force Stationary Sources, Methods for Estimating Emissions of Air Pollutants for Stationary Sources at U.S. Air Force Installations,* Air Force Civil Engineer Center (June 2020), and (2) *Air Emissions Guide for Air Force Mobile Sources, Methods for Estimating Emissions of Air Pollutants for Air Pollutants for Mobile Sources at U.S. Air Force Installations,* Air Force Installations, Air Force Civil Engineering Center (June 2020). Additional data used to prepare the ACAM reports are below.

Time in Mode (TIM) Summary for T-7A and T-38C aircraft within the ROIs

Table 2. TIMs Summary for ROI 1: Columbus AFB

| | ldle In/Out (min) | Takeoff AB (min) | Takeoff Mil (min) | Climbout (min) | Approach (min) |
|----------------------------|----------------------|---------------------|----------------------|-------------------|-------------------|
| Columbus AFB T-7A TIMs Sum | imary | | | | |
| LTO Flight | 0.00 | 0.01 | 0.73 | 0.42 | 4.03 |
| LTO Taxi | 16.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total LTO | 16.95 | 0.01 | 0.73 | 0.42 | 4.03 |
| Closed Patterns | 0.00 | 0.00 | 0.00 | 3.56 | 0.00 |

| | ldle In/Out (min) | Takeoff AB (min) | Takeoff Mil (min) | Climbout (min) | Approach (min) |
|-----------------------------|----------------------|---------------------|----------------------|-------------------|-------------------|
| Columbus AFB T-38C TIMs Sur | nmary | | | | |
| LTO Flight | 0.00 | 0.52 | 0.22 | 0.46 | 3.91 |
| LTO Taxi | 18.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total LTO | 18.35 | 0.52 | 0.22 | 0.46 | 3.91 |
| Closed Patterns | 0.00 | 0.00 | 0.00 | 3.56 | 0.00 |

Key: AB = afterburn; LTO = landing and takeoff cycle mil = military; min = minutes

Table 3. TIMs Summary for ROI 2: Birmingham and Birmingham 2 MOAs

| | ldle In/Out (min) | Takeoff AB (min) | Takeoff Mil (min) | Climbout (min) | Approach (min) |
|---|----------------------|---------------------|----------------------|-------------------|-------------------|
| Birmingham and Birmingham 2 MOAs T-7A TIMs Summary | | | | | |
| Low Flight Pattern | 0.00 | 0.00 | 19.55 | 0.00 | 0.00 |
| Birmingham and Birmingham 2 MOAs T-38C TIMs Summary | | | | | |
| Low Flight Pattern | 0.00 | 0.00 | 19.55 | 0.00 | 0.00 |

Key: AB = afterburn; LTO = landing and takeoff cycle mil = military; min = minutes

Table 4. TIMs Summary for ROI 3: Range R-4404

| | ldle In/Out (min) | Takeoff AB (min) | Takeoff Mil (min) | Climbout (min) | Approach (min) |
|---------------------------|----------------------|---------------------|----------------------|-------------------|-------------------|
| R-4404 T-7A TIMs Summary | | | | | |
| Low Flight Pattern | 0.00 | 0.00 | 19.50 | 0.00 | 0.00 |
| R-4404 T-38C TIMs Summary | | | | | |
| Low Flight Pattern | 0.00 | 0.00 | 19.50 | 0.00 | 0.00 |

Key: AB = afterburn; LTO = landing and takeoff cycle mil = military; min = minutes

Table 3. TIMs Summary for ROI 4: MTRs

| | ldle In/Out (min) | Takeoff AB (min) | Takeoff Mil (min) | Climbout (min) | Approach (min) |
|---------------------------|----------------------|---------------------|----------------------|-------------------|-------------------|
| IR-066 T-7A TIMs Summary | | | | | |
| Low Flight Pattern | 0.00 | 0.00 | 0.00 | 3.74 | 0.00 |
| IR-066 T-38C TIMs Summary | | | | | |
| Low Flight Pattern | 0.00 | 0.00 | 0.00 | 3.74 | 0.00 |
| IR-068 T-7A TIMs Summary | | | | | |
| Low Flight Pattern | 0.00 | 0.00 | 0.00 | 27.48 | 0.00 |
| IR-068 T-38C TIMs Summary | | | | | |
| Low Flight Pattern | 0.00 | 0.00 | 0.00 | 27.48 | 0.00 |
| IR-091 T-7A TIMs Summary | | | | | |
| Low Flight Pattern | 0.00 | 0.00 | 0.00 | 27.48 | 0.00 |
| IR-091 T-38C TIMs Summary | | | | | |
| Low Flight Pattern | 0.00 | 0.00 | 0.00 | 27.48 | 0.00 |
| VR-1014 T-7A TIMs Summary | | | | | |

| | ldle In/Out (min) | Takeoff AB (min) | Takeoff Mil (min) | Climbout (min) | Approach (min) |
|----------------------------|----------------------|---------------------|----------------------|-------------------|-------------------|
| Low Flight Pattern | 0.00 | 0.00 | 0.00 | 38.09 | 0.00 |
| VR-1014 T-38C TIMs Summary | | | | | |
| Low Flight Pattern | 0.00 | 0.00 | 0.00 | 38.09 | 0.00 |
| VR-1031 T-7A TIMs Summary | | | | | |
| Low Flight Pattern | 0.00 | 0.00 | 0.00 | 32.15 | 0.00 |
| VR-1031 T-38C TIMs Summary | | | | | |
| Low Flight Pattern | 0.00 | 0.00 | 0.00 | 32.15 | 0.00 |

Key: AB = afterburn; LTO = landing and takeoff cycle mil = military; min = minutes

ROI 1: Columbus AFB

This section includes the following:

- Alternative 1 ACAM Report
- Alternative 1 ACAM Detail Report
- Alternative 2 ACAM Report
- Alternative 2 ACAM Detail Report
- Alternative 3 ACAM Report
- Alternative 3 ACAM Detail Report

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base:COLUMBUS AFBState:MississippiCounty(s):Clay, MS; Lowndes, MS; Monroe, MSRegulatory Area(s):NOT IN A REGULATORY AREA

- b. Action Title: T-7A Recapitalization at Columbus AFB Alternative 1
- c. Project Number/s (if applicable):

d. Projected Action Start Date: 8 / 2024

e. Action Description:

The Proposed Action is recapitalization of the T-38C Talon flight training program at Columbus AFB with T-7A Red Hawk aircraft. Recapitalization would entail introduction of T-7A aircraft and flight operations at Columbus AFB and associated special use airspace to replace all T-38C aircraft assigned to the installation; introduction of nighttime (between 10 a.m. and 7 a.m.) T-7A flight operations; changes to the number of personnel and dependents in the Columbus AFB region; and construction and upgrade of operations, support, and maintenance facilities.

For Alternative 1, Columbus AFB would receive 61 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in 61 T-7A aircraft being delivered to Columbus AFB; however, T-7A operations would be performed at an intensity approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Columbus AFB would receive 77 T-7A aircraft and perform T-7A operations at an intensity identical to Alternative 2. Alternative 3 also incorporates a MILCON project alternative to construct 12 additional shelters for the T-7A aircraft. Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in the EIS provides analysis to evaluate future capacity needs. The No Action Alternative would not implement T-7A recapitalization at Columbus AFB.

f. Point of Contact:

| Name: | Carolyn Hein |
|---------------|--------------|
| Title: | Contractor |
| Organization: | HDR |
| Email: | |
| Phone Number: | |

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

_____ applicable __X__ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all

algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

Analysis Summary:

| 2024 | | | | |
|--------------------|---|--------------------|------------------------|--|
| Pollutant | Action Emissions INSIGNIFICANCE INDICATOR | | | |
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) | |
| NOT IN A REGULATOR | Y AREA | | | |
| VOC | 0.205 | 250 | No | |
| NOx | 1.005 | 250 | No | |
| СО | 1.689 | 250 | No | |
| SOx | 0.004 | 250 | No | |
| PM 10 | 0.284 | 250 | No | |
| PM 2.5 | 0.035 | 250 | No | |
| Pb | 0.000 | 25 | No | |
| NH3 | 0.001 | 250 | No | |
| CO2e | 397.5 | | | |

2025

| 2025 | | | |
|---------------------|------------------|--------------------------|------------------------|
| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | |
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) |
| NOT IN A REGULATORY | AREA | | |
| VOC | 1.069 | 250 | No |
| NOx | 4.712 | 250 | No |
| СО | 7.091 | 250 | No |
| SOx | 0.017 | 250 | No |
| PM 10 | 8.445 | 250 | No |
| PM 2.5 | 0.182 | 250 | No |
| Pb | 0.000 | 25 | No |
| NH3 | 0.004 | 250 | No |
| CO2e | 1603.9 | | |

2026

| Pollutant | Action Emissions | INSIGNIFICAN | CE INDICATOR |
|--------------------------|------------------|--------------------|------------------------|
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) |
| NOT IN A REGULATORY AREA | | | |
| VOC | 1.804 | 250 | No |

| NOx | 7.095 | 250 | No |
|--------|--------|-----|----|
| CO | 10.840 | 250 | No |
| SOx | 0.024 | 250 | No |
| PM 10 | 0.620 | 250 | No |
| PM 2.5 | 0.240 | 250 | No |
| Pb | 0.000 | 25 | No |
| NH3 | 0.010 | 250 | No |
| CO2e | 2363.7 | | |

2027

| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | |
|---------------------|------------------|--------------------------|------------------------|
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) |
| NOT IN A REGULATORY | AREA | | |
| VOC | 1.009 | 250 | No |
| NOx | 2.459 | 250 | No |
| CO | 4.117 | 250 | No |
| SOx | 0.009 | 250 | No |
| PM 10 | 0.086 | 250 | No |
| PM 2.5 | 0.086 | 250 | No |
| Pb | 0.000 | 25 | No |
| NH3 | 0.003 | 250 | No |
| CO2e | 886.1 | | |

2028

| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | |
|---------------------|------------------|--------------------------|------------------------|
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) |
| NOT IN A REGULATORY | AREA | | |
| VOC | 17.466 | 250 | No |
| NOx | 53.652 | 250 | No |
| CO | -200.780 | 250 | No |
| SOx | 1.675 | 250 | No |
| PM 10 | -6.253 | 250 | No |
| PM 2.5 | -4.297 | 250 | No |
| Pb | 0.000 | 25 | No |
| NH3 | 0.006 | 250 | No |
| CO2e | 6325.7 | | |

2029

| Pollutant | Action Emissions | | CE INDICATOR |
|---------------------|------------------|--------------------|------------------------|
| ronutant | | | |
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) |
| NOT IN A REGULATORY | AREA | | |
| VOC | 30.134 | 250 | No |
| NOx | 129.447 | 250 | No |
| CO | -637.064 | 250 | No |
| SOx | 2.783 | 250 | No |
| PM 10 | -18.912 | 250 | No |
| PM 2.5 | -13.078 | 250 | No |
| Pb | 0.000 | 25 | No |
| NH3 | 0.006 | 250 | No |
| CO2e | 11635.4 | | |

| 2030 | | | |
|---------------------|---|--------------------|------------------------|
| Pollutant | Action Emissions INSIGNIFICANCE INDICATOR | | ICE INDICATOR |
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) |
| NOT IN A REGULATORY | AREA | | |
| VOC | 29.647 | 250 | No |
| NOx | 150.497 | 250 | No |
| СО | -815.025 | 250 | No |
| SOx | 2.619 | 250 | No |
| PM 10 | -23.807 | 250 | No |
| PM 2.5 | -16.495 | 250 | No |
| Pb | 0.000 | 25 | No |
| NH3 | -0.010 | 250 | No |
| CO2e | 11586.6 | | |

2031 - (Steady State)

| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | |
|---------------------|------------------|--------------------------|------------------------|
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) |
| NOT IN A REGULATORY | AREA | | |
| VOC | 29.647 | 250 | No |
| NOx | 150.497 | 250 | No |
| CO | -815.025 | 250 | No |
| SOx | 2.619 | 250 | No |
| PM 10 | -23.807 | 250 | No |
| PM 2.5 | -16.495 | 250 | No |
| Pb | 0.000 | 25 | No |
| NH3 | -0.010 | 250 | No |
| CO2e | 11586.6 | | |

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.

mA

Carolyn Hein, Contractor

2/17/2023 DATE

1. General Information

- Action Location

Base:COLUMBUS AFBState:MississippiCounty(s):Clay, MS; Lowndes, MS; Monroe, MSRegulatory Area(s):NOT IN A REGULATORY AREA

- Action Title: T-7A Recapitalization at Columbus AFB - Alternative 1

- Project Number/s (if applicable):

- Projected Action Start Date: 8 / 2024

- Action Purpose and Need:

The purpose of the Proposed Action is to continue the T-7A recapitalization program by recapitalizing Columbus AFB to prepare pilots to operate the more technologically advanced T-7A aircraft.

The Proposed Action is needed because the current training practices with the older T-38C aircraft fail to prepare pilots for the technological advancements of fourth and fifth generation aircraft. By 2031, more than 60 percent of the Combat Air Force will be comprised of fifth generation aircraft, requiring a modern and capable training platform with capabilities beyond those currently available in the T-38C. Additionally, training systems provided with the newer T-7A aircraft allow for enhanced and improved flight and simulator training. The T-7A recapitalization program will allow DAF to provide more efficient and effective instructor and pilot training for operating fourth and fifth generation aircraft. T-7A recapitalization at Columbus AFB would allow DAF to continue the geographically phased T-7A recapitalization sequence ensuring DAF pilot training requirements are met.

- Action Description:

The Proposed Action is recapitalization of the T-38C Talon flight training program at Columbus AFB with T-7A Red Hawk aircraft. Recapitalization would entail introduction of T-7A aircraft and flight operations at Columbus AFB and associated special use airspace to replace all T-38C aircraft assigned to the installation; introduction of nighttime (between 10 a.m. and 7 a.m.) T-7A flight operations; changes to the number of personnel and dependents in the Columbus AFB region; and construction and upgrade of operations, support, and maintenance facilities.

For Alternative 1, Columbus AFB would receive 61 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in 61 T-7A aircraft being delivered to Columbus AFB; however, T-7A operations would be performed at an intensity approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Columbus AFB would receive 77 T-7A aircraft and perform T-7A operations at an intensity identical to Alternative 2. Alternative 3 also incorporates a MILCON project alternative to construct 12 additional shelters for the T-7A aircraft. Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in the EIS provides analysis to evaluate future capacity needs. The No Action Alternative would not implement T-7A recapitalization at Columbus AFB.

- Point of Contact

| Name: | Carolyn Hein |
|---------------|--------------|
| Title: | Contractor |
| Organization: | HDR |
| Email: | |
| Phone Number: | |

| - ACUIV | vity List: | |
|---------|---------------------------|---|
| | Activity Type | Activity Title |
| 2. | Aircraft | 2028 Add T-7As and LTOs |
| 3. | Aircraft | 2028 Add T-7A TGOs |
| 4. | Aircraft | 2028 Remove T-38C and LTOs |
| 5. | Aircraft | 2028 Remove T-38C TGOs |
| 6. | Aircraft | 2029 Add T-7As and LTOs |
| 7. | Aircraft | 2029 Add T-7A TGOs |
| 8. | Aircraft | 2029 Remove T-38C and LTOs |
| 9. | Aircraft | 2029 Remove T-38C TGOs |
| 10. | Aircraft | 2030 Add T-7As and LTOs |
| 11. | Aircraft | 2030 Add T-7A TGOs |
| 12. | Aircraft | 2030 Remove T-38C and LTOs |
| 13. | Aircraft | 2030 Remove T-38C TGOs |
| 14. | Aircraft | 2028 T-7A Increase Trim Test and Test Cell |
| 15. | Aircraft | 2028 T-38C Decrease Trim Test and Test Cell |
| 16. | Aircraft | 2029 T-7A Increase Trim Test and Test Cell |
| 17. | Aircraft | 2029 T-38C Decrease Trim Test and Test Cell |
| 18. | Aircraft | 2030 T-7A Increase Trim Test and Test Cell |
| 19. | Aircraft | 2030 T-38C Decrease Trim Test and Test Cell |
| 20. | Personnel | Add 43 personnel |
| 21. | Personnel | Remove 74 personnel |
| 22. | Construction / Demolition | MILCON: Construct GBTS Facility |
| 23. | Construction / Demolition | MILCON: Construct UMT Facility |
| 24. | Construction / Demolition | MILCON: Construct Hush House |
| 25. | Construction / Demolition | MILCON: Construct Aircraft Shelters |
| 26. | Construction / Demolition | MILCON: Addition to Egress Shop |
| 27. | Construction / Demolition | MILCON: Construct Jet Blast Deflectors |
| 28. | Construction / Demolition | FSRM: Renovate Building 452 (Hangar 3) |
| 29. | Construction / Demolition | FSRM: Wash Rack Renovation (Building 454) |
| 30. | Construction / Demolition | FSRM: Antenna Farm |
| 31. | Construction / Demolition | FSRM: Squadron Operations Buildings Renovations |
| 32. | Construction / Demolition | FSRM: Airfield Improvements |
| 33. | Construction / Demolition | FSRM: Trim Pad |
| 34. | Heating | Heating for New Facilities |

- Activity List:

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Aircraft

2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2028 Add T-7As and LTOs
- Activity Description:

Starting in 2028, add 21 T-7As and increase LTOs by 5,103.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 35.074924 |
| SO _x | 1.613344 |
| NO _x | 16.411266 |
| СО | 71.184814 |
| PM 10 | 0.430330 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.382371 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 4875.2 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]

| | in the spectrum (includes) |
|-----------------|----------------------------------|
| Pollutant | Emissions Per Year (TONs) |
| VOC | 35.074924 |
| SO _x | 1.613344 |
| NO _x | 16.411266 |
| CO | 71.184814 |
| PM 10 | 0.430330 |

| & APU) part]: | |
|---------------------------|----------------------------------|
| Pollutant | Emissions Per Year (TONs) |
| PM 2.5 | 0.382371 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 4875.2 |
| | |

2.2 Aircraft & Engines

2.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

| Aircraft Designation: | T-7A |
|--------------------------|-------------|
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

2.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

2.3 Flight Operations

2.3.1 Flight Operations Assumptions

- Flight Operations

| Number of Aircraft: | 21 |
|---|------|
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 5103 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 8.475 |
| Takeoff [Military] (mins): | 0.73 |
| Takeoff [After Burn] (mins): | 0.01 |
| Climb Out [Intermediate] (mins): | 0.42 |
| Approach [Approach] (mins): | 4.03 |
| Taxi/Idle In [Idle] (mins): | 8.475 |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

2.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)NE: Number of EnginesTGO: Number of Touch-and-Go Cycles (for all aircraft)2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

2.4 Auxiliary Power Unit (APU)

2.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of AP per Aircraft | J Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|------------------------------|--------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

2.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

2.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year APU_{POL} = APU * OH * LTO * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

3. Aircraft

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2028 Add T-7A TGOs
- Activity Description: Starting in 2028, increase T-7A TGOs by 11,227.
- Activity Start Date Start Month: 1 Start Year: 2028
- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 5.301943 |
| SO _x | 2.815315 |
| NO _x | 40.140052 |
| CO | 5.857730 |
| PM 10 | 0.302832 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.256242 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 8572.6 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 5.301943 |
| SO _x | 2.815315 |
| NO _x | 40.140052 |
| CO | 5.857730 |
| PM 10 | 0.302832 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.256242 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 8572.6 |
| | |

3.2 Aircraft & Engines

3.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-------------|
| Aircraft Designation: | T-7A |
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

3.2.2 Aircraft & Engines Emission Factor(s)

Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

3.3 Flight Operations

3.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|-------|
| Number of Aircraft: | 21 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 11227 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 0 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 3.56 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

- Trim Test Idle (mins): 12 Approach (mins): 27 Intermediate (mins): 9 Military (mins): 9 AfterBurn (mins): 3

3.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

3.4 Auxiliary Power Unit (APU)

3.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

3.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-----------------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

3.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

4. Aircraft

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2028 Remove T-38C and LTOs

- Activity Description:

Starting in 2028, remove 23 T-38Cs and decrease LTOs by 5,889.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -21.206061 |
| SO _x | -1.874064 |
| NO _x | -3.858114 |
| СО | -226.520932 |
| PM 10 | -5.555029 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -4.440584 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -4760.5 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -21.206061 |
| SO _x | -1.874064 |
| NO _x | -3.858114 |
| CO | -226.520932 |
| PM 10 | -5.555029 |

| t & APU) part[: | |
|-------------------|----------------------------------|
| Pollutant | Emissions Per Year (TONs) |
| PM 2.5 | -4.440584 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -4760.5 |
| | |

4.2 Aircraft & Engines

4.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

| Aircraft Designation: | T-38C |
|--------------------------|-----------|
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

4.2.2 Aircraft & Engines Emission Factor(s)

| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|--------------|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

4.3 Flight Operations

4.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|------|
| Number of Aircraft: | 23 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 5889 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 9.175 |
| Takeoff [Military] (mins): | 0.22 |
| Takeoff [After Burn] (mins): | 0.52 |
| Climb Out [Intermediate] (mins): | 0.46 |
| Approach [Approach] (mins): | 3.91 |
| Taxi/Idle In [Idle] (mins): | 9.175 |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

4.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEMPOL: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

4.4 Auxiliary Power Unit (APU)

4.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| | | | D • • | |
|--------------|----------------|---------|--------------|--------------|
| Number of AP | U Operation | Exempt | Designation | Manufacturer |
| | | | 8 | |
| per Aircraft | Hours for Each | Source? | | |
| I | | | | |
| | LTO | | | |

4.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-----|-----|-----------------|----|-------|--------|-------------------|
|-------------|--------------|-----|-----|-----------------|----|-------|--------|-------------------|

4.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year APU_{POL} = APU * OH * LTO * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

5. Aircraft

5.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove
- Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2028 Remove T-38C TGOs

- Activity Description: Starting in 2028, decrease T-38C TGOs by 12,956.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -2.201160 |
| SO _x | -0.847209 |
| NO _x | -0.554249 |
| CO | -51.521407 |
| PM 10 | -1.417294 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.546331 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -2560.6 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (IONs) | | Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|---|-------------------|---------------------------|
| VOC | -2.201160 | | PM 2.5 | -0.546331 |
| SO _x | -0.847209 | | Pb | 0.000000 |
| NO _x | -0.554249 | | NH ₃ | 0.000000 |
| СО | -51.521407 |] | CO ₂ e | -2560.6 |

5.2 Aircraft & Engines

5.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

 Aircraft Designation: T-38C
 Engine Model: J85-GE-5R
 Primary Function: Trainer
 Aircraft has After burn: Yes
 Number of Engines: 2
- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

5.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|--------------|------------------|-------|-----------------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

5.3 Flight Operations

5.3.1 Flight Operations Assumptions

| - Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: | | | |
|---|--------------|------|--|
| - Default Settings Used: | No | | |
| - Flight Operations TIMs (T | ime In Mode) | | |
| Taxi/Idle Out [Idle] (mi | ns): | 0 | |
| Takeoff [Military] (min | s): | 0 | |
| Takeoff [After Burn] (n | nins): | 0 | |
| Climb Out [Intermedia | te] (mins): | 3.56 | |
| Approach [Approach] (| mins): | 0 | |
| Taxi/Idle In [Idle] (mins | 5): | 0 | |
| - Trim Test | | | |
| Idle (mins): | 12 | | |
| Approach (mins): | 27 | | |
| Intermediate (mins): | 9 | | |
| Military (mins): | 9 | | |
| AfterBurn (mins): | 3 | | |

5.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60)^{*} (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

5.4 Auxiliary Power Unit (APU)

5.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

5.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation Fuel Flow | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|--------------------------|-----|-----|-----|----|-------|--------|-------------------|
|--------------------------|-----|-----|-----|----|-------|--------|-------------------|

5.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

6. Aircraft

6.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Clay, MS; Lowndes, MS; Monroe, MS

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2029 Add T-7As and LTOs

- Activity Description:

Starting in 2029, add 31 T-7As and increase LTOs by 7,533.

- Activity Start Date Start Month: 1 Start Year: 2029
- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 51.777269 |
| SO _x | 2.381603 |
| NO _x | 24.226154 |
| СО | 105.082344 |
| PM 10 | 0.635249 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.564452 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 7196.7 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | 51.777269 | PM 2.5 | 0.564452 |
| SO _x | 2.381603 | Pb | 0.000000 |
| NO _x | 24.226154 | NH ₃ | 0.000000 |
| СО | 105.082344 | CO ₂ e | 7196.7 |
| PM 10 | 0.635249 | | |

6.2 Aircraft & Engines

6.2.1 Aircraft & Engines Assumptions

| Aircraft & Engine | |
|--------------------------|-------------|
| Aircraft Designation: | T-7A |
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

6.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

6.3 Flight Operations

6.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|------|
| Number of Aircraft: | 31 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 7533 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 8.475 |
| Takeoff [Military] (mins): | 0.73 |
| Takeoff [After Burn] (mins): | 0.01 |
| Climb Out [Intermediate] (mins): | 0.42 |
| Approach [Approach] (mins): | 4.03 |
| Taxi/Idle In [Idle] (mins): | 8.475 |
| | |

| - Trim Test | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

6.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

6.4 Auxiliary Power Unit (APU)

6.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

6.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

| - Auxinary Power Unit (APU) Emission Factor (10/117) | | | | | | | | |
|--|-------|-------|-------|-------|-------|--------|--------|-------------------|
| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
| | Flow | | | | | | | |
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

6.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

7. Aircraft

7.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2029 Add T-7A TGOs
- Activity Description: Starting in 2029, increase T-7A TGOs by 16,572.
- Activity Start Date

Start Month:1Start Year:2029

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) | | Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|---|-------------------|---------------------------|
| VOC | 7.826115 | I | PM 2.5 | 0.378235 |
| SO _x | 4.155642 | I | Pb | 0.000000 |
| NO _x | 59.250106 | 1 | NH ₃ | 0.000000 |
| СО | 8.646504 | (| CO ₂ e | 12653.9 |
| PM 10 | 0.447005 | | | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------|----------------------------------|-----------|----------------------------------|
| VOC | 7.826115 | PM 2.5 | 0.378235 |

| SO _x | 4.155642 |
|-----------------|-----------|
| NO _x | 59.250106 |
| СО | 8.646504 |
| PM 10 | 0.447005 |

| Pb | 0.000000 |
|-------------------|----------|
| NH ₃ | 0.000000 |
| CO ₂ e | 12653.9 |
| | |

7.2 Aircraft & Engines

7.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

| Aircraft Designation: | T-7A |
|--------------------------|-------------|
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

7.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

7.3 Flight Operations

7.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|-------|
| Number of Aircraft: | 31 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 16572 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |
| - Default Settings Used: No | |
| - Flight Operations TIMs (Time In Mode) | |

| 0 |
|------|
| 0 |
| 0 |
| 3.56 |
| 0 |
| 0 |
| |

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

7.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

7.4 Auxiliary Power Unit (APU)

7.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

7.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

7.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

8. Aircraft

8.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Clay, MS; Lowndes, MS; Monroe, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2029 Remove T-38C and LTOs

- Activity Description:

Starting in 2029, remove 45 T-38Cs and decrease LTOs by 11,521.

- Activity Start Date

Start Month: 1 Start Year: 2029

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -41.486675 |
| SO _x | -3.666342 |
| NO _x | -7.547858 |
| СО | -443.156335 |
| PM 10 | -10.867632 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -8.687378 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -9313.3 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | -41.486675 | PM 2.5 | -8.687378 |
| SO _x | -3.666342 | Pb | 0.000000 |
| NO _x | -7.547858 | NH ₃ | 0.000000 |
| CO | -443.156335 | CO ₂ e | -9313.3 |
| PM 10 | -10.867632 | | |

8.2 Aircraft & Engines

8.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

8.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SO _x | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|------|-----------|-------|-----------------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |

| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
|--------------|---------|------|------|------|--------|------|------|------|
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

8.3 Flight Operations

8.3.1 Flight Operations Assumptions

| - Flight Operations | | |
|--------------------------|--|-------|
| Number of Aircraft: | | 45 |
| Number of Annual L | Os (Landing and Take-off) cycles for all Aircraft: | 11521 |
| Number of Annual TO | GOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Tr | im Test(s) per Aircraft: | 0 |
| - Default Settings Used: | No | |

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 9.175 |
| Takeoff [Military] (mins): | 0.22 |
| Takeoff [After Burn] (mins): | 0.52 |
| Climb Out [Intermediate] (mins): | 0.46 |
| Approach [Approach] (mins): | 3.91 |
| Taxi/Idle In [Idle] (mins): | 9.175 |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

8.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs)

AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

8.4 Auxiliary Power Unit (APU)

8.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

8.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----------------|----|-------|--------|-------------------|
| | Flow | | | | | | | |

8.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

9. Aircraft

9.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove
- Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2029 Remove T-38C TGOs
- Activity Description: Starting in 2029, decrease T-38C TGOs by 25,346.
- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2029 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -4.306160 |
| SO _x | -1.657407 |
| NO _x | -1.084285 |
| СО | -100.792034 |
| PM 10 | -2.772672 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -1.068795 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -5009.4 |
| | |

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|---------------------------|
| VOC | -4.306160 | PM 2.5 | -1.068795 |
| SO _x | -1.657407 | Pb | 0.000000 |
| NO _x | -1.084285 | NH ₃ | 0.000000 |
| СО | -100.792034 | CO ₂ e | -5009.4 |
| PM 10 | -2.772672 | | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

9.2 Aircraft & Engines

9.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |
| 0 | |

| - Aircraft & Engine Surrogate | |
|-----------------------------------|----|
| Is Aircraft & Engine a Surrogate? | No |
| Original Aircraft Name: | |
| Original Engine Name: | |

9.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| An cruit & Engine Emissions I actors (10/100015 fact) | | | | | | | | |
|---|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

9.3 Flight Operations

9.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|-------|
| Number of Aircraft: | 45 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 25346 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 0 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 3.56 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

| - Trim Test | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

9.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

9.4 Auxiliary Power Unit (APU)

9.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

9.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----|----|-------|--------|-------------------|
| | Flow | | | | | | | |

9.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

10. Aircraft

10.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location County: Clay, MS; Lowndes, MS; Monroe, MS Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2030 Add T-7As and LTOs
- Activity Description: Starting in 2030, add 9 T-7As and increase LTOs by 2,187.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 15.032110 |
| SO _x | 0.691433 |
| NO _x | 7.033400 |
| СО | 30.507777 |
| PM 10 | 0.184427 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.163873 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 2089.4 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|---|-------------------|----------------------------------|
| VOC | 15.032110 | | PM 2.5 | 0.163873 |
| SO _x | 0.691433 | | Pb | 0.000000 |
| NO _x | 7.033400 | | NH ₃ | 0.000000 |
| СО | 30.507777 | | CO ₂ e | 2089.4 |
| PM 10 | 0.184427 |] | | |

10.2 Aircraft & Engines

10.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

| Aircraft Designation: | T-7A |
|--------------------------|-------------|
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

10.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

10.3 Flight Operations

10.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|------|
| Number of Aircraft: | 9 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 2187 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| 8.475 |
|-------|
| 0.73 |
| 0.01 |
| 0.42 |
| 4.03 |
| 8.475 |
| |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

10.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs)

AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

10.4 Auxiliary Power Unit (APU)

10.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

10.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

| - Auxiliary Power Unit (APU) Emission Factor (lb/hr) | - Auxiliary | y Power I | Unit (APU |) Emission | Factor (| (lb/hr) |
|--|-------------|-----------|-----------|------------|----------|---------|
|--|-------------|-----------|-----------|------------|----------|---------|

| Designation | Fuel Flow | VOC | SO _x | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-----------------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

10.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

11. Aircraft

11.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location

County: Clay, MS; Lowndes, MS; Monroe, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2030 Add T-7A TGOs
- Activity Description: Starting in 2030, increase T-7A TGOs by 4,812.
- Activity Start Date Start Month: 1 Start Year: 2030
- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | 2.272464 |
| SO _x | 1.206671 |
| NO _x | 17.204412 |

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| PM 2.5 | 0.109828 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |

| СО | 2.510679 |
|-------|----------|
| PM 10 | 0.129797 |

| CO ₂ e | 3674.3 |
|-------------------|--------|
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 2.272464 |
| SO _x | 1.206671 |
| NO _x | 17.204412 |
| СО | 2.510679 |
| PM 10 | 0.129797 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.109828 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 3674.3 |
| | |

11.2 Aircraft & Engines

11.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

| Aircraft Designation: | T-7A |
|--------------------------|-------------|
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

11.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

11.3 Flight Operations

11.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|------|
| Number of Aircraft: | 9 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 4812 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |
| | |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 0 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 3.56 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |
| | |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

11.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

11.4 Auxiliary Power Unit (APU)

11.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

11.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SO _x | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-----------------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

11.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

12. Aircraft

12.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove
- Activity Location County: Clay, MS; Lowndes, MS; Monroe, MS Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2030 Remove T-38C and LTOs

- Activity Description: Starting in 2030, remove 17 T-38Cs and decrease LTOs by 4,353.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -15.674985 |
| SO _x | -1.385260 |
| NO _x | -2.851821 |
| СО | -167.438549 |
| PM 10 | -4.106137 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -3.282368 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -3518.9 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|---|-------------------|---------------------------|
| VOC | -15.674985 | | PM 2.5 | -3.282368 |
| SO _x | -1.385260 | | Pb | 0.000000 |
| NO _x | -2.851821 | | NH ₃ | 0.000000 |
| CO | -167.438549 | | CO ₂ e | -3518.9 |
| PM 10 | -4.106137 |] | | |

12.2 Aircraft & Engines

12.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

| Aircraft Designation: | T-38C |
|--------------------------|-----------|
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

12.2.2 Aircraft & Engines Emission Factor(s)

| | | ins i accors | | uei) | | | | |
|--------------|------------------|--------------|------|-----------------|--------|-------|--------|-------------------|
| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

12.3 Flight Operations

12.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|------|
| Number of Aircraft: | 17 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 4353 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 9.175 |
| Takeoff [Military] (mins): | 0.22 |
| Takeoff [After Burn] (mins): | 0.52 |
| Climb Out [Intermediate] (mins): | 0.46 |
| Approach [Approach] (mins): | 3.91 |
| Taxi/Idle In [Idle] (mins): | 9.175 |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

12.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

12.4 Auxiliary Power Unit (APU)

12.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

12.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-----|-----|-----|----|-------|--------|-------------------|
|-------------|--------------|-----|-----|-----|----|-------|--------|-------------------|

12.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

13. Aircraft

13.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove
- Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2030 Remove T-38C TGOs
- Activity Description: Starting in 2030, decrease T-38C TGOs by 9,577.
- Activity Start Date Start Month: 1 Start Year: 2030
- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------|----------------------------------|
| VOC | -1.627085 |

| Pollutant | Emissions Per Year (TONs) |
|-----------|---------------------------|
| PM 2.5 | -0.403845 |

| SO _x | -0.626252 |
|-----------------|------------|
| NO _x | -0.409698 |
| СО | -38.084325 |
| PM 10 | -1.047655 |

| Pb | 0.000000 |
|-------------------|----------|
| NH ₃ | 0.000000 |
| CO ₂ e | -1892.8 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -1.627085 |
| SO _x | -0.626252 |
| NO _x | -0.409698 |
| СО | -38.084325 |
| PM 10 | -1.047655 |

| & APU) partj: | |
|--------------------------|----------------------------------|
| Pollutant | Emissions Per Year (TONs) |
| PM 2.5 | -0.403845 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -1892.8 |
| | |

13.2 Aircraft & Engines

Number of Engines:

13.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

13.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

2

| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|--------------|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

0 0

13.3 Flight Operations

13.3.1 Flight Operations Assumptions

| - Flight Operations Number of Aircraft: | | 17 |
|--|--|------|
| Number of Annual L7 | Os (Landing and Take-off) cycles for all Aircraft: | 9577 |
| Number of Annual TO | GOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Tr | im Test(s) per Aircraft: | 0 |
| - Default Settings Used: | No | |

| - Flight Operations TIMs (Time In Mode) | |
|---|--|
| Taxi/Idle Out [Idle] (mins): | |
| Takeoff [Military] (mins): | |

| Takeoff [After Burn] | 0 | | |
|-------------------------|------|--|--|
| Climb Out [Intermed | 3.56 | | |
| Approach [Approach] | 0 | | |
| Taxi/Idle In [Idle] (mi | 0 | | |
| - Trim Test | | | |
| Idle (mins): | | | |
| Annroach (mins). | | | |

| Approach (mms): | 27 |
|----------------------|----|
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

13.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE IN} + AEM_{IDLE OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs)

AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

13.4 Auxiliary Power Unit (APU)

13.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| | (======) (=====) | | | |
|---------------|------------------|---------|-------------|--------------|
| Number of APU | Operation | Exempt | Designation | Manufacturer |
| per Aircraft | Hours for Each | Source? | _ | |
| | LTO | | | |

13.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| |) | (|) | | | | | |
|-------------|------|-----|-----|-----|----|-------|--------|-------------------|
| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
| | Flow | | | | | | | |

13.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year APU_{POL} = APU * OH * LTO * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

14. Aircraft

14.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2028 T-7A Increase Trim Test and Test Cell

- Activity Description:

Starting in 2028, add trim test and engine test cell for 21 T-7As.

- Activity Start Date

Start Month:1Start Year:2028

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.221964 |
| SO _x | 0.072285 |
| NO _x | 1.233454 |
| СО | 3.807975 |
| PM 10 | 0.086592 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.077654 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 218.5 |
| | |

Pollutant

PM 2.5

Pb

NH₃ CO₂e **Emissions Per Year (TONs)**

0.039568

 $\frac{0.000000}{0.000000}$

120.1

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.121136 |
| SO _x | 0.039746 |
| NO _x | 0.660320 |
| СО | 1.921205 |
| PM 10 | 0.044158 |

- Activity Emissions [Test Cell part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | 0.100828 |
| SO _x | 0.032539 |
| NO _x | 0.573135 |
| СО | 1.886770 |
| PM 10 | 0.042434 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.038086 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 98.3 |
| | |

14.2 Aircraft & Engines

14.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

 Aircraft Designation:
 T-7A
 Engine Model:
 F404-GE-102
 Primary Function:
 Trainer
 Aircraft has After burn:
 Yes
 Number of Engines:
 1
- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

14.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

14.3 Flight Operations

14.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|----|
| Number of Aircraft: | 21 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 0 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 1 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 6.8 |
| Takeoff [Military] (mins): | 0.25 |
| Takeoff [After Burn] (mins): | 0.25 |
| Climb Out [Intermediate] (mins): | 1.4 |
| Approach [Approach] (mins): | 4 |
| Taxi/Idle In [Idle] (mins): | 4.4 |

| - Trim Test | |
|----------------------|-------|
| Idle (mins): | 0 |
| Approach (mins): | 4.97 |
| Intermediate (mins): | 10.45 |
| Military (mins): | 6.14 |
| AfterBurn (mins): | 2.04 |

_

14.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)NE: Number of EnginesLTO: Number of Landing and Take-off Cycles (for all aircraft)2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs)

AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

14.4 Auxiliary Power Unit (APU)

14.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

14.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

14.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

14.5 Aircraft Engine Test Cell

14.5.1 Aircraft Engine Test Cell Assumptions

- Engine Test Cell Total Number of Aircraft Engines Tested Annually: 21

- Default Settings Used: Yes

| - Annual Run-ups / Test Durations | |
|---------------------------------------|--------------|
| Annual Run-ups (Per Aircraft Engine): | 1 (default) |
| Idle Duration (mins): | 0 (default) |
| Approach Duration (mins): | 12 (default) |
| Intermediate Duration (mins): | 0 (default) |
| Military Duration (mins): | 8 (default) |
| After Burner Duration (mins): | 2 (default) |
| | |

14.5.2 Aircraft Engine Test Cell Emission Factor(s)

- See Aircraft & Engines Emission Factor(s)

14.5.3 Aircraft Engine Test Cell Formula(s)

- Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs) TestCellPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * ARU / 2000

TestCellPS_{POL}: Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Total Number of Engines (For All Aircraft) ARU: Annual Run-ups (Per Aircraft Engine) 2000: Conversion Factor pounds to TONs

- Aircraft Engine Test Cell Emissions per Year

 $TestCellPS_{IDLE} + TestCellPS_{APPROACH} + TestCellPS_{INTERMEDIATE} + TestCellPS_{MILITARY} + TestCellPS_{AFTERBURN}$

TestCell: Aircraft Engine Test Cell Emissions (TONs) TestCellPS_{IDLE}: Aircraft Engine Test Cell Emissions for Idle Power Setting (TONs) TestCellPS_{APPROACH}: Aircraft Engine Test Cell Emissions for Approach Power Setting (TONs) TestCellPS_{INTERMEDIATE}: Aircraft Engine Test Cell Emissions for Intermediate Power Setting (TONs) TestCellPS_{MILITARY}: Aircraft Engine Test Cell Emissions for Military Power Setting (TONs) TestCellPS_{AFTERBURN}: Aircraft Engine Test Cell Emissions for After Burner Power Setting (TONs)

15. Aircraft

15.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove
- Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2028 T-38C Decrease Trim Test and Test Cell
- Activity Description:

Starting in 2028, remove trim test and engine test cell for 23 T-38Cs.

- Activity Start Date Start Month: 1 Start Year: 2028
- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -0.441333 |
| SO _x | -0.107957 |
| NO _x | -0.314704 |
| СО | -5.605788 |
| PM 10 | -0.118552 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.044035 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -326.3 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.210261 |
| SO _x | -0.054556 |
| NO _x | -0.155328 |
| CO | -2.774568 |
| PM 10 | -0.058050 |

- Activity Emissions [Test Cell part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -0.231073 |
| SO _x | -0.053401 |
| NO _x | -0.159375 |
| CO | -2.831220 |
| PM 10 | -0.060502 |

| t & APU) part : | |
|-------------------|----------------------------------|
| Pollutant | Emissions Per Year (TONs) |
| PM 2.5 | -0.019822 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -164.9 |
| | |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.024212 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -161.4 |
| | |

15.2 Aircraft & Engines

15.2.1 Aircraft & Engines Assumptions

| Aircraft Designation: | T-38C |
|--------------------------|-----------|
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

15.2.2 Aircraft & Engines Emission Factor(s)

| - An crait & Englic Emissions Factors (10/100010 fuci) | | | | | | | | |
|--|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

15.3 Flight Operations

15.3.1 Flight Operations Assumptions

- Flight Operations

| Number of Aircraft: | 23 |
|---|----|
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 0 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 3 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 12.8 |
| Takeoff [Military] (mins): | 0.2 |
| Takeoff [After Burn] (mins): | 0.2 |
| Climb Out [Intermediate] (mins): | 0.9 |
| Approach [Approach] (mins): | 3.8 |
| Taxi/Idle In [Idle] (mins): | 6.4 |

- Trim Test

| Idle (mins): | 0 |
|----------------------|-------|
| Approach (mins): | 4.97 |
| Intermediate (mins): | 10.45 |
| Military (mins): | 6.14 |
| AfterBurn (mins): | 2.04 |

15.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)NE: Number of EnginesTGO: Number of Touch-and-Go Cycles (for all aircraft)2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

15.4 Auxiliary Power Unit (APU)

15.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| | Number of APU | Operation | Exempt | Designation | Manufacturer |
|---|---------------|----------------|---------|-------------|-------------------|
| _ | | operation | Lacmpt | Designation | 1) fullutuetui ei |
| _ | per Aircraft | Hours for Each | Source? | | |
| | per Antran | Hours for Each | Source: | | |
| | - | ITO | | | |
| | | LTO | | | |

15.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----------------|----|-------|--------|-------------------|
| | Flow | | | | | | | |

15.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

15.5 Aircraft Engine Test Cell

15.5.1 Aircraft Engine Test Cell Assumptions

```
- Engine Test Cell
Total Number of Aircraft Engines Tested Annually: 46
```

- Default Settings Used: No

| - Annual Run-ups / Test Durations | |
|---------------------------------------|----|
| Annual Run-ups (Per Aircraft Engine): | 3 |
| Idle Duration (mins): | 0 |
| Approach Duration (mins): | 12 |
| Intermediate Duration (mins): | 0 |
| Military Duration (mins): | 8 |
| After Burner Duration (mins): | 2 |

15.5.2 Aircraft Engine Test Cell Emission Factor(s)

- See Aircraft & Engines Emission Factor(s)

15.5.3 Aircraft Engine Test Cell Formula(s)

- Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)

TestCellPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * ARU / 2000

TestCellPS_{POL}: Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Total Number of Engines (For All Aircraft) ARU: Annual Run-ups (Per Aircraft Engine) 2000: Conversion Factor pounds to TONs

- Aircraft Engine Test Cell Emissions per Year

 $TestCellPS_{IDLE} + TestCellPS_{APPROACH} + TestCellPS_{INTERMEDIATE} + TestCellPS_{MILITARY} + TestCellPS_{AFTERBURN}$

TestCell: Aircraft Engine Test Cell Emissions (TONs) TestCellPS_{IDLE}: Aircraft Engine Test Cell Emissions for Idle Power Setting (TONs) TestCellPS_{APPROACH}: Aircraft Engine Test Cell Emissions for Approach Power Setting (TONs) TestCellPS_{INTERMEDIATE}: Aircraft Engine Test Cell Emissions for Intermediate Power Setting (TONs)

TestCellPS_{MILITARY}: Aircraft Engine Test Cell Emissions for Military Power Setting (TONs) TestCellPS_{AFTERBURN}: Aircraft Engine Test Cell Emissions for After Burner Power Setting (TONs)

16. Aircraft

16.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location Clay, MS; Lowndes, MS; Monroe, MS County: Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2029 T-7A Increase Trim Test and Test Cell

- Activity Description:

Starting in 2029, add trim test and engine test cell for 31 T-7As.

- Activity Start Date Start Month: 1

Start Year: 2029

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.327661 |
| SO _x | 0.106706 |
| NO _x | 1.820814 |
| СО | 5.621297 |
| PM 10 | 0.127826 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.114632 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 322.5 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | | |
|-----------------|----------------------------------|--|--|
| VOC | 0.178820 | | |
| SO _x | 0.058673 | | |
| NO _x | 0.974757 | | |
| СО | 2.836065 | | |
| PM 10 | 0.065185 | | |

- Activity Emissions [Test Cell part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.148841 |
| SO _x | 0.048033 |
| NO _x | 0.846056 |
| СО | 2.785232 |
| PM 10 | 0.062641 |

| PM 2.5 | 0.058410 |
|-------------------|----------|
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 177.3 |
| | |
| | |

Pollutant

Emissions Per Year (TONs)

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.056222 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 145.2 |
| | |

16.2 Aircraft & Engines

16.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine Aircraft Designation: Engine Model: Primary Function: Aircraft has After burn: Number of Engines: | T-7A F404-GE-102 Trainer Yes 1 | | | | | |
|---|--|--|--|--|--|--|
| - Aircraft & Engine Surrogat Is Aircraft & Engine a Su Original Aircraft Name: Original Engine Name: | | | | | | |
| 16.2.2 Aircraft & Engines | Emission Factor(s) | | | | | |
| Aircraft & Engine Emission Proprietary Information. C engine's Emission Factors. | s Factors (lb/1000lb fuel) Contact Air Quality Subject Matter Expert for More Information regarding this | | | | | |
| 16.3 Flight Operations | | | | | | |
| 16.3.1 Flight Operations A | ssumptions | | | | | |
| Number of Annual TGO | | | | | | |
| - Default Settings Used: | lo | | | | | |
| - Flight Operations TIMs (Ti Taxi/Idle Out [Idle] (min Takeoff [Military] (mins) Takeoff [After Burn] (mi Climb Out [Intermediate Approach [Approach] (m Taxi/Idle In [Idle] (mins) | 6.8 : 0.25 ns): 0.25 (mins): 1.4 ins): 4 | | | | | |
| - Trim Test Idle (mins): Approach (mins): Intermediate (mins): Military (mins): AfterBurn (mins): | 0 4.97 10.45 6.14 2.04 | | | | | |
| 16.3.2 Flight Operations F | ormula(s) | | | | | |
| - Aircraft Emissions per Mode for LTOs per Year AEM _{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000 | | | | | | |

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min) 60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

16.4 Auxiliary Power Unit (APU)

16.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

16.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

16.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

16.5 Aircraft Engine Test Cell

16.5.1 Aircraft Engine Test Cell Assumptions

| - Engine Test Cell | |
|---|----|
| Total Number of Aircraft Engines Tested Annually: | 31 |

- Default Settings Used: Yes

| - Annual Run-ups / Test Durations | |
|---------------------------------------|--------------|
| Annual Run-ups (Per Aircraft Engine): | 1 (default) |
| Idle Duration (mins): | 0 (default) |
| Approach Duration (mins): | 12 (default) |
| Intermediate Duration (mins): | 0 (default) |
| Military Duration (mins): | 8 (default) |
| After Burner Duration (mins): | 2 (default) |

16.5.2 Aircraft Engine Test Cell Emission Factor(s)

- See Aircraft & Engines Emission Factor(s)

16.5.3 Aircraft Engine Test Cell Formula(s)

- Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)

 $TestCellPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * ARU / 2000$

TestCellPS_{POL}: Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Total Number of Engines (For All Aircraft)
ARU: Annual Run-ups (Per Aircraft Engine)
2000: Conversion Factor pounds to TONs

- Aircraft Engine Test Cell Emissions per Year

 $TestCellPS_{IDLE} + TestCellPS_{APPROACH} + TestCellPS_{INTERMEDIATE} + TestCellPS_{MILITARY} + TestCellPS_{AFTERBURN}$

TestCell: Aircraft Engine Test Cell Emissions (TONs) TestCellPS_{IDLE}: Aircraft Engine Test Cell Emissions for Idle Power Setting (TONs) TestCellPS_{APPROACH}: Aircraft Engine Test Cell Emissions for Approach Power Setting (TONs) TestCellPS_{INTERMEDIATE}: Aircraft Engine Test Cell Emissions for Intermediate Power Setting (TONs) TestCellPS_{MILITARY}: Aircraft Engine Test Cell Emissions for Military Power Setting (TONs) TestCellPS_{AFTERBURN}: Aircraft Engine Test Cell Emissions for After Burner Power Setting (TONs)

17. Aircraft

17.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2029 T-38C Decrease Trim Test and Test Cell

- Activity Description: Starting in 2029, remove trim test and engine test cell for 45 T-38Cs.

- Activity Start Date Start Month: 1 Start Year: 2029
- Activity End Date Indefinite: Yes End Month: N/A

End Year: N/A

- Activity Emissions:

| Theory Emissi | 0115. |
|-----------------|---------------------------|
| Pollutant | Emissions Per Year (TONs) |
| VOC | -0.863478 |
| SO _x | -0.211221 |
| NO _x | -0.615725 |
| СО | -10.967846 |
| PM 10 | -0.231950 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.086155 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -638.4 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.411379 |
| SO _x | -0.106740 |
| NO _x | -0.303903 |
| СО | -5.428503 |
| PM 10 | -0.113576 |

- Activity Emissions [Test Cell part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -0.452098 |
| SO _x | -0.104481 |
| NO _x | -0.311821 |
| СО | -5.539343 |
| PM 10 | -0.118374 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -0.038783 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -322.6 |
| | |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.047372 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -315.8 |
| | |

17.2 Aircraft & Engines

17.2.1 Aircraft & Engines Assumptions

| T-38C |
|-----------|
| J85-GE-5R |
| Trainer |
| Yes |
| 2 |
| |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

17.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SO _x | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|--------------|-----------|-------|-----------------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

17.3 Flight Operations

17.3.1 Flight Operations Assumptions

| Number of Aircraft: | 45 |
|---|----|
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 0 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 3 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 12.8 |
| Takeoff [Military] (mins): | 0.2 |
| Takeoff [After Burn] (mins): | 0.2 |
| Climb Out [Intermediate] (mins): | 0.9 |
| Approach [Approach] (mins): | 3.8 |
| Taxi/Idle In [Idle] (mins): | 6.4 |

- Trim Test

| Idle (mins): | 0 |
|----------------------|-------|
| Approach (mins): | 4.97 |
| Intermediate (mins): | 10.45 |
| Military (mins): | 6.14 |
| AfterBurn (mins): | 2.04 |

17.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)

60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

17.4 Auxiliary Power Unit (APU)

17.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|-----------------------|---------|-------------|--------------|
| per Aircraft | Hours for Each LTO | Source? | | |

17.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel V Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|--|--|-------------------------|---|-----------------|-----------|------------|--------|-------------------|
| 1742 Auxiliany Dower Un | · | mula(| | | | | | |
| 17.4.3 Auxiliary Power Un | II (AFU) FOI | riiruta(| 5) | | | | | |
| - Auxiliary Power Unit (APU) APU _{POL} = APU * OH * LTO * | | er Year | | | | | | |
| APU _{POL} : Auxiliary Power APU: Number of Auxiliary OH: Operation Hours for F LTO: Number of LTOs EF _{POL} : Emission Factor for 2000: Conversion Factor p | y Power Units Each LTO (hou r Pollutant (lb/ | ur) | s per Pollu | tant (TONs | ;) | | | |
| 17.5 Aircraft Engine Test | Cell | | | | | | | |
| 17.5.1 Aircraft Engine Tes | t Cell Assum | nptions | 5 | | | | | |
| - Engine Test Cell Total Number of Aircraft | Engines Test | ed Ann | ually: 9 | 0 | | | | |
| - Default Settings Used: Y | es | | | | | | | |
| - Annual Run-ups / Test Dura Annual Run-ups (Per Air Idle Duration (mins): Approach Duration (mins Intermediate Duration (m Military Duration (mins): After Burner Duration (n | craft Engine): s): ains): | 0 (12 0 (8 (| default) default) (default) default) default) default) | | | | | |
| 17.5.2 Aircraft Engine Tes | t Cell Emissi | ion Fa | ctor(s) | | | | | |
| - See Aircraft & Engines Emis | ssion Factor(s | 5) | | | | | | |
| 17.5.3 Aircraft Engine Tes | t Cell Formu | ıla(s) | | | | | | |
| - Aircraft Engine Test Cell En TestCellPS _{POL} = (TD / 60) * (Fo | | | | | ('ONs) | | | |
| TestCellPS _{POL} : Aircraft En TD: Test Duration (min) 60: Conversion Factor min | utes to hours | Emissi | ons per Po | llutant & P | ower Sett | ing (TONs) |) | |

60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Total Number of Engines (For All Aircraft)
ARU: Annual Run-ups (Per Aircraft Engine)
2000: Conversion Factor pounds to TONs

- Aircraft Engine Test Cell Emissions per Year

 $TestCell = TestCellPS_{IDLE} + TestCellPS_{APPROACH} + TestCellPS_{INTERMEDIATE} + TestCellPS_{MILITARY} + TestCellPS_{AFTERBURN}$

TestCell: Aircraft Engine Test Cell Emissions (TONs)

TestCellPS_{IDLE}: Aircraft Engine Test Cell Emissions for Idle Power Setting (TONs) TestCellPS_{APPROACH}: Aircraft Engine Test Cell Emissions for Approach Power Setting (TONs) TestCellPS_{INTERMEDIATE}: Aircraft Engine Test Cell Emissions for Intermediate Power Setting (TONs) TestCellPS_{MILITARY}: Aircraft Engine Test Cell Emissions for Military Power Setting (TONs) TestCellPS_{AFTERBURN}: Aircraft Engine Test Cell Emissions for After Burner Power Setting (TONs)

18. Aircraft

18.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location

County: Clay, MS; Lowndes, MS; Monroe, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2030 T-7A Increase Trim Test and Test Cell

- Activity Description:

Starting in 2030, add trim test and engine test cell for 9 T-7As.

- Activity Start Date

Start Month:1Start Year:2030

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.095127 |
| SO _x | 0.030979 |
| NO _x | 0.528623 |
| СО | 1.631989 |
| PM 10 | 0.037111 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.033280 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 93.6 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.051916 |
| SO _x | 0.017034 |
| NO _x | 0.282994 |
| СО | 0.823374 |
| PM 10 | 0.018925 |

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.043212 |
| SO _x | 0.013945 |
| NO _x | 0.245629 |
| CO | 0.808616 |

| t <u>& APU) partj:</u> | |
|----------------------------|----------------------------------|
| Pollutant | Emissions Per Year (TONs) |
| PM 2.5 | 0.016958 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 51.5 |
| | |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.016322 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 42.1 |

| Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name: 8.2.2 Aircraft & Engines Emission Factor(s) Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors. 8.3 Flight Operations 8.3.1 Flight Operations 8.3.1 Flight Operations SHIGH Operations Number of Aircraft: 9 Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [Military] (mins): 0.25 Takeoff [After Burn] (mins): 1.4 Approach [Approach] (mins): 4 Taxi/Idle In [Idle] (mins): 4 Taxi/Idle In [Idle] (mins): 4 Taxi/Idle In [Idle] (mins): 4 Taxi/Idle In [Idle] (mins): 4.4 | PM 10 0.018186 | |
|--|--|---------------------------|
| Aircraft & Engine Aircraft & Engine Aircraft & Engine Mircraft & Engine Model: F404-GE-102 Primary Function: Trainer Aircraft & After burn: Yes Number of Engines: 1 Mircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft & Engine a Surrogate? No Original Aircraft & Engines Emission Factor(s) Mircraft & Engine Emission Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors. 3. Flight Operations Mumber of Aircraft: 9 Number of Aircraft: 9 Number of Aircraft: 9 Number of Aircraft: 0 Number of Aircraft: 0 Number of Aircraft: 0 Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual TGOS (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 0.25 Takeoff [Military] (mins): 0.25 Takeoff [After Burn] (mins): 4.4 Taxi/Idle In [Infermediate] (mins): 4.4 Trim Test Idle (mins): 0 Approach [Approach] (mins): 4.97 Intermediate (mins): 4.97 Intermediate (mins): 4.97 Intermediate (mins): 6.14 | .2 Aircraft & Engines | |
| Aircraft & Engine Aircraft Designation: T-7A Engine Model: F404-GE-102 Primary Function: Trainer Aircraft & After burn: Yes Number of Engines: 1 Vircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: 3.2.2 Aircraft & Engines Emission Factor(s) Vircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors. 3.3 Flight Operations 3.3 Flight Operations Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 9 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [Aifter Burn] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4.4 Taxi/Idle In [Idle] (mins): 4.4 Traxi/Idle In [Idle] (mins): 4.4 Traxi/Idle In [Idle] (mins): 4.4 Traxi/Idle In [Idle] (mins): 6.14 | | |
| Aircraft Designation: T-7A Engine Model: F404-GE-102 Primary Function: Traine Aircraft has After burn: Yes Number of Engines: 1 Xircraft & Engine Surrogate Is Aircraft & Engine Surrogate? Is Aircraft & Engine Surrogate? No Original Aircraft Name: Original Legine Name: 32.2 Aircraft & Engines Emission Factor(s) Xircraft & Engine Emissions Factors (b/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors. Bit String Surgate? 3.3 Flight Operations Sa.3 Flight Operations Assumptions 9 Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Tight Operations TIMs (Time In Mode) 6.8 Takeoff [Aiter Burn] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4.4 frim Test Idle (mins): 4.4 Frim Test Idle (mins): | 3.2.1 Aircraft & Engines Assumptions | |
| Engine Model: F404-GE-102 Primary Function: Trainer Aircraft has After burn: Yes Number of Engines: 1 Aircraft & Engine a Surrogate Is Aircraft & Engine a Surrogate? Is Aircraft & Engine a Surrogate? No Original Aircraft & Engines Emission Factor(s) Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Proprietary Information. Solution: 8.3.1 Flight Operations 8.3.1 Flight Operations 8.3.1 Flight Operations (Journamet Context) 9 Number of Annual LTOS (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TGOS (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMS (Time In Mode) Taxi/Idle Out [Idle] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4.4 Trim Test Idle (mins): 4.4 Trim Test Idle (mins): 4.4 | | |
| Primary Function: Trainer Aircraft has After burn: Yes Number of Engines: 1 Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name: 8.2.2 Aircraft & Engine Emission Factors (Ib/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors. 8.3 Flight Operations Sature of Aircraft: 9 Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual LTOs (Couch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) 6.8 Tak/off [After Burn] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4.4 Trim Test Idle (mins): 4.4 Trim Test Idle (mins): 6.4 Military (mins): 0.45 Military (mins): 0.45 Military (mins): 6.14 | | |
| Aircraft has After burn: Yes Number of Engines: 1 Aircraft & Engine a Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft & Engine a Surrogate? No Original Engine Name: 8.2.2 Aircraft & Engine Emission Factor(s) Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors. 8.3 Flight Operations 8.3.1 Flight Operations 8.3.1 Flight Operations 8.3.1 Flight Operations Number of Aircraft: 9 Number of Annual LTOS (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TGOS (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 0.25 Takeoff [After Burn] (mins): 1.4 Approach [Approach] (mins): 4.4 Trim Test Idle (mins): 0 Approach (mins): 4.4 Trim Test Idle (mins): 0.45 Military (mins): 6.14 | | |
| Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name: 8.2.2 Aircraft & Engines Emission Factor(s) Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors. 8.3 Flight Operations 8.3.1 Flight Operations 8.3.1 Flight Operations Sumber of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TGOS (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual TGOS (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Tim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 0.25 Takcoff [After Burn] (mins): 1.4 Approach [Approach] (mins): 4.4 Trim Test Idle (mins): 0 Approach (mins): 4.97 Intermediate (mins): 10.45 Military (mins): 0.45 Military (mins): 0.45 Military (mins): 0.45 Military (mins): 0.45 Military (mins): 0.45 | | |
| Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name: 8.2.2 Aircraft & Engines Emission Factor(s) Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors. 8.3 Flight Operations 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: 9 Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 0.25 Takeoff [After Burn] (mins): 1.4 Approach [Approach] (mins): 4 Taxi/Idle In [Idle] (mins): 44 Taxi/Idle In [Idle] (mins): 44 Taxi/Idle In [Idle] (mins): 44 Mapproach (mins): 4.97 Intermediate (mins): 10.45 Military (mins): 6.14 | Number of Engines: 1 | |
| Original Aircraft Name: Original Engine Name: 8.2.2 Aircraft & Engines Emission Factor(s) Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors. 8.3 Flight Operations 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: 9 Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [After Burn] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4.4 Trim Test Idle (mins): 0 Approach (mins): 4.97 Intermediate (mins): 10.45 Military (mins): 0.45 Military (mins): 0.45 Military (mins): 0.45 Military (mins): 0.45 | Aircraft & Engine Surrogate | |
| Original Engine Name: 18.2.2 Aircraft & Engines Emission Factor(s) Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors. 18.3.1 Flight Operations 18.3.1 Flight Operations Flight Operations Number of Aircraft: 9 Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [Military] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4.4 Trim Test Idle (mins): 0 Approach (mins): 4.97 Intermediate (mins): 10.45 Military (mins): 6.14 | | |
| 18.2.2 Aircraft & Engines Emission Factor(s) Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors. 18.3 Flight Operations 18.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: 9 Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [Military] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4.4 Trim Test Idle (mins): 0 Approach (mins): 4.4 Trim Test Idle (mins): 0 Approach (mins): 4.97 Intermediate (mins): 10.45 Military (mins): 6.14 | | |
| Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors. 8.3 Flight Operations 8.3.1 Flight Operations Flight Operations Number of Aircraft: 9 Number of Annual LTOS (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TGS (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [After Burn] (mins): 0.25 Takeoff [After Burn] (mins): 1.4 Approach [Approach] (mins): 4.4 Trim Test Idle (mins): 0 Approach (mins): 4.97 Intermediate (mins): 10.45 Military (mins): 6.14 | | |
| Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors. 8.3.1 Flight Operations Flight Operations Assumptions Flight Operations Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TCOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual TCOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [After Burn] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4 Taxi/Idle In [Idle] (mins): 4.4 Trim Test Idle (mins): 0 Approach (mins): 4.97 Intermediate (mins): 10.45 Military (mins): 6.14 | | |
| engine's Emission Factors. 18.3 Flight Operations 18.3.1 Flight Operations Assumptions Flight Operations Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [Military] (mins): 0.25 Takeoff [After Burn] (mins): 1.4 Approach [Approach] (mins): 4.7 Trim Test Idle (mins): 0 Approach (mins): 4.97 Intermediate (mins): 10.45 Military (mins): 6.14 | | nformation regarding this |
| Image: Provide the system of the sy | | normation regulating this |
| 83.1 Flight Operations Assumptions Flight Operations Number of Aircraft: 9 Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 0.25 Takeoff [Military] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4.4 Trim Test Idle (mins): 0 Approach (mins): 4.7 Intermediate (mins): 10.45 Military (mins): 6.14 | 9.3 Elight Operations | |
| Flight Operations 9 Number of Aircraft: 9 Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) 6.8 Taxi/Idle Out [Idle] (mins): 0.25 Takeoff [Military] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4.4 Trim Test 4.4 Idle (mins): 0 Approach (mins): 4.97 Intermediate (mins): 10.45 Military (mins): 6.14 | | |
| Number of Aircraft: 9 Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) 6.8 Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [Military] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4.4 Trim Test 1 Idle (mins): 0 Approach (mins): 4.97 Intermediate (mins): 10.45 Military (mins): 6.14 | o.o Tingit Operations | |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) 5 Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [Military] (mins): 0.25 Takeoff [After Burn] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4.4 Trim Test 1 Idle (mins): 0 Approach (mins): 4.97 Intermediate (mins): 10.45 Military (mins): 6.14 | | |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) 6.8 Taxi/Idle Out [Idle] (mins): 0.25 Takeoff [Military] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4.4 Trim Test 1 Idle (mins): 0 Approach (mins): 4.4 Trim Test 1 Idle (mins): 10.45 Military (mins): 6.14 | 8.3.1 Flight Operations Assumptions Flight Operations | |
| Number of Annual Trim Test(s) per Aircraft:1Default Settings Used:NoFlight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins):6.8Takeoff [Military] (mins):0.25Takeoff [Military] (mins):0.25Climb Out [Intermediate] (mins):1.4Approach [Approach] (mins):4Trim Test4.4Trim Test0Idle (mins):4.4Intermediate (mins):10.45Military (mins):6.14 | 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: | |
| Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [Military] (mins): 0.25 Takeoff [After Burn] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4 Taxi/Idle In [Idle] (mins): 4.4 Trim Test Idle (mins): 4.97 Intermediate (mins): 10.45 Military (mins): 6.14 | 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 0 |
| Taxi/Idle Out [Idle] (mins):6.8Takeoff [Military] (mins):0.25Takeoff [After Burn] (mins):0.25Climb Out [Intermediate] (mins):1.4Approach [Approach] (mins):4Taxi/Idle In [Idle] (mins):4.4Trim Test0Idle (mins):0Approach (mins):4.97Intermediate (mins):10.45Military (mins):6.14 | 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 0 |
| Takeoff [Military] (mins):0.25Takeoff [After Burn] (mins):0.25Climb Out [Intermediate] (mins):1.4Approach [Approach] (mins):4Taxi/Idle In [Idle] (mins):4.4Trim Test0Idle (mins):0Approach (mins):4.97Intermediate (mins):10.45Military (mins):6.14 | 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: | 0 0 |
| Takeoff [After Burn] (mins):0.25Climb Out [Intermediate] (mins):1.4Approach [Approach] (mins):4Taxi/Idle In [Idle] (mins):4.4Trim TestIdle (mins):0Approach (mins):4.97Intermediate (mins):10.45Military (mins):6.14 | 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: Default Settings Used: No Flight Operations TIMs (Time In Mode) | 0 0 |
| Climb Out [Intermediate] (mins):1.4Approach [Approach] (mins):4Taxi/Idle In [Idle] (mins):4.4Trim Test4.4Idle (mins):0Approach (mins):4.97Intermediate (mins):10.45Military (mins):6.14 | 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 | 0 0 |
| Taxi/Idle In [Idle] (mins):4.4Trim Test Idle (mins):0Approach (mins):4.97Intermediate (mins):10.45Military (mins):6.14 | 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [Military] (mins): | 0 0 |
| Trim TestIdle (mins):0Approach (mins):4.97Intermediate (mins):10.45Military (mins):6.14 | 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [Military] (mins): 0.25 Takeoff [After Burn] (mins): | 0 0 |
| Idle (mins): 0 Approach (mins): 4.97 Intermediate (mins): 10.45 Military (mins): 6.14 | 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 0.25 Takeoff [After Burn] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): | 0 0 |
| Approach (mins):4.97Intermediate (mins):10.45Military (mins):6.14 | 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [Military] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4 | 0 0 |
| Intermediate (mins):10.45Military (mins):6.14 | 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [Military] (mins): 0.25 Takeoff [After Burn] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4 Taxi/Idle In [Idle] (mins): 4.4 Trim Test | 0 0 |
| Military (mins): 6.14 | 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [Military] (mins): 0.25 Takeoff [After Burn] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4 Taxi/Idle In [Idle] (mins): 4.4 Trim Test Idle (mins): 0 | 0 0 |
| AfterBurn (mins): 2.04 | 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [Military] (mins): 0.25 Takeoff [After Burn] (mins): 1.4 Approach [Approach] (mins): 4 Taxi/Idle In [Idle] (mins): 4.4 Trim Test Idle (mins): 0 Approach (mins): 4.97 | 0 0 |
| | 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [Military] (mins): 0.25 Takeoff [After Burn] (mins): 1.4 Approach [Approach] (mins): 4 Taxi/Idle In [Idle] (mins): 4.4 Trim Test Idle (mins): 0 Approach (mins): 4.97 Intermediate (mins): 10.45 | 0 0 |

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)

AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

18.4 Auxiliary Power Unit (APU)

18.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

18.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SO _x | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-----------------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

18.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year APU_{POL} = APU * OH * LTO * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

18.5 Aircraft Engine Test Cell

18.5.1 Aircraft Engine Test Cell Assumptions

 Engine Test Cell Total Number of Aircraft Engines Tested Annually: 9

- Default Settings Used: Yes

| - Annual Run-ups / Test Durations | |
|---------------------------------------|-------------|
| Annual Run-ups (Per Aircraft Engine): | 1 (default) |
| Idle Duration (mins): | 0 (default) |

| Approach Duration (mins): | 12 (default) |
|-------------------------------|--------------|
| Intermediate Duration (mins): | 0 (default) |
| Military Duration (mins): | 8 (default) |
| After Burner Duration (mins): | 2 (default) |

18.5.2 Aircraft Engine Test Cell Emission Factor(s)

- See Aircraft & Engines Emission Factor(s)

18.5.3 Aircraft Engine Test Cell Formula(s)

- Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)

TestCellPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * ARU / 2000

TestCellPS_{POL}: Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Total Number of Engines (For All Aircraft)
ARU: Annual Run-ups (Per Aircraft Engine)
2000: Conversion Factor pounds to TONs

- Aircraft Engine Test Cell Emissions per Year

 $TestCellPS_{IDLE} + TestCellPS_{APPROACH} + TestCellPS_{INTERMEDIATE} + TestCellPS_{MILITARY} + TestCellPS_{AFTERBURN}$

TestCell: Aircraft Engine Test Cell Emissions (TONs) TestCellPS_{IDLE}: Aircraft Engine Test Cell Emissions for Idle Power Setting (TONs) TestCellPS_{APPROACH}: Aircraft Engine Test Cell Emissions for Approach Power Setting (TONs) TestCellPS_{INTERMEDIATE}: Aircraft Engine Test Cell Emissions for Intermediate Power Setting (TONs) TestCellPS_{MILITARY}: Aircraft Engine Test Cell Emissions for Military Power Setting (TONs) TestCellPS_{AFTERBURN}: Aircraft Engine Test Cell Emissions for After Burner Power Setting (TONs)

19. Aircraft

19.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Clay, MS; Lowndes, MS; Monroe, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2030 T-38C Decrease Trim Test and Test Cell

- Activity Description: Starting in 2030, remove trim test and engine test cell for 17 T-38Cs.

- Activity Start Date Start Month: 1 Start Year: 2030

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.326203 |
| SO _x | -0.079795 |
| NO _x | -0.232607 |
| CO | -4.143408 |
| PM 10 | -0.087626 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.032548 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -241.2 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.155410 |
| SO _x | -0.040324 |
| NO _x | -0.114808 |
| СО | -2.050768 |
| PM 10 | -0.042906 |

- Activity Emissions [Test Cell part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -0.170793 |
| SO _x | -0.039470 |
| NO _x | -0.117799 |
| CO | -2.092641 |
| PM 10 | -0.044719 |

| PM 2.5 | -0.014651 |
|-----------------|-----------|
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO_2e | -121.9 |
| | |
| | |
| | |

Pollutant

DI

Emissions Per Year (TONs)

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.017896 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -119.3 |
| | |

19.2 Aircraft & Engines

19.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

19.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SOx | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|--------------|-----------|-------|------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |

| | | | | 1 | | | | |
|--|--|--|----------------------------------|----------------------------------|----------------|------------------------|------|------|
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |
| 19.3 Flight Operations | | | | | | | | |
| 19.3.1 Flight | Operations | Assumptio | ns | | | | | |
| Number o Number o | tions f Aircraft: f Annual LT(f Annual TG(f Annual Trir | Os (Touch-a | nd-Go) cyc | | | řt: 0 0 3 | | |
| - Default Setti | ngs Used: | No | | | | | | |
| Takeoff [] Takeoff [/ Climb Ou Approach | tions TIMs (7 Out [Idle] (mi Military] (min After Burn] (n t [Intermedia [Approach] (In [Idle] (min | ns): s): nins): te] (mins): mins): | le) | 12.8 0.2 0.9 3.8 6.4 | | | | |
| - Trim Test Idle (mins Approach Intermedi Military (AfterBurn | (mins): ate (mins): mins): | 0 4.97 10.45 6.14 2.04 | | | | | | |
| 19.3.2 Flight | Operations | Formula(s |) | | | | | |
| - Aircraft Em AEM _{POL} = (TI | | | | D / 2000 | | | | |
| TIM: Tim 60: Conve FC: Fuel 1000: Con EF: Emiss NE: Num LTO: Num | Aircraft Emiss e in Mode (mi ersion Factor n Flow Rate (lb/ oversion Factor sion Factor (lb/ ber of Engines nber of Landir oversion Factor | n) ninutes to hou nr) r pounds to 1 (1000lb fuel) ng and Take-0 | urs 000pounds off Cycles (| | ft) | | | |
| - Aircraft Em AE _{LTO} = AEM | | - | | + AEM _{CLIM} | BOUT + AEM_T | AKEOFF | | |

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

19.4 Auxiliary Power Unit (APU)

19.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: No

- Auxiliary Power Unit (APU)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| r | LTO | | | |

19.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----|----|-------|--------|-------------------|
| | Flow | | | | | | | |

19.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

19.5 Aircraft Engine Test Cell

19.5.1 Aircraft Engine Test Cell Assumptions

| - Engine Test Cell | |
|---|----|
| Total Number of Aircraft Engines Tested Annually: | 34 |

- Default Settings Used: Yes

| - Annual Run-ups / Test Durations | |
|---------------------------------------|--------------|
| Annual Run-ups (Per Aircraft Engine): | 3 (default) |
| Idle Duration (mins): | 0 (default) |
| Approach Duration (mins): | 12 (default) |
| Intermediate Duration (mins): | 0 (default) |
| Military Duration (mins): | 8 (default) |
| After Burner Duration (mins): | 2 (default) |

19.5.2 Aircraft Engine Test Cell Emission Factor(s)

- See Aircraft & Engines Emission Factor(s)

19.5.3 Aircraft Engine Test Cell Formula(s)

- Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs) TestCellPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * ARU / 2000

TestCellPS_{POL}: Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Total Number of Engines (For All Aircraft)
ARU: Annual Run-ups (Per Aircraft Engine)
2000: Conversion Factor pounds to TONs

- Aircraft Engine Test Cell Emissions per Year

 $TestCellPS_{IDLE} + TestCellPS_{APPROACH} + TestCellPS_{INTERMEDIATE} + TestCellPS_{MILITARY} + TestCellPS_{AFTERBURN}$

TestCell: Aircraft Engine Test Cell Emissions (TONs) TestCellPS_{IDLE}: Aircraft Engine Test Cell Emissions for Idle Power Setting (TONs) TestCellPS_{APPROACH}: Aircraft Engine Test Cell Emissions for Approach Power Setting (TONs) TestCellPS_{INTERMEDIATE}: Aircraft Engine Test Cell Emissions for Intermediate Power Setting (TONs) TestCellPS_{MILITARY}: Aircraft Engine Test Cell Emissions for Military Power Setting (TONs) TestCellPS_{AFTERBURN}: Aircraft Engine Test Cell Emissions for After Burner Power Setting (TONs)

20. Personnel

20.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location

County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Add 43 personnel

- Activity Description:

Addition of 43 personnel during the T-7A and T-38C transition period. Conservatively assumed all personnel commute daily.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | No |
|-------------|------|
| End Month: | 12 |
| End Year: | 2029 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.190336 |
| SO _x | 0.001295 |
| NO _x | 0.163202 |
| СО | 2.164712 |
| PM 10 | 0.003741 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.003415 |
| Pb | 0.000000 |
| NH ₃ | 0.011726 |
| CO ₂ e | 186.2 |
| | |

20.2 Personnel Assumptions

| - Number of Personnel | |
|-------------------------------------|----|
| Active Duty Personnel: | 43 |
| Civilian Personnel: | 0 |
| Support Contractor Personnel: | 0 |
| Air National Guard (ANG) Personnel: | 0 |
| Reserve Personnel: | 0 |
| | |

- Default Settings Used: Yes

- Average Personnel Round Trip Commute (mile): 20 (default)

| - Personnel Work Schedule | |
|-------------------------------------|----------------------------|
| Active Duty Personnel: | 5 Days Per Week (default) |
| Civilian Personnel: | 5 Days Per Week (default) |
| Support Contractor Personnel: | 5 Days Per Week (default) |
| Air National Guard (ANG) Personnel: | 4 Days Per Week (default) |
| Reserve Personnel: | 4 Days Per Month (default) |
| | |

20.3 Personnel On Road Vehicle Mixture

| - On Road Vehic | le Mixture (%) |
|-----------------|----------------|
|-----------------|----------------|

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|-----|
| POVs | 37.55 | 60.32 | 0 | 0.03 | 0.2 | 0 | 1.9 |
| GOVs | 54.49 | 37.73 | 4.67 | 0 | 0 | 3.11 | 0 |

20.4 Personnel Emission Factor(s)

- On Road Vehicle Emission Factors (grams/mile)

| | | | (grain) | | | | | | |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

20.5 Personnel Formula(s)

- Personnel Vehicle Miles Travel for Work Days per Year

 $VMT_P = NP * WD * AC$

VMT_P: Personnel Vehicle Miles Travel (miles/year) NP: Number of Personnel WD: Work Days per Year AC: Average Commute (miles)

- Total Vehicle Miles Travel per Year

 $VMT_{Total} = VMT_{AD} + VMT_{C} + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$

VMT_{Total}: Total Vehicle Miles Travel (miles)
VMT_{AD}: Active Duty Personnel Vehicle Miles Travel (miles)
VMT_C: Civilian Personnel Vehicle Miles Travel (miles)
VMT_{SC}: Support Contractor Personnel Vehicle Miles Travel (miles)
VMT_{ANG}: Air National Guard Personnel Vehicle Miles Travel (miles)
VMT_{AFRC}: Reserve Personnel Vehicle Miles Travel (miles)

- Vehicle Emissions per Year

 $V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs) VMT_{Total}: Total Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Personnel On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

21. Personnel

21.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Remove 74 personnel

- Activity Description:

Net decrease of 74 personnel following T-7A arrival and T-38C withdrawal. Conservatively assumed all personnel commute daily.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.163778 |
| SO _x | -0.001114 |
| NO _x | -0.140430 |
| СО | -1.862659 |
| PM 10 | -0.003219 |

| 21.2 | Personnel Assumptions |
|------|-----------------------|

| - Number of Personnel | |
|-------------------------------------|----|
| Active Duty Personnel: | 74 |
| Civilian Personnel: | 0 |
| Support Contractor Personnel: | 0 |
| Air National Guard (ANG) Personnel: | 0 |
| Reserve Personnel: | 0 |
| | |

- Default Settings Used: Yes

- Average Personnel Round Trip Commute (mile): 20 (default)

| - Personnel Work Schedule | |
|---------------------------|---------------------------|
| Active Duty Personnel: | 5 Days Per Week (default) |
| Civilian Personnel: | 5 Days Per Week (default) |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.002938 |
| Pb | 0.000000 |
| NH ₃ | -0.010089 |
| CO ₂ e | -160.2 |
| | |

Support Contractor Personnel:5 DayAir National Guard (ANG) Personnel:4 DayReserve Personnel:4 Day

5 Days Per Week (default) 4 Days Per Week (default) 4 Days Per Month (default)

21.3 Personnel On Road Vehicle Mixture

- On Road Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|-----|
| POVs | 37.55 | 60.32 | 0 | 0.03 | 0.2 | 0 | 1.9 |
| GOVs | 54.49 | 37.73 | 4.67 | 0 | 0 | 3.11 | 0 |

21.4 Personnel Emission Factor(s)

- On Road Vehicle Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | \mathbf{NH}_3 | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

21.5 Personnel Formula(s)

- Personnel Vehicle Miles Travel for Work Days per Year

 $VMT_P = NP * WD * AC$

VMT_P: Personnel Vehicle Miles Travel (miles/year) NP: Number of Personnel WD: Work Days per Year AC: Average Commute (miles)

- Total Vehicle Miles Travel per Year

 $VMT_{Total} = VMT_{AD} + VMT_{C} + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$

VMT_{Total}: Total Vehicle Miles Travel (miles)
VMT_{AD}: Active Duty Personnel Vehicle Miles Travel (miles)
VMT_c: Civilian Personnel Vehicle Miles Travel (miles)
VMT_{SC}: Support Contractor Personnel Vehicle Miles Travel (miles)
VMT_{ANG}: Air National Guard Personnel Vehicle Miles Travel (miles)
VMT_{AFRC}: Reserve Personnel Vehicle Miles Travel (miles)

- Vehicle Emissions per Year

 $V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{Total}: Total Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Personnel On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

22. Construction / Demolition

22.1 General Information & Timeline Assumptions

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: MILCON: Construct GBTS Facility

- Activity Description:

Construction of the GBTS Facility (33,000 square feet) would occur from July 2025 through August 2027.

Site grading would occur on an area of approximately 3.65 acres (159,000 square feet). Site grading would begin in July 2025 and last approximately 4 months.

Trenching for site utilities would require approximately 300 feet of excavation. A 3-foot trench width for utilities was assumed. Trenching would begin in November 2025 and last approximately 2 months.

Construction of the new GBTS facility would total approximately 33,000 square feet. The height of the GBTS facility was assumed to be 15 feet. Construction would begin in January 2026 and last approximately 18 months.

Architectural coatings would be applied to the facility, totaling 33,000 square feet. Architectural coating application would begin in June 2027 and last approximately 1 month.

Paving for driveways, parking areas, and roadways would occur on an area totaling approximately 2.75 acres (120,000 square feet). Paving would begin July 2027 and last approximately 2 months.

Assumed no materials are required to be hauled on- or off-site; excavated spoils will be used on-site.

The analysis assumes the following: (1) no new emergency generators, or if any were needed for new facilities, their emissions would be offset by removing generators that were supporting T-38C operations; (2) for special vehicles and non-road combustion equipment needed to support T-7A operations/facilities, their operation/emissions would be equally offset by eliminating or reusing vehicles and non-road equipment that were supporting T-38C operations; and (3) T-7A fuel cell maintenance, composite repair, NDI testing, and fuel storage/dispensing operations/emissions would be equally offset by eliminating those corresponding operations/emissions supporting the T-38C operations.

- Activity Start Date

| Start Month: | 7 |
|--------------|------|
| Start Month: | 2025 |

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 8 |
| End Month: | 2027 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|-------------------------------|
| VOC | 0.951152 |
| SO _x | 0.010236 |
| NO _x | 3.131076 |
| СО | 4.538396 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.113029 |
| Pb | 0.000000 |
| NH ₃ | 0.002861 |
| CO ₂ e | 989.0 |

| PM 10 | | 6.458026 | | | | | |
|---|--|--|--|---|---|----|-----------------------|
| 22.1 Site Gradi | ing Phase | | | | | | |
| 22.1.1 Site Gra | ding Phas | e Timeline A | ssumptions | | | | |
| - Phase Start Dat Start Month Start Quarte Start Year: | : 7 | | | | | | |
| - Phase Duration Number of M Number of D | Aonth: 4 | | | | | | |
| 22.1.2 Site Gra | ding Phas | e Assumptio | ns | | | | |
| | to be Grad Iaterial to | | | 159000 0 0 | | | |
| - Site Grading De Default Setti | ngs Used: | - | Yes | | | | |
| Average Day | v(s) worked | per week: | 5 (default) | | | | |
| Average Day | xhaust (def | ault) | × , | | | | |
| | xhaust (def | - | × , | | Number O Equipmen | | urs Per Day |
| - Construction E | <u>xhaust (</u> def Eq | ault) | × , | | Number O Equipmen 1 | | |
| | xhaust (def Eq | 'ault) Juipment Nam | × , | | Equipmen | | urs Per Day |
| - Construction E Graders Compos Other Constructi Rubber Tired Do | xhaust (def Eq site ion Equipmo ozers Compo | Yault) Juipment Nam ent Composite osite | × , | | Equipmen 1 | | 8 |
| - Construction E Graders Compos Other Constructi | xhaust (def Eq site ion Equipmo ozers Compo | Yault) Juipment Nam ent Composite osite | × , | | Equipmen 1 1 | | 8 8 |
| Construction Est Graders Compos Other Constructi Rubber Tired Do Tractors/Loaders Vehicle Exhaus Average Hau Average Hau | xhaust (def Eq site on Equipmo ozers Compo s/Backhoes t aling Truck aling Truck | Yault) Juipment Nam ent Composite osite Composite Composite | ie | 20 (defa ile): 20 (defa | Equipmen | | 8 8 8 8 |
| Construction E Graders Compos Other Constructi Rubber Tired Do Tractors/Loaders - Vehicle Exhaus Average Hau | xhaust (def Eq site on Equipmo ozers Compo s/Backhoes t iling Truck iling Truck iling Truck | Yault) Juipment Name ent Composite osite Composite Composite Composite Capacity (yd Round Trip (Lixture (%) | ³): Commute (m | ile): 20 (defa | Equipmen 1 1 2 uult) uult) | It | 8 8 8 7 |
| Construction Examples Graders Compose Other Construction Rubber Tired Doc Tractors/Loaders Vehicle Exhaus Average Hau Average Hau Average Hau | xhaust (def Eq site on Equipmo ozers Compo s/Backhoes t aling Truck aling Truck | Yault) Juipment Nam ent Composite osite Composite Composite | ie | | Equipmen | t | 8 8 8 8 |
| Construction Examples Graders Compose Other Construction Rubber Tired Doc Tractors/Loaders Vehicle Exhaus Average Hau Average Hau Average Hau POVs Worker Trips | xhaust (def Eq site ton Equipmo ozers Compos/Backhoes t lling Truck lling Truck t Vehicle M LDGV 0 | Yault) Juipment Name ent Composite osite Composite Composite Capacity (yd c Round Trip of Lixture (%) | ie ³): Commute (m <u>HDGV</u> 0 | ile): 20 (defa | Equipmen 1 1 2 ult) ult) LDDT | It | 8 8 8 7 |
| Construction Examples Graders Compose Other Construction Rubber Tired Doc Tractors/Loaders Vehicle Exhaus Average Hau Average Hau Average Hau POVs Worker Trips | xhaust (def Eq Site fon Equipmo ozers Compo s/Backhoes t ling Truck ling Truck ling Truck LDGV 0 | Fault) Juipment Name ent Composite C | ie ³): Commute (m <u>HDGV</u> 0 | ile): 20 (defa | Equipmen 1 1 2 ult) ult) LDDT | t | 8 8 8 7 |
| Construction Examples Graders Compose Other Construction Rubber Tired Doc Tractors/Loaders Vehicle Exhaus Average Hau Average Hau Average Hau Average Hau Average Would the Second Se | xhaust (def Eq in Equipmo ozers Compo s/Backhoes t iling Truck iling Truck t Vehicle M LDGV 0 rker Round /ehicle Mix LDGV | Fault) Juipment Name ent Composite composite Compos | ie ³): Commute (m <u>HDGV</u> 0 | ile): 20 (defa | Equipmen 1 1 2 ult) ult) LDDT | t | 8 8 8 7 |
| Construction Examples Graders Compose Other Construction Rubber Tired Doc Tractors/Loaders Vehicle Exhaus Average Hau Average Hau Average Hau Average Hau Average Wo Worker Trips Average Wo Worker Trips V | xhaust (def Eq site on Equipmo ozers Compo s/Backhoes t lling Truck aling Truck t Vehicle M LDGV 0 rker Round Vehicle Mix | Fault) Juipment Name ent Composite cosite Comp | a a a a a b a a b a c o mute (m b c o mute (m c o ute (mile): | ile): 20 (defa LDDV 0 20 (default) | Equipmen 1 1 2 ult) ult) LDDT 0 | t | 8 8 8 7 7 |

22.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Graders Composite | | | | | | | | |
|-------------------|-----|-----|-----------------|----|-------|--------|-----------------|-------------------|
| | VOC | SOx | NO _x | СО | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |

| Emission Factors | 0.0676 | 0.0014 | 0.3314 | 0.5695 | 0.0147 | 0.0147 | 0.0061 | 132.89 | | | | | |
|--|-------------------------------|--------|--------|--------|--------|--------|-----------------|-------------------|--|--|--|--|--|
| Other Construction Equipment Composite | | | | | | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | | | |
| Emission Factors | 0.0442 | 0.0012 | 0.2021 | 0.3473 | 0.0068 | 0.0068 | 0.0039 | 122.60 | | | | | |
| Rubber Tired Dozen | Rubber Tired Dozers Composite | | | | | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | | | |
| Emission Factors | 0.1671 | 0.0024 | 1.0824 | 0.6620 | 0.0418 | 0.0418 | 0.0150 | 239.45 | | | | | |
| Tractors/Loaders/Backhoes Composite | | | | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | | | | |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 | | | | | |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

22.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

 $PM10_{FD} = (20 * ACRE * WD) / 2000$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³) HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³) HC: Average Hauling Truck Capacity (yd³) (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³) HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Vehicle Exhaust On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 $\begin{array}{l} V_{POL}: \mbox{ Vehicle Emissions (TONs)} \\ VMT_{WT}: \mbox{ Worker Trips Vehicle Miles Travel (miles)} \\ 0.002205: \mbox{ Conversion Factor grams to pounds} \\ EF_{POL}: \mbox{ Emission Factor for Pollutant (grams/mile)} \\ VM: \mbox{ Worker Trips On Road Vehicle Mixture (%)} \\ 2000: \mbox{ Conversion Factor pounds to tons} \end{array}$

22.2 Trenching/Excavating Phase

22.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date Start Month: 11 Start Quarter: 1 Start Year: 2025

- Phase Duration Number of Month: 2 Number of Days: 0

22.2.2 Trenching / Excavating Phase Assumptions

| - General Trenching/Excavating Information | |
|--|-----|
| Area of Site to be Trenched/Excavated (ft ²): | 900 |
| Amount of Material to be Hauled On-Site (yd ³): | 0 |
| Amount of Material to be Hauled Off-Site (yd ³): | 0 |

- Trenching Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|---|------------------------|---------------|
| Excavators Composite | 2 | 8 |
| Other General Industrial Equipmen Composite | 1 | 8 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³):20 (default)Average Hauling Truck Round Trip Commute (mile):20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

22.2.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Graders Composite | | | | | | | | | | | | | |
|---------------------------|--|--------|-----------------|--------|--------|--------|-----------------|-------------------|--|--|--|--|--|
| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | | | | |
| Emission Factors | 0.0676 | 0.0014 | 0.3314 | 0.5695 | 0.0147 | 0.0147 | 0.0061 | 132.89 | | | | | |
| Other Construction | Other Construction Equipment Composite | | | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | | | | |
| Emission Factors | 0.0442 | 0.0012 | 0.2021 | 0.3473 | 0.0068 | 0.0068 | 0.0039 | 122.60 | | | | | |
| Rubber Tired Dozen | rs Composi | te | | | | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | | | | |
| Emission Factors | 0.1671 | 0.0024 | 1.0824 | 0.6620 | 0.0418 | 0.0418 | 0.0150 | 239.45 | | | | | |
| Tractors/Loaders/B | Tractors/Loaders/Backhoes Composite | | | | | | | | | | | | |
| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | | | | |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 | | | | | |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|------------------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

22.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

 $PM10_{FD} = (20 * ACRE * WD) / 2000$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³) HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³) HC: Average Hauling Truck Capacity (yd³) (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³) HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

22.3 Building Construction Phase

22.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date Start Month: 1 Start Quarter: 1 Start Year: 2026

- Phase Duration

Number of Month:18Number of Days:0

22.3.2 Building Construction Phase Assumptions

- General Building Construction Information

| Building Category: | Office or Industrial |
|--------------------------------------|----------------------|
| Area of Building (ft ²): | 33000 |
| Height of Building (ft): | 15 |
| Number of Units: | N/A |

Building Construction Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of | Hours Per Day |
|-------------------------------------|-----------|---------------|
| | Equipment | |
| Cranes Composite | 1 | 6 |
| Forklifts Composite | 2 | 6 |
| Generator Sets Composite | 1 | 8 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |
| Welders Composite | 3 | 8 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

22.3.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Cranes Composite | Cranes Composite | | | | | | | | | | |
|-------------------------|------------------|--------|--------|--------|--------|--------|-----------------|-------------------|--|--|--|
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | |
| Emission Factors | 0.0680 | 0.0013 | 0.4222 | 0.3737 | 0.0143 | 0.0143 | 0.0061 | 128.77 | | | |
| Forklifts Composite | | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | | |
| Emission Factors | 0.0236 | 0.0006 | 0.0859 | 0.2147 | 0.0025 | 0.0025 | 0.0021 | 54.449 | | | |

| Generator Sets Con | Generator Sets Composite | | | | | | | | | | |
|-------------------------------------|--------------------------|--------|-----------------|--------|--------|--------|-----------------|-------------------|--|--|--|
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | | |
| Emission Factors | 0.0287 | 0.0006 | 0.2329 | 0.2666 | 0.0080 | 0.0080 | 0.0025 | 61.057 | | | |
| Tractors/Loaders/Backhoes Composite | | | | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 | | | |
| Welders Composite | | | | | | | | | | | |
| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | | |
| Emission Factors | 0.0214 | 0.0003 | 0.1373 | 0.1745 | 0.0051 | 0.0051 | 0.0019 | 25.650 | | | |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

22.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)1.25: Conversion Factor Number of Construction Equipment to Number of WorksNE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

VMT_{VT} = BA * BH * (0.38 / 1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VT}: Vender Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

22.4 Architectural Coatings Phase

22.4.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date Start Month: 6 Start Quarter: 1 Start Year: 2027
- Phase Duration Number of Month: 1 Number of Days: 0

22.4.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information Building Category: Non-Residential Total Square Footage (ft²): 33000 Number of Units: N/A
- Architectural Coatings Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

| - Worker Trij | ps Vehicle Mixt | ture (%) |
|---------------|-----------------|----------|
| | | |

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

22.4.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e | |
|------|---------|---------|-----------------|---------|---------|---------|----|-----------------|-------------------|--|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 | |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 | |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 | |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 | |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 | |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 | |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 | |

22.4.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

 $VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft²)
800: Conversion Factor square feet to man days (1 ft² / 1 man * day)

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft²)
2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)
0.0116: Emission Factor (lb/ft²)
2000: Conversion Factor pounds to tons

22.5 Paving Phase

22.5.1 Paving Phase Timeline Assumptions

```
- Phase Start Date
Start Month: 7
Start Quarter: 1
```

| Start | Year: | 2027 |
|-------|-------|------|
| | | |

- Phase Duration Number of Month: 2 Number of Days: 0

22.5.2 Paving Phase Assumptions

- General Paving Information Paving Area (ft²): 120000
- Paving Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|------------------------------------|------------------------|---------------|
| Cement and Mortar Mixers Composite | 4 | 6 |
| Pavers Composite | 1 | 7 |
| Paving Equipment Composite | 2 | 6 |
| Rollers Composite | 1 | 7 |

- Vehicle Exhaust

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

22.5.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Graders Composite | | | | | | | | |
|---------------------------|-------------------------------------|-------------|--------|--------|--------|--------|-----------------|-------------------|
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0676 | 0.0014 | 0.3314 | 0.5695 | 0.0147 | 0.0147 | 0.0061 | 132.89 |
| Other Construction | Equipment | t Composite | e | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0442 | 0.0012 | 0.2021 | 0.3473 | 0.0068 | 0.0068 | 0.0039 | 122.60 |
| Rubber Tired Dozer | s Composit | te | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
| Emission Factors | 0.1671 | 0.0024 | 1.0824 | 0.6620 | 0.0418 | 0.0418 | 0.0150 | 239.45 |
| Tractors/Loaders/Ba | Tractors/Loaders/Backhoes Composite | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

Average Hauling Truck Round Trip Commute (mile): 20 (default)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

22.5.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft²)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)
HC: Average Hauling Truck Capacity (yd³)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft²)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)² / acre)

23. Construction / Demolition

23.1 General Information & Timeline Assumptions

- Activity Location

County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: MILCON: Construct UMT Facility

- Activity Description:

Construction of the UMT Facility (12,000 square feet) would occur from July 2025 through August 2027.

Site grading would occur on an area of approximately 0.75 acres (32,500 square feet). Site grading would begin in July 2025 and last approximately 4 months.

Trenching for site utilities would require approximately 500 feet of excavation. A 3-foot trench width for utilities was assumed. Trenching would begin in November 2025 and last approximately 2 months.

Construction of the new UMT facility would total approximately 12,000 square feet. The height of the UMT facility was assumed to be 15 feet. Construction would begin in January 2026 and last approximately 18 months.

Architectural coatings would be applied to the facility, totaling 312,000 square feet. Architectural coating application would begin in June 2027 and last approximately 1 month.

Paving for driveways and roadways would occur on an area totaling approximately 0.2 acres (8,750 square feet). Paving would begin July 2027 and last approximately 2 months.

Assumed no materials are required to be hauled on- or off-site; excavated spoils will be used on-site.

- Activity Start Date

Start Month:7Start Month:2025

- Activity End Date

| muennite: | raise |
|------------|-------|
| End Month: | 8 |
| End Month: | 2027 |

- Activity Emissions: Pollutant Total Emissions (TONs)

Pollutant Total Emissions (TONs)

| VOC | 0.474579 |
|-----------------|----------|
| SO _x | 0.006568 |
| NO _x | 1.680257 |
| CO | 2.695038 |
| PM 10 | 1.382261 |

| PM 2.5 | 0.059107 |
|-------------------|----------|
| Pb | 0.000000 |
| NH ₃ | 0.001602 |
| CO ₂ e | 636.1 |
| | |

23.1 Site Grading Phase

23.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date Start Month: 7 Start Quarter: 1 Start Year: 2025
- Phase Duration Number of Month: 4 Number of Days: 0

23.1.2 Site Grading Phase Assumptions

| - General Site Grading Information | |
|--|-------|
| Area of Site to be Graded (ft ²): | 32500 |
| Amount of Material to be Hauled On-Site (yd ³): | 0 |
| Amount of Material to be Hauled Off-Site (yd ³): | 0 |
| | |

| - Site Grading Default Settings | |
|---------------------------------|-------------|
| Default Settings Used: | Yes |
| Average Day(s) worked per week: | 5 (default) |

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|--|------------------------|---------------|
| Graders Composite | 1 | 6 |
| Other Construction Equipment Composite | 1 | 8 |
| Rubber Tired Dozers Composite | 1 | 6 |
| Tractors/Loaders/Backhoes Composite | 1 | 7 |

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default) Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

23.1.3 Site Grading Phase Emission Factor(s)

| Graders Composite | Graders Composite | | | | | | | | | | |
|--|-------------------|--------|--------|--------|--------|--------|-----------------|-------------------|--|--|--|
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | | |
| Emission Factors | 0.0676 | 0.0014 | 0.3314 | 0.5695 | 0.0147 | 0.0147 | 0.0061 | 132.89 | | | |
| Other Construction Equipment Composite | | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | | |
| Emission Factors | 0.0442 | 0.0012 | 0.2021 | 0.3473 | 0.0068 | 0.0068 | 0.0039 | 122.60 | | | |
| Rubber Tired Dozers Composite | | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | | |
| Emission Factors | 0.1671 | 0.0024 | 1.0824 | 0.6620 | 0.0418 | 0.0418 | 0.0150 | 239.45 | | | |
| Tractors/Loaders/Backhoes Composite | | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | | |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 | | | |

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

23.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

PM10_{FD} = (20 * ACRE * WD) / 2000

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³) HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³) HC: Average Hauling Truck Capacity (yd³) (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³) HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Vehicle Exhaust On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

23.2 Trenching/Excavating Phase

23.2.1 Trenching / Excavating Phase Timeline Assumptions

| Phase Start Date | |
|------------------|------|
| Start Month: | 11 |
| Start Quarter: | 1 |
| Start Year: | 2025 |

- Phase Duration Number of Month: 2 Number of Days: 0

23.2.2 Trenching / Excavating Phase Assumptions

| - General Trenching/Excavating Information | |
|--|------|
| Area of Site to be Trenched/Excavated (ft ²): | 1500 |
| Amount of Material to be Hauled On-Site (yd ³): | 0 |
| Amount of Material to be Hauled Off-Site (yd ³): | 0 |
| | |

| - Trenching Default Settings | |
|---------------------------------|-------------|
| Default Settings Used: | Yes |
| Average Day(s) worked per week: | 5 (default) |

- Construction Exhaust (default)

| T T T T T T | umber Of quipment | Hours Per Day |
|--------------------|----------------------|---------------|
|--------------------|----------------------|---------------|

| Excavators Composite | 2 | 8 |
|---|---|---|
| Other General Industrial Equipmen Composite | 1 | 8 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |

- Vehicle Exhaust

| Average Hauling Truck Capacity (yd ³): | 20 (default) |
|--|--------------|
| Average Hauling Truck Round Trip Commute (mile): | 20 (default) |

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

23.2.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Graders Composite | | | | | | | | | | |
|--|-------------------------------------|--------|--------|--------|--------|--------|-----------------|-------------------|--|--|
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | |
| Emission Factors | 0.0676 | 0.0014 | 0.3314 | 0.5695 | 0.0147 | 0.0147 | 0.0061 | 132.89 | | |
| Other Construction Equipment Composite | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | |
| Emission Factors | 0.0442 | 0.0012 | 0.2021 | 0.3473 | 0.0068 | 0.0068 | 0.0039 | 122.60 | | |
| Rubber Tired Dozen | 's Composi | te | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | |
| Emission Factors | 0.1671 | 0.0024 | 1.0824 | 0.6620 | 0.0418 | 0.0418 | 0.0150 | 239.45 | | |
| Tractors/Loaders/B | Tractors/Loaders/Backhoes Composite | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 | | |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

23.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

 $PM10_{FD} = (20 * ACRE * WD) / 2000$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³) HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³) HC: Average Hauling Truck Capacity (yd³) (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³) HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Vehicle Exhaust On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

23.3 Building Construction Phase

1

23.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date Start Month:

| Start Quarter: | 1 |
|----------------|------|
| Start Year: | 2026 |

- Phase Duration

Number of Month: 18 Number of Days: 0

23.3.2 Building Construction Phase Assumptions

- General Building Construction Information

| Office or Industrial |
|----------------------|
| 12000 |
| 15 |
| N/A |
| |

- Building Construction Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|-------------------------------------|------------------------|---------------|
| Cranes Composite | 1 | 4 |
| Forklifts Composite | 2 | 6 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

23.3.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Cranes Composite | | | | | | | | |
|-------------------------|--------|--------|--------|--------|--------|--------|-----------------|-------------------|
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
| Emission Factors | 0.0680 | 0.0013 | 0.4222 | 0.3737 | 0.0143 | 0.0143 | 0.0061 | 128.77 |
| Forklifts Composite | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |

| Emission Factors | 0.0236 | 0.0006 | 0.0859 | 0.2147 | 0.0025 | 0.0025 | 0.0021 | 54.449 |
|-------------------------------------|--------|--------|--------|--------|--------|--------|--------|-------------------|
| Tractors/Loaders/Backhoes Composite | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

23.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

 $VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VT}: Vender Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

23.4 Architectural Coatings Phase

23.4.1 Architectural Coatings Phase Timeline Assumptions

| 6 |
|------|
| 1 |
| 2027 |
| |

- Phase Duration Number of Month: 1 Number of Days: 0

23.4.2 Architectural Coatings Phase Assumptions

| - General Arc Building | hitectural Co Category: | atings Inform Non-Resid | | | | | |
|--|----------------------------|----------------------------|-------------|--------------|------|------|--|
| Total Squ | are Footage (| ft ²): 12000 | | | | | |
| Number o | of Units: | N/A | | | | | |
| - Architectural Coatings Default Settings | | | | | | | |
| Default S | ettings Used: | - | Yes | | | | |
| Average I | Day(s) worked | l per week: | 5 (default) | | | | |
| - Worker Trips Average Worker Round Trip Commute (mile): 20 (default) | | | | | | | |
| Average | worker Koun | u Trip Comm | lute (mne): | 20 (default) | | | |
| - Worker Trips Vehicle Mixture (%) | | | | | | | |
| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | |

MC

| DOLL | 5 0.00 | 5 0.00 | 0 | 0 | 0 | 0 | 0 |
|------|---------------|---------------|---|---|---|---|---|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

23.4.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|---------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

23.4.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

 $VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft²)
800: Conversion Factor square feet to man days (1 ft² / 1 man * day)

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft²)
2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)
0.0116: Emission Factor (lb/ft²)
2000: Conversion Factor pounds to tons

23.5 Paving Phase

23.5.1 Paving Phase Timeline Assumptions

```
- Phase Start Date
Start Month: 7
Start Quarter: 1
Start Year: 2027
```

- Phase Duration Number of Month: 2 Number of Days: 0

23.5.2 Paving Phase Assumptions

- General Paving Information

Paving Area (ft²): 8750

- Paving Default Settings

```
Default Settings Used:YesAverage Day(s) worked per week:5 (default)
```

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|-------------------------------------|------------------------|---------------|
| Cement and Mortar Mixers Composite | 4 | 6 |
| Pavers Composite | 1 | 7 |
| Rollers Composite | 1 | 7 |
| Tractors/Loaders/Backhoes Composite | 1 | 7 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

23.5.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Graders Composite | | | | | | | | | | |
|---------------------------|-------------------------------------|------------|--------|--------|--------|--------|-----------------|-------------------|--|--|
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | |
| Emission Factors | 0.0676 | 0.0014 | 0.3314 | 0.5695 | 0.0147 | 0.0147 | 0.0061 | 132.89 | | |
| Other Construction | Equipment | t Composit | e | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | |
| Emission Factors | 0.0442 | 0.0012 | 0.2021 | 0.3473 | 0.0068 | 0.0068 | 0.0039 | 122.60 | | |
| Rubber Tired Dozen | Rubber Tired Dozers Composite | | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | |
| Emission Factors | 0.1671 | 0.0024 | 1.0824 | 0.6620 | 0.0418 | 0.0418 | 0.0150 | 239.45 | | |
| Tractors/Loaders/B | Tractors/Loaders/Backhoes Composite | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 | | |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SOx | NO _x | СО | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|---------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |

| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | 000.008 | 00442.757 |
|------|---------|---------|---------|---------|---------|---------|---------|-----------|
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | 000.054 | 00393.696 |

23.5.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft²)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)
HC: Average Hauling Truck Capacity (yd³)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Vehicle Exhaust On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft²)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)² / acre)

24. Construction / Demolition

24.1 General Information & Timeline Assumptions

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: MILCON: Construct Hush House

- Activity Description:

Construction of the Hush House (24,111 square feet) would occur from November 2025 through November 2026.

Trenching to extend site utilities would require approximately 100 feet of excavation. A 3-foot trench width for utilities was assumed. Trenching would begin in November 2025 and last approximately 1 month.

Construction of the new Hush House would total approximately 24,111 square feet. The height of the Hush House was assumed to be 20 feet. Construction would begin in December 2025 and last approximately 12 months.

Architectural coatings would be applied to the facility, totaling 24,111 square feet. Architectural coating application would begin in November 2026 and last approximately 1 month.

Paving for approach pavements would occur on an area totaling approximately 300 square feet. Paving would begin November 2026 and last approximately 1 months.

Assumed no materials are required to be hauled on- or off-site; excavated spoils will be used on-site.

- Activity Start Date

| Start Month: | 11 |
|--------------|------|
| Start Month: | 2025 |

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 11 |
| End Month: | 2026 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.558724 |
| SO _x | 0.005128 |
| NO _x | 1.550784 |
| CO | 2.357436 |
| PM 10 | 0.056807 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.053680 |
| Pb | 0.000000 |
| NH ₃ | 0.001724 |
| CO ₂ e | 492.5 |
| | |

24.1 Trenching/Excavating Phase

24.1.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date Start Month: 11 Start Quarter: 1 Start Year: 2025

- Phase Duration Number of Month: 1 Number of Days: 0

24.1.2 Trenching / Excavating Phase Assumptions

| - General Trenching/Excavating Information | |
|--|-----|
| Area of Site to be Trenched/Excavated (ft ²): | 300 |
| Amount of Material to be Hauled On-Site (yd ³): | 0 |
| Amount of Material to be Hauled Off-Site (yd ³): | 0 |

| - Trenching Default Settings | |
|---------------------------------|-------------|
| Default Settings Used: | Yes |
| Average Day(s) worked per week: | 5 (default) |

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|---|------------------------|---------------|
| Excavators Composite | 2 | 8 |
| Other General Industrial Equipmen Composite | 1 | 8 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |

- Vehicle Exhaust

| Average Hauling Truck Capacity (yd ³): | 20 (default) |
|--|--------------|
| Average Hauling Truck Round Trip Commute (mile): | 20 (default) |

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

24.1.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.597 | 000.007 | 000.639 | 005.101 | 000.011 | 000.009 | | 000.033 | 00367.095 |
| LDGT | 000.799 | 000.010 | 001.093 | 008.335 | 000.012 | 000.010 | | 000.034 | 00489.953 |

| HDGV | 001.373 | 000.015 | 002.807 | 024.705 | 000.026 | 000.023 | 000.045 | 00760.448 |
|------|---------|---------|---------|---------|---------|---------|---------|-----------|
| LDDV | 000.233 | 000.003 | 000.314 | 003.669 | 000.006 | 000.006 | 000.008 | 00375.756 |
| LDDT | 000.527 | 000.005 | 000.830 | 007.383 | 000.008 | 000.007 | 000.008 | 00585.601 |
| HDDV | 000.773 | 000.014 | 008.040 | 002.706 | 000.363 | 000.334 | 000.028 | 01561.469 |
| MC | 002.788 | 000.008 | 000.733 | 014.953 | 000.027 | 000.024 | 000.050 | 00392.901 |

24.1.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

 $PM10_{FD} = (20 * ACRE * WD) / 2000$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

 $\begin{array}{l} VMT_{VE}: \mbox{ Vehicle Exhaust Vehicle Miles Travel (miles)} \\ HA_{OnSite}: \mbox{ Amount of Material to be Hauled On-Site (yd^3)} \\ HA_{OffSite}: \mbox{ Amount of Material to be Hauled Off-Site (yd^3)} \\ HC: \mbox{ Average Hauling Truck Capacity (yd^3)} \\ (1 / HC): \mbox{ Conversion Factor cubic yards to trips (1 trip / HC yd^3)} \\ HT: \mbox{ Average Hauling Truck Round Trip Commute (mile/trip)} \end{array}$

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

 $\begin{array}{l} V_{POL}: \ Vehicle \ Emissions \ (TONs) \\ VMT_{VE}: \ Vehicle \ Exhaust \ Vehicle \ Miles \ Travel \ (miles) \\ 0.002205: \ Conversion \ Factor \ grams \ to \ pounds \\ EF_{POL}: \ Emission \ Factor \ for \ Pollutant \ (grams/mile) \\ VM: \ Vehicle \ Exhaust \ On \ Road \ Vehicle \ Mixture \ (\%) \\ 2000: \ Conversion \ Factor \ pounds \ to \ tons \end{array}$

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VE}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

24.2 Building Construction Phase

24.2.1 Building Construction Phase Timeline Assumptions

- Phase Start Date Start Month: 12 Start Quarter: 1 Start Year: 2025

- Phase Duration Number of Month: 12 Number of Days: 0

24.2.2 Building Construction Phase Assumptions

- General Building Construction Information

Building Category:Office or IndustrialArea of Building (ft²):24111Height of Building (ft):20Number of Units:N/A

Building Construction Default Settings
 Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|-------------------------------------|------------------------|---------------|
| Cranes Composite | 1 | 6 |
| Forklifts Composite | 2 | 6 |
| Generator Sets Composite | 1 | 8 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |
| Welders Composite | 3 | 8 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| LDGV LDGT HDGV LDDV LDDT HDDV MC |
|----------------------------------|
|----------------------------------|

| POV_{c} 50.00 50.00 0 0 0 0 | |
|-------------------------------|---|
| POVs 50.00 50.00 0 0 0 0 | 0 |

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

| venuer rrips veniere mixture (70) | | | | | | | | | |
|-----------------------------------|------|------|------|------|------|--------|----|--|--|
| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC | | |
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 | | |

24.2.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Cranes Composite | | | | | | | | | |
|--------------------------|-------------------|---------|--------|--------|--------|--------|--------|-------------------|--|
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | |
| Emission Factors | 0.0680 | 0.0013 | 0.4222 | 0.3737 | 0.0143 | 0.0143 | 0.0061 | 128.77 | |
| Forklifts Composite | : | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | |
| Emission Factors | 0.0236 | 0.0006 | 0.0859 | 0.2147 | 0.0025 | 0.0025 | 0.0021 | 54.449 | |
| Generator Sets Composite | | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | |
| Emission Factors | 0.0287 | 0.0006 | 0.2329 | 0.2666 | 0.0080 | 0.0080 | 0.0025 | 61.057 | |
| Tractors/Loaders/Ba | ackhoes Co | mposite | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 | |
| Welders Composite | Welders Composite | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | |
| Emission Factors | 0.0214 | 0.0003 | 0.1373 | 0.1745 | 0.0051 | 0.0051 | 0.0019 | 25.650 | |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

24.2.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase VMT_{VE} = BA * BH * (0.42 / 1000) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

 $VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VT}: Vender Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

24.3 Architectural Coatings Phase

24.3.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date

| Start Month: | 11 |
|----------------|------|
| Start Quarter: | 1 |
| Start Year: | 2026 |

- Phase Duration

Number of Month: 1 Number of Days: 0

24.3.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information Building Category: Non-Residential Total Square Footage (ft²): 24111 Number of Units: N/A
- Architectural Coatings Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)
- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

24.3.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | \mathbf{NH}_3 | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

24.3.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

 $VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft²)
800: Conversion Factor square feet to man days (1 ft² / 1 man * day)

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft²)
2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)
0.0116: Emission Factor (lb/ft²)
2000: Conversion Factor pounds to tons

24.4 Paving Phase

24.4.1 Paving Phase Timeline Assumptions

- Phase Start Date Start Month: 11 Start Quarter: 1 Start Year: 2026

- Phase Duration Number of Month: 1 Number of Days: 0

24.4.2 Paving Phase Assumptions

- General Paving Information Paving Area (ft²): 300
- Paving Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|-------------------------------------|------------------------|---------------|
| Cement and Mortar Mixers Composite | 4 | 6 |
| Pavers Composite | 1 | 7 |
| Rollers Composite | 1 | 7 |
| Tractors/Loaders/Backhoes Composite | 1 | 7 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

24.4.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.597 | 000.007 | 000.639 | 005.101 | 000.011 | 000.009 | | 000.033 | 00367.095 |
| LDGT | 000.799 | 000.010 | 001.093 | 008.335 | 000.012 | 000.010 | | 000.034 | 00489.953 |
| HDGV | 001.373 | 000.015 | 002.807 | 024.705 | 000.026 | 000.023 | | 000.045 | 00760.448 |
| LDDV | 000.233 | 000.003 | 000.314 | 003.669 | 000.006 | 000.006 | | 000.008 | 00375.756 |
| LDDT | 000.527 | 000.005 | 000.830 | 007.383 | 000.008 | 000.007 | | 000.008 | 00585.601 |
| HDDV | 000.773 | 000.014 | 008.040 | 002.706 | 000.363 | 000.334 | | 000.028 | 01561.469 |
| MC | 002.788 | 000.008 | 000.733 | 014.953 | 000.027 | 000.024 | | 000.050 | 00392.901 |

24.4.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft²)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)
HC: Average Hauling Truck Capacity (yd³)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft²)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)² / acre)

25. Construction / Demolition

25.1 General Information & Timeline Assumptions

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: MILCON: Construct Aircraft Shelters

- Activity Description:

Construction of 46 aircraft shelters (sunshades) would occur from November 2025 through November 2026.

Demolition would be required for the existing T-38C shelters. Demolition would include removal of approximately 68 sunshades totaling approximately 180,000 square feet. Demolition would begin in November 2025 and last approximately 6 months.

Construction would include installation of 46 sunshades totaling approximately 210,500 square feet. The height of all sunshades was assumed to be 15 feet. Construction would begin in May 2026 and last approximately 7 months.

- Activity Start Date

| Start Month: | 11 |
|--------------|------|
| Start Month: | 2025 |

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 11 |
| End Month: | 2026 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.264204 |
| SO _x | 0.005243 |
| NO _x | 1.652907 |
| СО | 2.202898 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.055859 |
| Pb | 0.000000 |
| NH ₃ | 0.003513 |
| CO ₂ e | 525.3 |

| PM 10 | 0.623968 | | |
|--|---|------------------------|---------------|
| 25.1 Demolition | Phase | | |
| 25.1.1 Demoliti | on Phase Timeline Assumptions | | |
| - Phase Start Date Start Month: Start Quarter Start Year: | 11 | | |
| - Phase Duration Number of M Number of D | | | |
| 25.1.2 Demoliti | on Phase Assumptions | | |
| | tion Information ling to be demolished (ft ²): 180000 lding to be demolished (ft): 15 | | |
| - Default Settings | Used: Yes | | |
| - Average Day(s) | worked per week: 5 (default) | | |
| - Construction Ex | | | |
| | Equipment Name | Number Of Equipment | Hours Per Day |
| Concrete/Industr | al Saws Composite | 1 | 8 |
| | • | 1 | |
| Rubber Tired Do | zers Composite | 1 | 1 |

- Vehicle Exhaust

| Average Hauling Truck Capacity (yd ³): | 20 (default) |
|--|--------------|
| Average Hauling Truck Round Trip Commute (mile): | 20 (default) |

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

25.1.3 Demolition Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Concrete/Industrial Saws Composite | | | | | | | | |
|------------------------------------|--------|--------|--------|--------|--------|--------|--------|-------------------|
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0336 | 0.0006 | 0.2470 | 0.3705 | 0.0093 | 0.0093 | 0.0030 | 58.539 |
| Rubber Tired Dozers Composite | | | | | | | | |

| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
|-------------------------------------|--------|--------|--------|--------|--------|--------|-----------------|-------------------|
| Emission Factors | 0.1671 | 0.0024 | 1.0824 | 0.6620 | 0.0418 | 0.0418 | 0.0150 | 239.45 |
| Tractors/Loaders/Backhoes Composite | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|---------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

25.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

 $PM10_{FD} = (0.00042 * BA * BH) / 2000$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
0.00042: Emission Factor (lb/ft³)
BA: Area of Building to be demolished (ft²)
BH: Height of Building to be demolished (ft)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building being demolish (ft²)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd³)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

25.2 Building Construction Phase

25.2.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

| Start Month: | 5 |
|----------------|------|
| Start Quarter: | 1 |
| Start Year: | 2026 |

- Phase Duration Number of Month: 7 Number of Days: 0

25.2.2 Building Construction Phase Assumptions

- General Building Construction Information

| uon mation |
|----------------------|
| Office or Industrial |
| 210500 |
| 15 |
| N/A |
| |

| - Building Construction Default Settings | |
|--|-------------|
| Default Settings Used: | Yes |
| Average Day(s) worked per week: | 5 (default) |

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|-------------------------------------|------------------------|---------------|
| Cranes Composite | 1 | 6 |
| Forklifts Composite | 2 | 6 |
| Generator Sets Composite | 1 | 8 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |
| Welders Composite | 3 | 8 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

25.2.3 Building Construction Phase Emission Factor(s)

| Constituction Exhau | | 1 400015 (1 | <u>o/nour) (ue</u> | | | | | | | |
|----------------------------|-------------------|-------------|--------------------|--------|--------|--------|-----------------|-------------------|--|--|
| Cranes Composite | | | | | | | | | | |
| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | |
| Emission Factors | 0.0680 | 0.0013 | 0.4222 | 0.3737 | 0.0143 | 0.0143 | 0.0061 | 128.77 | | |
| Forklifts Composite | | | | | | | | | | |
| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | |
| Emission Factors | 0.0236 | 0.0006 | 0.0859 | 0.2147 | 0.0025 | 0.0025 | 0.0021 | 54.449 | | |
| Generator Sets Com | posite | | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | |
| Emission Factors | 0.0287 | 0.0006 | 0.2329 | 0.2666 | 0.0080 | 0.0080 | 0.0025 | 61.057 | | |
| Tractors/Loaders/B | ackhoes Co | mposite | | | | | | | | |
| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 | | |
| Welders Composite | Welders Composite | | | | | | | | | |
| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | |
| Emission Factors | 0.0214 | 0.0003 | 0.1373 | 0.1745 | 0.0051 | 0.0051 | 0.0019 | 25.650 | | |

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| · emiere L | inina abt et i | or mer int | | 1 1 actors (g | 5 | / | | | |
|------------|----------------|-----------------|-----------------|---------------|---------|---------|----|-----------------|-------------------|
| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

25.2.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

 $VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VT}: Vender Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

26. Construction / Demolition

26.1 General Information & Timeline Assumptions

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: MILCON: Addition to Egress Shop

- Activity Description:

Construction of the addition to the Egress Shop would occur from July 2026 through August 2028.

Construction of the Egress Shop addition would total approximately 4,000 square feet. The height of the addition was assumed to be 20 feet. Construction would begin in July 2026 and last approximately 25 months.

Architectural coatings would be applied to the addition, totaling 4,000 square feet. Architectural coating application would begin in August 2028 and last approximately 1 month.

- Activity Start Date

Start Month:7Start Month:2026

- Activity End Date

Indefinite:FalseEnd Month:8End Month:2028

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.289900 |
| SO _x | 0.005043 |
| NO _x | 1.163443 |
| СО | 2.124393 |
| PM 10 | 0.036831 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.036783 |
| Pb | 0.000000 |
| NH ₃ | 0.001413 |
| CO ₂ e | 485.3 |
| | |

26.1 Building Construction Phase

26.1.1 Building Construction Phase Timeline Assumptions

| Phase Start Date | |
|------------------|------|
| Start Month: | 7 |
| Start Quarter: | 1 |
| Start Year: | 2026 |

- Phase Duration

Number of Month: 25 Number of Days: 0

26.1.2 Building Construction Phase Assumptions

- General Building Construction Information

| Building Category: | Office or Industrial |
|--------------------------------------|----------------------|
| Area of Building (ft ²): | 4000 |
| Height of Building (ft): | 20 |
| Number of Units: | N/A |

Building Construction Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of | Hours Per Day |
|-------------------------------------|-----------|---------------|
| | Equipment | |
| Cranes Composite | 1 | 4 |
| Forklifts Composite | 2 | 6 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

26.1.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Cranes Composite | | | | | | | | |
|-------------------------------------|--------|--------|-----------------|--------|--------|--------|-----------------|-------------------|
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
| Emission Factors | 0.0680 | 0.0013 | 0.4222 | 0.3737 | 0.0143 | 0.0143 | 0.0061 | 128.77 |
| Forklifts Composite | | | | | | | | |
| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
| Emission Factors | 0.0236 | 0.0006 | 0.0859 | 0.2147 | 0.0025 | 0.0025 | 0.0021 | 54.449 |
| Tractors/Loaders/Backhoes Composite | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e |

| Emission Factors 0.033 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 |
|------------------------|--------|--------|--------|--------|--------|--------|--------|
|------------------------|--------|--------|--------|--------|--------|--------|--------|

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

26.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase VMT_{VT} = BA * BH * (0.38 / 1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

 $\begin{array}{l} V_{POL}: \ Vehicle \ Emissions (TONs) \\ VMT_{VT}: \ Vender \ Trips \ Vehicle \ Miles \ Travel (miles) \\ 0.002205: \ Conversion \ Factor \ grams \ to \ pounds \\ EF_{POL}: \ Emission \ Factor \ for \ Pollutant \ (grams/mile) \\ VM: \ Worker \ Trips \ On \ Road \ Vehicle \ Mixture \ (\%) \\ 2000: \ Conversion \ Factor \ pounds \ to \ tons \end{array}$

26.2 Architectural Coatings Phase

26.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date

| Start Month: | 8 |
|----------------|------|
| Start Quarter: | 1 |
| Start Year: | 2028 |

- Phase Duration Number of Month: 1 Number of Days: 0

26.2.2 Architectural Coatings Phase Assumptions

| - General Architectural Coatings Information | | | | | |
|--|-----------------|--|--|--|--|
| Building Category: | Non-Residential | | | | |
| Total Square Footage (| $(ft^2):$ 4000 | | | | |
| Number of Units: | N/A | | | | |

- Architectural Coatings Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

26.2.3 Architectural Coatings Phase Emission Factor(s)

| 110 | продінія | | ~ (8 |) | | | | | |
|------|----------|---------|--------------|---------|---------|---------|----|-----------------|-------------------|
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

- Worker Trips Emission Factors (grams/mile)

26.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

 $VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft²)
800: Conversion Factor square feet to man days (1 ft² / 1 man * day)

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft²)
2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)
0.0116: Emission Factor (lb/ft²)
2000: Conversion Factor pounds to tons

27. Construction / Demolition

27.1 General Information & Timeline Assumptions

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: MILCON: Construct Jet Blast Deflectors

- Activity Description:

Construction of the jet blast deflectors would occur from November 2025 through November 2026.

Construction of the deflectors would total approximately 48,000 feet. The height of the deflectors was assumed to be 12 feet. Construction would begin in November 2025 and last approximately 13 months.

- Activity Start Date

Start Month:11Start Month:2025

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 11 |
| End Month: | 2026 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.265030 |
| SO _x | 0.004879 |
| NO _x | 1.502261 |
| CO | 2.241723 |
| PM 10 | 0.051185 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.051022 |
| Pb | 0.000000 |
| NH ₃ | 0.001713 |
| CO ₂ e | 469.5 |
| | |

27.1 Building Construction Phase

27.1.1 Building Construction Phase Timeline Assumptions

| - Phase Start I |
|-----------------|
|-----------------|

| Start Month: | 11 |
|----------------|------|
| Start Quarter: | 1 |
| Start Year: | 2025 |

- Phase Duration

Number of Month: 13 Number of Days: 0

27.1.2 Building Construction Phase Assumptions

General Building Construction Information Building Category: Office or Industrial Area of Building (ft²): 48000 Height of Building (ft): 12 Number of Units: N/A

- Building Construction Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of | Hours Per Day |
|-------------------------------------|-----------|---------------|
| | Equipment | |
| Cranes Composite | 1 | 6 |
| Forklifts Composite | 2 | 6 |
| Generator Sets Composite | 1 | 8 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |
| Welders Composite | 3 | 8 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

| - Vehicle Exh | aust Vehicle N | /lixture (%) | | | | | |
|---------------|----------------|--------------|------|------|------|--------|----|
| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

27.1.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Cranes Composite | | | | | | | | |
|---------------------------|-------------------------------------|--------|--------|--------|--------|--------|-----------------|-------------------|
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0680 | 0.0013 | 0.4222 | 0.3737 | 0.0143 | 0.0143 | 0.0061 | 128.77 |
| Forklifts Composite | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0236 | 0.0006 | 0.0859 | 0.2147 | 0.0025 | 0.0025 | 0.0021 | 54.449 |
| Generator Sets Com | posite | | | | | • | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0287 | 0.0006 | 0.2329 | 0.2666 | 0.0080 | 0.0080 | 0.0025 | 61.057 |
| Tractors/Loaders/B | Tractors/Loaders/Backhoes Composite | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 |
| Welders Composite | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
| Emission Factors | 0.0214 | 0.0003 | 0.1373 | 0.1745 | 0.0051 | 0.0051 | 0.0019 | 25.650 |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

27.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

 $VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

28. Construction / Demolition

28.1 General Information & Timeline Assumptions

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: FSRM: Renovate Building 452 (Hangar 3)

- Activity Description:

Renovation of Hangar 452 would occur from August 2024 through February 2026.

It was assumed 25 percent of the total square footage of the facility (21,024 square feet * 0.25 = 5,256 square feet) would be construction to equate the renovations. Renovations would begin in August 2024 and last approximately 19 months.

It was assumed architectural coatings would be required for the entire facility (21,024 square feet) following the renovations. Architectural coating application would begin in February 2026 and last approximately 1 month.

- Activity Start Date

| Start Month: | 8 |
|--------------|------|
| Start Month: | 2024 |

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 2 |
| End Month: | 2026 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.436750 |
| SO _x | 0.003838 |
| NO _x | 0.965344 |
| СО | 1.619187 |
| PM 10 | 0.032164 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.032123 |
| Pb | 0.000000 |
| NH ₃ | 0.001095 |
| CO ₂ e | 369.5 |
| | |

28.1 Building Construction Phase

28.1.1 Building Construction Phase Timeline Assumptions

| Phase Start Date | |
|------------------|------|
| Start Month: | 8 |
| Start Quarter: | 1 |
| Start Year: | 2024 |

- Phase Duration

Number of Month:19Number of Days:0

28.1.2 Building Construction Phase Assumptions

- General Building Construction Information

| Building Category: | Office or Industrial |
|--------------------------------------|----------------------|
| Area of Building (ft ²): | 5256 |
| Height of Building (ft): | 15 |
| Number of Units: | N/A |

Building Construction Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of | Hours Per Day |
|-------------------------------------|-----------|---------------|
| | Equipment | |
| Cranes Composite | 1 | 4 |
| Forklifts Composite | 2 | 6 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

28.1.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Cranes Composite | | | | | | | | | | |
|-------------------------|-------------------------------------|--------|--------|--------|--------|--------|-----------------|-------------------|--|--|
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | |
| Emission Factors | 0.0715 | 0.0013 | 0.4600 | 0.3758 | 0.0161 | 0.0161 | 0.0064 | 128.78 | | |
| Forklifts Composite | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | |
| Emission Factors | 0.0246 | 0.0006 | 0.0973 | 0.2146 | 0.0029 | 0.0029 | 0.0022 | 54.451 | | |
| Tractors/Loaders/B | Tractors/Loaders/Backhoes Composite | | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | |

| Emission Factors 0.0348 | 0.0007 | 0.1980 | 0.3589 | 0.0068 | 0.0068 | 0.0031 | 66.875 |
|-------------------------|--------|--------|--------|--------|--------|--------|--------|
|-------------------------|--------|--------|--------|--------|--------|--------|--------|

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

28.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase VMT_{VT} = BA * BH * (0.38 / 1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

 $\begin{array}{l} V_{POL}: \ Vehicle \ Emissions (TONs) \\ VMT_{VT}: \ Vender \ Trips \ Vehicle \ Miles \ Travel (miles) \\ 0.002205: \ Conversion \ Factor \ grams \ to \ pounds \\ EF_{POL}: \ Emission \ Factor \ for \ Pollutant \ (grams/mile) \\ VM: \ Worker \ Trips \ On \ Road \ Vehicle \ Mixture \ (\%) \\ 2000: \ Conversion \ Factor \ pounds \ to \ tons \end{array}$

28.2 Architectural Coatings Phase

28.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date

| Start Month: | 2 |
|----------------|------|
| Start Quarter: | 1 |
| Start Year: | 2026 |

- Phase Duration Number of Month: 1 Number of Days: 0

28.2.2 Architectural Coatings Phase Assumptions

| - General Architectural Co | oatings Information |
|----------------------------|---------------------------|
| Building Category: | Non-Residential |
| Total Square Footage | (ft ²): 21024 |
| Number of Units: | N/A |

- Architectural Coatings Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

28.2.3 Architectural Coatings Phase Emission Factor(s)

| 110 | продінія | | ~ (8 |) | | | | | |
|------|----------|---------|--------------|---------|---------|---------|----|-----------------|-------------------|
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

- Worker Trips Emission Factors (grams/mile)

28.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

 $VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft²)
800: Conversion Factor square feet to man days (1 ft² / 1 man * day)

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft²)
2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)
0.0116: Emission Factor (lb/ft²)
2000: Conversion Factor pounds to tons

29. Construction / Demolition

29.1 General Information & Timeline Assumptions

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: FSRM: Wash Rack Renovation (Building 454)

- Activity Description:

Renovation of Building 454 to relocate the wash rack would occur from August 2024 through September 2025.

It was assumed 25 percent of the total square footage of the facility (13,124 square feet * 0.25 = 3,281 square feet) would be construction to equate the renovations. Renovations would begin in August 2024 and last approximately 14 months.

It was assumed architectural coatings would be required for the entire facility (13,124 square feet) following the renovations. Architectural coatings application would begin in September 2025 and last approximately 1 month.

- Activity Start Date

Start Month:8Start Month:2024

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 9 |
| End Month: | 2025 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.294183 |
| SO _x | 0.002825 |
| NO _x | 0.710509 |
| СО | 1.191602 |
| PM 10 | 0.023672 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.023644 |
| Pb | 0.000000 |
| NH ₃ | 0.000796 |
| CO ₂ e | 271.9 |
| | |

29.1 Building Construction Phase

29.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date Start Month:

Start Month:8Start Quarter:1Start Year:2024

- Phase Duration Number of Month: 14 Number of Days: 0

29.1.2 Building Construction Phase Assumptions

- General Building Construction Information

Building Category:Office or IndustrialArea of Building (ft²):3281Height of Building (ft):15Number of Units:N/A

- Building Construction Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|---------------------|------------------------|---------------|
| Cranes Composite | 1 | 4 |
| Forklifts Composite | 2 | 6 |

| Tractors/Loaders/Backhoes Composite | 1 | 8 |
|-------------------------------------|---|---|

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

29.1.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Cranes Composite | Cranes Composite | | | | | | | | | | | | |
|-------------------------|-------------------------------------|--------|--------|--------|--------|--------|--------|-------------------|--|--|--|--|--|
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | | | |
| Emission Factors | 0.0715 | 0.0013 | 0.4600 | 0.3758 | 0.0161 | 0.0161 | 0.0064 | 128.78 | | | | | |
| Forklifts Composite | | | | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | | | |
| Emission Factors | 0.0246 | 0.0006 | 0.0973 | 0.2146 | 0.0029 | 0.0029 | 0.0022 | 54.451 | | | | | |
| Tractors/Loaders/B | Tractors/Loaders/Backhoes Composite | | | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | | | |
| Emission Factors | 0.0348 | 0.0007 | 0.1980 | 0.3589 | 0.0068 | 0.0068 | 0.0031 | 66.875 | | | | | |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|---------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

29.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

 $VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VT}: Vender Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

29.2 Architectural Coatings Phase

29.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date Start Month: 9 Start Quarter: 1 Start Year: 2025
- Phase Duration Number of Month: 1 Number of Days: 0

29.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information Building Category: Non-Residential Total Square Footage (ft²): 13124 Number of Units: N/A
- Architectural Coatings Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)
- Worker Trips Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

29.2.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|---------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

29.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

 $VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)

PA: Paint Area (ft²)
800: Conversion Factor square feet to man days (1 ft² / 1 man * day)

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft²)
2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)
0.0116: Emission Factor (lb/ft²)
2000: Conversion Factor pounds to tons

30. Construction / Demolition

30.1 General Information & Timeline Assumptions

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: FSRM: Antenna Farm

- Activity Description:

Construction of the antenna farm would occur from August 2024 through December 2024.

It was assumed approximately 5,000 square feet would be trenched and excavated for installation of the antenna farm. Trenching/excavation would begin in August 2024 and last approximately 5 months.

Assumed no materials are required to be hauled on- or off-site; excavated spoils will be used on-site.

- Activity Start Date Start Month: 8 Start Month: 2024

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 12 |
| End Month: | 2024 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.103650 |
| SO _x | 0.002153 |
| NO _x | 0.497117 |
| CO | 0.837771 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.018234 |
| Pb | 0.000000 |
| NH ₃ | 0.000275 |
| CO ₂ e | 203.1 |

| | | 0.266939 | | | | | |
|---|--|--|---|---------------------------------------|-------------------------|----------------|---------------|
| 30.1 Trenc | hing/Excavati | ng Phase | | | | | |
| 30.1.1 Tre | nching / Excav | ating Phase T | imeline A | ssumptions | | | |
| - Phase Star Start M Start Qu Start Ye | onth: 8 uarter: 1 | | | | | | |
| | ation c of Month: 5 c of Days: 0 | | | | | | |
| 30.1.2 Tre | nching / Excav | ating Phase A | ssumption | 18 | | | |
| Area of Amount | renching/Excava Site to be Trenc t of Material to l t of Material to l | hed/Excavated be Hauled On-S | l (ft ²): Site (yd ³): | 5000 0 0 | | | |
| Default | Default Settings Settings Used: e Day(s) worked | • | Yes 5 (default) | | | | |
| - Constructi | on Exhaust (def | ault) uipment Name | | | Number C |)f Ua | ours Per Day |
| | Ľq | uipment ivame | | | Equipmer | | Juis i ei Day |
| | | | | | 2 | | |
| Excavators | Composite | | | | ۷. | | 8 |
| Other Gene | ral Industrial Equ | | site | | 1 | | 8 |
| Other Gene | | | site | | | | |
| Other Gene Tractors/Lo - Vehicle Ex Average Average | ral Industrial Equ aders/Backhoes haust e Hauling Truck e Hauling Truck haust Vehicle M | Composite Capacity (yd ³) Round Trip C |): 'ommute (n | , , , , , , , , , , , , , , , , , , , | 1 1 ult) ult) | | 8 8 |
| Other Gene Tractors/Lo - Vehicle Ex Average Average - Vehicle Ex | ral Industrial Equ aders/Backhoes haust e Hauling Truck e Hauling Truck | Composite Capacity (yd ³) Round Trip C |): | | 1 1 ult) | HDDV | 8 |
| Other Gene Tractors/Lo - Vehicle Ex Average Average | ral Industrial Equ aders/Backhoes haust e Hauling Truck e Hauling Truck haust Vehicle M | Composite Capacity (yd ³) Round Trip C lixture (%) |): 'ommute (n | nile): 20 (defa | 1 1 ult) ult) | HDDV 100.00 | 8 |
| Other Gene Tractors/Lo - Vehicle Ex Average Average - Vehicle Ex POVs - Worker Tr | ral Industrial Equ baders/Backhoes (haust e Hauling Truck e Hauling Truck haust Vehicle M LDGV 0 | Composite Capacity (yd ³) Round Trip C lixture (%) LDGT 0 |): 'ommute (n <u>HDGV</u> 0 | nile): 20 (defa | l l uult) LDDT | | 8 8 MC |
| Other Gene Tractors/Lo - Vehicle Ex Average Average - Vehicle Ex POVs - Worker Tr Average | ral Industrial Equ baders/Backhoes Haust Hauling Truck Hauling Truck haust Vehicle M LDGV 0 | Composite Capacity (yd ³) Round Trip C LDGT 0 I Trip Commut |): fommute (n HDGV 0 te (mile): | nile): 20 (defa | l l uult) LDDT | | 8 8 MC |
| Other Gene Tractors/Lo - Vehicle Ex Average Average - Vehicle Ex POVs - Worker Tr Average | ral Industrial Equ baders/Backhoes (haust Hauling Truck Hauling Truck haust Vehicle M LDGV 0 'ips Worker Round | Composite Capacity (yd ³) Round Trip C LDGT 0 I Trip Commut |): 'ommute (n <u>HDGV</u> 0 | nile): 20 (defa | l l uult) LDDT | | 8 8 MC |

30.1.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| · · · · · · · · · · · · · · · · · · · | | |
|--|-----------------|-------------------|
| VOC SO _x NO _x CO PM 10 PM 2.5 Pb | NH ₃ | CO ₂ e |

| LDGV | 000.597 | 000.007 | 000.639 | 005.101 | 000.011 | 000.009 | 000.033 | 00367.095 |
|------|---------|---------|---------|---------|---------|---------|-------------|-----------|
| LDGT | 000.799 | 000.010 | 001.093 | 008.335 | 000.012 | 000.010 | 000.034 | 00489.953 |
| HDGV | 001.373 | 000.015 | 002.807 | 024.705 | 000.026 | 000.023 | 000.045 | 00760.448 |
| LDDV | 000.233 | 000.003 | 000.314 | 003.669 | 000.006 | 000.006 | 000.008 | 00375.756 |
| LDDT | 000.527 | 000.005 | 000.830 | 007.383 | 000.008 | 000.007 | 000.008 | 00585.601 |
| HDDV | 000.773 | 000.014 | 008.040 | 002.706 | 000.363 | 000.334 | 000.028 | 01561.469 |
| MC | 002.788 | 000.008 | 000.733 | 014.953 | 000.027 | 000.024 | 000.050 | 00392.901 |

30.1.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

PM10_{FD} = (20 * ACRE * WD) / 2000

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³) HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³) HC: Average Hauling Truck Capacity (yd³) (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³) HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

31. Construction / Demolition

31.1 General Information & Timeline Assumptions

- Activity Location

County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: FSRM: Squadron Operations Buildings Renovations

- Activity Description:

Renovation of the Squadron Operations Buildings (Buildings 216 and 234) would occur from July 2025 through August 2028.

It was assumed 25 percent of the total square footage of Building 216 (26,603 square feet) and Building 234 (13,686 square feet) (40,289 total square feet * 0.25 = 10,072.25 square feet) would be construction to equate the renovations. Renovations would begin in July 2025 and last approximately 34 months.

It was assumed architectural coatings would be required for the entire building area (40,289 square feet) following the renovations. Architectural coatings application would begin in August 2028 and last approximately 1 month.

- Activity Start Date

Start Month:7Start Month:2025

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 8 |
| End Month: | 2028 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.798913 |
| SO _x | 0.006868 |
| NO _x | 1.585700 |
| СО | 2.891207 |
| PM 10 | 0.050214 |

| Pollutant | Total Emissions (TONs) |
|-------------------|-------------------------------|
| PM 2.5 | 0.050138 |
| Pb | 0.000000 |
| NH ₃ | 0.001947 |
| CO ₂ e | 661.2 |
| | |

31.1 Building Construction Phase

31.1.1 Building Construction Phase Timeline Assumptions

| - Phase Start Date | |
|--------------------|------|
| Start Month: | 7 |
| Start Quarter: | 1 |
| Start Year: | 2025 |
| | |

- Phase Duration Number of Month: 34 Number of Days: 0

31.1.2 Building Construction Phase Assumptions

| - General Building Construction Information | | | | | |
|---|----------------------|--|--|--|--|
| Building Category: | Office or Industrial | | | | |
| Area of Building (ft ²): | 10072.25 | | | | |
| Height of Building (ft): | 15 | | | | |
| Number of Units: | N/A | | | | |

- Building Construction Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|-------------------------------------|------------------------|---------------|
| Cranes Composite | 1 | 4 |
| Forklifts Composite | 2 | 6 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

31.1.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite

| Cranes composite | | | | | | | | |
|------------------|-----|-----|-----|----|-------|--------|-----|-------------------|
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e |

| Emission Factors | 0.0680 | 0.0013 | 0.4222 | 0.3737 | 0.0143 | 0.0143 | 0.0061 | 128.77 | | | | |
|-------------------------|-------------------------------------|--------|--------|--------|--------|--------|--------|-------------------|--|--|--|--|
| Forklifts Composite | | | | | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | | |
| Emission Factors | 0.0236 | 0.0006 | 0.0859 | 0.2147 | 0.0025 | 0.0025 | 0.0021 | 54.449 | | | | |
| Tractors/Loaders/B | Tractors/Loaders/Backhoes Composite | | | | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | | |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 | | | | |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

31.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

VMT_{VE} = BA * BH * (0.42 / 1000) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase VMT_{VT} = BA * BH * (0.38 / 1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

31.2 Architectural Coatings Phase

31.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date Start Month: 8 Start Quarter: 1 Start Year: 2028

- Phase Duration Number of Month: 1 Number of Days: 0

31.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information Building Category: Non-Residential Total Square Footage (ft²): 40289 Number of Units: N/A
- Architectural Coatings Default Settings
 Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)
- Worker Trips Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

31.2.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

31.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

 $VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

1: Conversion Factor man days to trips (1 trip / 1 man * day)

WT: Average Worker Round Trip Commute (mile)

PA: Paint Area (ft²)

800: Conversion Factor square feet to man days ($1 \text{ ft}^2 / 1 \text{ man * day}$)

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft²)
2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)
0.0116: Emission Factor (lb/ft²)
2000: Conversion Factor pounds to tons

32. Construction / Demolition

32.1 General Information & Timeline Assumptions

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: FSRM: Airfield Improvements

- Activity Description:

Aircraft improvements would occur from July 2025 through December 2025.

Airfield improvements would occur on an area totaling approximately 720,000 square feet. Improvements would begin in July 2025 and last approximately 6 months.

- Activity Start Date

| Start Month: | 7 |
|--------------|------|
| Start Month: | 2025 |

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 12 |
| End Month: | 2025 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.157002 |
| SO _x | 0.001830 |
| NO _x | 0.775266 |
| CO | 1.040129 |
| PM 10 | 0.041883 |

| Pollutant | Total Emissions (TONs) |
|-------------------|-------------------------------|
| PM 2.5 | 0.041779 |
| Pb | 0.000000 |
| NH ₃ | 0.000618 |
| CO ₂ e | 182.3 |
| | |

32.1 Paving Phase

32.1.1 Paving Phase Timeline Assumptions

- Phase Start Date
 - Start Month:7Start Quarter:1Start Year:2025
- Phase Duration Number of Month: 6 Number of Days: 0

32.1.2 Paving Phase Assumptions

- General Paving Information Paving Area (ft²): 720000
- Paving Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|----------------------------|------------------------|---------------|
| Pavers Composite | 1 | 8 |
| Paving Equipment Composite | 2 | 8 |
| Rollers Composite | 2 | 6 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

32.1.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|---------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.597 | 000.007 | 000.639 | 005.101 | 000.011 | 000.009 | | 000.033 | 00367.095 |
| LDGT | 000.799 | 000.010 | 001.093 | 008.335 | 000.012 | 000.010 | | 000.034 | 00489.953 |
| HDGV | 001.373 | 000.015 | 002.807 | 024.705 | 000.026 | 000.023 | | 000.045 | 00760.448 |
| LDDV | 000.233 | 000.003 | 000.314 | 003.669 | 000.006 | 000.006 | | 000.008 | 00375.756 |
| LDDT | 000.527 | 000.005 | 000.830 | 007.383 | 000.008 | 000.007 | | 000.008 | 00585.601 |
| HDDV | 000.773 | 000.014 | 008.040 | 002.706 | 000.363 | 000.334 | | 000.028 | 01561.469 |
| MC | 002.788 | 000.008 | 000.733 | 014.953 | 000.027 | 000.024 | | 000.050 | 00392.901 |

32.1.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

 $\begin{array}{ll} VMT_{VE}: \mbox{ Vehicle Exhaust Vehicle Miles Travel (miles)} \\ PA: \mbox{ Paving Area (ft^2)} \\ 0.25: \mbox{ Thickness of Paving Area (ft)} \\ (1/27): \mbox{ Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)} \\ HC: \mbox{ Average Hauling Truck Capacity (yd^3)} \\ (1/HC): \mbox{ Conversion Factor cubic yards to trips (1 trip / HC yd^3)} \\ HT: \mbox{ Average Hauling Truck Round Trip Commute (mile/trip)} \end{array}$

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs) VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Vehicle Exhaust On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VE}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft²)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)² / acre)

33. Construction / Demolition

33.1 General Information & Timeline Assumptions

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: FSRM: Trim Pad

- Activity Description:

Construction of a trim pad would occur from August 2025 through February 2026.

Excavation of existing pavement would occur on an area totaling approximately 20,523 square feet. Excavation would begin in August 2025 and last approximately 2 months.

Pavement for the new trim pad would be required for an area totaling approximately 20,523 square feet. Paving would begin in October 2025 and last approximately 5 months.

Assumed no materials are required to be hauled on- or off-site; excavated spoils will be used on-site.

- Activity Start Date Start Month: 8

Start Month: 2025

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 2 |
| End Month: | 2026 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.113845 |
| SO _x | 0.001880 |
| NO _x | 0.568786 |
| CO | 0.932186 |
| PM 10 | 0.427134 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.024167 |
| Pb | 0.000000 |
| NH ₃ | 0.000596 |
| CO ₂ e | 179.1 |
| | |

33.1 Trenching/Excavating Phase

33.1.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date Start Month: 8 Start Quarter: 1

Start Quarter:1Start Year:2025

- Phase Duration

Number of Month: 2 Number of Days: 0

33.1.2 Trenching / Excavating Phase Assumptions

| - General Trenching/Excavating Information | |
|--|-------|
| Area of Site to be Trenched/Excavated (ft ²): | 20253 |
| Amount of Material to be Hauled On-Site (yd ³): | 0 |
| Amount of Material to be Hauled Off-Site (yd ³): | 0 |

- Trenching Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of | Hours Per Day |
|---|-----------|---------------|
| | Equipment | |
| Excavators Composite | 2 | 8 |
| Other General Industrial Equipmen Composite | 1 | 8 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |

- Vehicle Exhaust

| Average Hauling Truck Capacity (yd ³): | 20 (default) |
|--|--------------|
| Average Hauling Truck Round Trip Commute (mile): | 20 (default) |

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

| - Worker Tri | ps Vehicle Mix | xture (%) | | | | | |
|--------------|----------------|-----------|------|------|------|------|----|
| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

33.1.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.597 | 000.007 | 000.639 | 005.101 | 000.011 | 000.009 | | 000.033 | 00367.095 |
| LDGT | 000.799 | 000.010 | 001.093 | 008.335 | 000.012 | 000.010 | | 000.034 | 00489.953 |
| HDGV | 001.373 | 000.015 | 002.807 | 024.705 | 000.026 | 000.023 | | 000.045 | 00760.448 |
| LDDV | 000.233 | 000.003 | 000.314 | 003.669 | 000.006 | 000.006 | | 000.008 | 00375.756 |
| LDDT | 000.527 | 000.005 | 000.830 | 007.383 | 000.008 | 000.007 | | 000.008 | 00585.601 |
| HDDV | 000.773 | 000.014 | 008.040 | 002.706 | 000.363 | 000.334 | | 000.028 | 01561.469 |
| MC | 002.788 | 000.008 | 000.733 | 014.953 | 000.027 | 000.024 | | 000.050 | 00392.901 |

33.1.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

PM10_{FD} = (20 * ACRE * WD) / 2000

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs) 20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day) ACRE: Total acres (acres) WD: Number of Total Work Days (days) 2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³) HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³) HC: Average Hauling Truck Capacity (yd³) (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³) HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs) VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Vehicle Exhaust On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

33.2 Paving Phase

33.2.1 Paving Phase Timeline Assumptions

- Phase Start Date

| Start Month: | 10 |
|----------------|------|
| Start Quarter: | 1 |
| Start Year: | 2025 |

- Phase Duration Number of Month: 5 Number of Days: 0

33.2.2 Paving Phase Assumptions

- General Paving Information Paving Area (ft²): 20253
- Paving Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of | Hours Per Day |
|-------------------------------------|-----------|---------------|
| | Equipment | |
| Cement and Mortar Mixers Composite | 4 | 6 |
| Pavers Composite | 1 | 7 |
| Rollers Composite | 1 | 7 |
| Tractors/Loaders/Backhoes Composite | 1 | 7 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

33.2.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.597 | 000.007 | 000.639 | 005.101 | 000.011 | 000.009 | | 000.033 | 00367.095 |
| LDGT | 000.799 | 000.010 | 001.093 | 008.335 | 000.012 | 000.010 | | 000.034 | 00489.953 |
| HDGV | 001.373 | 000.015 | 002.807 | 024.705 | 000.026 | 000.023 | | 000.045 | 00760.448 |
| LDDV | 000.233 | 000.003 | 000.314 | 003.669 | 000.006 | 000.006 | | 000.008 | 00375.756 |
| LDDT | 000.527 | 000.005 | 000.830 | 007.383 | 000.008 | 000.007 | | 000.008 | 00585.601 |
| HDDV | 000.773 | 000.014 | 008.040 | 002.706 | 000.363 | 000.334 | | 000.028 | 01561.469 |
| MC | 002.788 | 000.008 | 000.733 | 014.953 | 000.027 | 000.024 | | 000.050 | 00392.901 |

33.2.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft²)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)
HC: Average Hauling Truck Capacity (yd³)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VE}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft²)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)² / acre)

34. Heating

34.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Heating for New Facilities

- Activity Description:

Heating for new facilities would begin following construction. For the purposes of this analysis, heating was assumed to required starting in January 2029. Heating would be required for the following facilities: GBTS Facility - 33,000 square feet UMT Facility - 12,000 square feet Hush House - 24,111 square feet Addition to the Egress Shop - 4,000 square feet

Total ares to be heated - 73,111 square feet

- Activity Start Date Start Month: 1 Start Year: 2029

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.014227 |
| SO _x | 0.001552 |
| NO _x | 0.258674 |
| CO | 0.217286 |
| PM 10 | 0.019659 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.019659 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 311.4 |
| | |

34.2 Heating Assumptions

- Heating

Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method

Area of floorspace to be heated (ft²): Type of fuel: Type of boiler/furnace: Heat Value (MMBtu/ft³): Energy Intensity (MMBtu/ft²):

73111 Natural Gas Industrial (10 - 250 MMBtu/hr) 0.00105 0.0743

- Default Settings Used: Yes

- Boiler/Furnace Usage Operating Time Per Year (hours): 900 (default)

34.3 Heating Emission Factor(s)

- Heating Emission Factors (lb/1000000 scf)

| VOC | SOx | NOx | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|-----|-----|-----|----|-------|--------|----|-----------------|-------------------|
| 5.5 | 0.6 | 100 | 84 | 7.6 | 7.6 | | | 120390 |

34.4 Heating Formula(s)

- Heating Fuel Consumption ft³ per Year

FC_{HER}= HA * EI / HV / 1000000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method HA: Area of floorspace to be heated (ft²)
EI: Energy Intensity Requirement (MMBtu/ft²)
HV: Heat Value (MMBTU/ft³)
1000000: Conversion Factor

- Heating Emissions per Year

 $HE_{POL}=FC * EF_{POL} / 2000$

HE_{POL}: Heating Emission Emissions (TONs) FC: Fuel Consumption EF_{POL}: Emission Factor for Pollutant 2000: Conversion Factor pounds to tons

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base:COLUMBUS AFBState:MississippiCounty(s):Clay, MS; Lowndes, MS; Monroe, MSRegulatory Area(s):NOT IN A REGULATORY AREA

b. Action Title: T-7A Recapitalization at Columbus AFB - Alternative 2

c. Project Number/s (if applicable):

d. Projected Action Start Date: 8 / 2024

e. Action Description:

The Proposed Action is recapitalization of the T-38C Talon flight training program at Columbus AFB with T-7A Red Hawk aircraft. Recapitalization would entail introduction of T-7A aircraft and flight operations at Columbus AFB and associated special use airspace to replace all T-38C aircraft assigned to the installation; introduction of nighttime (between 10 a.m. and 7 a.m.) T-7A flight operations; changes to the number of personnel and dependents in the Columbus AFB region; and construction and upgrade of operations, support, and maintenance facilities.

For Alternative 1, Columbus AFB would receive 61 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in 61 T-7A aircraft being delivered to Columbus AFB; however, T-7A operations would be performed at an intensity approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Columbus AFB would receive 77 T-7A aircraft and perform T-7A operations at an intensity identical to Alternative 2. Alternative 3 also incorporates a MILCON project alternative to construct 12 additional shelters for the T-7A aircraft. Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in the EIS provides analysis to evaluate future capacity needs. The No Action Alternative would not implement T-7A recapitalization at Columbus AFB.

f. Point of Contact:

| Name: | Carolyn Hein |
|---------------|--------------|
| Title: | Contractor |
| Organization: | HDR |
| Email: | |
| Phone Number: | |

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

_____ applicable __X__ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all

algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

Analysis Summary:

| 2024 | | | | | | |
|---------------------|------------------|--------------------------|------------------------|--|--|--|
| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | | | | |
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) | | | |
| NOT IN A REGULATORY | AREA | | | | | |
| VOC | 0.205 | 250 | No | | | |
| NOx | 1.005 | 250 | No | | | |
| СО | 1.689 | 250 | No | | | |
| SOx | 0.004 | 250 | No | | | |
| PM 10 | 0.284 | 250 | No | | | |
| PM 2.5 | 0.035 | 250 | No | | | |
| Pb | 0.000 | 25 | No | | | |
| NH3 | 0.001 | 250 | No | | | |
| CO2e | 397.5 | | | | | |

2025

| 2025 | | | | | | | | |
|---------------------|--------------------------|--------------------------|------------------------|--|--|--|--|--|
| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | | | | | | |
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) | | | | | |
| NOT IN A REGULATORY | NOT IN A REGULATORY AREA | | | | | | | |
| VOC | 1.069 | 250 | No | | | | | |
| NOx | 4.712 | 250 | No | | | | | |
| СО | 7.091 | 250 | No | | | | | |
| SOx | 0.017 | 250 | No | | | | | |
| PM 10 | 8.445 | 250 | No | | | | | |
| PM 2.5 | 0.182 | 250 | No | | | | | |
| Pb | 0.000 | 25 | No | | | | | |
| NH3 | 0.004 | 250 | No | | | | | |
| CO2e | 1603.9 | | | | | | | |

2026

| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | | | | |
|--------------------------|------------------|--------------------------|------------------------|--|--|--|
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) | | | |
| NOT IN A REGULATORY AREA | | | | | | |
| VOC | 1.804 | 250 | No | | | |

| NOx | 7.095 | 250 | No |
|--------|--------|-----|----|
| CO | 10.840 | 250 | No |
| SOx | 0.024 | 250 | No |
| PM 10 | 0.620 | 250 | No |
| PM 2.5 | 0.240 | 250 | No |
| Pb | 0.000 | 25 | No |
| NH3 | 0.010 | 250 | No |
| CO2e | 2363.7 | | |

2027

| Pollutant | Action Emissions | INSIGNIFICAN | CE INDICATOR |
|---------------------|------------------|--------------------|------------------------|
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) |
| NOT IN A REGULATORY | AREA | | |
| VOC | 1.009 | 250 | No |
| NOx | 2.459 | 250 | No |
| CO | 4.117 | 250 | No |
| SOx | 0.009 | 250 | No |
| PM 10 | 0.086 | 250 | No |
| PM 2.5 | 0.086 | 250 | No |
| Pb | 0.000 | 25 | No |
| NH3 | 0.003 | 250 | No |
| CO2e | 886.1 | | |

2028

| Pollutant | Action Emissions | INSIGNIFICAN | CE INDICATOR |
|---------------------|------------------|--------------------|------------------------|
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) |
| NOT IN A REGULATORY | AREA | | |
| VOC | 27.562 | 250 | No |
| NOx | 67.791 | 250 | No |
| CO | -181.515 | 250 | No |
| SOx | 2.782 | 250 | No |
| PM 10 | -6.070 | 250 | No |
| PM 2.5 | -4.137 | 250 | No |
| Pb | 0.000 | 25 | No |
| NH3 | 0.006 | 250 | No |
| CO2e | 9688.1 | | |

2029

| Pollutant | Action Emissions | INSIGNIFICAN | CE INDICATOR |
|---------------------|------------------|--------------------|------------------------|
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) |
| NOT IN A REGULATORY | AREA | | |
| VOC | 55.137 | 250 | No |
| NOx | 164.465 | 250 | No |
| CO | -589.356 | 250 | No |
| SOx | 5.525 | 250 | No |
| PM 10 | -18.458 | 250 | No |
| PM 2.5 | -12.683 | 250 | No |
| Pb | 0.000 | 25 | No |
| NH3 | 0.006 | 250 | No |
| CO2e | 19962.7 | | |

| | 2030 | | |
|---------------------|--|--------------------|------------------------|
| Pollutant | lutant Action Emissions INSIGNIFICANCE INDICATOR | | ICE INDICATOR |
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) |
| NOT IN A REGULATORY | AREA | | |
| VOC | 58.978 | 250 | No |
| NOx | 191.576 | 250 | No |
| СО | -759.059 | 250 | No |
| SOx | 5.836 | 250 | No |
| PM 10 | -23.274 | 250 | No |
| PM 2.5 | -16.031 | 250 | No |
| Pb | 0.000 | 25 | No |
| NH3 | -0.010 | 250 | No |
| CO2e | 21355.0 | | |

2031 - (Steady State)

| Pollutant | Action Emissions | INSIGNIFICAN | CE INDICATOR |
|---------------------|------------------|--------------------|------------------------|
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) |
| NOT IN A REGULATORY | AREA | | |
| VOC | 58.978 | 250 | No |
| NOx | 191.576 | 250 | No |
| CO | -759.059 | 250 | No |
| SOx | 5.836 | 250 | No |
| PM 10 | -23.274 | 250 | No |
| PM 2.5 | -16.031 | 250 | No |
| Pb | 0.000 | 25 | No |
| NH3 | -0.010 | 250 | No |
| CO2e | 21355.0 | | |

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.

mA

Carolyn Hein, Contractor

2/17/2023 DATE

1. General Information

- Action Location

Base:COLUMBUS AFBState:MississippiCounty(s):Clay, MS; Lowndes, MS; Monroe, MSRegulatory Area(s):NOT IN A REGULATORY AREA

- Action Title: T-7A Recapitalization at Columbus AFB - Alternative 2

- Project Number/s (if applicable):

- Projected Action Start Date: 8 / 2024

- Action Purpose and Need:

The purpose of the Proposed Action is to continue the T-7A recapitalization program by recapitalizing Columbus AFB to prepare pilots to operate the more technologically advanced T-7A aircraft.

The Proposed Action is needed because the current training practices with the older T-38C aircraft fail to prepare pilots for the technological advancements of fourth and fifth generation aircraft. By 2031, more than 60 percent of the Combat Air Force will be comprised of fifth generation aircraft, requiring a modern and capable training platform with capabilities beyond those currently available in the T-38C. Additionally, training systems provided with the newer T-7A aircraft allow for enhanced and improved flight and simulator training. The T-7A recapitalization program will allow DAF to provide more efficient and effective instructor and pilot training for operating fourth and fifth generation aircraft. T-7A recapitalization at Columbus AFB would allow DAF to continue the geographically phased T-7A recapitalization sequence ensuring DAF pilot training requirements are met.

- Action Description:

The Proposed Action is recapitalization of the T-38C Talon flight training program at Columbus AFB with T-7A Red Hawk aircraft. Recapitalization would entail introduction of T-7A aircraft and flight operations at Columbus AFB and associated special use airspace to replace all T-38C aircraft assigned to the installation; introduction of nighttime (between 10 a.m. and 7 a.m.) T-7A flight operations; changes to the number of personnel and dependents in the Columbus AFB region; and construction and upgrade of operations, support, and maintenance facilities.

For Alternative 1, Columbus AFB would receive 61 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in 61 T-7A aircraft being delivered to Columbus AFB; however, T-7A operations would be performed at an intensity approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Columbus AFB would receive 77 T-7A aircraft and perform T-7A operations at an intensity identical to Alternative 2. Alternative 3 also incorporates a MILCON project alternative to construct 12 additional shelters for the T-7A aircraft. Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in the EIS provides analysis to evaluate future capacity needs. The No Action Alternative would not implement T-7A recapitalization at Columbus AFB.

- Point of Contact

| Name: | Carolyn Hein |
|---------------|--------------|
| Title: | Contractor |
| Organization: | HDR |
| Email: | |
| Phone Number: | |

| - Activ | vity List: | |
|---------|---------------------------|---|
| | Activity Type | Activity Title |
| 2. | Aircraft | 2028 Add T-7As and LTOs |
| 3. | Aircraft | 2028 Add T-7A TGOs |
| 4. | Aircraft | 2028 Remove T-38C and LTOs |
| 5. | Aircraft | 2028 Remove T-38C TGOs |
| 6. | Aircraft | 2029 Add T-7As and LTOs |
| 7. | Aircraft | 2029 Add T-7A TGOs |
| 8. | Aircraft | 2029 Remove T-38C and LTOs |
| 9. | Aircraft | 2029 Remove T-38C TGOs |
| 10. | Aircraft | 2030 Add T-7As and LTOs |
| 11. | Aircraft | 2030 Add T-7A TGOs |
| 12. | Aircraft | 2030 Remove T-38C and LTOs |
| 13. | Aircraft | 2030 Remove T-38C TGOs |
| 14. | Aircraft | 2028 T-7A Increase Trim Test and Test Cell |
| 15. | Aircraft | 2028 T-38C Decrease Trim Test and Test Cell |
| 16. | Aircraft | 2029 T-7A Increase Trim Test and Test Cell |
| 17. | Aircraft | 2029 T-38C Decrease Trim Test and Test Cell |
| 18. | Aircraft | 2030 T-7A Increase Trim Test and Test Cell |
| 19. | Aircraft | 2030 T-38C Decrease Trim Test and Test Cell |
| 20. | Personnel | Add 43 personnel |
| 21. | Personnel | Remove 74 personnel |
| 22. | Construction / Demolition | MILCON: Construct GBTS Facility |
| 23. | Construction / Demolition | MILCON: Construct UMT Facility |
| 24. | Construction / Demolition | MILCON: Construct Hush House |
| 25. | Construction / Demolition | MILCON: Construct Aircraft Shelters |
| 26. | Construction / Demolition | MILCON: Addition to Egress Shop |
| 27. | Construction / Demolition | MILCON: Construct Jet Blast Deflectors |
| 28. | Construction / Demolition | FSRM: Renovate Building 452 (Hangar 3) |
| 29. | Construction / Demolition | FSRM: Wash Rack Renovation (Building 454) |
| 30. | Construction / Demolition | FSRM: Antenna Farm |
| 31. | Construction / Demolition | FSRM: Squadron Operations Buildings Renovations |
| 32. | Construction / Demolition | FSRM: Airfield Improvements |
| 33. | Construction / Demolition | FSRM: Trim Pad |
| 34. | Heating | Heating for New Facilities |

- Activity List:

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Aircraft

2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location County: Clay, MS; Lowndes, MS; Monroe, MS Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2028 Add T-7As and LTOs

- Activity Description:

Starting in 2028, add 21 T-7As and increase LTOs by 6,379.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 43.845373 |
| SO _x | 2.016759 |
| NO _x | 20.514886 |
| СО | 88.984504 |
| PM 10 | 0.537933 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.477982 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 6094.2 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | 43.845373 |
| SO _x | 2.016759 |
| NO _x | 20.514886 |
| CO | 88.984504 |
| PM 10 | 0.537933 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.477982 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 6094.2 |
| | |

2.2 Aircraft & Engines

2.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-------------|
| Aircraft Designation: | T-7A |
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |

| Aircraft has After burn: | Yes |
|--------------------------|-----|
| Number of Engines: | 1 |
| | |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

2.2.2 Aircraft & Engines Emission Factor(s)

Aircraft & Engine Emissions Factors (lb/1000lb fuel)
 Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

2.3 Flight Operations

2.3.1 Flight Operations Assumptions

| - Flight Operations Number of Aircraft: Number of Annual LTC Number of Annual TGC Number of Annual Trir | Os (Touch-and-Go | | 21 6379 0 0 |
|---|-------------------------|-------|----------------------|
| - Default Settings Used: | No | | |
| - Flight Operations TIMs (1 | Time In Mode) | | |
| Taxi/Idle Out [Idle] (mi | ins): | 8.475 | |
| Takeoff [Military] (min | s): | 0.73 | |
| Takeoff [After Burn] (n | nins): | 0.01 | |
| Climb Out [Intermedia | te] (mins): | 0.42 | |
| Approach [Approach] (| | 4.03 | |
| Taxi/Idle In [Idle] (min | s): | 8.475 | |
| - Trim Test | | | |
| Idle (mins): | 12 | | |
| Approach (mins): | 27 | | |
| Intermediate (mins): | 9 | | |
| Military (mins): | 9 | | |

2.3.2 Flight Operations Formula(s)

AfterBurn (mins):

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

3

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000poundsEF: Emission Factor (lb/1000lb fuel)NE: Number of EnginesTGO: Number of Touch-and-Go Cycles (for all aircraft)2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

2.4 Auxiliary Power Unit (APU)

2.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

2.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| | | 1 40001 (10 | ,) | | | | | |
|-------------|------|-------------|-----|-----|----|-------|--------|-------------------|
| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
| - | Flow | | | | | | | |

| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |
|----------|-------|-------|-------|-------|-------|--------|--------|-------|
|----------|-------|-------|-------|-------|-------|--------|--------|-------|

2.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

3. Aircraft

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2028 Add T-7A TGOs
- Activity Description: Starting in 2028, increase T-7A TGOs by 14,034.
- Activity Start Date Start Month: 1 Start Year: 2028
- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 6.627546 |
| SO _x | 3.519206 |
| NO _x | 50.175959 |
| СО | 7.322293 |
| PM 10 | 0.378546 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.320309 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 10716.0 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | 6.627546 | PM 2.5 | 0.320309 |
| SO _x | 3.519206 | Pb | 0.000000 |
| NO _x | 50.175959 | NH ₃ | 0.000000 |
| CO | 7.322293 | CO ₂ e | 10716.0 |
| PM 10 | 0.378546 | | |

3.2 Aircraft & Engines

3.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

 Aircraft Designation: T-7A
 Engine Model: F404-GE-102
 Primary Function: Trainer
 Aircraft has After burn: Yes
 Number of Engines: 1
- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

3.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

3.3 Flight Operations

3.3.1 Flight Operations Assumptions

| Number of Aircraft: | 21 |
|---|-------|
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 14034 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 0 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 3.56 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |
| | |

| Trim Test | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

-

3.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

3.4 Auxiliary Power Unit (APU)

3.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

| - Auxiliary Power | Unit (APU |) (default) |
|-------------------|-----------|-------------|
|-------------------|-----------|-------------|

| ber of APU Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|----------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

3.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

3.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

4. Aircraft

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2028 Remove T-38C and LTOs

- Activity Description:

Starting in 2028, remove 23 T-38Cs and decrease LTOs by 5,889.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -21.206061 |
| SO _x | -1.874064 |
| NO _x | -3.858114 |
| СО | -226.520932 |
| PM 10 | -5.555029 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -4.440584 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -4760.5 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -21.206061 |
| SO _x | -1.874064 |
| NO _x | -3.858114 |
| СО | -226.520932 |
| PM 10 | -5.555029 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -4.440584 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -4760.5 |
| | |

4.2 Aircraft & Engines

4.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |

Number of Engines:

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

4.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

2

| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|--------------|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

4.3 Flight Operations

4.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|------|
| Number of Aircraft: | 23 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 5889 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| Flight Operations TIMs (Time In Mode) | |
|---------------------------------------|-------|
| Taxi/Idle Out [Idle] (mins): | 9.175 |
| Takeoff [Military] (mins): | 0.22 |
| Takeoff [After Burn] (mins): | 0.52 |
| Climb Out [Intermediate] (mins): | 0.46 |
| Approach [Approach] (mins): | 3.91 |
| Taxi/Idle In [Idle] (mins): | 9.175 |
| | |

| - Trim Test | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

4.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60)^* (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

4.4 Auxiliary Power Unit (APU)

4.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

4.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----|----|-------|--------|-------------------|
| | Flow | | | | | | | |

4.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

5. Aircraft

5.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2028 Remove T-38C TGOs

- Activity Description:

Starting in 2028, decrease T-38C TGOs by 12,956.

- Activity Start Date

Start Month:1Start Year:2028

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -2.201160 |
| SO _x | -0.847209 |
| NO _x | -0.554249 |
| СО | -51.521407 |
| PM 10 | -1.417294 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.546331 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -2560.6 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-----------------|----------------------------------|
| VOC | -2.201160 | PM 2.5 | -0.546331 |
| SO _x | -0.847209 | Pb | 0.000000 |
| NO _x | -0.554249 | NH ₃ | 0.000000 |

| СО | -51.521407 |
|-------|------------|
| PM 10 | -1.417294 |

| CO ₂ e | -2560.6 |
|-------------------|---------|
| | |

5.2 Aircraft & Engines

5.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

5.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | 8 | | | | | | | |
|--------------|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

5.3 Flight Operations

5.3.1 Flight Operations Assumptions

| - Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: | | | |
|---|---|--------------------------|--|
| - Default Settings Used: | No | | |
| - Flight Operations TIMs (Ti Taxi/Idle Out [Idle] (min Takeoff [Military] (mins Takeoff [After Burn] (m Climb Out [Intermediate Approach [Approach] (n Taxi/Idle In [Idle] (mins) | ns):): ins): e] (mins): nins): | 0 0 3.56 0 0 | |
| - Trim Test Idle (mins): Approach (mins): Intermediate (mins): Military (mins): | 12 27 9 9 | | |

AfterBurn (mins):

5.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

3

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE IN} + AEM_{IDLE OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000poundsEF: Emission Factor (lb/1000lb fuel)NE: Number of EnginesNA: Number of AircraftNTT: Number of Trim Test2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

5.4 Auxiliary Power Unit (APU)

5.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|-----------------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

5.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----------------|----|-------|--------|-------------------|
| | Flow | | | | | | | |

5.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

6. Aircraft

6.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Clay, MS; Lowndes, MS; Monroe, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2029 Add T-7As and LTOs

- Activity Description:

Starting in 2029, add 31 T-7As and increase LTOs by 9,417.

- Activity Start Date Start Month: 1

Start Year: 2029

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) | | | | |
|-----------------|----------------------------------|--|--|--|--|
| VOC | 64.726741 | | | | |
| SO _x | 2.977240 | | | | |
| NO _x | 30.285105 | | | | |
| CO | 131.363392 | | | | |
| PM 10 | 0.794124 | | | | |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.705622 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 8996.6 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | 64.726741 | PM 2.5 | 0.705622 |
| SO _x | 2.977240 | Pb | 0.000000 |
| NO _x | 30.285105 | NH ₃ | 0.000000 |
| CO | 131.363392 | CO ₂ e | 8996.6 |
| PM 10 | 0.794124 | | |

6.2 Aircraft & Engines

6.2.1 Aircraft & Engines Assumptions

| Aircraft & Engine | |
|--------------------------|-------------|
| Aircraft Designation: | T-7A |
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

6.2.2 Aircraft & Engines Emission Factor(s)

Aircraft & Engine Emissions Factors (lb/1000lb fuel)
 Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

6.3 Flight Operations

6.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|------|
| Number of Aircraft: | 31 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 9417 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| Flight Operations TIMs (Time In Mode) | |
|---------------------------------------|-------|
| Taxi/Idle Out [Idle] (mins): | 8.475 |
| Takeoff [Military] (mins): | 0.73 |
| Takeoff [After Burn] (mins): | 0.01 |
| Climb Out [Intermediate] (mins): | 0.42 |
| Approach [Approach] (mins): | 4.03 |
| Taxi/Idle In [Idle] (mins): | 8.475 |
| | |

| - Trim Test | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

6.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

6.4 Auxiliary Power Unit (APU)

6.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

6.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

| - Auxiliary Power Unit (APU) Emission Factor (10/117) | | | | | | | | |
|---|-------|-------|-------|-------|-------|--------|--------|-------------------|
| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
| | Flow | | | | | | | |
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

6.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

7. Aircraft

7.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2029 Add T-7A TGOs
- Activity Description: Starting in 2029, increase T-7A TGOs by 20,717.
- Activity Start Date

Start Month:1Start Year:2029

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) | | Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|---|-------------------|----------------------------------|
| VOC | 9.783588 | Р | M 2.5 | 0.472840 |
| SO _x | 5.195054 | P | 'b | 0.000000 |
| NO _x | 74.069783 | N | JH3 | 0.000000 |
| СО | 10.809174 | C | CO ₂ e | 15818.9 |
| PM 10 | 0.558811 | | | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------|----------------------------------|-----------|----------------------------------|
| VOC | 9.783588 | PM 2.5 | 0.472840 |

| SO _x | 5.195054 |
|-----------------|-----------|
| NO _x | 74.069783 |
| СО | 10.809174 |
| PM 10 | 0.558811 |

| Pb | 0.000000 |
|-------------------|----------|
| NH ₃ | 0.000000 |
| CO ₂ e | 15818.9 |
| | |

7.2 Aircraft & Engines

7.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

| Aircraft Designation: | T-7A |
|--------------------------|-------------|
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

7.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

7.3 Flight Operations

7.3.1 Flight Operations Assumptions

| - Flight Operations Number of Aircraft: | | 31 |
|--|--|-------|
| Number of Annual LT | Os (Landing and Take-off) cycles for all Aircraft: | 20717 |
| Number of Annual TO | GOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Tr | im Test(s) per Aircraft: | 0 |
| - Default Settings Used: | No | |

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 0 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 3.56 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

| - Trim Test | |
|-------------|--|
|-------------|--|

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

7.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

7.4 Auxiliary Power Unit (APU)

7.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

7.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

7.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

8. Aircraft

8.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Clay, MS; Lowndes, MS; Monroe, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2029 Remove T-38C and LTOs

- Activity Description:

Starting in 2029, remove 45 T-38Cs and decrease LTOs by 11,521.

- Activity Start Date

Start Month: 1 Start Year: 2029

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -41.486675 |
| SO _x | -3.666342 |
| NO _x | -7.547858 |
| СО | -443.156335 |
| PM 10 | -10.867632 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -8.687378 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -9313.3 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | -41.486675 | PM 2.5 | -8.687378 |
| SO _x | -3.666342 | Pb | 0.000000 |
| NO _x | -7.547858 | NH ₃ | 0.000000 |
| CO | -443.156335 | CO ₂ e | -9313.3 |
| PM 10 | -10.867632 | | |

8.2 Aircraft & Engines

8.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

8.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SO _x | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|------|-----------|-------|-----------------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |

| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
|--------------|---------|------|------|------|--------|------|------|------|
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

8.3 Flight Operations

8.3.1 Flight Operations Assumptions

| - Flight Operations | | |
|--------------------------|--|-------|
| Number of Aircraft: | | 45 |
| Number of Annual L | Os (Landing and Take-off) cycles for all Aircraft: | 11521 |
| Number of Annual TO | GOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Tr | im Test(s) per Aircraft: | 0 |
| - Default Settings Used: | No | |

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 9.175 |
| Takeoff [Military] (mins): | 0.22 |
| Takeoff [After Burn] (mins): | 0.52 |
| Climb Out [Intermediate] (mins): | 0.46 |
| Approach [Approach] (mins): | 3.91 |
| Taxi/Idle In [Idle] (mins): | 9.175 |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

8.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs)

AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

8.4 Auxiliary Power Unit (APU)

8.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

8.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|--------------------------|-----|-----|-----------------|----|-------|--------|-------------------|
|--------------------------|-----|-----|-----------------|----|-------|--------|-------------------|

8.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

9. Aircraft

9.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove
- Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2029 Remove T-38C TGOs
- Activity Description: Starting in 2029, decrease T-38C TGOs by 25,346.
- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2029 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant Emissions Per Year (TON | | |
|-----------------------------------|-------------|--|
| VOC | -4.306160 | |
| SO _x | -1.657407 | |
| NO _x | -1.084285 | |
| СО | -100.792034 | |
| PM 10 | -2.772672 | |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -1.068795 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -5009.4 |
| | |

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|---------------------------|
| VOC | -4.306160 | PM 2.5 | -1.068795 |
| SO _x | -1.657407 | Pb | 0.000000 |
| NO _x | -1.084285 | NH ₃ | 0.000000 |
| СО | -100.792034 | CO ₂ e | -5009.4 |
| PM 10 | -2.772672 | | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

9.2 Aircraft & Engines

9.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |
| 0 | |

| - Aircraft & Engine Surrogate | |
|-----------------------------------|----|
| Is Aircraft & Engine a Surrogate? | No |
| Original Aircraft Name: | |
| Original Engine Name: | |

9.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| The end of the states of the s | | | | | | | | |
|--|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

9.3 Flight Operations

9.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|-------|
| Number of Aircraft: | 45 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 25346 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 0 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 3.56 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

| - Trim Test | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

9.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

9.4 Auxiliary Power Unit (APU)

9.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

9.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| | <i>c)</i> ===== | | ·) | | | | | |
|-------------|-----------------|-----|-----|-----|----|-------|--------|-------------------|
| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
| | Flow | | | | | | | |

9.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

10. Aircraft

10.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location County: Clay, MS; Lowndes, MS; Monroe, MS Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2030 Add T-7As and LTOs
- Activity Description: Starting in 2030, add 9 T-7As and increase LTOs by 2,734.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | 18.791856 |
| SO _x | 0.864370 |
| NO _x | 8.792553 |
| СО | 38.138209 |
| PM 10 | 0.230555 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.204860 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 2612.0 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|---------------------------|
| VOC | 18.791856 | PM 2.5 | 0.204860 |
| SO _x | 0.864370 | Pb | 0.000000 |
| NO _x | 8.792553 | NH ₃ | 0.000000 |
| СО | 38.138209 | CO ₂ e | 2612.0 |
| PM 10 | 0.230555 | | |

10.2 Aircraft & Engines

10.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

| Aircraft Designation: | T-7A |
|--------------------------|-------------|
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

10.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

10.3 Flight Operations

10.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|------|
| Number of Aircraft: | 9 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 2734 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |
| | |

- Default Settings Used: No

| Flight Operations TIMs (Time In Mode) | |
|---|------------------------------|
| Taxi/Idle Out [Idle] (mins): | 8.475 |
| Takeoff [Military] (mins): | 0.73 |
| Takeoff [After Burn] (mins): | 0.01 |
| Climb Out [Intermediate] (mins): | 0.42 |
| Approach [Approach] (mins): | 4.03 |
| Taxi/Idle In [Idle] (mins): | 8.475 |
| Takeoff [Military] (mins): Takeoff [After Burn] (mins): Climb Out [Intermediate] (mins): Approach [Approach] (mins): | 0.73 0.01 0.42 4.03 |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

10.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs)

AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

10.4 Auxiliary Power Unit (APU)

10.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

10.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

| - Auxiliary Power Unit (APU) Emission Factor (| lb/hr) | |
|--|--------|--|
|--|--------|--|

| Designation | Fuel Flow | VOC | SO _x | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-----------------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

10.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

11. Aircraft

11.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location

County: Clay, MS; Lowndes, MS; Monroe, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2030 Add T-7A TGOs
- Activity Description: Starting in 2030, increase T-7A TGOs by 6,015.
- Activity Start Date Start Month: 1 Start Year: 2030
- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | 2.840579 |
| SO _x | 1.508339 |
| NO _x | 21.505515 |

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| PM 2.5 | 0.137285 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |

| СО | 3.138349 |
|-------|----------|
| PM 10 | 0.162246 |

| CO ₂ e | 4592.9 |
|-------------------|--------|
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 2.840579 |
| SO _x | 1.508339 |
| NO _x | 21.505515 |
| CO | 3.138349 |
| PM 10 | 0.162246 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.137285 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 4592.9 |
| | |

11.2 Aircraft & Engines

11.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

| e- wie ee Engline | |
|--------------------------|-------------|
| Aircraft Designation: | T-7A |
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

11.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

11.3 Flight Operations

11.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|------|
| Number of Aircraft: | 9 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 6015 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |
| | |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 0 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 3.56 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |
| Climb Out [Intermediate] (mins): Approach [Approach] (mins): | |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

11.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

11.4 Auxiliary Power Unit (APU)

11.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

11.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SO _x | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-----------------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

11.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

12. Aircraft

12.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove
- Activity Location County: Clay, MS; Lowndes, MS; Monroe, MS Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2030 Remove T-38C and LTOs

- Activity Description: Starting in 2030, remove 17 T-38Cs and decrease LTOs by 4,353.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -15.674985 |
| SO _x | -1.385260 |
| NO _x | -2.851821 |
| СО | -167.438549 |
| PM 10 | -4.106137 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -3.282368 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -3518.9 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|---|-------------------|---------------------------|
| VOC | -15.674985 | | PM 2.5 | -3.282368 |
| SO _x | -1.385260 | | Pb | 0.000000 |
| NO _x | -2.851821 | | NH ₃ | 0.000000 |
| CO | -167.438549 | | CO ₂ e | -3518.9 |
| PM 10 | -4.106137 |] | | |

12.2 Aircraft & Engines

12.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

| Aircraft Designation: | T-38C |
|--------------------------|-----------|
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

12.2.2 Aircraft & Engines Emission Factor(s)

| The cruit & Engline Emissions Tuetors (10/100018 Tuet) | | | | | | | | |
|--|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

12.3 Flight Operations

12.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|------|
| Number of Aircraft: | 17 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 4353 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 9.175 |
| Takeoff [Military] (mins): | 0.22 |
| Takeoff [After Burn] (mins): | 0.52 |
| Climb Out [Intermediate] (mins): | 0.46 |
| Approach [Approach] (mins): | 3.91 |
| Taxi/Idle In [Idle] (mins): | 9.175 |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

12.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

12.4 Auxiliary Power Unit (APU)

12.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

12.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-----|-----|-----|----|-------|--------|-------------------|
|-------------|--------------|-----|-----|-----|----|-------|--------|-------------------|

12.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

13. Aircraft

13.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove
- Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2030 Remove T-38C TGOs
- Activity Description: Starting in 2030, decrease T-38C TGOs by 9,577.
- Activity Start Date Start Month: 1 Start Year: 2030
- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------|----------------------------------|
| VOC | -1.627085 |

| Pollutant | Emissions Per Year (TONs) |
|-----------|---------------------------|
| PM 2.5 | -0.403845 |

| SO _x | -0.626252 |
|-----------------|------------|
| NO _x | -0.409698 |
| СО | -38.084325 |
| PM 10 | -1.047655 |

| Pb | 0.000000 |
|-------------------|----------|
| NH ₃ | 0.000000 |
| CO ₂ e | -1892.8 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -1.627085 |
| SO _x | -0.626252 |
| NO _x | -0.409698 |
| СО | -38.084325 |
| PM 10 | -1.047655 |

| & APU) partj: | |
|--------------------------|---------------------------|
| Pollutant | Emissions Per Year (TONs) |
| PM 2.5 | -0.403845 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -1892.8 |
| | |

13.2 Aircraft & Engines

Number of Engines:

13.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

13.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

2

| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|--------------|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

0 0

13.3 Flight Operations

13.3.1 Flight Operations Assumptions

| - Flight Operations Number of Aircraft: | | 17 | | | |
|---|--------------------------|----|--|--|--|
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | | | | | |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | | | | | |
| Number of Annual Tr | im Test(s) per Aircraft: | 0 | | | |
| - Default Settings Used: | No | | | | |

| - Flight Operations TIMs (Time In Mode) | |
|---|--|
| Taxi/Idle Out [Idle] (mins): | |
| Takeoff [Military] (mins): | |

| Takeoff [After Burn] | (mins): | 0 |
|-------------------------|---------|---|
| Climb Out [Intermed | 3.56 | |
| Approach [Approach] | 0 | |
| Taxi/Idle In [Idle] (mi | 0 | |
| - Trim Test | | |
| Idle (mins): | 12 | |
| Annroach (mins). | 27 | |

| Approach (mms): | 27 |
|----------------------|----|
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

13.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE IN} + AEM_{IDLE OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs)

AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

13.4 Auxiliary Power Unit (APU)

13.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| | (======) (=====) | | | |
|---------------|------------------|---------|-------------|--------------|
| Number of APU | Operation | Exempt | Designation | Manufacturer |
| per Aircraft | Hours for Each | Source? | _ | |
| | LTO | | | |

13.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| |) | (|) | | | | | |
|-------------|------|-----|-----|-----|----|-------|--------|-------------------|
| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
| | Flow | | | | | | | |

13.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year APU_{POL} = APU * OH * LTO * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

14. Aircraft

14.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2028 T-7A Increase Trim Test and Test Cell

- Activity Description:

Starting in 2028, add trim test and engine test cell for 21 T-7As.

- Activity Start Date

Start Month:1Start Year:2028

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.221964 |
| SO _x | 0.072285 |
| NO _x | 1.233454 |
| СО | 3.807975 |
| PM 10 | 0.086592 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.077654 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 218.5 |
| | |

Pollutant

PM 2.5

Pb

NH₃ CO₂e **Emissions Per Year (TONs)**

0.039568

 $\frac{0.000000}{0.000000}$

120.1

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.121136 |
| SO _x | 0.039746 |
| NO _x | 0.660320 |
| СО | 1.921205 |
| PM 10 | 0.044158 |

- Activity Emissions [Test Cell part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | 0.100828 |
| SO _x | 0.032539 |
| NO _x | 0.573135 |
| СО | 1.886770 |
| PM 10 | 0.042434 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.038086 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 98.3 |
| | |

14.2 Aircraft & Engines

14.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

 Aircraft Designation:
 T-7A
 Engine Model:
 F404-GE-102
 Primary Function:
 Trainer
 Aircraft has After burn:
 Yes
 Number of Engines:
 1
- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

14.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

14.3 Flight Operations

14.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|----|
| Number of Aircraft: | 21 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 0 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 1 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 6.8 |
| Takeoff [Military] (mins): | 0.25 |
| Takeoff [After Burn] (mins): | 0.25 |
| Climb Out [Intermediate] (mins): | 1.4 |
| Approach [Approach] (mins): | 4 |
| Taxi/Idle In [Idle] (mins): | 4.4 |

| - Trim Test | |
|----------------------|-------|
| Idle (mins): | 0 |
| Approach (mins): | 4.97 |
| Intermediate (mins): | 10.45 |
| Military (mins): | 6.14 |
| AfterBurn (mins): | 2.04 |

_

14.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)NE: Number of EnginesLTO: Number of Landing and Take-off Cycles (for all aircraft)2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs)

AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

14.4 Auxiliary Power Unit (APU)

14.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

14.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

14.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

14.5 Aircraft Engine Test Cell

14.5.1 Aircraft Engine Test Cell Assumptions

- Engine Test Cell Total Number of Aircraft Engines Tested Annually: 21

- Default Settings Used: Yes

| - Annual Run-ups / Test Durations | |
|---------------------------------------|--------------|
| Annual Run-ups (Per Aircraft Engine): | 1 (default) |
| Idle Duration (mins): | 0 (default) |
| Approach Duration (mins): | 12 (default) |
| Intermediate Duration (mins): | 0 (default) |
| Military Duration (mins): | 8 (default) |
| After Burner Duration (mins): | 2 (default) |
| | |

14.5.2 Aircraft Engine Test Cell Emission Factor(s)

- See Aircraft & Engines Emission Factor(s)

14.5.3 Aircraft Engine Test Cell Formula(s)

- Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs) TestCellPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * ARU / 2000

TestCellPS_{POL}: Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Total Number of Engines (For All Aircraft) ARU: Annual Run-ups (Per Aircraft Engine) 2000: Conversion Factor pounds to TONs

- Aircraft Engine Test Cell Emissions per Year

 $TestCellPS_{IDLE} + TestCellPS_{APPROACH} + TestCellPS_{INTERMEDIATE} + TestCellPS_{MILITARY} + TestCellPS_{AFTERBURN}$

TestCell: Aircraft Engine Test Cell Emissions (TONs) TestCellPS_{IDLE}: Aircraft Engine Test Cell Emissions for Idle Power Setting (TONs) TestCellPS_{APPROACH}: Aircraft Engine Test Cell Emissions for Approach Power Setting (TONs) TestCellPS_{INTERMEDIATE}: Aircraft Engine Test Cell Emissions for Intermediate Power Setting (TONs) TestCellPS_{MILITARY}: Aircraft Engine Test Cell Emissions for Military Power Setting (TONs) TestCellPS_{AFTERBURN}: Aircraft Engine Test Cell Emissions for After Burner Power Setting (TONs)

15. Aircraft

15.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove
- Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2028 T-38C Decrease Trim Test and Test Cell
- Activity Description:

Starting in 2028, remove trim test and engine test cell for 23 T-38Cs.

- Activity Start Date Start Month: 1 Start Year: 2028
- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -0.441333 |
| SO _x | -0.107957 |
| NO _x | -0.314704 |
| СО | -5.605788 |
| PM 10 | -0.118552 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.044035 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -326.3 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.210261 |
| SO _x | -0.054556 |
| NO _x | -0.155328 |
| CO | -2.774568 |
| PM 10 | -0.058050 |

- Activity Emissions [Test Cell part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -0.231073 |
| SO _x | -0.053401 |
| NO _x | -0.159375 |
| CO | -2.831220 |
| PM 10 | -0.060502 |

| t & APU) part : | |
|-------------------|----------------------------------|
| Pollutant | Emissions Per Year (TONs) |
| PM 2.5 | -0.019822 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -164.9 |
| | |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.024212 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -161.4 |
| | |

15.2 Aircraft & Engines

15.2.1 Aircraft & Engines Assumptions

| Aircraft Designation: | T-38C |
|--------------------------|-----------|
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

15.2.2 Aircraft & Engines Emission Factor(s)

| - All chalt & Elignic Elinissions Factors (10/100010 fuci) | | | | | | | | |
|--|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

15.3 Flight Operations

15.3.1 Flight Operations Assumptions

- Flight Operations

| Number of Aircraft: | 23 |
|---|----|
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 0 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 3 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 12.8 |
| Takeoff [Military] (mins): | 0.2 |
| Takeoff [After Burn] (mins): | 0.2 |
| Climb Out [Intermediate] (mins): | 0.9 |
| Approach [Approach] (mins): | 3.8 |
| Taxi/Idle In [Idle] (mins): | 6.4 |

- Trim Test

| Idle (mins): | 0 |
|----------------------|-------|
| Approach (mins): | 4.97 |
| Intermediate (mins): | 10.45 |
| Military (mins): | 6.14 |
| AfterBurn (mins): | 2.04 |

15.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)NE: Number of EnginesTGO: Number of Touch-and-Go Cycles (for all aircraft)2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

15.4 Auxiliary Power Unit (APU)

15.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| | Number of APU | Operation | Exempt | Designation | Manufacturer |
|---|---------------|----------------|---------|-------------|-------------------|
| _ | | operation | Lacmpt | Designation | 1) fullutuetui ei |
| _ | per Aircraft | Hours for Each | Source? | | |
| | per Antran | Hours for Each | Source: | | |
| | - | ITO | | | |
| | | LTO | | | |

15.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----------------|----|-------|--------|-------------------|
| | Flow | | | | | | | |

15.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

15.5 Aircraft Engine Test Cell

15.5.1 Aircraft Engine Test Cell Assumptions

```
- Engine Test Cell
Total Number of Aircraft Engines Tested Annually: 46
```

- Default Settings Used: No

| - Annual Run-ups / Test Durations | |
|---------------------------------------|----|
| Annual Run-ups (Per Aircraft Engine): | 3 |
| Idle Duration (mins): | 0 |
| Approach Duration (mins): | 12 |
| Intermediate Duration (mins): | 0 |
| Military Duration (mins): | 8 |
| After Burner Duration (mins): | 2 |

15.5.2 Aircraft Engine Test Cell Emission Factor(s)

- See Aircraft & Engines Emission Factor(s)

15.5.3 Aircraft Engine Test Cell Formula(s)

- Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)

TestCellPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * ARU / 2000

TestCellPS_{POL}: Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Total Number of Engines (For All Aircraft) ARU: Annual Run-ups (Per Aircraft Engine) 2000: Conversion Factor pounds to TONs

- Aircraft Engine Test Cell Emissions per Year

 $TestCellPS_{IDLE} + TestCellPS_{APPROACH} + TestCellPS_{INTERMEDIATE} + TestCellPS_{MILITARY} + TestCellPS_{AFTERBURN}$

TestCell: Aircraft Engine Test Cell Emissions (TONs) TestCellPS_{IDLE}: Aircraft Engine Test Cell Emissions for Idle Power Setting (TONs) TestCellPS_{APPROACH}: Aircraft Engine Test Cell Emissions for Approach Power Setting (TONs) TestCellPS_{INTERMEDIATE}: Aircraft Engine Test Cell Emissions for Intermediate Power Setting (TONs)

TestCellPS_{MILITARY}: Aircraft Engine Test Cell Emissions for Military Power Setting (TONs) TestCellPS_{AFTERBURN}: Aircraft Engine Test Cell Emissions for After Burner Power Setting (TONs)

16. Aircraft

16.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location Clay, MS; Lowndes, MS; Monroe, MS County: Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2029 T-7A Increase Trim Test and Test Cell

- Activity Description:

Starting in 2029, add trim test and engine test cell for 31 T-7As.

- Activity Start Date Start Month: 1

Start Year: 2029

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.327661 |
| SO _x | 0.106706 |
| NO _x | 1.820814 |
| СО | 5.621297 |
| PM 10 | 0.127826 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.114632 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 322.5 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | | |
|-----------------|----------------------------------|--|--|
| VOC | 0.178820 | | |
| SO _x | 0.058673 | | |
| NO _x | 0.974757 | | |
| СО | 2.836065 | | |
| PM 10 | 0.065185 | | |

- Activity Emissions [Test Cell part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.148841 |
| SO _x | 0.048033 |
| NO _x | 0.846056 |
| СО | 2.785232 |
| PM 10 | 0.062641 |

| PM 2.5 | 0.058410 |
|-------------------|----------|
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 177.3 |
| | |
| | |

Pollutant

Emissions Per Year (TONs)

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.056222 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 145.2 |
| | |

16.2 Aircraft & Engines

16.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine Aircraft Designation: Engine Model: Primary Function: Aircraft has After burn: Number of Engines: | T-7A F404-GE-102 Trainer Yes 1 | | | | | |
|---|--|--|--|--|--|--|
| - Aircraft & Engine Surrogat Is Aircraft & Engine a Su Original Aircraft Name: Original Engine Name: | | | | | | |
| 16.2.2 Aircraft & Engines | Emission Factor(s) | | | | | |
| Aircraft & Engine Emission Proprietary Information. C engine's Emission Factors. | s Factors (lb/1000lb fuel) Contact Air Quality Subject Matter Expert for More Information regarding this | | | | | |
| 16.3 Flight Operations | | | | | | |
| 16.3.1 Flight Operations A | ssumptions | | | | | |
| Number of Annual TGO | | | | | | |
| - Default Settings Used: | lo | | | | | |
| - Flight Operations TIMs (Ti Taxi/Idle Out [Idle] (min Takeoff [Military] (mins) Takeoff [After Burn] (mi Climb Out [Intermediate Approach [Approach] (m Taxi/Idle In [Idle] (mins) | 6.8 : 0.25 ns): 0.25 (mins): 1.4 ins): 4 | | | | | |
| - Trim Test Idle (mins): Approach (mins): Intermediate (mins): Military (mins): AfterBurn (mins): | 0 4.97 10.45 6.14 2.04 | | | | | |
| 16.3.2 Flight Operations F | ormula(s) | | | | | |
| - Aircraft Emissions per Mode for LTOs per Year AEM _{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000 | | | | | | |

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min) 60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

16.4 Auxiliary Power Unit (APU)

16.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

16.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

16.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

16.5 Aircraft Engine Test Cell

16.5.1 Aircraft Engine Test Cell Assumptions

| - Engine Test Cell | |
|---|----|
| Total Number of Aircraft Engines Tested Annually: | 31 |

- Default Settings Used: Yes

| - Annual Run-ups / Test Durations | |
|---------------------------------------|--------------|
| Annual Run-ups (Per Aircraft Engine): | 1 (default) |
| Idle Duration (mins): | 0 (default) |
| Approach Duration (mins): | 12 (default) |
| Intermediate Duration (mins): | 0 (default) |
| Military Duration (mins): | 8 (default) |
| After Burner Duration (mins): | 2 (default) |

16.5.2 Aircraft Engine Test Cell Emission Factor(s)

- See Aircraft & Engines Emission Factor(s)

16.5.3 Aircraft Engine Test Cell Formula(s)

- Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)

 $TestCellPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * ARU / 2000$

TestCellPS_{POL}: Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Total Number of Engines (For All Aircraft)
ARU: Annual Run-ups (Per Aircraft Engine)
2000: Conversion Factor pounds to TONs

- Aircraft Engine Test Cell Emissions per Year

 $TestCellPS_{IDLE} + TestCellPS_{APPROACH} + TestCellPS_{INTERMEDIATE} + TestCellPS_{MILITARY} + TestCellPS_{AFTERBURN}$

TestCell: Aircraft Engine Test Cell Emissions (TONs) TestCellPS_{IDLE}: Aircraft Engine Test Cell Emissions for Idle Power Setting (TONs) TestCellPS_{APPROACH}: Aircraft Engine Test Cell Emissions for Approach Power Setting (TONs) TestCellPS_{INTERMEDIATE}: Aircraft Engine Test Cell Emissions for Intermediate Power Setting (TONs) TestCellPS_{MILITARY}: Aircraft Engine Test Cell Emissions for Military Power Setting (TONs) TestCellPS_{AFTERBURN}: Aircraft Engine Test Cell Emissions for After Burner Power Setting (TONs)

17. Aircraft

17.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2029 T-38C Decrease Trim Test and Test Cell

- Activity Description: Starting in 2029, remove trim test and engine test cell for 45 T-38Cs.

- Activity Start Date Start Month: 1 Start Year: 2029
- Activity End Date Indefinite: Yes End Month: N/A

End Year: N/A

- Activity Emissions:

| Theory Emissi | 0115. |
|-----------------|---------------------------|
| Pollutant | Emissions Per Year (TONs) |
| VOC | -0.863478 |
| SO _x | -0.211221 |
| NO _x | -0.615725 |
| СО | -10.967846 |
| PM 10 | -0.231950 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.086155 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -638.4 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.411379 |
| SO _x | -0.106740 |
| NO _x | -0.303903 |
| СО | -5.428503 |
| PM 10 | -0.113576 |

- Activity Emissions [Test Cell part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -0.452098 |
| SO _x | -0.104481 |
| NO _x | -0.311821 |
| СО | -5.539343 |
| PM 10 | -0.118374 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -0.038783 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -322.6 |
| | |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.047372 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -315.8 |
| | |

17.2 Aircraft & Engines

17.2.1 Aircraft & Engines Assumptions

| T-38C |
|-----------|
| J85-GE-5R |
| Trainer |
| Yes |
| 2 |
| |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

17.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SO _x | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|--------------|-----------|-------|-----------------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

17.3 Flight Operations

17.3.1 Flight Operations Assumptions

| Number of Aircraft: | 45 |
|---|----|
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 0 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 3 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 12.8 |
| Takeoff [Military] (mins): | 0.2 |
| Takeoff [After Burn] (mins): | 0.2 |
| Climb Out [Intermediate] (mins): | 0.9 |
| Approach [Approach] (mins): | 3.8 |
| Taxi/Idle In [Idle] (mins): | 6.4 |

- Trim Test

| Idle (mins): | 0 |
|----------------------|-------|
| Approach (mins): | 4.97 |
| Intermediate (mins): | 10.45 |
| Military (mins): | 6.14 |
| AfterBurn (mins): | 2.04 |

17.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)

60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

17.4 Auxiliary Power Unit (APU)

17.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|-----------------------|---------|-------------|--------------|
| per Aircraft | Hours for Each LTO | Source? | | |

17.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel V Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|---|---------------------------------|-------------------------|---|-----------------|-----------|------------|--------|-------------------|
| 1742 Auxiliany Dower Un | · | mula(| | | | | | |
| 17.4.3 Auxiliary Power Un | II (AFU) FOI | riiruta(| 5) | | | | | |
| - Auxiliary Power Unit (APU) APU _{POL} = APU * OH * LTO * | | er Year | | | | | | |
| APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs) APU: Number of Auxiliary Power Units OH: Operation Hours for Each LTO (hour) LTO: Number of LTOs EF_{POL}: Emission Factor for Pollutant (lb/hr) 2000: Conversion Factor pounds to tons | | | | | | | | |
| 17.5 Aircraft Engine Test | Cell | | | | | | | |
| 17.5.1 Aircraft Engine Tes | t Cell Assum | nptions | 5 | | | | | |
| - Engine Test Cell Total Number of Aircraft | Engines Test | ed Ann | ually: 9 | 0 | | | | |
| - Default Settings Used: Y | es | | | | | | | |
| - Annual Run-ups / Test Dura Annual Run-ups (Per Air Idle Duration (mins): Approach Duration (mins Intermediate Duration (m Military Duration (mins): After Burner Duration (n | craft Engine): s): ains): | 0 (12 0 (8 (| default) default) (default) default) default) default) | | | | | |
| 17.5.2 Aircraft Engine Tes | t Cell Emissi | ion Fa | ctor(s) | | | | | |
| - See Aircraft & Engines Emis | ssion Factor(s | 5) | | | | | | |
| 17.5.3 Aircraft Engine Tes | t Cell Formu | ıla(s) | | | | | | |
| - Aircraft Engine Test Cell En TestCellPS _{POL} = (TD / 60) * (Fo | | | | | (ONs) | | | |
| TestCellPS _{POL} : Aircraft En TD: Test Duration (min) 60: Conversion Factor min | utes to hours | Emissi | ons per Po | llutant & P | ower Sett | ing (TONs) |) | |

60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Total Number of Engines (For All Aircraft)
ARU: Annual Run-ups (Per Aircraft Engine)
2000: Conversion Factor pounds to TONs

- Aircraft Engine Test Cell Emissions per Year

 $TestCell = TestCellPS_{IDLE} + TestCellPS_{APPROACH} + TestCellPS_{INTERMEDIATE} + TestCellPS_{MILITARY} + TestCellPS_{AFTERBURN}$

TestCell: Aircraft Engine Test Cell Emissions (TONs)

TestCellPS_{IDLE}: Aircraft Engine Test Cell Emissions for Idle Power Setting (TONs) TestCellPS_{APPROACH}: Aircraft Engine Test Cell Emissions for Approach Power Setting (TONs) TestCellPS_{INTERMEDIATE}: Aircraft Engine Test Cell Emissions for Intermediate Power Setting (TONs) TestCellPS_{MILITARY}: Aircraft Engine Test Cell Emissions for Military Power Setting (TONs) TestCellPS_{AFTERBURN}: Aircraft Engine Test Cell Emissions for After Burner Power Setting (TONs)

18. Aircraft

18.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location

County: Clay, MS; Lowndes, MS; Monroe, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2030 T-7A Increase Trim Test and Test Cell

- Activity Description:

Starting in 2030, add trim test and engine test cell for 9 T-7As.

- Activity Start Date

Start Month:1Start Year:2030

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.095127 |
| SO _x | 0.030979 |
| NO _x | 0.528623 |
| СО | 1.631989 |
| PM 10 | 0.037111 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.033280 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 93.6 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.051916 |
| SO _x | 0.017034 |
| NO _x | 0.282994 |
| CO | 0.823374 |
| PM 10 | 0.018925 |

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.043212 |
| SO _x | 0.013945 |
| NO _x | 0.245629 |
| CO | 0.808616 |

| t <u>& APU) partj:</u> | |
|----------------------------|----------------------------------|
| Pollutant | Emissions Per Year (TONs) |
| PM 2.5 | 0.016958 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 51.5 |
| | |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.016322 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 42.1 |

| Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name: 8.2.2 Aircraft & Engines Emission Factor(s) Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors. 8.3 Flight Operations 8.3.1 Flight Operations 8.3.1 Flight Operations SHIGH Operations Number of Aircraft: 9 Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [Military] (mins): 0.25 Takeoff [After Burn] (mins): 1.4 Approach [Approach] (mins): 4 Taxi/Idle In [Idle] (mins): 4 Taxi/Idle In [Idle] (mins): 4 Taxi/Idle In [Idle] (mins): 4 Taxi/Idle In [Idle] (mins): 4.4 | PM 10 0.018186 | |
|--|--|---------------------------|
| Aircraft & Engine Aircraft & Engine Aircraft & Engine Mircraft & Engine Model: F404-GE-102 Primary Function: Trainer Aircraft & After burn: Yes Number of Engines: 1 Mircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft & Engine a Surrogate? No Original Aircraft & Engines Emission Factor(s) Mircraft & Engine Emission Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors. 3. Flight Operations Mumber of Aircraft: 9 Number of Aircraft: 9 Number of Aircraft: 9 Number of Aircraft: 0 Number of Aircraft: 0 Number of Aircraft: 0 Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual TGOS (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 0.25 Takeoff [Military] (mins): 0.25 Takeoff [After Burn] (mins): 4.4 Taxi/Idle In [Infermediate] (mins): 4.4 Trim Test Idle (mins): 0 Approach [Approach] (mins): 4.97 Intermediate (mins): 4.94 | .2 Aircraft & Engines | |
| Aircraft & Engine Aircraft Designation: T-7A Engine Model: F404-GE-102 Primary Function: Trainer Aircraft & After burn: Yes Number of Engines: 1 Vircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: 3.2.2 Aircraft & Engines Emission Factor(s) Vircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors. 3.3 Flight Operations 3.3 Flight Operations Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 9 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [Aifter Burn] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4.4 Taxi/Idle In [Idle] (mins): 4.4 Traxi/Idle In [Idle] (mins): 4.4 Traxi/Idle In [Idle] (mins): 4.4 Traxi/Idle In [Idle] (mins): 6.14 | | |
| Aircraft Designation: T-7A Engine Model: F404-GE-102 Primary Function: Traine Aircraft has After burn: Yes Number of Engines: 1 Xircraft & Engine Surrogate Is Aircraft & Engine Surrogate? Is Aircraft & Engine Surrogate? No Original Aircraft Name: Original Legine Name: 32.2 Aircraft & Engines Emission Factor(s) Xircraft & Engine Emissions Factors (b/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors. Bit String Surgate? 3.3 Flight Operations Sa.3 Flight Operations Assumptions 9 Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Tight Operations TIMs (Time In Mode) 6.8 Takeoff [Aiter Burn] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4.4 frim Test Idle (mins): 4.4 Frim Test Idle (mins): | 3.2.1 Aircraft & Engines Assumptions | |
| Engine Model: F404-GE-102 Primary Function: Trainer Aircraft has After burn: Yes Number of Engines: 1 Aircraft & Engine a Surrogate Is Aircraft & Engine a Surrogate? Is Aircraft & Engine a Surrogate? No Original Aircraft & Engines Emission Factor(s) Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Proprietary Information. Solution: 8.3.1 Flight Operations 8.3.1 Flight Operations 8.3.1 Flight Operations (Journamet Context) 9 Number of Annual LTOS (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TGOS (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMS (Time In Mode) Taxi/Idle Out [Idle] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4.4 Trim Test Idle (mins): 4.4 Trim Test Idle (mins): 4.4 | | |
| Primary Function: Trainer Aircraft has After burn: Yes Number of Engines: 1 Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name: 8.2.2 Aircraft & Engine Emission Factors (Ib/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors. 8.3 Flight Operations Sature of Aircraft: 9 Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual LTOs (Couch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) 6.8 Tak/off [After Burn] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4.4 Trim Test Idle (mins): 4.4 Trim Test Idle (mins): 6.4 Military (mins): 0.45 Military (mins): 0.45 Military (mins): 6.14 | | |
| Aircraft has After burn: Yes Number of Engines: 1 Aircraft & Engine a Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft & Engine a Surrogate? No Original Engine Name: 8.2.2 Aircraft & Engine Emission Factor(s) Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors. 8.3 Flight Operations 8.3.1 Flight Operations 8.3.1 Flight Operations 8.3.1 Flight Operations Number of Aircraft: 9 Number of Annual LTOS (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TGOS (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 0.25 Takeoff [After Burn] (mins): 1.4 Approach [Approach] (mins): 4.4 Trim Test Idle (mins): 0 Approach (mins): 4.4 Trim Test Idle (mins): 0.45 Military (mins): 6.14 | | |
| Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name: 8.2.2 Aircraft & Engines Emission Factor(s) Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors. 8.3 Flight Operations 8.3.1 Flight Operations 8.3.1 Flight Operations Sumber of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TGOS (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual TGOS (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Tim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 0.25 Takcoff [After Burn] (mins): 1.4 Approach [Approach] (mins): 4.4 Trim Test Idle (mins): 0 Approach (mins): 4.97 Intermediate (mins): 10.45 Military (mins): 0.45 Military (mins): 0.45 Military (mins): 0.45 Military (mins): 0.45 Military (mins): 0.45 | | |
| Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name: 8.2.2 Aircraft & Engines Emission Factor(s) Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors. 8.3 Flight Operations 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: 9 Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 0.25 Takeoff [After Burn] (mins): 1.4 Approach [Approach] (mins): 4 Taxi/Idle In [Idle] (mins): 44 Taxi/Idle In [Idle] (mins): 44 Taxi/Idle In [Idle] (mins): 44 Mapproach (mins): 4.97 Intermediate (mins): 10.45 Military (mins): 6.14 | Number of Engines: 1 | |
| Original Aircraft Name: Original Engine Name: 8.2.2 Aircraft & Engines Emission Factor(s) Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors. 8.3 Flight Operations 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: 9 Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [After Burn] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4.4 Trim Test Idle (mins): 0 Approach (mins): 4.97 Intermediate (mins): 10.45 Military (mins): 0.45 Military (mins): 0.45 Military (mins): 0.45 | Aircraft & Engine Surrogate | |
| Original Engine Name: 18.2.2 Aircraft & Engines Emission Factor(s) Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors. 18.3.1 Flight Operations 18.3.1 Flight Operations Flight Operations Number of Aircraft: 9 Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [Military] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4.4 Trim Test Idle (mins): 0 Approach (mins): 4.97 Intermediate (mins): 10.45 Military (mins): 6.14 | | |
| 18.2.2 Aircraft & Engines Emission Factor(s) Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors. 18.3 Flight Operations 18.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: 9 Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [Military] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4.4 Trim Test Idle (mins): 0 Approach (mins): 4.4 Trim Test Idle (mins): 0 Approach (mins): 4.97 Intermediate (mins): 10.45 Military (mins): 6.14 | | |
| Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors. 8.3 Flight Operations 8.3.1 Flight Operations Flight Operations Number of Aircraft: 9 Number of Annual LTOS (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TGS (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [After Burn] (mins): 0.25 Takeoff [After Burn] (mins): 1.4 Approach [Approach] (mins): 4.4 Trim Test Idle (mins): 0 Approach (mins): 4.97 Intermediate (mins): 10.45 Military (mins): 6.14 | | |
| Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors. 8.3.1 Flight Operations Flight Operations Assumptions Flight Operations Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TCOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual TCOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [After Burn] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4 Taxi/Idle In [Idle] (mins): 4.4 Trim Test Idle (mins): 0 Approach (mins): 4.97 Intermediate (mins): 10.45 Military (mins): 6.14 | | |
| engine's Emission Factors. 18.3 Flight Operations 18.3.1 Flight Operations Assumptions Flight Operations Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [Military] (mins): 0.25 Takeoff [After Burn] (mins): 1.4 Approach [Approach] (mins): 4.7 Trim Test Idle (mins): 0 Approach (mins): 4.97 Intermediate (mins): 10.45 Military (mins): 6.14 | | nformation regarding this |
| Image: Provide the system of the sy | | normation regulating this |
| 83.1 Flight Operations Assumptions Flight Operations Number of Aircraft: 9 Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 0.25 Takeoff [Military] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4.4 Trim Test Idle (mins): 0 Approach (mins): 4.7 Intermediate (mins): 10.45 Military (mins): 6.14 | 9.3 Elight Onovations | |
| Flight Operations 9 Number of Aircraft: 9 Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) 6.8 Taxi/Idle Out [Idle] (mins): 0.25 Takeoff [Military] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4.4 Trim Test 4.4 Idle (mins): 0 Approach (mins): 4.97 Intermediate (mins): 10.45 Military (mins): 6.14 | | |
| Number of Aircraft:9Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft:0Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft:0Number of Annual Trim Test(s) per Aircraft:1Default Settings Used:NoFlight Operations TIMs (Time In Mode)6.8Taxi/Idle Out [Idle] (mins):6.8Takeoff [Military] (mins):0.25Climb Out [Intermediate] (mins):1.4Approach [Approach] (mins):4.4Trim Test1Idle (mins):0Approach (mins):4.97Intermediate (mins):10.45Military (mins):6.14 | o.o Tingit Operations | |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 0 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) 5 Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [Military] (mins): 0.25 Takeoff [After Burn] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4.4 Trim Test 1 Idle (mins): 0 Approach (mins): 4.97 Intermediate (mins): 10.45 Military (mins): 6.14 | | |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0 Number of Annual Trim Test(s) per Aircraft: 1 Default Settings Used: No Flight Operations TIMs (Time In Mode) 6.8 Taxi/Idle Out [Idle] (mins): 0.25 Takeoff [Military] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4.4 Trim Test 1 Idle (mins): 0 Approach (mins): 4.4 Trim Test 1 Idle (mins): 10.45 Military (mins): 6.14 | 8.3.1 Flight Operations Assumptions Flight Operations | |
| Number of Annual Trim Test(s) per Aircraft:1Default Settings Used:NoFlight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins):6.8Takeoff [Military] (mins):0.25Takeoff [Military] (mins):0.25Climb Out [Intermediate] (mins):1.4Approach [Approach] (mins):4Trim Test4.4Trim Test0Idle (mins):4.4Intermediate (mins):10.45Military (mins):6.14 | 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: | |
| Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [Military] (mins): 0.25 Takeoff [After Burn] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4 Taxi/Idle In [Idle] (mins): 4.4 Trim Test Idle (mins): 4.97 Intermediate (mins): 10.45 Military (mins): 6.14 | 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 0 |
| Taxi/Idle Out [Idle] (mins):6.8Takeoff [Military] (mins):0.25Takeoff [After Burn] (mins):0.25Climb Out [Intermediate] (mins):1.4Approach [Approach] (mins):4Taxi/Idle In [Idle] (mins):4.4Trim Test0Idle (mins):0Approach (mins):4.97Intermediate (mins):10.45Military (mins):6.14 | 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 0 |
| Takeoff [Military] (mins):0.25Takeoff [After Burn] (mins):0.25Climb Out [Intermediate] (mins):1.4Approach [Approach] (mins):4Taxi/Idle In [Idle] (mins):4.4Trim Test0Idle (mins):0Approach (mins):4.97Intermediate (mins):10.45Military (mins):6.14 | 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: | 0 0 |
| Takeoff [After Burn] (mins):0.25Climb Out [Intermediate] (mins):1.4Approach [Approach] (mins):4Taxi/Idle In [Idle] (mins):4.4Trim TestIdle (mins):0Approach (mins):4.97Intermediate (mins):10.45Military (mins):6.14 | 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: Default Settings Used: No Flight Operations TIMs (Time In Mode) | 0 0 |
| Climb Out [Intermediate] (mins):1.4Approach [Approach] (mins):4Taxi/Idle In [Idle] (mins):4.4Trim Test4.4Idle (mins):0Approach (mins):4.97Intermediate (mins):10.45Military (mins):6.14 | 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 | 0 0 |
| Taxi/Idle In [Idle] (mins):4.4Trim Test Idle (mins):0Approach (mins):4.97Intermediate (mins):10.45Military (mins):6.14 | 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [Military] (mins): | 0 0 |
| Trim TestIdle (mins):0Approach (mins):4.97Intermediate (mins):10.45Military (mins):6.14 | 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [Military] (mins): 0.25 Takeoff [After Burn] (mins): | 0 0 |
| Idle (mins): 0 Approach (mins): 4.97 Intermediate (mins): 10.45 Military (mins): 6.14 | 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 0.25 Takeoff [After Burn] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): | 0 0 |
| Approach (mins):4.97Intermediate (mins):10.45Military (mins):6.14 | 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [Military] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4 | 0 0 |
| Intermediate (mins):10.45Military (mins):6.14 | 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [Military] (mins): 0.25 Takeoff [After Burn] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4 Taxi/Idle In [Idle] (mins): 4.4 Trim Test | 0 0 |
| Military (mins): 6.14 | 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [Military] (mins): 0.25 Takeoff [After Burn] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4 Taxi/Idle In [Idle] (mins): 4.4 Trim Test Idle (mins): 0 | 0 0 |
| AfterBurn (mins): 2.04 | 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 6.8 Takeoff [Military] (mins): 0.25 Takeoff [After Burn] (mins): 1.4 Approach [Approach] (mins): 4.4 Trim Test Idle (mins): 0 Approach (mins): 4.97 | 0 0 |
| | 8.3.1 Flight Operations Assumptions Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: Default Settings Used: No Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): 0.25 Takeoff [Military] (mins): 0.25 Climb Out [Intermediate] (mins): 1.4 Approach [Approach] (mins): 4.4 Trim Test Idle (mins): 0 Approach (mins): 10.45 | 0 0 |

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)

AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

18.4 Auxiliary Power Unit (APU)

18.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

18.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SO _x | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-----------------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

18.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year APU_{POL} = APU * OH * LTO * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

18.5 Aircraft Engine Test Cell

18.5.1 Aircraft Engine Test Cell Assumptions

 Engine Test Cell Total Number of Aircraft Engines Tested Annually: 9

- Default Settings Used: Yes

| - Annual Run-ups / Test Durations | |
|---------------------------------------|-------------|
| Annual Run-ups (Per Aircraft Engine): | 1 (default) |
| Idle Duration (mins): | 0 (default) |

| Approach Duration (mins): | 12 (default) |
|-------------------------------|--------------|
| Intermediate Duration (mins): | 0 (default) |
| Military Duration (mins): | 8 (default) |
| After Burner Duration (mins): | 2 (default) |

18.5.2 Aircraft Engine Test Cell Emission Factor(s)

- See Aircraft & Engines Emission Factor(s)

18.5.3 Aircraft Engine Test Cell Formula(s)

- Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)

TestCellPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * ARU / 2000

TestCellPS_{POL}: Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Total Number of Engines (For All Aircraft)
ARU: Annual Run-ups (Per Aircraft Engine)
2000: Conversion Factor pounds to TONs

- Aircraft Engine Test Cell Emissions per Year

 $TestCellPS_{IDLE} + TestCellPS_{APPROACH} + TestCellPS_{INTERMEDIATE} + TestCellPS_{MILITARY} + TestCellPS_{AFTERBURN}$

TestCell: Aircraft Engine Test Cell Emissions (TONs) TestCellPS_{IDLE}: Aircraft Engine Test Cell Emissions for Idle Power Setting (TONs) TestCellPS_{APPROACH}: Aircraft Engine Test Cell Emissions for Approach Power Setting (TONs) TestCellPS_{INTERMEDIATE}: Aircraft Engine Test Cell Emissions for Intermediate Power Setting (TONs) TestCellPS_{MILITARY}: Aircraft Engine Test Cell Emissions for Military Power Setting (TONs) TestCellPS_{AFTERBURN}: Aircraft Engine Test Cell Emissions for After Burner Power Setting (TONs)

19. Aircraft

19.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Clay, MS; Lowndes, MS; Monroe, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2030 T-38C Decrease Trim Test and Test Cell

- Activity Description: Starting in 2030, remove trim test and engine test cell for 17 T-38Cs.

- Activity Start Date Start Month: 1 Start Year: 2030

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.326203 |
| SO _x | -0.079795 |
| NO _x | -0.232607 |
| CO | -4.143408 |
| PM 10 | -0.087626 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.032548 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -241.2 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.155410 |
| SO _x | -0.040324 |
| NO _x | -0.114808 |
| СО | -2.050768 |
| PM 10 | -0.042906 |

- Activity Emissions [Test Cell part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -0.170793 |
| SO _x | -0.039470 |
| NO _x | -0.117799 |
| CO | -2.092641 |
| PM 10 | -0.044719 |

| PM 2.5 | -0.014651 |
|-----------------|-----------|
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO_2e | -121.9 |
| | |
| | |
| | |

Pollutant

DI

Emissions Per Year (TONs)

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.017896 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -119.3 |
| | |

19.2 Aircraft & Engines

19.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

19.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SOx | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|--------------|-----------|-------|------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |

| | | | | 1 | | <u>.</u> | | |
|--|--|--|----------------------------------|----------------------------------|----------------|------------------------|------|------|
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |
| 19.3 Flight (| 19.3 Flight Operations | | | | | | | |
| 19.3.1 Flight | Operations | Assumptio | ns | | | | | |
| Number o Number o | tions f Aircraft: f Annual LT(f Annual TG(f Annual Trir | Os (Touch-a | nd-Go) cyc | | | it: 0 0 3 | | |
| - Default Setti | ngs Used: | No | | | | | | |
| Takeoff [] Takeoff [/ Climb Ou Approach | tions TIMs (7 Out [Idle] (mi Military] (min After Burn] (n t [Intermedia [Approach] (In [Idle] (min | ns): s): nins): te] (mins): mins): | le) | 12.8 0.2 0.9 3.8 6.4 | | | | |
| - Trim Test Idle (mins Approach Intermedi Military (AfterBurn | (mins): ate (mins): mins): | 0 4.97 10.45 6.14 2.04 | | | | | | |
| 19.3.2 Flight | Operations | Formula(s |) | | | | | |
| - Aircraft Em AEM _{POL} = (TI | | | | D / 2000 | | | | |
| TIM: Tim 60: Conve FC: Fuel 1000: Con EF: Emiss NE: Num LTO: Num | Aircraft Emiss e in Mode (mi ersion Factor n Flow Rate (lb/ oversion Factor sion Factor (lb/ ber of Engines nber of Landir oversion Factor | n) ninutes to hou nr) r pounds to 1 (1000lb fuel) ng and Take-0 | urs 000pounds off Cycles (| | ft) | | | |
| - Aircraft Em AE _{LTO} = AEM | | - | | + AEM _{CLIM} | BOUT + AEM_T | AKEOFF | | |

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

19.4 Auxiliary Power Unit (APU)

19.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: No

- Auxiliary Power Unit (APU)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| r | LTO | | | |

19.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----|----|-------|--------|-------------------|
| | Flow | | | | | | | |

19.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

19.5 Aircraft Engine Test Cell

19.5.1 Aircraft Engine Test Cell Assumptions

| - Engine Test Cell | |
|---|----|
| Total Number of Aircraft Engines Tested Annually: | 34 |

- Default Settings Used: Yes

| - Annual Run-ups / Test Durations | |
|---------------------------------------|--------------|
| Annual Run-ups (Per Aircraft Engine): | 3 (default) |
| Idle Duration (mins): | 0 (default) |
| Approach Duration (mins): | 12 (default) |
| Intermediate Duration (mins): | 0 (default) |
| Military Duration (mins): | 8 (default) |
| After Burner Duration (mins): | 2 (default) |

19.5.2 Aircraft Engine Test Cell Emission Factor(s)

- See Aircraft & Engines Emission Factor(s)

19.5.3 Aircraft Engine Test Cell Formula(s)

- Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs) TestCellPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * ARU / 2000

TestCellPS_{POL}: Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Total Number of Engines (For All Aircraft)
ARU: Annual Run-ups (Per Aircraft Engine)
2000: Conversion Factor pounds to TONs

- Aircraft Engine Test Cell Emissions per Year

 $TestCellPS_{IDLE} + TestCellPS_{APPROACH} + TestCellPS_{INTERMEDIATE} + TestCellPS_{MILITARY} + TestCellPS_{AFTERBURN}$

TestCell: Aircraft Engine Test Cell Emissions (TONs) TestCellPS_{IDLE}: Aircraft Engine Test Cell Emissions for Idle Power Setting (TONs) TestCellPS_{APPROACH}: Aircraft Engine Test Cell Emissions for Approach Power Setting (TONs) TestCellPS_{INTERMEDIATE}: Aircraft Engine Test Cell Emissions for Intermediate Power Setting (TONs) TestCellPS_{MILITARY}: Aircraft Engine Test Cell Emissions for Military Power Setting (TONs) TestCellPS_{AFTERBURN}: Aircraft Engine Test Cell Emissions for After Burner Power Setting (TONs)

20. Personnel

20.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location

County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Add 43 personnel

- Activity Description:

Addition of 43 personnel during the T-7A and T-38C transition period. Conservatively assumed all personnel commute daily.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | No |
|-------------|------|
| End Month: | 12 |
| End Year: | 2029 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.190336 |
| SO _x | 0.001295 |
| NO _x | 0.163202 |
| СО | 2.164712 |
| PM 10 | 0.003741 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.003415 |
| Pb | 0.000000 |
| NH ₃ | 0.011726 |
| CO ₂ e | 186.2 |
| | |

20.2 Personnel Assumptions

| - Number of Personnel | |
|-------------------------------------|----|
| Active Duty Personnel: | 43 |
| Civilian Personnel: | 0 |
| Support Contractor Personnel: | 0 |
| Air National Guard (ANG) Personnel: | 0 |
| Reserve Personnel: | 0 |
| | |

- Default Settings Used: Yes

- Average Personnel Round Trip Commute (mile): 20 (default)

| - Personnel Work Schedule | |
|-------------------------------------|----------------------------|
| Active Duty Personnel: | 5 Days Per Week (default) |
| Civilian Personnel: | 5 Days Per Week (default) |
| Support Contractor Personnel: | 5 Days Per Week (default) |
| Air National Guard (ANG) Personnel: | 4 Days Per Week (default) |
| Reserve Personnel: | 4 Days Per Month (default) |
| | |

20.3 Personnel On Road Vehicle Mixture

| - On Road Vehic | le Mixture (%) |
|-----------------|----------------|
|-----------------|----------------|

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|-----|
| POVs | 37.55 | 60.32 | 0 | 0.03 | 0.2 | 0 | 1.9 |
| GOVs | 54.49 | 37.73 | 4.67 | 0 | 0 | 3.11 | 0 |

20.4 Personnel Emission Factor(s)

- On Road Vehicle Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

20.5 Personnel Formula(s)

- Personnel Vehicle Miles Travel for Work Days per Year

 $VMT_P = NP * WD * AC$

VMT_P: Personnel Vehicle Miles Travel (miles/year) NP: Number of Personnel WD: Work Days per Year AC: Average Commute (miles)

- Total Vehicle Miles Travel per Year

 $VMT_{Total} = VMT_{AD} + VMT_{C} + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$

VMT_{Total}: Total Vehicle Miles Travel (miles)
VMT_{AD}: Active Duty Personnel Vehicle Miles Travel (miles)
VMT_C: Civilian Personnel Vehicle Miles Travel (miles)
VMT_{SC}: Support Contractor Personnel Vehicle Miles Travel (miles)
VMT_{ANG}: Air National Guard Personnel Vehicle Miles Travel (miles)
VMT_{AFRC}: Reserve Personnel Vehicle Miles Travel (miles)

- Vehicle Emissions per Year

 $V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs) VMT_{Total}: Total Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Personnel On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

21. Personnel

21.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Remove 74 personnel

- Activity Description:

Net decrease of 74 personnel following T-7A arrival and T-38C withdrawal. Conservatively assumed all personnel commute daily.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.163778 |
| SO _x | -0.001114 |
| NO _x | -0.140430 |
| СО | -1.862659 |
| PM 10 | -0.003219 |

| 21.2 | Personnel Assumptions |
|------|-----------------------|

| - Number of Personnel | |
|-------------------------------------|----|
| Active Duty Personnel: | 74 |
| Civilian Personnel: | 0 |
| Support Contractor Personnel: | 0 |
| Air National Guard (ANG) Personnel: | 0 |
| Reserve Personnel: | 0 |
| | |

- Default Settings Used: Yes

- Average Personnel Round Trip Commute (mile): 20 (default)

| - Personnel Work Schedule | |
|---------------------------|---------------------------|
| Active Duty Personnel: | 5 Days Per Week (default) |
| Civilian Personnel: | 5 Days Per Week (default) |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.002938 |
| Pb | 0.000000 |
| NH ₃ | -0.010089 |
| CO ₂ e | -160.2 |
| | |

Support Contractor Personnel:5 DayAir National Guard (ANG) Personnel:4 DayReserve Personnel:4 Day

5 Days Per Week (default) 4 Days Per Week (default) 4 Days Per Month (default)

21.3 Personnel On Road Vehicle Mixture

- On Road Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|-----|
| POVs | 37.55 | 60.32 | 0 | 0.03 | 0.2 | 0 | 1.9 |
| GOVs | 54.49 | 37.73 | 4.67 | 0 | 0 | 3.11 | 0 |

21.4 Personnel Emission Factor(s)

- On Road Vehicle Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | \mathbf{NH}_3 | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

21.5 Personnel Formula(s)

- Personnel Vehicle Miles Travel for Work Days per Year

 $VMT_P = NP * WD * AC$

VMT_P: Personnel Vehicle Miles Travel (miles/year) NP: Number of Personnel WD: Work Days per Year AC: Average Commute (miles)

- Total Vehicle Miles Travel per Year

 $VMT_{Total} = VMT_{AD} + VMT_{C} + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$

VMT_{Total}: Total Vehicle Miles Travel (miles)
VMT_{AD}: Active Duty Personnel Vehicle Miles Travel (miles)
VMT_c: Civilian Personnel Vehicle Miles Travel (miles)
VMT_{SC}: Support Contractor Personnel Vehicle Miles Travel (miles)
VMT_{ANG}: Air National Guard Personnel Vehicle Miles Travel (miles)
VMT_{AFRC}: Reserve Personnel Vehicle Miles Travel (miles)

- Vehicle Emissions per Year

 $V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{Total}: Total Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Personnel On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

22. Construction / Demolition

22.1 General Information & Timeline Assumptions

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: MILCON: Construct GBTS Facility

- Activity Description:

Construction of the GBTS Facility (33,000 square feet) would occur from July 2025 through August 2027.

Site grading would occur on an area of approximately 3.65 acres (159,000 square feet). Site grading would begin in July 2025 and last approximately 4 months.

Trenching for site utilities would require approximately 300 feet of excavation. A 3-foot trench width for utilities was assumed. Trenching would begin in November 2025 and last approximately 2 months.

Construction of the new GBTS facility would total approximately 33,000 square feet. The height of the GBTS facility was assumed to be 15 feet. Construction would begin in January 2026 and last approximately 18 months.

Architectural coatings would be applied to the facility, totaling 33,000 square feet. Architectural coating application would begin in June 2027 and last approximately 1 month.

Paving for driveways, parking areas, and roadways would occur on an area totaling approximately 2.75 acres (120,000 square feet). Paving would begin July 2027 and last approximately 2 months.

Assumed no materials are required to be hauled on- or off-site; excavated spoils will be used on-site.

The analysis assumes the following: (1) no new emergency generators, or if any were needed for new facilities, their emissions would be offset by removing generators that were supporting T-38C operations; (2) for special vehicles and non-road combustion equipment needed to support T-7A operations/facilities, their operation/emissions would be equally offset by eliminating or reusing vehicles and non-road equipment that were supporting T-38C operations; and (3) T-7A fuel cell maintenance, composite repair, NDI testing, and fuel storage/dispensing operations/emissions would be equally offset by eliminating those corresponding operations/emissions supporting the T-38C operations.

- Activity Start Date

| Start Month: | 7 |
|--------------|------|
| Start Month: | 2025 |

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 8 |
| End Month: | 2027 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|-------------------------------|
| VOC | 0.951152 |
| SO _x | 0.010236 |
| NO _x | 3.131076 |
| СО | 4.538396 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.113029 |
| Pb | 0.000000 |
| NH ₃ | 0.002861 |
| CO ₂ e | 989.0 |

| PM 10 | | 6.458026 | | | | | |
|---|--|--|--|---|---|----|-----------------------|
| 22.1 Site Gradi | ing Phase | | | | | | |
| 22.1.1 Site Gra | ding Phas | e Timeline A | ssumptions | | | | |
| - Phase Start Dat Start Month Start Quarte Start Year: | : 7 | | | | | | |
| - Phase Duration Number of M Number of D | Aonth: 4 | | | | | | |
| 22.1.2 Site Gra | ding Phas | e Assumptio | ns | | | | |
| | to be Grad Iaterial to | | | 159000 0 0 | | | |
| - Site Grading De Default Setti | ngs Used: | - | Yes | | | | |
| Average Day | v(s) worked | per week: | 5 (default) | | | | |
| Average Day | xhaust (def | ault) | × , | | | | |
| | xhaust (def | - | × , | | Number O Equipmen | | urs Per Day |
| - Construction E | <u>xhaust (</u> def Eq | ault) | × , | | Number O Equipmen 1 | | |
| | xhaust (def Eq | 'ault) Juipment Nam | × , | | Equipmen | | urs Per Day |
| - Construction E Graders Compos Other Constructi Rubber Tired Do | xhaust (def Eq site ion Equipmo ozers Compo | Yault) Juipment Nam ent Composite osite | × , | | Equipmen 1 | | 8 |
| - Construction E Graders Compos Other Constructi | xhaust (def Eq site ion Equipmo ozers Compo | Yault) Juipment Nam ent Composite osite | × , | | Equipmen 1 1 | | 8 8 |
| Construction Est Graders Compos Other Constructi Rubber Tired Do Tractors/Loaders Vehicle Exhaus Average Hau Average Hau | xhaust (def Eq site on Equipmo ozers Compo s/Backhoes t aling Truck aling Truck | Yault) Juipment Nam ent Composite osite Composite Composite | ie | 20 (defa ile): 20 (defa | Equipmen | | 8 8 8 8 |
| Construction E Graders Compos Other Constructi Rubber Tired Do Tractors/Loaders - Vehicle Exhaus Average Hau | xhaust (def Eq site on Equipmo ozers Compo s/Backhoes t iling Truck iling Truck iling Truck | Yault) Juipment Name ent Composite osite Composite Composite Composite Capacity (yd Round Trip (Lixture (%) | ³): Commute (m | ile): 20 (defa | Equipmen 1 1 2 uult) uult) | It | 8 8 8 7 |
| Construction Examples Graders Compose Other Construction Rubber Tired Doc Tractors/Loaders Vehicle Exhaus Average Hau Average Hau Average Hau | xhaust (def Eq site on Equipmo ozers Compo s/Backhoes t aling Truck aling Truck | Yault) Juipment Nam ent Composite osite Composite Composite | ie | | Equipmen | t | 8 8 8 8 |
| Construction Examples Graders Compose Other Construction Rubber Tired Doc Tractors/Loaders Vehicle Exhaus Average Hau Average Hau Average Hau POVs Worker Trips | xhaust (def Eq site ton Equipmo ozers Compos/Backhoes t lling Truck lling Truck t Vehicle M LDGV 0 | Yault) Juipment Name ent Composite osite Composite Composite Capacity (yd c Round Trip of Lixture (%) | ie ³): Commute (m <u>HDGV</u> 0 | ile): 20 (defa | Equipmen 1 1 2 ult) ult) LDDT | It | 8 8 8 7 |
| Construction Examples Graders Compose Other Construction Rubber Tired Doc Tractors/Loaders Vehicle Exhaus Average Hau Average Hau Average Hau POVs Worker Trips | xhaust (def Eq Site fon Equipmo ozers Compo s/Backhoes t ling Truck ling Truck ling Truck LDGV 0 | Fault) Juipment Name ent Composite C | ie ³): Commute (m <u>HDGV</u> 0 | ile): 20 (defa | Equipmen 1 1 2 ult) ult) LDDT | t | 8 8 8 7 |
| Construction Examples Graders Compose Other Construction Rubber Tired Doc Tractors/Loaders Vehicle Exhaus Average Hau Average Hau Average Hau Average Hau Average Would the Second Se | xhaust (def Eq in Equipmo ozers Compo s/Backhoes t iling Truck iling Truck t Vehicle M LDGV 0 rker Round /ehicle Mix LDGV | Fault) Juipment Name ent Composite composite Compos | ie ³): Commute (m <u>HDGV</u> 0 | ile): 20 (defa | Equipmen 1 1 2 ult) ult) LDDT | t | 8 8 8 7 |
| Construction Examples Graders Compose Other Construction Rubber Tired Doc Tractors/Loaders Vehicle Exhaus Average Hau Average Hau Average Hau Average Hau Average Wo Worker Trips Average Wo Worker Trips V | xhaust (def Eq site on Equipmo ozers Compo s/Backhoes t lling Truck aling Truck t Vehicle M LDGV 0 rker Round Vehicle Mix | Fault) Juipment Name ent Composite cosite Comp | a a a a a b a a b a c o mute (m b c o mute (m c o ute (mile): | ile): 20 (defa LDDV 0 20 (default) | Equipmen 1 1 2 ult) ult) LDDT 0 | t | 8 8 8 7 7 |

22.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Graders Composite | | | | | | | | |
|-------------------|-----|-----|-----------------|----|-------|--------|-----------------|-------------------|
| | VOC | SOx | NO _x | СО | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |

| Emission Factors | 0.0676 | 0.0014 | 0.3314 | 0.5695 | 0.0147 | 0.0147 | 0.0061 | 132.89 | | |
|--|--------|--------|--------|--------|--------|--------|-----------------|-------------------|--|--|
| Other Construction Equipment Composite | | | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | |
| Emission Factors | 0.0442 | 0.0012 | 0.2021 | 0.3473 | 0.0068 | 0.0068 | 0.0039 | 122.60 | | |
| Rubber Tired Dozers Composite | | | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | |
| Emission Factors | 0.1671 | 0.0024 | 1.0824 | 0.6620 | 0.0418 | 0.0418 | 0.0150 | 239.45 | | |
| Tractors/Loaders/Backhoes Composite | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 | | |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

22.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

 $PM10_{FD} = (20 * ACRE * WD) / 2000$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³) HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³) HC: Average Hauling Truck Capacity (yd³) (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³) HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Vehicle Exhaust On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 $\begin{array}{l} V_{POL}: \mbox{ Vehicle Emissions (TONs)} \\ VMT_{WT}: \mbox{ Worker Trips Vehicle Miles Travel (miles)} \\ 0.002205: \mbox{ Conversion Factor grams to pounds} \\ EF_{POL}: \mbox{ Emission Factor for Pollutant (grams/mile)} \\ VM: \mbox{ Worker Trips On Road Vehicle Mixture (%)} \\ 2000: \mbox{ Conversion Factor pounds to tons} \end{array}$

22.2 Trenching/Excavating Phase

22.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date Start Month: 11 Start Quarter: 1 Start Year: 2025

- Phase Duration Number of Month: 2 Number of Days: 0

22.2.2 Trenching / Excavating Phase Assumptions

| - General Trenching/Excavating Information | |
|--|-----|
| Area of Site to be Trenched/Excavated (ft ²): | 900 |
| Amount of Material to be Hauled On-Site (yd ³): | 0 |
| Amount of Material to be Hauled Off-Site (yd ³): | 0 |

- Trenching Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|---|------------------------|---------------|
| Excavators Composite | 2 | 8 |
| Other General Industrial Equipmen Composite | 1 | 8 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³):20 (default)Average Hauling Truck Round Trip Commute (mile):20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

22.2.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Graders Composite | | | | | | | | |
|-------------------------------------|------------|-------------|-----------------|--------|--------|--------|-----------------|-------------------|
| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
| Emission Factors | 0.0676 | 0.0014 | 0.3314 | 0.5695 | 0.0147 | 0.0147 | 0.0061 | 132.89 |
| Other Construction | Equipment | t Composite | e | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0442 | 0.0012 | 0.2021 | 0.3473 | 0.0068 | 0.0068 | 0.0039 | 122.60 |
| Rubber Tired Dozen | rs Composi | te | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
| Emission Factors | 0.1671 | 0.0024 | 1.0824 | 0.6620 | 0.0418 | 0.0418 | 0.0150 | 239.45 |
| Tractors/Loaders/Backhoes Composite | | | | | | | | |
| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|------------------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

22.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

 $PM10_{FD} = (20 * ACRE * WD) / 2000$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³) HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³) HC: Average Hauling Truck Capacity (yd³) (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³) HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

22.3 Building Construction Phase

22.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date Start Month: 1 Start Quarter: 1 Start Year: 2026

- Phase Duration

Number of Month:18Number of Days:0

22.3.2 Building Construction Phase Assumptions

- General Building Construction Information

| Building Category: | Office or Industrial |
|--------------------------------------|----------------------|
| Area of Building (ft ²): | 33000 |
| Height of Building (ft): | 15 |
| Number of Units: | N/A |

Building Construction Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of | Hours Per Day |
|-------------------------------------|-----------|---------------|
| | Equipment | |
| Cranes Composite | 1 | 6 |
| Forklifts Composite | 2 | 6 |
| Generator Sets Composite | 1 | 8 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |
| Welders Composite | 3 | 8 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

22.3.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Cranes Composite | | | | | | | | |
|-------------------------|---------------------|--------|--------|--------|--------|--------|-----------------|-------------------|
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0680 | 0.0013 | 0.4222 | 0.3737 | 0.0143 | 0.0143 | 0.0061 | 128.77 |
| Forklifts Composite | Forklifts Composite | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
| Emission Factors | 0.0236 | 0.0006 | 0.0859 | 0.2147 | 0.0025 | 0.0025 | 0.0021 | 54.449 |

| Generator Sets Composite | | | | | | | | |
|-------------------------------------|--------|--------|-----------------|--------|--------|--------|-----------------|-------------------|
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
| Emission Factors | 0.0287 | 0.0006 | 0.2329 | 0.2666 | 0.0080 | 0.0080 | 0.0025 | 61.057 |
| Tractors/Loaders/Backhoes Composite | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 |
| Welders Composite | | | | | | | | |
| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
| Emission Factors | 0.0214 | 0.0003 | 0.1373 | 0.1745 | 0.0051 | 0.0051 | 0.0019 | 25.650 |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

22.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)1.25: Conversion Factor Number of Construction Equipment to Number of WorksNE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

VMT_{VT} = BA * BH * (0.38 / 1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VT}: Vender Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

22.4 Architectural Coatings Phase

22.4.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date Start Month: 6 Start Quarter: 1 Start Year: 2027
- Phase Duration Number of Month: 1 Number of Days: 0

22.4.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information Building Category: Non-Residential Total Square Footage (ft²): 33000 Number of Units: N/A
- Architectural Coatings Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

| - Worker Trij | ps Vehicle Mixt | ture (%) |
|---------------|-----------------|----------|
| | | |

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

22.4.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e | | |
|------|---------|---------|-----------------|---------|---------|---------|----|-----------------|-------------------|--|--|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 | | |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 | | |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 | | |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 | | |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 | | |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 | | |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 | | |

22.4.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

 $VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft²)
800: Conversion Factor square feet to man days (1 ft² / 1 man * day)

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft²)
2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)
0.0116: Emission Factor (lb/ft²)
2000: Conversion Factor pounds to tons

22.5 Paving Phase

22.5.1 Paving Phase Timeline Assumptions

```
- Phase Start Date
Start Month: 7
Start Quarter: 1
```

| Start | Year: | 2027 |
|-------|-------|------|
| | | |

- Phase Duration Number of Month: 2 Number of Days: 0

22.5.2 Paving Phase Assumptions

- General Paving Information Paving Area (ft²): 120000
- Paving Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|------------------------------------|------------------------|---------------|
| Cement and Mortar Mixers Composite | 4 | 6 |
| Pavers Composite | 1 | 7 |
| Paving Equipment Composite | 2 | 6 |
| Rollers Composite | 1 | 7 |

- Vehicle Exhaust

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

22.5.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Graders Composite | | | | | | | | | | | |
|--|------------|--------|--------|--------|--------|--------|-----------------|-------------------|--|--|--|
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | |
| Emission Factors | 0.0676 | 0.0014 | 0.3314 | 0.5695 | 0.0147 | 0.0147 | 0.0061 | 132.89 | | | |
| Other Construction Equipment Composite | | | | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | |
| Emission Factors | 0.0442 | 0.0012 | 0.2021 | 0.3473 | 0.0068 | 0.0068 | 0.0039 | 122.60 | | | |
| Rubber Tired Dozer | s Composit | te | | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | | |
| Emission Factors | 0.1671 | 0.0024 | 1.0824 | 0.6620 | 0.0418 | 0.0418 | 0.0150 | 239.45 | | | |
| Tractors/Loaders/Backhoes Composite | | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 | | | |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

Average Hauling Truck Round Trip Commute (mile): 20 (default)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

22.5.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft²)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)
HC: Average Hauling Truck Capacity (yd³)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft²)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)² / acre)

23. Construction / Demolition

23.1 General Information & Timeline Assumptions

- Activity Location

County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: MILCON: Construct UMT Facility

- Activity Description:

Construction of the UMT Facility (12,000 square feet) would occur from July 2025 through August 2027.

Site grading would occur on an area of approximately 0.75 acres (32,500 square feet). Site grading would begin in July 2025 and last approximately 4 months.

Trenching for site utilities would require approximately 500 feet of excavation. A 3-foot trench width for utilities was assumed. Trenching would begin in November 2025 and last approximately 2 months.

Construction of the new UMT facility would total approximately 12,000 square feet. The height of the UMT facility was assumed to be 15 feet. Construction would begin in January 2026 and last approximately 18 months.

Architectural coatings would be applied to the facility, totaling 312,000 square feet. Architectural coating application would begin in June 2027 and last approximately 1 month.

Paving for driveways and roadways would occur on an area totaling approximately 0.2 acres (8,750 square feet). Paving would begin July 2027 and last approximately 2 months.

Assumed no materials are required to be hauled on- or off-site; excavated spoils will be used on-site.

- Activity Start Date

Start Month:7Start Month:2025

- Activity End Date

| maennite: | raise |
|------------|-------|
| End Month: | 8 |
| End Month: | 2027 |

- Activity Emissions: Pollutant Total Emissions (TONs)

Pollutant Total Emissions (TONs)

| VOC | 0.474579 |
|-----------------|----------|
| SO _x | 0.006568 |
| NO _x | 1.680257 |
| CO | 2.695038 |
| PM 10 | 1.382261 |

| PM 2.5 | 0.059107 |
|-------------------|----------|
| Pb | 0.000000 |
| NH ₃ | 0.001602 |
| CO ₂ e | 636.1 |
| | |

23.1 Site Grading Phase

23.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date Start Month: 7 Start Quarter: 1 Start Year: 2025
- Phase Duration Number of Month: 4 Number of Days: 0

23.1.2 Site Grading Phase Assumptions

| - General Site Grading Information | |
|--|-------|
| Area of Site to be Graded (ft ²): | 32500 |
| Amount of Material to be Hauled On-Site (yd ³): | 0 |
| Amount of Material to be Hauled Off-Site (yd ³): | 0 |
| | |

| - Site Grading Default Settings | |
|---------------------------------|-------------|
| Default Settings Used: | Yes |
| Average Day(s) worked per week: | 5 (default) |

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|--|------------------------|---------------|
| Graders Composite | 1 | 6 |
| Other Construction Equipment Composite | 1 | 8 |
| Rubber Tired Dozers Composite | 1 | 6 |
| Tractors/Loaders/Backhoes Composite | 1 | 7 |

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default) Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

23.1.3 Site Grading Phase Emission Factor(s)

| Graders Composite | | | | | | | | |
|-------------------------------------|------------|-------------|--------|--------|--------|--------|-----------------|-------------------|
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
| Emission Factors | 0.0676 | 0.0014 | 0.3314 | 0.5695 | 0.0147 | 0.0147 | 0.0061 | 132.89 |
| Other Construction | Equipment | t Composite | e | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
| Emission Factors | 0.0442 | 0.0012 | 0.2021 | 0.3473 | 0.0068 | 0.0068 | 0.0039 | 122.60 |
| Rubber Tired Dozen | s Composit | te | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
| Emission Factors | 0.1671 | 0.0024 | 1.0824 | 0.6620 | 0.0418 | 0.0418 | 0.0150 | 239.45 |
| Tractors/Loaders/Backhoes Composite | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 |

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

23.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

PM10_{FD} = (20 * ACRE * WD) / 2000

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³) HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³) HC: Average Hauling Truck Capacity (yd³) (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³) HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Vehicle Exhaust On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

23.2 Trenching/Excavating Phase

23.2.1 Trenching / Excavating Phase Timeline Assumptions

| Phase Start Date | |
|------------------|------|
| Start Month: | 11 |
| Start Quarter: | 1 |
| Start Year: | 2025 |

- Phase Duration Number of Month: 2 Number of Days: 0

23.2.2 Trenching / Excavating Phase Assumptions

| - General Trenching/Excavating Information | |
|--|------|
| Area of Site to be Trenched/Excavated (ft ²): | 1500 |
| Amount of Material to be Hauled On-Site (yd ³): | 0 |
| Amount of Material to be Hauled Off-Site (yd ³): | 0 |
| | |

| - Trenching Default Settings | |
|---------------------------------|-------------|
| Default Settings Used: | Yes |
| Average Day(s) worked per week: | 5 (default) |

- Construction Exhaust (default)

| T T T T T T | umber Of quipment | Hours Per Day |
|--------------------|----------------------|---------------|
|--------------------|----------------------|---------------|

| Excavators Composite | 2 | 8 |
|---|---|---|
| Other General Industrial Equipmen Composite | 1 | 8 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |

- Vehicle Exhaust

| Average Hauling Truck Capacity (yd ³): | 20 (default) |
|--|--------------|
| Average Hauling Truck Round Trip Commute (mile): | 20 (default) |

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

23.2.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Graders Composite | | | | | | | | | | |
|--|------------|--------|--------|--------|--------|--------|-----------------|-------------------|--|--|
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | |
| Emission Factors | 0.0676 | 0.0014 | 0.3314 | 0.5695 | 0.0147 | 0.0147 | 0.0061 | 132.89 | | |
| Other Construction Equipment Composite | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | |
| Emission Factors | 0.0442 | 0.0012 | 0.2021 | 0.3473 | 0.0068 | 0.0068 | 0.0039 | 122.60 | | |
| Rubber Tired Dozen | 's Composi | te | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | |
| Emission Factors | 0.1671 | 0.0024 | 1.0824 | 0.6620 | 0.0418 | 0.0418 | 0.0150 | 239.45 | | |
| Tractors/Loaders/Backhoes Composite | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 | | |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

23.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

 $PM10_{FD} = (20 * ACRE * WD) / 2000$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³) HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³) HC: Average Hauling Truck Capacity (yd³) (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³) HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Vehicle Exhaust On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

23.3 Building Construction Phase

1

23.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date Start Month:

| Start Quarter: | 1 |
|----------------|------|
| Start Year: | 2026 |

- Phase Duration

Number of Month: 18 Number of Days: 0

23.3.2 Building Construction Phase Assumptions

- General Building Construction Information

| Office or Industrial |
|----------------------|
| 12000 |
| 15 |
| N/A |
| |

- Building Construction Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|-------------------------------------|------------------------|---------------|
| Cranes Composite | 1 | 4 |
| Forklifts Composite | 2 | 6 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

23.3.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Cranes Composite | | | | | | | | | | | |
|-------------------------|--------|--------|--------|--------|--------|--------|-----------------|-------------------|--|--|--|
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | | |
| Emission Factors | 0.0680 | 0.0013 | 0.4222 | 0.3737 | 0.0143 | 0.0143 | 0.0061 | 128.77 | | | |
| Forklifts Composite | | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | | |

| Emission Factors | 0.0236 | 0.0006 | 0.0859 | 0.2147 | 0.0025 | 0.0025 | 0.0021 | 54.449 | | | |
|-------------------------------------|--------|--------|--------|--------|--------|--------|--------|-------------------|--|--|--|
| Tractors/Loaders/Backhoes Composite | | | | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 | | | |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | inause et () of her fifty Emission Factors (grans, inne) | | | | | | | | | |
|------|--|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|--|
| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e | |
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 | |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 | |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 | |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 | |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 | |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 | |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 | |

23.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

 $VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VT}: Vender Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

23.4 Architectural Coatings Phase

23.4.1 Architectural Coatings Phase Timeline Assumptions

| 6 |
|------|
| 1 |
| 2027 |
| |

- Phase Duration Number of Month: 1 Number of Days: 0

23.4.2 Architectural Coatings Phase Assumptions

| - General Arc Building | hitectural Co Category: | atings Inform Non-Resid | | | | | |
|---------------------------|----------------------------|----------------------------|--------------|--------------|------|------|--|
| Total Squ | are Footage (| ft ²): 12000 | | | | | |
| Number o | of Units: | N/A | | | | | |
| - Architectura | l Coatings De | fault Settings | 1 | | | | |
| Default S | ettings Used: | - | Yes | | | | |
| Average I | Day(s) worked | l per week: | 5 (default) | | | | |
| - Worker Trip | | | | 20 (1.6.10) | | | |
| Average | Worker Roun | d Trip Comm | iute (mile): | 20 (default) | | | |
| - Worker Trip | os Vehicle Mix | xture (%) | | | | | |
| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | |

MC

| DOLL | 5 0.00 | 5 0.00 | 0 | 0 | 0 | 0 | 0 |
|------|---------------|---------------|---|---|---|---|---|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

23.4.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|---------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

23.4.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

 $VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft²)
800: Conversion Factor square feet to man days (1 ft² / 1 man * day)

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft²)
2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)
0.0116: Emission Factor (lb/ft²)
2000: Conversion Factor pounds to tons

23.5 Paving Phase

23.5.1 Paving Phase Timeline Assumptions

```
- Phase Start Date
Start Month: 7
Start Quarter: 1
Start Year: 2027
```

- Phase Duration Number of Month: 2 Number of Days: 0

23.5.2 Paving Phase Assumptions

- General Paving Information

Paving Area (ft²): 8750

- Paving Default Settings

```
Default Settings Used:YesAverage Day(s) worked per week:5 (default)
```

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|-------------------------------------|------------------------|---------------|
| Cement and Mortar Mixers Composite | 4 | 6 |
| Pavers Composite | 1 | 7 |
| Rollers Composite | 1 | 7 |
| Tractors/Loaders/Backhoes Composite | 1 | 7 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

23.5.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Graders Composite | | | | | | | | | |
|-------------------------------------|------------|------------|--------|--------|--------|--------|-----------------|-------------------|--|
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | |
| Emission Factors | 0.0676 | 0.0014 | 0.3314 | 0.5695 | 0.0147 | 0.0147 | 0.0061 | 132.89 | |
| Other Construction | Equipment | t Composit | e | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | |
| Emission Factors | 0.0442 | 0.0012 | 0.2021 | 0.3473 | 0.0068 | 0.0068 | 0.0039 | 122.60 | |
| Rubber Tired Dozen | rs Composi | te | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | |
| Emission Factors | 0.1671 | 0.0024 | 1.0824 | 0.6620 | 0.0418 | 0.0418 | 0.0150 | 239.45 | |
| Tractors/Loaders/Backhoes Composite | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 | |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SOx | NO _x | СО | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|---------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |

| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | 000.008 | 00442.757 |
|------|---------|---------|---------|---------|---------|---------|---------|-----------|
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | 000.054 | 00393.696 |

23.5.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft²)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)
HC: Average Hauling Truck Capacity (yd³)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Vehicle Exhaust On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft²)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)² / acre)

24. Construction / Demolition

24.1 General Information & Timeline Assumptions

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: MILCON: Construct Hush House

- Activity Description:

Construction of the Hush House (24,111 square feet) would occur from November 2025 through November 2026.

Trenching to extend site utilities would require approximately 100 feet of excavation. A 3-foot trench width for utilities was assumed. Trenching would begin in November 2025 and last approximately 1 month.

Construction of the new Hush House would total approximately 24,111 square feet. The height of the Hush House was assumed to be 20 feet. Construction would begin in December 2025 and last approximately 12 months.

Architectural coatings would be applied to the facility, totaling 24,111 square feet. Architectural coating application would begin in November 2026 and last approximately 1 month.

Paving for approach pavements would occur on an area totaling approximately 300 square feet. Paving would begin November 2026 and last approximately 1 months.

Assumed no materials are required to be hauled on- or off-site; excavated spoils will be used on-site.

- Activity Start Date

| Start Month: | 11 |
|--------------|------|
| Start Month: | 2025 |

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 11 |
| End Month: | 2026 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.558724 |
| SO _x | 0.005128 |
| NO _x | 1.550784 |
| CO | 2.357436 |
| PM 10 | 0.056807 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.053680 |
| Pb | 0.000000 |
| NH ₃ | 0.001724 |
| CO ₂ e | 492.5 |
| | |

24.1 Trenching/Excavating Phase

24.1.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date Start Month: 11 Start Quarter: 1 Start Year: 2025

- Phase Duration Number of Month: 1 Number of Days: 0

24.1.2 Trenching / Excavating Phase Assumptions

| - General Trenching/Excavating Information | |
|--|-----|
| Area of Site to be Trenched/Excavated (ft ²): | 300 |
| Amount of Material to be Hauled On-Site (yd ³): | 0 |
| Amount of Material to be Hauled Off-Site (yd ³): | 0 |

| - Trenching Default Settings | |
|---------------------------------|-------------|
| Default Settings Used: | Yes |
| Average Day(s) worked per week: | 5 (default) |

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|---|------------------------|---------------|
| Excavators Composite | 2 | 8 |
| Other General Industrial Equipmen Composite | 1 | 8 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |

- Vehicle Exhaust

| Average Hauling Truck Capacity (yd ³): | 20 (default) |
|--|--------------|
| Average Hauling Truck Round Trip Commute (mile): | 20 (default) |

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

24.1.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.597 | 000.007 | 000.639 | 005.101 | 000.011 | 000.009 | | 000.033 | 00367.095 |
| LDGT | 000.799 | 000.010 | 001.093 | 008.335 | 000.012 | 000.010 | | 000.034 | 00489.953 |

| HDGV | 001.373 | 000.015 | 002.807 | 024.705 | 000.026 | 000.023 | 000.045 | 00760.448 |
|------|---------|---------|---------|---------|---------|---------|---------|-----------|
| LDDV | 000.233 | 000.003 | 000.314 | 003.669 | 000.006 | 000.006 | 000.008 | 00375.756 |
| LDDT | 000.527 | 000.005 | 000.830 | 007.383 | 000.008 | 000.007 | 000.008 | 00585.601 |
| HDDV | 000.773 | 000.014 | 008.040 | 002.706 | 000.363 | 000.334 | 000.028 | 01561.469 |
| MC | 002.788 | 000.008 | 000.733 | 014.953 | 000.027 | 000.024 | 000.050 | 00392.901 |

24.1.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

 $PM10_{FD} = (20 * ACRE * WD) / 2000$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

 $\begin{array}{l} VMT_{VE}: \mbox{ Vehicle Exhaust Vehicle Miles Travel (miles)} \\ HA_{OnSite}: \mbox{ Amount of Material to be Hauled On-Site (yd^3)} \\ HA_{OffSite}: \mbox{ Amount of Material to be Hauled Off-Site (yd^3)} \\ HC: \mbox{ Average Hauling Truck Capacity (yd^3)} \\ (1 / HC): \mbox{ Conversion Factor cubic yards to trips (1 trip / HC yd^3)} \\ HT: \mbox{ Average Hauling Truck Round Trip Commute (mile/trip)} \end{array}$

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

 $\begin{array}{l} V_{POL}: \ Vehicle \ Emissions \ (TONs) \\ VMT_{VE}: \ Vehicle \ Exhaust \ Vehicle \ Miles \ Travel \ (miles) \\ 0.002205: \ Conversion \ Factor \ grams \ to \ pounds \\ EF_{POL}: \ Emission \ Factor \ for \ Pollutant \ (grams/mile) \\ VM: \ Vehicle \ Exhaust \ On \ Road \ Vehicle \ Mixture \ (\%) \\ 2000: \ Conversion \ Factor \ pounds \ to \ tons \end{array}$

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VE}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

24.2 Building Construction Phase

24.2.1 Building Construction Phase Timeline Assumptions

- Phase Start Date Start Month: 12 Start Quarter: 1 Start Year: 2025

- Phase Duration Number of Month: 12 Number of Days: 0

24.2.2 Building Construction Phase Assumptions

- General Building Construction Information

Building Category:Office or IndustrialArea of Building (ft²):24111Height of Building (ft):20Number of Units:N/A

Building Construction Default Settings
 Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|-------------------------------------|------------------------|---------------|
| Cranes Composite | 1 | 6 |
| Forklifts Composite | 2 | 6 |
| Generator Sets Composite | 1 | 8 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |
| Welders Composite | 3 | 8 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| LDGV LDGT HDGV LDDV LDDT HDDV MC |
|----------------------------------|
|----------------------------------|

| POV_{c} 50.00 50.00 0 0 0 0 | |
|-------------------------------|---|
| POVs 50.00 50.00 0 0 0 0 | 0 |

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

| , endor inp | o venicie ivina | (/ U) | | | | | |
|-------------|-----------------|-------|------|------|------|--------|----|
| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

24.2.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Cranes Composite | | | | | | | | |
|---------------------------|------------|---------|--------|--------|--------|--------|--------|-------------------|
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0680 | 0.0013 | 0.4222 | 0.3737 | 0.0143 | 0.0143 | 0.0061 | 128.77 |
| Forklifts Composite | : | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0236 | 0.0006 | 0.0859 | 0.2147 | 0.0025 | 0.0025 | 0.0021 | 54.449 |
| Generator Sets Com | posite | | | | | • | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0287 | 0.0006 | 0.2329 | 0.2666 | 0.0080 | 0.0080 | 0.0025 | 61.057 |
| Tractors/Loaders/Ba | ackhoes Co | mposite | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 |
| Welders Composite | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0214 | 0.0003 | 0.1373 | 0.1745 | 0.0051 | 0.0051 | 0.0019 | 25.650 |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

24.2.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase VMT_{VE} = BA * BH * (0.42 / 1000) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

 $VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VT}: Vender Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

24.3 Architectural Coatings Phase

24.3.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date

| Start Month: | 11 |
|----------------|------|
| Start Quarter: | 1 |
| Start Year: | 2026 |

- Phase Duration

Number of Month: 1 Number of Days: 0

24.3.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information Building Category: Non-Residential Total Square Footage (ft²): 24111 Number of Units: N/A
- Architectural Coatings Default Settings
 Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)
- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

24.3.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | \mathbf{NH}_3 | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

24.3.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

 $VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft²)
800: Conversion Factor square feet to man days (1 ft² / 1 man * day)

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft²)
2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)
0.0116: Emission Factor (lb/ft²)
2000: Conversion Factor pounds to tons

24.4 Paving Phase

24.4.1 Paving Phase Timeline Assumptions

- Phase Start Date Start Month: 11 Start Quarter: 1 Start Year: 2026

- Phase Duration Number of Month: 1 Number of Days: 0

24.4.2 Paving Phase Assumptions

- General Paving Information Paving Area (ft²): 300
- Paving Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|-------------------------------------|------------------------|---------------|
| Cement and Mortar Mixers Composite | 4 | 6 |
| Pavers Composite | 1 | 7 |
| Rollers Composite | 1 | 7 |
| Tractors/Loaders/Backhoes Composite | 1 | 7 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

24.4.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.597 | 000.007 | 000.639 | 005.101 | 000.011 | 000.009 | | 000.033 | 00367.095 |
| LDGT | 000.799 | 000.010 | 001.093 | 008.335 | 000.012 | 000.010 | | 000.034 | 00489.953 |
| HDGV | 001.373 | 000.015 | 002.807 | 024.705 | 000.026 | 000.023 | | 000.045 | 00760.448 |
| LDDV | 000.233 | 000.003 | 000.314 | 003.669 | 000.006 | 000.006 | | 000.008 | 00375.756 |
| LDDT | 000.527 | 000.005 | 000.830 | 007.383 | 000.008 | 000.007 | | 000.008 | 00585.601 |
| HDDV | 000.773 | 000.014 | 008.040 | 002.706 | 000.363 | 000.334 | | 000.028 | 01561.469 |
| MC | 002.788 | 000.008 | 000.733 | 014.953 | 000.027 | 000.024 | | 000.050 | 00392.901 |

24.4.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft²)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)
HC: Average Hauling Truck Capacity (yd³)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft²)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)² / acre)

25. Construction / Demolition

25.1 General Information & Timeline Assumptions

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: MILCON: Construct Aircraft Shelters

- Activity Description:

Construction of 46 aircraft shelters (sunshades) would occur from November 2025 through November 2026.

Demolition would be required for the existing T-38C shelters. Demolition would include removal of approximately 68 sunshades totaling approximately 180,000 square feet. Demolition would begin in November 2025 and last approximately 6 months.

Construction would include installation of 46 sunshades totaling approximately 210,500 square feet. The height of all sunshades was assumed to be 15 feet. Construction would begin in May 2026 and last approximately 7 months.

- Activity Start Date

| Start Month: | 11 |
|--------------|------|
| Start Month: | 2025 |

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 11 |
| End Month: | 2026 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.264204 |
| SO _x | 0.005243 |
| NO _x | 1.652907 |
| СО | 2.202898 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.055859 |
| Pb | 0.000000 |
| NH ₃ | 0.003513 |
| CO ₂ e | 525.3 |

| PM 10 | 0.623968 | | |
|---|---|------------------------|---------------|
| 25.1 Demolition | Phase | | |
| 25.1.1 Demoliti | on Phase Timeline Assumptions | | |
| - Phase Start Dat Start Month: Start Quarter Start Year: | 11 | | |
| - Phase Duration Number of M Number of D | | | |
| 25.1.2 Demoliti | on Phase Assumptions | | |
| | tion Information ling to be demolished (ft ²): 180000 lding to be demolished (ft): 15 | | |
| - Default Settings | Used: Yes | | |
| - Average Day(s) | worked per week: 5 (default) | | |
| - Construction Ex | | | |
| | Equipment Name | Number Of Equipment | Hours Per Day |
| Concrete/Industr | al Saws Composite | 1 | 8 |
| | • | 1 | |
| Rubber Tired Do | zers Composite | 1 | 1 |

- Vehicle Exhaust

| Average Hauling Truck Capacity (yd ³): | 20 (default) |
|--|--------------|
| Average Hauling Truck Round Trip Commute (mile): | 20 (default) |

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

25.1.3 Demolition Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Concrete/Industrial Saws Composite | | | | | | | | | | | |
|------------------------------------|-------------------------------|--------|--------|--------|--------|--------|--------|-------------------|--|--|--|
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | |
| Emission Factors | 0.0336 | 0.0006 | 0.2470 | 0.3705 | 0.0093 | 0.0093 | 0.0030 | 58.539 | | | |
| Rubber Tired Dozen | Rubber Tired Dozers Composite | | | | | | | | | | |

| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | | |
|---|--------|--------|--------|--------|--------|--------|-----------------|-------------------|--|--|--|
| Emission Factors | 0.1671 | 0.0024 | 1.0824 | 0.6620 | 0.0418 | 0.0418 | 0.0150 | 239.45 | | | |
| Tractors/Loaders/Backhoes Composite | | | | | | | | | | | |
| VOC SO _x NO _x CO PM 10 PM 2.5 CH ₄ CO ₂ e | | | | | | | | | | | |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 | | | |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|---------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

25.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

 $PM10_{FD} = (0.00042 * BA * BH) / 2000$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
0.00042: Emission Factor (lb/ft³)
BA: Area of Building to be demolished (ft²)
BH: Height of Building to be demolished (ft)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building being demolish (ft²)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd³)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

25.2 Building Construction Phase

25.2.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

| Start Month: | 5 |
|----------------|------|
| Start Quarter: | 1 |
| Start Year: | 2026 |

- Phase Duration Number of Month: 7 Number of Days: 0

25.2.2 Building Construction Phase Assumptions

- General Building Construction Information

| uon mation |
|----------------------|
| Office or Industrial |
| 210500 |
| 15 |
| N/A |
| |

| - Building Construction Default Settings | |
|--|-------------|
| Default Settings Used: | Yes |
| Average Day(s) worked per week: | 5 (default) |

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|-------------------------------------|------------------------|---------------|
| Cranes Composite | 1 | 6 |
| Forklifts Composite | 2 | 6 |
| Generator Sets Composite | 1 | 8 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |
| Welders Composite | 3 | 8 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

25.2.3 Building Construction Phase Emission Factor(s)

| Construction Exhaust Emission 1 actors (10/10/17) (actually | | | | | | | | | | | |
|---|------------|---------|-----------------|--------|--------|--------|-----------------|-------------------|--|--|--|
| Cranes Composite | | | | | | | | | | | |
| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | | |
| Emission Factors | 0.0680 | 0.0013 | 0.4222 | 0.3737 | 0.0143 | 0.0143 | 0.0061 | 128.77 | | | |
| Forklifts Composite | | | | | | | | | | | |
| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | | |
| Emission Factors | 0.0236 | 0.0006 | 0.0859 | 0.2147 | 0.0025 | 0.0025 | 0.0021 | 54.449 | | | |
| Generator Sets Composite | | | | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | |
| Emission Factors | 0.0287 | 0.0006 | 0.2329 | 0.2666 | 0.0080 | 0.0080 | 0.0025 | 61.057 | | | |
| Tractors/Loaders/B | ackhoes Co | mposite | | | | | | | | | |
| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | | |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 | | | |
| Welders Composite | | | | | | | | | | | |
| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | | |
| Emission Factors | 0.0214 | 0.0003 | 0.1373 | 0.1745 | 0.0051 | 0.0051 | 0.0019 | 25.650 | | | |

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| · emiere L | inina abt et i | or mer int | | 1 1 actors (g | 5 | / | | | |
|------------|----------------|-----------------|-----------------|---------------|---------|---------|----|-----------------|-------------------|
| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

25.2.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

 $VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VT}: Vender Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

26. Construction / Demolition

26.1 General Information & Timeline Assumptions

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: MILCON: Addition to Egress Shop

- Activity Description:

Construction of the addition to the Egress Shop would occur from July 2026 through August 2028.

Construction of the Egress Shop addition would total approximately 4,000 square feet. The height of the addition was assumed to be 20 feet. Construction would begin in July 2026 and last approximately 25 months.

Architectural coatings would be applied to the addition, totaling 4,000 square feet. Architectural coating application would begin in August 2028 and last approximately 1 month.

- Activity Start Date

Start Month:7Start Month:2026

- Activity End Date

Indefinite:FalseEnd Month:8End Month:2028

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.289900 |
| SO _x | 0.005043 |
| NO _x | 1.163443 |
| СО | 2.124393 |
| PM 10 | 0.036831 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.036783 |
| Pb | 0.000000 |
| NH ₃ | 0.001413 |
| CO ₂ e | 485.3 |
| | |

26.1 Building Construction Phase

26.1.1 Building Construction Phase Timeline Assumptions

| Phase Start Date | |
|------------------|------|
| Start Month: | 7 |
| Start Quarter: | 1 |
| Start Year: | 2026 |

- Phase Duration

Number of Month: 25 Number of Days: 0

26.1.2 Building Construction Phase Assumptions

- General Building Construction Information

| Building Category: | Office or Industrial |
|--------------------------------------|----------------------|
| Area of Building (ft ²): | 4000 |
| Height of Building (ft): | 20 |
| Number of Units: | N/A |

Building Construction Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of | Hours Per Day |
|-------------------------------------|-----------|---------------|
| | Equipment | |
| Cranes Composite | 1 | 4 |
| Forklifts Composite | 2 | 6 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

26.1.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Cranes Composite | | | | | | | | | | | | |
|-------------------------|-------------------------------------|--------|-----------------|--------|--------|--------|-----------------|-------------------|--|--|--|--|
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | | | |
| Emission Factors | 0.0680 | 0.0013 | 0.4222 | 0.3737 | 0.0143 | 0.0143 | 0.0061 | 128.77 | | | | |
| Forklifts Composite | | | | | | | | | | | | |
| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | | | |
| Emission Factors | 0.0236 | 0.0006 | 0.0859 | 0.2147 | 0.0025 | 0.0025 | 0.0021 | 54.449 | | | | |
| Tractors/Loaders/B | Tractors/Loaders/Backhoes Composite | | | | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | | |

| Emission Factors 0.033 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 |
|------------------------|--------|--------|--------|--------|--------|--------|--------|
|------------------------|--------|--------|--------|--------|--------|--------|--------|

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

26.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase VMT_{VT} = BA * BH * (0.38 / 1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

 $\begin{array}{l} V_{POL}: \ Vehicle \ Emissions (TONs) \\ VMT_{VT}: \ Vender \ Trips \ Vehicle \ Miles \ Travel (miles) \\ 0.002205: \ Conversion \ Factor \ grams \ to \ pounds \\ EF_{POL}: \ Emission \ Factor \ for \ Pollutant \ (grams/mile) \\ VM: \ Worker \ Trips \ On \ Road \ Vehicle \ Mixture \ (\%) \\ 2000: \ Conversion \ Factor \ pounds \ to \ tons \end{array}$

26.2 Architectural Coatings Phase

26.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date

| Start Month: | 8 |
|----------------|------|
| Start Quarter: | 1 |
| Start Year: | 2028 |

- Phase Duration Number of Month: 1 Number of Days: 0

26.2.2 Architectural Coatings Phase Assumptions

| · General Architectural Coatings Information | | | | | | | |
|--|-----------------|--|--|--|--|--|--|
| Building Category: | Non-Residential | | | | | | |
| Total Square Footage (| $(ft^2):$ 4000 | | | | | | |
| Number of Units: | N/A | | | | | | |

- Architectural Coatings Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

26.2.3 Architectural Coatings Phase Emission Factor(s)

| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|---------|---------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

- Worker Trips Emission Factors (grams/mile)

26.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

 $VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft²)
800: Conversion Factor square feet to man days (1 ft² / 1 man * day)

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft²)
2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)
0.0116: Emission Factor (lb/ft²)
2000: Conversion Factor pounds to tons

27. Construction / Demolition

27.1 General Information & Timeline Assumptions

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: MILCON: Construct Jet Blast Deflectors

- Activity Description:

Construction of the jet blast deflectors would occur from November 2025 through November 2026.

Construction of the deflectors would total approximately 48,000 feet. The height of the deflectors was assumed to be 12 feet. Construction would begin in November 2025 and last approximately 13 months.

- Activity Start Date

Start Month:11Start Month:2025

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 11 |
| End Month: | 2026 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.265030 |
| SO _x | 0.004879 |
| NO _x | 1.502261 |
| CO | 2.241723 |
| PM 10 | 0.051185 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.051022 |
| Pb | 0.000000 |
| NH ₃ | 0.001713 |
| CO ₂ e | 469.5 |
| | |

27.1 Building Construction Phase

27.1.1 Building Construction Phase Timeline Assumptions

| - Phase Start I |
|-----------------|
|-----------------|

| Start Month: | 11 |
|----------------|------|
| Start Quarter: | 1 |
| Start Year: | 2025 |

- Phase Duration

Number of Month: 13 Number of Days: 0

27.1.2 Building Construction Phase Assumptions

General Building Construction Information Building Category: Office or Industrial Area of Building (ft²): 48000 Height of Building (ft): 12 Number of Units: N/A

- Building Construction Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of | Hours Per Day |
|-------------------------------------|-----------|---------------|
| | Equipment | |
| Cranes Composite | 1 | 6 |
| Forklifts Composite | 2 | 6 |
| Generator Sets Composite | 1 | 8 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |
| Welders Composite | 3 | 8 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

| - Vehicle Exhaust Vehicle Mixture (%) | | | | | | | | | |
|---------------------------------------|------|------|------|------|------|--------|----|--|--|
| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC | | |
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 | | |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

27.1.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Cranes Composite | | | | | | | | |
|-------------------------------------|--------|--------|--------|--------|--------|--------|--------|-------------------|
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0680 | 0.0013 | 0.4222 | 0.3737 | 0.0143 | 0.0143 | 0.0061 | 128.77 |
| Forklifts Composite | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0236 | 0.0006 | 0.0859 | 0.2147 | 0.0025 | 0.0025 | 0.0021 | 54.449 |
| Generator Sets Composite | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0287 | 0.0006 | 0.2329 | 0.2666 | 0.0080 | 0.0080 | 0.0025 | 61.057 |
| Tractors/Loaders/Backhoes Composite | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 |
| Welders Composite | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0214 | 0.0003 | 0.1373 | 0.1745 | 0.0051 | 0.0051 | 0.0019 | 25.650 |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

27.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

 $VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

28. Construction / Demolition

28.1 General Information & Timeline Assumptions

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: FSRM: Renovate Building 452 (Hangar 3)

- Activity Description:

Renovation of Hangar 452 would occur from August 2024 through February 2026.

It was assumed 25 percent of the total square footage of the facility (21,024 square feet * 0.25 = 5,256 square feet) would be construction to equate the renovations. Renovations would begin in August 2024 and last approximately 19 months.

It was assumed architectural coatings would be required for the entire facility (21,024 square feet) following the renovations. Architectural coating application would begin in February 2026 and last approximately 1 month.

- Activity Start Date

| Start Month: | 8 |
|--------------|------|
| Start Month: | 2024 |

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 2 |
| End Month: | 2026 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.436750 |
| SO _x | 0.003838 |
| NO _x | 0.965344 |
| СО | 1.619187 |
| PM 10 | 0.032164 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.032123 |
| Pb | 0.000000 |
| NH ₃ | 0.001095 |
| CO ₂ e | 369.5 |
| | |

28.1 Building Construction Phase

28.1.1 Building Construction Phase Timeline Assumptions

| Phase Start Date | |
|------------------|------|
| Start Month: | 8 |
| Start Quarter: | 1 |
| Start Year: | 2024 |

- Phase Duration

Number of Month:19Number of Days:0

28.1.2 Building Construction Phase Assumptions

- General Building Construction Information

| Building Category: | Office or Industrial |
|--------------------------------------|----------------------|
| Area of Building (ft ²): | 5256 |
| Height of Building (ft): | 15 |
| Number of Units: | N/A |

Building Construction Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of | Hours Per Day |
|-------------------------------------|-----------|---------------|
| | Equipment | |
| Cranes Composite | 1 | 4 |
| Forklifts Composite | 2 | 6 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

28.1.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Cranes Composite | | | | | | | | | | |
|-------------------------------------|--------|--------|--------|--------|--------|--------|-----------------|-------------------|--|--|
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | |
| Emission Factors | 0.0715 | 0.0013 | 0.4600 | 0.3758 | 0.0161 | 0.0161 | 0.0064 | 128.78 | | |
| Forklifts Composite | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | |
| Emission Factors | 0.0246 | 0.0006 | 0.0973 | 0.2146 | 0.0029 | 0.0029 | 0.0022 | 54.451 | | |
| Tractors/Loaders/Backhoes Composite | | | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | |

| Emission Factors 0.0348 | 0.0007 | 0.1980 | 0.3589 | 0.0068 | 0.0068 | 0.0031 | 66.875 |
|-------------------------|--------|--------|--------|--------|--------|--------|--------|
|-------------------------|--------|--------|--------|--------|--------|--------|--------|

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

28.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase VMT_{VT} = BA * BH * (0.38 / 1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

 $\begin{array}{l} V_{POL}: \ Vehicle \ Emissions (TONs) \\ VMT_{VT}: \ Vender \ Trips \ Vehicle \ Miles \ Travel (miles) \\ 0.002205: \ Conversion \ Factor \ grams \ to \ pounds \\ EF_{POL}: \ Emission \ Factor \ for \ Pollutant \ (grams/mile) \\ VM: \ Worker \ Trips \ On \ Road \ Vehicle \ Mixture \ (\%) \\ 2000: \ Conversion \ Factor \ pounds \ to \ tons \end{array}$

28.2 Architectural Coatings Phase

28.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date

| Start Month: | 2 |
|----------------|------|
| Start Quarter: | 1 |
| Start Year: | 2026 |

- Phase Duration Number of Month: 1 Number of Days: 0

28.2.2 Architectural Coatings Phase Assumptions

| - General Architectural Co | oatings Information |
|----------------------------|---------------------------|
| Building Category: | Non-Residential |
| Total Square Footage | (ft ²): 21024 |
| Number of Units: | N/A |

- Architectural Coatings Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

28.2.3 Architectural Coatings Phase Emission Factor(s)

| 110 | продінія | | ~ (8 |) | | | | | |
|------|----------|---------|--------------|---------|---------|---------|----|-----------------|-------------------|
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

- Worker Trips Emission Factors (grams/mile)

28.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

 $VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft²)
800: Conversion Factor square feet to man days (1 ft² / 1 man * day)

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft²)
2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)
0.0116: Emission Factor (lb/ft²)
2000: Conversion Factor pounds to tons

29. Construction / Demolition

29.1 General Information & Timeline Assumptions

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: FSRM: Wash Rack Renovation (Building 454)

- Activity Description:

Renovation of Building 454 to relocate the wash rack would occur from August 2024 through September 2025.

It was assumed 25 percent of the total square footage of the facility (13,124 square feet * 0.25 = 3,281 square feet) would be construction to equate the renovations. Renovations would begin in August 2024 and last approximately 14 months.

It was assumed architectural coatings would be required for the entire facility (13,124 square feet) following the renovations. Architectural coatings application would begin in September 2025 and last approximately 1 month.

- Activity Start Date

Start Month:8Start Month:2024

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 9 |
| End Month: | 2025 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.294183 |
| SO _x | 0.002825 |
| NO _x | 0.710509 |
| СО | 1.191602 |
| PM 10 | 0.023672 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.023644 |
| Pb | 0.000000 |
| NH ₃ | 0.000796 |
| CO ₂ e | 271.9 |
| | |

29.1 Building Construction Phase

29.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date Start Month:

Start Month:8Start Quarter:1Start Year:2024

- Phase Duration Number of Month: 14 Number of Days: 0

29.1.2 Building Construction Phase Assumptions

- General Building Construction Information

Building Category:Office or IndustrialArea of Building (ft²):3281Height of Building (ft):15Number of Units:N/A

- Building Construction Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|---------------------|------------------------|---------------|
| Cranes Composite | 1 | 4 |
| Forklifts Composite | 2 | 6 |

| Tractors/Loaders/Backhoes Composite | 1 | 8 |
|-------------------------------------|---|---|

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

29.1.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Cranes Composite | | | | | | | | | | | |
|----------------------------|-------------------------------------|--------|--------|--------|--------|--------|--------|-------------------|--|--|--|
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | |
| Emission Factors | 0.0715 | 0.0013 | 0.4600 | 0.3758 | 0.0161 | 0.0161 | 0.0064 | 128.78 | | | |
| Forklifts Composite | Forklifts Composite | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | |
| Emission Factors | 0.0246 | 0.0006 | 0.0973 | 0.2146 | 0.0029 | 0.0029 | 0.0022 | 54.451 | | | |
| Tractors/Loaders/B | Tractors/Loaders/Backhoes Composite | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | |
| Emission Factors | 0.0348 | 0.0007 | 0.1980 | 0.3589 | 0.0068 | 0.0068 | 0.0031 | 66.875 | | | |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|---------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

29.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

 $VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VT}: Vender Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

29.2 Architectural Coatings Phase

29.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date Start Month: 9 Start Quarter: 1 Start Year: 2025
- Phase Duration Number of Month: 1 Number of Days: 0

29.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information Building Category: Non-Residential Total Square Footage (ft²): 13124 Number of Units: N/A
- Architectural Coatings Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)
- Worker Trips Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

29.2.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|---------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

29.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

 $VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)

PA: Paint Area (ft²)
800: Conversion Factor square feet to man days (1 ft² / 1 man * day)

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft²)
2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)
0.0116: Emission Factor (lb/ft²)
2000: Conversion Factor pounds to tons

30. Construction / Demolition

30.1 General Information & Timeline Assumptions

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: FSRM: Antenna Farm

- Activity Description:

Construction of the antenna farm would occur from August 2024 through December 2024.

It was assumed approximately 5,000 square feet would be trenched and excavated for installation of the antenna farm. Trenching/excavation would begin in August 2024 and last approximately 5 months.

Assumed no materials are required to be hauled on- or off-site; excavated spoils will be used on-site.

- Activity Start Date Start Month: 8 Start Month: 2024

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 12 |
| End Month: | 2024 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.103650 |
| SO _x | 0.002153 |
| NO _x | 0.497117 |
| CO | 0.837771 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.018234 |
| Pb | 0.000000 |
| NH ₃ | 0.000275 |
| CO ₂ e | 203.1 |

| | | 0.266939 | | | | | |
|---|--|--|---|---------------------------------------|-------------------------|----------------|---------------|
| 30.1 Trenc | hing/Excavati | ng Phase | | | | | |
| 30.1.1 Tre | nching / Excav | ating Phase T | imeline A | ssumptions | | | |
| - Phase Star Start M Start Qu Start Ye | onth: 8 uarter: 1 | | | | | | |
| | ation c of Month: 5 c of Days: 0 | | | | | | |
| 30.1.2 Tre | nching / Excav | ating Phase A | ssumption | 18 | | | |
| Area of Amount | renching/Excava Site to be Trenc t of Material to l t of Material to l | hed/Excavated be Hauled On-S | l (ft ²): Site (yd ³): | 5000 0 0 | | | |
| Default | Default Settings Settings Used: e Day(s) worked | • | Yes 5 (default) | | | | |
| - Constructi | on Exhaust (def | ault) uipment Name | | | Number C |)f Ua | ours Per Day |
| | Ľq | uipment ivame | | | Equipmer | | Juis i ei Day |
| | | | | | 2 | | |
| Excavators | Composite | | | | ۷. | | 8 |
| Other Gene | ral Industrial Equ | | site | | 1 | | 8 |
| Other Gene | | | site | | | | |
| Other Gene Tractors/Lo - Vehicle Ex Average Average | ral Industrial Equ aders/Backhoes haust e Hauling Truck e Hauling Truck haust Vehicle M | Composite Capacity (yd ³) Round Trip C |): 'ommute (n | , , , , , , , , , , , , , , , , , , , | 1 1 ult) ult) | | 8 |
| Other Gene Tractors/Lo - Vehicle Ex Average Average - Vehicle Ex | ral Industrial Equ aders/Backhoes haust e Hauling Truck e Hauling Truck | Composite Capacity (yd ³) Round Trip C |): | | 1 1 ult) | HDDV | 8 |
| Other Gene Tractors/Lo - Vehicle Ex Average Average | ral Industrial Equ aders/Backhoes haust e Hauling Truck e Hauling Truck haust Vehicle M | Composite Capacity (yd ³) Round Trip C lixture (%) |): 'ommute (n | nile): 20 (defa | 1 1 ult) ult) | HDDV 100.00 | 8 |
| Other Gene Tractors/Lo - Vehicle Ex Average Average - Vehicle Ex POVs - Worker Tr | ral Industrial Equ baders/Backhoes (haust e Hauling Truck e Hauling Truck haust Vehicle M LDGV 0 | Composite Capacity (yd ³) Round Trip C lixture (%) LDGT 0 |): 'ommute (n <u>HDGV</u> 0 | nile): 20 (defa | l l uult) LDDT | | 8 8 MC |
| Other Gene Tractors/Lo - Vehicle Ex Average Average - Vehicle Ex POVs - Worker Tr Average | ral Industrial Equ baders/Backhoes Haust Hauling Truck Hauling Truck haust Vehicle M LDGV 0 | Composite Capacity (yd ³) Round Trip C LDGT 0 I Trip Commut |): fommute (n HDGV 0 te (mile): | nile): 20 (defa | l l uult) LDDT | | 8 8 MC |
| Other Gene Tractors/Lo - Vehicle Ex Average Average - Vehicle Ex POVs - Worker Tr Average | ral Industrial Equ baders/Backhoes (haust Hauling Truck Hauling Truck haust Vehicle M LDGV 0 'ips Worker Round | Composite Capacity (yd ³) Round Trip C LDGT 0 I Trip Commut |): 'ommute (n <u>HDGV</u> 0 | nile): 20 (defa | l l uult) LDDT | | 8 8 MC |

30.1.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| · · · · · · · · · · · · · · · · · · · | | |
|--|-----------------|-------------------|
| VOC SO _x NO _x CO PM 10 PM 2.5 Pb | NH ₃ | CO ₂ e |

| LDGV | 000.597 | 000.007 | 000.639 | 005.101 | 000.011 | 000.009 | 000.033 | 00367.095 |
|------|---------|---------|---------|---------|---------|---------|-------------|-----------|
| LDGT | 000.799 | 000.010 | 001.093 | 008.335 | 000.012 | 000.010 | 000.034 | 00489.953 |
| HDGV | 001.373 | 000.015 | 002.807 | 024.705 | 000.026 | 000.023 | 000.045 | 00760.448 |
| LDDV | 000.233 | 000.003 | 000.314 | 003.669 | 000.006 | 000.006 | 000.008 | 00375.756 |
| LDDT | 000.527 | 000.005 | 000.830 | 007.383 | 000.008 | 000.007 | 000.008 | 00585.601 |
| HDDV | 000.773 | 000.014 | 008.040 | 002.706 | 000.363 | 000.334 | 000.028 | 01561.469 |
| MC | 002.788 | 000.008 | 000.733 | 014.953 | 000.027 | 000.024 | 000.050 | 00392.901 |

30.1.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

PM10_{FD} = (20 * ACRE * WD) / 2000

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³) HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³) HC: Average Hauling Truck Capacity (yd³) (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³) HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Vehicle Exhaust On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

31. Construction / Demolition

31.1 General Information & Timeline Assumptions

- Activity Location

County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: FSRM: Squadron Operations Buildings Renovations

- Activity Description:

Renovation of the Squadron Operations Buildings (Buildings 216 and 234) would occur from July 2025 through August 2028.

It was assumed 25 percent of the total square footage of Building 216 (26,603 square feet) and Building 234 (13,686 square feet) (40,289 total square feet * 0.25 = 10,072.25 square feet) would be construction to equate the renovations. Renovations would begin in July 2025 and last approximately 34 months.

It was assumed architectural coatings would be required for the entire building area (40,289 square feet) following the renovations. Architectural coatings application would begin in August 2028 and last approximately 1 month.

- Activity Start Date

Start Month:7Start Month:2025

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 8 |
| End Month: | 2028 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.798913 |
| SO _x | 0.006868 |
| NO _x | 1.585700 |
| СО | 2.891207 |
| PM 10 | 0.050214 |

| Pollutant | Total Emissions (TONs) |
|-------------------|-------------------------------|
| PM 2.5 | 0.050138 |
| Pb | 0.000000 |
| NH ₃ | 0.001947 |
| CO ₂ e | 661.2 |
| | |

31.1 Building Construction Phase

31.1.1 Building Construction Phase Timeline Assumptions

| - Phase Start Date | |
|--------------------|------|
| Start Month: | 7 |
| Start Quarter: | 1 |
| Start Year: | 2025 |
| | |

- Phase Duration Number of Month: 34 Number of Days: 0

31.1.2 Building Construction Phase Assumptions

| - General Building Construction Information | | | |
|---|----------------------|--|--|
| Building Category: | Office or Industrial | | |
| Area of Building (ft ²): | 10072.25 | | |
| Height of Building (ft): | 15 | | |
| Number of Units: | N/A | | |

- Building Construction Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|-------------------------------------|------------------------|---------------|
| Cranes Composite | 1 | 4 |
| Forklifts Composite | 2 | 6 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

31.1.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite

| Cranes composite | | | | | | | | |
|------------------|-----|-----|-----|----|-------|--------|-----|-------------------|
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e |

| Emission Factors | 0.0680 | 0.0013 | 0.4222 | 0.3737 | 0.0143 | 0.0143 | 0.0061 | 128.77 |
|-------------------------|-------------------------------------|--------|--------|--------|--------|--------|--------|-------------------|
| Forklifts Composite | Forklifts Composite | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0236 | 0.0006 | 0.0859 | 0.2147 | 0.0025 | 0.0025 | 0.0021 | 54.449 |
| Tractors/Loaders/B | Tractors/Loaders/Backhoes Composite | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

31.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

VMT_{VE} = BA * BH * (0.42 / 1000) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase VMT_{VT} = BA * BH * (0.38 / 1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

31.2 Architectural Coatings Phase

31.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date Start Month: 8 Start Quarter: 1 Start Year: 2028

- Phase Duration Number of Month: 1 Number of Days: 0

31.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information Building Category: Non-Residential Total Square Footage (ft²): 40289 Number of Units: N/A
- Architectural Coatings Default Settings
 Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)
- Worker Trips Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

31.2.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

31.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

 $VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

1: Conversion Factor man days to trips (1 trip / 1 man * day)

WT: Average Worker Round Trip Commute (mile)

PA: Paint Area (ft²)

800: Conversion Factor square feet to man days ($1 \text{ ft}^2 / 1 \text{ man * day}$)

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft²)
2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)
0.0116: Emission Factor (lb/ft²)
2000: Conversion Factor pounds to tons

32. Construction / Demolition

32.1 General Information & Timeline Assumptions

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: FSRM: Airfield Improvements

- Activity Description:

Aircraft improvements would occur from July 2025 through December 2025.

Airfield improvements would occur on an area totaling approximately 720,000 square feet. Improvements would begin in July 2025 and last approximately 6 months.

- Activity Start Date

| Start Month: | 7 |
|--------------|------|
| Start Month: | 2025 |

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 12 |
| End Month: | 2025 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.157002 |
| SO _x | 0.001830 |
| NO _x | 0.775266 |
| CO | 1.040129 |
| PM 10 | 0.041883 |

| Pollutant | Total Emissions (TONs) |
|-------------------|-------------------------------|
| PM 2.5 | 0.041779 |
| Pb | 0.000000 |
| NH ₃ | 0.000618 |
| CO ₂ e | 182.3 |
| | |

32.1 Paving Phase

32.1.1 Paving Phase Timeline Assumptions

- Phase Start Date
 - Start Month:7Start Quarter:1Start Year:2025
- Phase Duration Number of Month: 6 Number of Days: 0

32.1.2 Paving Phase Assumptions

- General Paving Information Paving Area (ft²): 720000
- Paving Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|----------------------------|------------------------|---------------|
| Pavers Composite | 1 | 8 |
| Paving Equipment Composite | 2 | 8 |
| Rollers Composite | 2 | 6 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

32.1.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|---------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.597 | 000.007 | 000.639 | 005.101 | 000.011 | 000.009 | | 000.033 | 00367.095 |
| LDGT | 000.799 | 000.010 | 001.093 | 008.335 | 000.012 | 000.010 | | 000.034 | 00489.953 |
| HDGV | 001.373 | 000.015 | 002.807 | 024.705 | 000.026 | 000.023 | | 000.045 | 00760.448 |
| LDDV | 000.233 | 000.003 | 000.314 | 003.669 | 000.006 | 000.006 | | 000.008 | 00375.756 |
| LDDT | 000.527 | 000.005 | 000.830 | 007.383 | 000.008 | 000.007 | | 000.008 | 00585.601 |
| HDDV | 000.773 | 000.014 | 008.040 | 002.706 | 000.363 | 000.334 | | 000.028 | 01561.469 |
| MC | 002.788 | 000.008 | 000.733 | 014.953 | 000.027 | 000.024 | | 000.050 | 00392.901 |

32.1.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

 $\begin{array}{ll} VMT_{VE}: \mbox{ Vehicle Exhaust Vehicle Miles Travel (miles)} \\ PA: \mbox{ Paving Area (ft^2)} \\ 0.25: \mbox{ Thickness of Paving Area (ft)} \\ (1/27): \mbox{ Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)} \\ HC: \mbox{ Average Hauling Truck Capacity (yd^3)} \\ (1/HC): \mbox{ Conversion Factor cubic yards to trips (1 trip / HC yd^3)} \\ HT: \mbox{ Average Hauling Truck Round Trip Commute (mile/trip)} \end{array}$

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs) VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Vehicle Exhaust On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VE}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft²)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)² / acre)

33. Construction / Demolition

33.1 General Information & Timeline Assumptions

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: FSRM: Trim Pad

- Activity Description:

Construction of a trim pad would occur from August 2025 through February 2026.

Excavation of existing pavement would occur on an area totaling approximately 20,523 square feet. Excavation would begin in August 2025 and last approximately 2 months.

Pavement for the new trim pad would be required for an area totaling approximately 20,523 square feet. Paving would begin in October 2025 and last approximately 5 months.

Assumed no materials are required to be hauled on- or off-site; excavated spoils will be used on-site.

- Activity Start Date Start Month: 8

Start Month: 2025

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 2 |
| End Month: | 2026 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.113845 |
| SO _x | 0.001880 |
| NO _x | 0.568786 |
| CO | 0.932186 |
| PM 10 | 0.427134 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.024167 |
| Pb | 0.000000 |
| NH ₃ | 0.000596 |
| CO ₂ e | 179.1 |
| | |

33.1 Trenching/Excavating Phase

33.1.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date Start Month: 8 Start Quarter: 1

Start Quarter:1Start Year:2025

- Phase Duration

Number of Month: 2 Number of Days: 0

33.1.2 Trenching / Excavating Phase Assumptions

| - General Trenching/Excavating Information | |
|--|-------|
| Area of Site to be Trenched/Excavated (ft ²): | 20253 |
| Amount of Material to be Hauled On-Site (yd ³): | 0 |
| Amount of Material to be Hauled Off-Site (yd ³): | 0 |

- Trenching Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of | Hours Per Day |
|---|-----------|---------------|
| | Equipment | |
| Excavators Composite | 2 | 8 |
| Other General Industrial Equipmen Composite | 1 | 8 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |

- Vehicle Exhaust

| Average Hauling Truck Capacity (yd ³): | 20 (default) |
|--|--------------|
| Average Hauling Truck Round Trip Commute (mile): | 20 (default) |

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

| - Worker Trips Vehicle Mixture (%) | | | | | | | | | |
|------------------------------------|-------|-------|------|------|------|------|----|--|--|
| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC | | |
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 | | |

33.1.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.597 | 000.007 | 000.639 | 005.101 | 000.011 | 000.009 | | 000.033 | 00367.095 |
| LDGT | 000.799 | 000.010 | 001.093 | 008.335 | 000.012 | 000.010 | | 000.034 | 00489.953 |
| HDGV | 001.373 | 000.015 | 002.807 | 024.705 | 000.026 | 000.023 | | 000.045 | 00760.448 |
| LDDV | 000.233 | 000.003 | 000.314 | 003.669 | 000.006 | 000.006 | | 000.008 | 00375.756 |
| LDDT | 000.527 | 000.005 | 000.830 | 007.383 | 000.008 | 000.007 | | 000.008 | 00585.601 |
| HDDV | 000.773 | 000.014 | 008.040 | 002.706 | 000.363 | 000.334 | | 000.028 | 01561.469 |
| MC | 002.788 | 000.008 | 000.733 | 014.953 | 000.027 | 000.024 | | 000.050 | 00392.901 |

33.1.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

PM10_{FD} = (20 * ACRE * WD) / 2000

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs) 20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day) ACRE: Total acres (acres) WD: Number of Total Work Days (days) 2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³) HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³) HC: Average Hauling Truck Capacity (yd³) (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³) HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs) VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Vehicle Exhaust On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

33.2 Paving Phase

33.2.1 Paving Phase Timeline Assumptions

- Phase Start Date

| Start Month: | 10 |
|----------------|------|
| Start Quarter: | 1 |
| Start Year: | 2025 |

- Phase Duration Number of Month: 5 Number of Days: 0

33.2.2 Paving Phase Assumptions

- General Paving Information Paving Area (ft²): 20253
- Paving Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of | Hours Per Day |
|-------------------------------------|-----------|---------------|
| | Equipment | |
| Cement and Mortar Mixers Composite | 4 | 6 |
| Pavers Composite | 1 | 7 |
| Rollers Composite | 1 | 7 |
| Tractors/Loaders/Backhoes Composite | 1 | 7 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

33.2.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.597 | 000.007 | 000.639 | 005.101 | 000.011 | 000.009 | | 000.033 | 00367.095 |
| LDGT | 000.799 | 000.010 | 001.093 | 008.335 | 000.012 | 000.010 | | 000.034 | 00489.953 |
| HDGV | 001.373 | 000.015 | 002.807 | 024.705 | 000.026 | 000.023 | | 000.045 | 00760.448 |
| LDDV | 000.233 | 000.003 | 000.314 | 003.669 | 000.006 | 000.006 | | 000.008 | 00375.756 |
| LDDT | 000.527 | 000.005 | 000.830 | 007.383 | 000.008 | 000.007 | | 000.008 | 00585.601 |
| HDDV | 000.773 | 000.014 | 008.040 | 002.706 | 000.363 | 000.334 | | 000.028 | 01561.469 |
| MC | 002.788 | 000.008 | 000.733 | 014.953 | 000.027 | 000.024 | | 000.050 | 00392.901 |

33.2.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft²)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)
HC: Average Hauling Truck Capacity (yd³)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VE}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft²)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)² / acre)

34. Heating

34.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Heating for New Facilities

- Activity Description:

Heating for new facilities would begin following construction. For the purposes of this analysis, heating was assumed to required starting in January 2029. Heating would be required for the following facilities: GBTS Facility - 33,000 square feet UMT Facility - 12,000 square feet Hush House - 24,111 square feet Addition to the Egress Shop - 4,000 square feet

Total ares to be heated - 73,111 square feet

- Activity Start Date Start Month: 1 Start Year: 2029

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.014227 |
| SO _x | 0.001552 |
| NO _x | 0.258674 |
| CO | 0.217286 |
| PM 10 | 0.019659 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.019659 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 311.4 |
| | |

34.2 Heating Assumptions

- Heating

Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method

Area of floorspace to be heated (ft²): Type of fuel: Type of boiler/furnace: Heat Value (MMBtu/ft³): Energy Intensity (MMBtu/ft²):

73111 Natural Gas Industrial (10 - 250 MMBtu/hr) 0.00105 0.0743

- Default Settings Used: Yes

- Boiler/Furnace Usage Operating Time Per Year (hours): 900 (default)

34.3 Heating Emission Factor(s)

- Heating Emission Factors (lb/1000000 scf)

| VOC | SOx | NOx | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|-----|-----|-----|----|-------|--------|----|-----------------|-------------------|
| 5.5 | 0.6 | 100 | 84 | 7.6 | 7.6 | | | 120390 |

34.4 Heating Formula(s)

- Heating Fuel Consumption ft³ per Year

FC_{HER}= HA * EI / HV / 1000000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method HA: Area of floorspace to be heated (ft²)
EI: Energy Intensity Requirement (MMBtu/ft²)
HV: Heat Value (MMBTU/ft³)
1000000: Conversion Factor

- Heating Emissions per Year

 $HE_{POL}=FC * EF_{POL} / 2000$

HE_{POL}: Heating Emission Emissions (TONs) FC: Fuel Consumption EF_{POL}: Emission Factor for Pollutant 2000: Conversion Factor pounds to tons

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base:COLUMBUS AFBState:MississippiCounty(s):Clay, MS; Lowndes, MS; Monroe, MSRegulatory Area(s):NOT IN A REGULATORY AREA

- b. Action Title: T-7A Recapitalization at Columbus AFB Alternative 3
- c. Project Number/s (if applicable):

d. Projected Action Start Date: 8 / 2024

e. Action Description:

The Proposed Action is recapitalization of the T-38C Talon flight training program at Columbus AFB with T-7A Red Hawk aircraft. Recapitalization would entail introduction of T-7A aircraft and flight operations at Columbus AFB and associated special use airspace to replace all T-38C aircraft assigned to the installation; introduction of nighttime (between 10 a.m. and 7 a.m.) T-7A flight operations; changes to the number of personnel and dependents in the Columbus AFB region; and construction and upgrade of operations, support, and maintenance facilities.

For Alternative 1, Columbus AFB would receive 61 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in 61 T-7A aircraft being delivered to Columbus AFB; however, T-7A operations would be performed at an intensity approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Columbus AFB would receive 77 T-7A aircraft and perform T-7A operations at an intensity identical to Alternative 2. Alternative 3 also incorporates a MILCON project alternative to construct 12 additional shelters for the T-7A aircraft. Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in the EIS provides analysis to evaluate future capacity needs. The No Action Alternative would not implement T-7A recapitalization at Columbus AFB.

f. Point of Contact:

| Name: | Carolyn Hein |
|---------------|--------------|
| Title: | Contractor |
| Organization: | HDR |
| Email: | |
| Phone Number: | |

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

_____ applicable __X__ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all

algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

Analysis Summary:

| 2024 | | | | | | | |
|---------------------|------------------|--------------------------|------------------------|--|--|--|--|
| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | | | | | |
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) | | | | |
| NOT IN A REGULATORY | AREA | | | | | | |
| VOC | 0.205 | 250 | No | | | | |
| NOx | 1.005 | 250 | No | | | | |
| СО | 1.689 | 250 | No | | | | |
| SOx | 0.004 | 250 | No | | | | |
| PM 10 | 0.284 | 250 | No | | | | |
| PM 2.5 | 0.035 | 250 | No | | | | |
| Pb | 0.000 | 25 | No | | | | |
| NH3 | 0.001 | 250 | No | | | | |
| CO2e | 397.5 | | | | | | |

2025

| 2025 | | | | |
|---------------------|------------------|--------------------------|------------------------|--|
| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | | |
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) | |
| NOT IN A REGULATORY | Y AREA | | | |
| VOC | 1.069 | 250 | No | |
| NOx | 4.712 | 250 | No | |
| СО | 7.091 | 250 | No | |
| SOx | 0.017 | 250 | No | |
| PM 10 | 8.445 | 250 | No | |
| PM 2.5 | 0.182 | 250 | No | |
| Pb | 0.000 | 25 | No | |
| NH3 | 0.004 | 250 | No | |
| CO2e | 1603.9 | | | |

2026

| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | |
|--------------------------|------------------|--------------------------|------------------------|
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) |
| NOT IN A REGULATORY AREA | | | |
| VOC | 1.819 | 250 | No |

| NOx | 7.205 | 250 | No |
|--------|--------|-----|----|
| СО | 10.925 | 250 | No |
| SOx | 0.025 | 250 | No |
| PM 10 | 0.623 | 250 | No |
| PM 2.5 | 0.244 | 250 | No |
| Pb | 0.000 | 25 | No |
| NH3 | 0.010 | 250 | No |
| CO2e | 2403.3 | | |

2027

| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | |
|---------------------|------------------|--------------------------|------------------------|
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) |
| NOT IN A REGULATORY | AREA | | |
| VOC | 1.009 | 250 | No |
| NOx | 2.459 | 250 | No |
| CO | 4.117 | 250 | No |
| SOx | 0.009 | 250 | No |
| PM 10 | 0.086 | 250 | No |
| PM 2.5 | 0.086 | 250 | No |
| Pb | 0.000 | 25 | No |
| NH3 | 0.003 | 250 | No |
| CO2e | 886.1 | | |

2028

| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | |
|---------------------|------------------|--------------------------|------------------------|
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) |
| NOT IN A REGULATORY | AREA | | |
| VOC | 27.732 | 250 | No |
| NOx | 68.731 | 250 | No |
| СО | -178.614 | 250 | No |
| SOx | 2.837 | 250 | No |
| PM 10 | -6.004 | 250 | No |
| PM 2.5 | -4.078 | 250 | No |
| Pb | 0.000 | 25 | No |
| NH3 | 0.006 | 250 | No |
| CO2e | 9854.5 | | |

2029

| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | |
|---------------------|------------------|--------------------------|------------------------|
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) |
| NOT IN A REGULATORY | AREA | | |
| VOC | 55.307 | 250 | No |
| NOx | 165.405 | 250 | No |
| CO | -586.455 | 250 | No |
| SOx | 5.580 | 250 | No |
| PM 10 | -18.392 | 250 | No |
| PM 2.5 | -12.624 | 250 | No |
| Pb | 0.000 | 25 | No |
| NH3 | 0.006 | 250 | No |
| CO2e | 20129.2 | | |

| 2030 | | | |
|---------------------|------------------|--------------------------|------------------------|
| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | |
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) |
| NOT IN A REGULATORY | AREA | | |
| VOC | 59.147 | 250 | No |
| NOx | 192.516 | 250 | No |
| СО | -756.158 | 250 | No |
| SOx | 5.891 | 250 | No |
| PM 10 | -23.208 | 250 | No |
| PM 2.5 | -15.972 | 250 | No |
| Pb | 0.000 | 25 | No |
| NH3 | -0.010 | 250 | No |
| CO2e | 21521.5 | | |

2031 - (Steady State)

| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | |
|---------------------|------------------|--------------------------|------------------------|
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) |
| NOT IN A REGULATORY | AREA | | |
| VOC | 59.147 | 250 | No |
| NOx | 192.516 | 250 | No |
| CO | -756.158 | 250 | No |
| SOx | 5.891 | 250 | No |
| PM 10 | -23.208 | 250 | No |
| PM 2.5 | -15.972 | 250 | No |
| Pb | 0.000 | 25 | No |
| NH3 | -0.010 | 250 | No |
| CO2e | 21521.5 | | |

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.

mA

Carolyn Hein, Contractor

2/17/2023 DATE

1. General Information

- Action Location

Base:COLUMBUS AFBState:MississippiCounty(s):Clay, MS; Lowndes, MS; Monroe, MSRegulatory Area(s):NOT IN A REGULATORY AREA

- Action Title: T-7A Recapitalization at Columbus AFB - Alternative 3

- Project Number/s (if applicable):

- Projected Action Start Date: 8 / 2024

- Action Purpose and Need:

The purpose of the Proposed Action is to continue the T-7A recapitalization program by recapitalizing Columbus AFB to prepare pilots to operate the more technologically advanced T-7A aircraft.

The Proposed Action is needed because the current training practices with the older T-38C aircraft fail to prepare pilots for the technological advancements of fourth and fifth generation aircraft. By 2031, more than 60 percent of the Combat Air Force will be comprised of fifth generation aircraft, requiring a modern and capable training platform with capabilities beyond those currently available in the T-38C. Additionally, training systems provided with the newer T-7A aircraft allow for enhanced and improved flight and simulator training. The T-7A recapitalization program will allow DAF to provide more efficient and effective instructor and pilot training for operating fourth and fifth generation aircraft. T-7A recapitalization at Columbus AFB would allow DAF to continue the geographically phased T-7A recapitalization sequence ensuring DAF pilot training requirements are met.

- Action Description:

The Proposed Action is recapitalization of the T-38C Talon flight training program at Columbus AFB with T-7A Red Hawk aircraft. Recapitalization would entail introduction of T-7A aircraft and flight operations at Columbus AFB and associated special use airspace to replace all T-38C aircraft assigned to the installation; introduction of nighttime (between 10 a.m. and 7 a.m.) T-7A flight operations; changes to the number of personnel and dependents in the Columbus AFB region; and construction and upgrade of operations, support, and maintenance facilities.

For Alternative 1, Columbus AFB would receive 61 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in 61 T-7A aircraft being delivered to Columbus AFB; however, T-7A operations would be performed at an intensity approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Columbus AFB would receive 77 T-7A aircraft and perform T-7A operations at an intensity identical to Alternative 2. Alternative 3 also incorporates a MILCON project alternative to construct 12 additional shelters for the T-7A aircraft. Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in the EIS provides analysis to evaluate future capacity needs. The No Action Alternative would not implement T-7A recapitalization at Columbus AFB.

- Point of Contact

| Name: | Carolyn Hein |
|---------------|--------------|
| Title: | Contractor |
| Organization: | HDR |
| Email: | |
| Phone Number: | |

| - Atily | rity List: | |
|---------|---------------------------|---|
| | Activity Type | Activity Title |
| 2. | Aircraft | 2028 Add T-7As and LTOs |
| 3. | Aircraft | 2028 Add T-7A TGOs |
| 4. | Aircraft | 2028 Remove T-38C and LTOs |
| 5. | Aircraft | 2028 Remove T-38C TGOs |
| 6. | Aircraft | 2029 Add T-7As and LTOs |
| 7. | Aircraft | 2029 Add T-7A TGOs |
| 8. | Aircraft | 2029 Remove T-38C and LTOs |
| 9. | Aircraft | 2029 Remove T-38C TGOs |
| 10. | Aircraft | 2030 Add T-7As and LTOs |
| 11. | Aircraft | 2030 Remove T-38C and LTOs |
| 12. | Aircraft | 2030 Remove T-38C TGOs |
| 13. | Aircraft | 2028 T-7A Increase Trim Test and Test Cell |
| 14. | Aircraft | 2028 T-38C Decrease Trim Test and Test Cell |
| 15. | Aircraft | 2029 T-7A Increase Trim Test and Test Cell |
| 16. | Aircraft | 2029 T-38C Decrease Trim Test and Test Cell |
| 17. | Aircraft | 2030 T-7A Increase Trim Test and Test Cell |
| 18. | Aircraft | 2030 T-38C Decrease Trim Test and Test Cell |
| 19. | Personnel | Add 43 personnel |
| 20. | Personnel | Remove 74 personnel |
| 21. | Aircraft | 2030 Add T-7A TGOs |
| 22. | Construction / Demolition | MILCON: Construct GBTS Facility |
| 23. | Construction / Demolition | MILCON: Construct UMT Facility |
| 24. | Construction / Demolition | MILCON: Construct Hush House |
| 25. | Construction / Demolition | MILCON: Construct Aircraft Shelters |
| 26. | Construction / Demolition | MILCON: Addition to Egress Shop |
| 27. | Construction / Demolition | MILCON: Construct Jet Blast Deflectors |
| 28. | Construction / Demolition | FSRM: Renovate Building 452 (Hangar 3) |
| 29. | Construction / Demolition | FSRM: Wash Rack Renovation |
| 30. | Construction / Demolition | FSRM: Antenna Farm |
| 31. | Construction / Demolition | FSRM: Squadron Operations Buildings Renovations |
| 32. | Construction / Demolition | FSRM: Airfield Improvements |
| 33. | Construction / Demolition | FSRM: Trim Pad |
| 34. | Heating | Heating for New Facilities |

- Activity List:

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Aircraft

2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2028 Add T-7As and LTOs
- Activity Description:

Starting in 2028, add 37 T-7As and increase LTOs by 6,379.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 43.845373 |
| SO _x | 2.016759 |
| NO _x | 20.514886 |
| СО | 88.984504 |
| PM 10 | 0.537933 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.477982 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 6094.2 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]

| Pollutant | Emissions Per Year (TONs) | | |
|-----------------|----------------------------------|--|--|
| VOC | 43.845373 | | |
| SO _x | 2.016759 | | |
| NO _x | 20.514886 | | |
| CO | 88.984504 | | |
| PM 10 | 0.537933 | | |

| & APU) part]: | |
|---------------------------|----------------------------------|
| Pollutant | Emissions Per Year (TONs) |
| PM 2.5 | 0.477982 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 6094.2 |
| | |

2.2 Aircraft & Engines

2.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

| Aircraft Designation: | T-7A |
|--------------------------|-------------|
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

2.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

2.3 Flight Operations

2.3.1 Flight Operations Assumptions

- Flight Operations

| Number of Aircraft: | 37 |
|---|------|
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 6379 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 8.475 |
| Takeoff [Military] (mins): | 0.73 |
| Takeoff [After Burn] (mins): | 0.01 |
| Climb Out [Intermediate] (mins): | 0.42 |
| Approach [Approach] (mins): | 4.03 |
| Taxi/Idle In [Idle] (mins): | 8.475 |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

2.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)NE: Number of EnginesTGO: Number of Touch-and-Go Cycles (for all aircraft)2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

2.4 Auxiliary Power Unit (APU)

2.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

2.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

2.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year APU_{POL} = APU * OH * LTO * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

3. Aircraft

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2028 Add T-7A TGOs
- Activity Description: Starting in 2028, increase T-7A TGOs by 14,034.
- Activity Start Date Start Month: 1 Start Year: 2028
- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 6.627546 |
| SO _x | 3.519206 |
| NO _x | 50.175959 |
| CO | 7.322293 |
| PM 10 | 0.378546 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.320309 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 10716.0 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | P |
|-----------------|----------------------------------|-----------------|
| VOC | 6.627546 | PM |
| SO _x | 3.519206 | Pb |
| NO _x | 50.175959 | NH ₃ |
| CO | 7.322293 | CO ₂ |
| PM 10 | 0.378546 | |

| a Al Oj partj. | | |
|-----------------------|----------------------------------|--|
| Pollutant | Emissions Per Year (TONs) | |
| PM 2.5 | 0.320309 | |
| Pb | 0.000000 | |
| NH ₃ | 0.000000 | |
| CO ₂ e | 10716.0 | |
| | | |

3.2 Aircraft & Engines

3.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-------------|
| Aircraft Designation: | T-7A |
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

3.2.2 Aircraft & Engines Emission Factor(s)

Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

3.3 Flight Operations

3.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|-------|
| Number of Aircraft: | 37 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 14034 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| 0 |
|------|
| 0 |
| 0 |
| 3.56 |
| 0 |
| 0 |
| |

- Trim Test Idle (mins): 12 Approach (mins): 27 Intermediate (mins): 9 Military (mins): 9 AfterBurn (mins): 3

3.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

3.4 Auxiliary Power Unit (APU)

3.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

3.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-----------------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

3.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

4. Aircraft

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2028 Remove T-38C and LTOs

- Activity Description:

Starting in 2028, remove 23 T-38Cs and decrease LTOs by 5,889.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -21.206061 |
| SO _x | -1.874064 |
| NO _x | -3.858114 |
| СО | -226.520932 |
| PM 10 | -5.555029 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -4.440584 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -4760.5 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -21.206061 |
| SO _x | -1.874064 |
| NO _x | -3.858114 |
| CO | -226.520932 |
| PM 10 | -5.555029 |

| t & APU) part[: | |
|-------------------|----------------------------------|
| Pollutant | Emissions Per Year (TONs) |
| PM 2.5 | -4.440584 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -4760.5 |
| | |

4.2 Aircraft & Engines

4.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

| Aircraft Designation: | T-38C |
|--------------------------|-----------|
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

4.2.2 Aircraft & Engines Emission Factor(s)

| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|--------------|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

4.3 Flight Operations

4.3.1 Flight Operations Assumptions

| Flight Operations | |
|---|------|
| Number of Aircraft: | 23 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 5889 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 9.175 |
| Takeoff [Military] (mins): | 0.22 |
| Takeoff [After Burn] (mins): | 0.52 |
| Climb Out [Intermediate] (mins): | 0.46 |
| Approach [Approach] (mins): | 3.91 |
| Taxi/Idle In [Idle] (mins): | 9.175 |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

4.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEMPOL: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

4.4 Auxiliary Power Unit (APU)

4.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | _ | |
| - | LTO | | | |

4.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-----|-----|-----------------|----|-------|--------|-------------------|
|-------------|--------------|-----|-----|-----------------|----|-------|--------|-------------------|

4.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year APU_{POL} = APU * OH * LTO * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

5. Aircraft

5.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove
- Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2028 Remove T-38C TGOs

- Activity Description: Starting in 2028, decrease T-38C TGOs by 12,956.

- Activity Start Date Start Month:

| Start N | lonth: | 1 |
|---------|--------|------|
| Start Y | ear: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) | | | |
|-----------------|----------------------------------|--|--|--|
| VOC | -2.201160 | | | |
| SO _x | -0.847209 | | | |
| NO _x | -0.554249 | | | |
| CO | -51.521407 | | | |
| PM 10 | -1.417294 | | | |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.546331 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -2560.6 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (IONS) | | Pollutant | Emissions Per Year (TONS) |
|-----------------|---------------------------|---|-------------------|---------------------------|
| VOC | -2.201160 | | PM 2.5 | -0.546331 |
| SO _x | -0.847209 | | Pb | 0.000000 |
| NO _x | -0.554249 | - | NH ₃ | 0.000000 |
| СО | -51.521407 | | CO ₂ e | -2560.6 |

|--|

5.2 Aircraft & Engines

5.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

 Aircraft Designation: T-38C
 Engine Model: J85-GE-5R
 Primary Function: Trainer
 Aircraft has After burn: Yes
 Number of Engines: 2
- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

5.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|--------------|------------------|-------|-----------------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

5.3 Flight Operations

5.3.1 Flight Operations Assumptions

| - Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: | | | | |
|---|---------------------------------------|---|--|--|
| - Default Settings Used: No | | | | |
| - Flight Operations TIMs (T | 'ime In Mode) | | | |
| Taxi/Idle Out [Idle] (mins): 0 | | | | |
| Takeoff [Military] (mins): | | 0 | | |
| Takeoff [After Burn] (mins): 0 | | 0 | | |
| Climb Out [Intermediat | Climb Out [Intermediate] (mins): 3.56 | | | |
| Approach [Approach] (| mins): | 0 | | |
| Taxi/Idle In [Idle] (mins | Taxi/Idle In [Idle] (mins):0 | | | |
| - Trim Test | | | | |
| Idle (mins): | 12 | | | |
| Approach (mins): | 27 | | | |
| Intermediate (mins): | 9 | | | |
| Military (mins): | 9 | | | |
| AfterBurn (mins): | 3 | | | |

5.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60)^{*} (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

5.4 Auxiliary Power Unit (APU)

5.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

5.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation Fuel Flow | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|--------------------------|-----|-----|-----|----|-------|--------|-------------------|
|--------------------------|-----|-----|-----|----|-------|--------|-------------------|

5.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

6. Aircraft

6.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Clay, MS; Lowndes, MS; Monroe, MS

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2029 Add T-7As and LTOs

- Activity Description:

Starting in 2029, add 31 T-7As and increase LTOs by 9,417.

- Activity Start Date Start Month: 1 Start Year: 2029
- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 64.726741 |
| SO _x | 2.977240 |
| NO _x | 30.285105 |
| СО | 131.363392 |
| PM 10 | 0.794124 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.705622 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 8996.6 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | 64.726741 | PM 2.5 | 0.705622 |
| SO _x | 2.977240 | Pb | 0.000000 |
| NO _x | 30.285105 | NH ₃ | 0.000000 |
| CO | 131.363392 | CO ₂ e | 8996.6 |
| PM 10 | 0.794124 | | |

6.2 Aircraft & Engines

6.2.1 Aircraft & Engines Assumptions

| Aircraft & Engine | |
|--------------------------|-------------|
| Aircraft Designation: | T-7A |
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

6.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

6.3 Flight Operations

6.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|------|
| Number of Aircraft: | 31 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 9417 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| Flight Operations TIMs (Time In Mode) | |
|---------------------------------------|-------|
| Taxi/Idle Out [Idle] (mins): | 8.475 |
| Takeoff [Military] (mins): | 0.73 |
| Takeoff [After Burn] (mins): | 0.01 |
| Climb Out [Intermediate] (mins): | 0.42 |
| Approach [Approach] (mins): | 4.03 |
| Taxi/Idle In [Idle] (mins): | 8.475 |
| | |

| - Trim Test | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

6.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

6.4 Auxiliary Power Unit (APU)

6.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

6.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

| - Auxiliary Power Unit (APU) Emission Factor (10/11) | | | | | | | | |
|--|-------|-------|-------|-------|-------|--------|--------|-------------------|
| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
| | Flow | | | | | | | |
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

6.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

7. Aircraft

7.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2029 Add T-7A TGOs
- Activity Description: Starting in 2029, increase T-7A TGOs by 20,717.
- Activity Start Date

Start Month:1Start Year:2029

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) | | Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|---|-------------------|----------------------------------|
| VOC | 9.783588 | Р | M 2.5 | 0.472840 |
| SO _x | 5.195054 | Р | 'b | 0.000000 |
| NO _x | 74.069783 | N | JH3 | 0.000000 |
| СО | 10.809174 | C | CO ₂ e | 15818.9 |
| PM 10 | 0.558811 | | | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------|----------------------------------|-----------|----------------------------------|
| VOC | 9.783588 | PM 2.5 | 0.472840 |

| SO _x | 5.195054 |
|-----------------|-----------|
| NO _x | 74.069783 |
| СО | 10.809174 |
| PM 10 | 0.558811 |

| Pb | 0.000000 |
|-------------------|----------|
| NH ₃ | 0.000000 |
| CO ₂ e | 15818.9 |
| | |

7.2 Aircraft & Engines

7.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

| Aircraft Designation: | T-7A |
|--------------------------|-------------|
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

7.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

7.3 Flight Operations

7.3.1 Flight Operations Assumptions

| - Flight Operations Number of Aircraft: | | 31 |
|--|--|-------|
| Number of Annual LT | Os (Landing and Take-off) cycles for all Aircraft: | 20717 |
| Number of Annual TO | GOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Tr | im Test(s) per Aircraft: | 0 |
| - Default Settings Used: | No | |

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 0 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 3.56 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

| - Trim Test | |
|-------------|--|
|-------------|--|

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

7.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

7.4 Auxiliary Power Unit (APU)

7.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

7.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

7.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

8. Aircraft

8.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Clay, MS; Lowndes, MS; Monroe, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2029 Remove T-38C and LTOs

- Activity Description:

Starting in 2029, remove 45 T-38Cs and decrease LTOs by 11,521.

- Activity Start Date

Start Month: 1 Start Year: 2029

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -41.486675 |
| SO _x | -3.666342 |
| NO _x | -7.547858 |
| СО | -443.156335 |
| PM 10 | -10.867632 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -8.687378 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -9313.3 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | -41.486675 | PM 2.5 | -8.687378 |
| SO _x | -3.666342 | Pb | 0.000000 |
| NO _x | -7.547858 | NH ₃ | 0.000000 |
| CO | -443.156335 | CO ₂ e | -9313.3 |
| PM 10 | -10.867632 | | |

8.2 Aircraft & Engines

8.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

8.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SO _x | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|------|-----------|-------|-----------------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |

| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
|--------------|---------|------|------|------|--------|------|------|------|
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

8.3 Flight Operations

8.3.1 Flight Operations Assumptions

| - Flight Operations | | |
|--------------------------|--|-------|
| Number of Aircraft: | | 45 |
| Number of Annual L | Os (Landing and Take-off) cycles for all Aircraft: | 11521 |
| Number of Annual TO | GOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Tr | im Test(s) per Aircraft: | 0 |
| - Default Settings Used: | No | |

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 9.175 |
| Takeoff [Military] (mins): | 0.22 |
| Takeoff [After Burn] (mins): | 0.52 |
| Climb Out [Intermediate] (mins): | 0.46 |
| Approach [Approach] (mins): | 3.91 |
| Taxi/Idle In [Idle] (mins): | 9.175 |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

8.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs)

AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

8.4 Auxiliary Power Unit (APU)

8.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

8.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|--------------------------|-----|-----|-----------------|----|-------|--------|-------------------|
|--------------------------|-----|-----|-----------------|----|-------|--------|-------------------|

8.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

9. Aircraft

9.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove
- Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2029 Remove T-38C TGOs
- Activity Description: Starting in 2029, decrease T-38C TGOs by 25,346.
- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2029 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -4.306160 |
| SO _x | -1.657407 |
| NO _x | -1.084285 |
| СО | -100.792034 |
| PM 10 | -2.772672 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -1.068795 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -5009.4 |
| | |

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|---------------------------|
| VOC | -4.306160 | PM 2.5 | -1.068795 |
| SO _x | -1.657407 | Pb | 0.000000 |
| NO _x | -1.084285 | NH ₃ | 0.000000 |
| СО | -100.792034 | CO ₂ e | -5009.4 |
| PM 10 | -2.772672 | | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

9.2 Aircraft & Engines

9.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |
| 0 | |

| - Aircraft & Engine Surrogate | |
|-----------------------------------|----|
| Is Aircraft & Engine a Surrogate? | No |
| Original Aircraft Name: | |
| Original Engine Name: | |

9.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| The chart of Englise Emissions Factors (16/100016 Factor) | | | | | | | | |
|---|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

9.3 Flight Operations

9.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|-------|
| Number of Aircraft: | 45 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 25346 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 0 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 3.56 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

| - Trim Test | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

9.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

9.4 Auxiliary Power Unit (APU)

9.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

9.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| | <i>c)</i> ===== | | ·) | | | | | |
|-------------|-----------------|-----|-----|-----|----|-------|--------|-------------------|
| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
| | Flow | | | | | | | |

9.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

10. Aircraft

10.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location County: Clay, MS; Lowndes, MS; Monroe, MS Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2030 Add T-7As and LTOs
- Activity Description: Starting in 2030, add 9 T-7As and increase LTOs by 2,734.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) | |
|-----------------|---------------------------|--|
| VOC | 18.791856 | |
| SO _x | 0.864370 | |
| NO _x | 8.792553 | |
| СО | 38.138209 | |
| PM 10 | 0.230555 | |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.204860 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 2612.0 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|---------------------------|
| VOC | 18.791856 | PM 2.5 | 0.204860 |
| SO _x | 0.864370 | Pb | 0.000000 |
| NO _x | 8.792553 | NH ₃ | 0.000000 |
| СО | 38.138209 | CO ₂ e | 2612.0 |
| PM 10 | 0.230555 | | |

10.2 Aircraft & Engines

10.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

| Aircraft Designation: | T-7A |
|--------------------------|-------------|
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

10.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

10.3 Flight Operations

10.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|------|
| Number of Aircraft: | 9 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 2734 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |
| | |

- Default Settings Used: No

| Flight Operations TIMs (Time In Mode) | |
|---|------------------------------|
| Taxi/Idle Out [Idle] (mins): | 8.475 |
| Takeoff [Military] (mins): | 0.73 |
| Takeoff [After Burn] (mins): | 0.01 |
| Climb Out [Intermediate] (mins): | 0.42 |
| Approach [Approach] (mins): | 4.03 |
| Taxi/Idle In [Idle] (mins): | 8.475 |
| Takeoff [Military] (mins): Takeoff [After Burn] (mins): Climb Out [Intermediate] (mins): Approach [Approach] (mins): | 0.73 0.01 0.42 4.03 |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

10.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs)

AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

10.4 Auxiliary Power Unit (APU)

10.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

10.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

| - Auxiliary Power Unit (APU) Emission Factor (lb/hr) | - Auxiliary | Power | Unit (| (APU) | Emission | Factor (| (lb/hr) |) |
|--|-------------|-------|--------|-------|----------|----------|---------|---|
|--|-------------|-------|--------|-------|----------|----------|---------|---|

| Designation | Fuel Flow | VOC | SOx | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

10.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

11. Aircraft

11.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove
- Activity Location

County: Clay, MS; Lowndes, MS; Monroe, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2030 Remove T-38C and LTOs
- Activity Description:

Starting in 2030, remove 17 T-38Cs and decrease LTOs by 4,353.

- Activity Start Date

Start Month:1Start Year:2030

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -15.674985 |
| SO _x | -1.385260 |
| NO _x | -2.851821 |

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| PM 2.5 | -3.282368 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |

| СО | -167.438549 |
|-------|-------------|
| PM 10 | -4.106137 |

| CO ₂ e | -3518.9 | |
|-------------------|---------|--|
| | | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -15.674985 |
| SO _x | -1.385260 |
| NO _x | -2.851821 |
| CO | -167.438549 |
| PM 10 | -4.106137 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -3.282368 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -3518.9 |
| | |

11.2 Aircraft & Engines

11.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

| Aircraft Designation: | T-38C |
|--------------------------|-----------|
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

11.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SOx | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|--------------|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

11.3 Flight Operations

11.3.1 Flight Operations Assumptions

Flight Operations

 Number of Aircraft:
 Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft:
 Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft:
 Number of Annual Trim Test(s) per Aircraft:
 0

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 9.175 |
| Takeoff [Military] (mins): | 0.22 |
| Takeoff [After Burn] (mins): | 0.52 |
| Climb Out [Intermediate] (mins): | 0.46 |

| Approach [Approach] (mins): | 3.91 |
|-----------------------------|-------|
| Taxi/Idle In [Idle] (mins): | 9.175 |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

11.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

11.4 Auxiliary Power Unit (APU)

11.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

11.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----------------|----|-------|--------|-------------------|
| - | Flow | | | | | | | |

11.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

12. Aircraft

12.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove
- Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2030 Remove T-38C TGOs
- Activity Description: Starting in 2030, decrease T-38C TGOs by 9,577.
- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -1.627085 |
| SO _x | -0.626252 |
| NO _x | -0.409698 |
| СО | -38.084325 |
| PM 10 | -1.047655 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -0.403845 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -1892.8 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|---|------------------|----------------------------------|
| VOC | -1.627085 | P | M 2.5 | -0.403845 |
| SO _x | -0.626252 | P | b | 0.000000 |
| NO _x | -0.409698 | N | H ₃ | 0.000000 |
| СО | -38.084325 | С | O ₂ e | -1892.8 |
| PM 10 | -1.047655 | | | |

12.2 Aircraft & Engines

12.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |
| C C | |
| | |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name:

3234

Original Engine Name:

12.2.2 Aircraft & Engines Emission Factor(s)

| - Aircraft & E | - Aircraft & Engine Emissions Factors (lb/1000lb fuel) | | | | | | | |
|----------------|--|-------|------|-----------------|--------|-------|--------|--|
| | Fuel Flow | VOC | SOx | NO _x | СО | PM 10 | PM 2.5 | |
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | |

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12.3 Flight Operations

12.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|------|
| Number of Aircraft: | 17 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 9577 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 0 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 3.56 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

| - Trim Test | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

12.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines LTO: Number of Landing and Take-off Cycles (for all aircraft) 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

12.4 Auxiliary Power Unit (APU)

12.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

12.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-----|-----|-----------------|----|-------|--------|-------------------|
| | 1,10,44 | | | | | | | |

12.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year APU_{POL} = APU * OH * LTO * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

13. Aircraft

13.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2028 T-7A Increase Trim Test and Test Cell
- Activity Description: Starting in 2028, add trim test and engine test cell for 37 T-7As.

- Activity Start Date Start Month: 1 Start Year: 2028

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | 0.391079 |
| SO _x | 0.127359 |
| NO _x | 2.173229 |
| CO | 6.709290 |
| PM 10 | 0.152567 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.136819 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 384.9 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.213430 |
| SO _x | 0.070029 |
| NO _x | 1.163420 |
| CO | 3.384981 |
| PM 10 | 0.077801 |

- Activity Emissions [Test Cell part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | 0.177649 |
| SO _x | 0.057330 |
| NO _x | 1.009809 |
| CO | 3.324309 |
| PM 10 | 0.074765 |

13.2 Aircraft & Engines

13.2.1 Aircraft & Engines Assumptions

| - Aircraft | & | Engine |
|------------|---|--------|
|------------|---|--------|

| T-7A |
|-------------|
| F404-GE-102 |
| Trainer |
| Yes |
| 1 |
| |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

13.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

13.3 Flight Operations

13.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|----|
| Number of Aircraft: | 37 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 0 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 1 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.069716 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 211.7 |
| | |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.067103 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 173.3 |
| | |

| - Delauti Settings Oseu. | NO | |
|-----------------------------|---------------|------|
| - Flight Operations TIMs (1 | Time In Mode) | |
| Taxi/Idle Out [Idle] (mi | ins): | 6.8 |
| Takeoff [Military] (min | s): | 0.25 |
| Takeoff [After Burn] (n | nins): | 0.25 |
| Climb Out [Intermedia | 1.4 | |
| Approach [Approach] (| 4 | |
| Taxi/Idle In [Idle] (min | s): | 4.4 |
| - Trim Test | | |
| Idle (mins): | | |
| Approach (mins): | 4.97 | |
| Intermediate (mins): | 10.45 | |

No

13.3.2 Flight Operations Formula(s)

- Default Settings Used.

Military (mins):

AfterBurn (mins):

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

6.14

2.04

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

13.4 Auxiliary Power Unit (APU)

13.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

- Auxiliary Power Unit (APU) (default)

13.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

| Designation | Fuel Flow | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-----------------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

13.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

13.5 Aircraft Engine Test Cell

13.5.1 Aircraft Engine Test Cell Assumptions

 Engine Test Cell Total Number of Aircraft Engines Tested Annually: 37

- Default Settings Used: Yes

| - Annual Run-ups / Test Durations | |
|---------------------------------------|--------------|
| Annual Run-ups (Per Aircraft Engine): | 1 (default) |
| Idle Duration (mins): | 0 (default) |
| Approach Duration (mins): | 12 (default) |
| Intermediate Duration (mins): | 0 (default) |
| Military Duration (mins): | 8 (default) |
| After Burner Duration (mins): | 2 (default) |
| | |

13.5.2 Aircraft Engine Test Cell Emission Factor(s)

- See Aircraft & Engines Emission Factor(s)

13.5.3 Aircraft Engine Test Cell Formula(s)

- Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs) TestCellPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * ARU / 2000

TestCellPS_{POL}: Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Total Number of Engines (For All Aircraft) ARU: Annual Run-ups (Per Aircraft Engine) 2000: Conversion Factor pounds to TONs

- Aircraft Engine Test Cell Emissions per Year

 $TestCellPS_{IDLE} + TestCellPS_{APPROACH} + TestCellPS_{INTERMEDIATE} + TestCellPS_{MILITARY} + TestCellPS_{AFTERBURN}$

TestCell: Aircraft Engine Test Cell Emissions (TONs) TestCellPS_{IDLE}: Aircraft Engine Test Cell Emissions for Idle Power Setting (TONs) TestCellPS_{APPROACH}: Aircraft Engine Test Cell Emissions for Approach Power Setting (TONs) TestCellPS_{INTERMEDIATE}: Aircraft Engine Test Cell Emissions for Intermediate Power Setting (TONs) TestCellPS_{MILITARY}: Aircraft Engine Test Cell Emissions for Military Power Setting (TONs) TestCellPS_{AFTERBURN}: Aircraft Engine Test Cell Emissions for After Burner Power Setting (TONs)

14. Aircraft

14.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove
- Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2028 T-38C Decrease Trim Test and Test Cell

- Activity Description:

Starting in 2028, remove trim test and engine test cell for 23 T-38Cs.

- Activity Start Date

Start Month:1Start Year:2028

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.441333 |
| SO _x | -0.107957 |
| NO _x | -0.314704 |
| СО | -5.605788 |
| PM 10 | -0.118552 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.044035 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -326.3 |
| | |

Pollutant

Emissions Per Year (TONs)

-0.019822 0.000000

0.000000

-164.9

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | | Pollu |
|-----------------|----------------------------------|--|-------------------|
| VOC | -0.210261 | | PM 2.5 |
| SO _x | -0.054556 | | Pb |
| NO _x | -0.155328 | | NH ₃ |
| CO | -2.774568 | | CO ₂ e |
| PM 10 | -0.058050 | | |

- Activity Emissions [Test Cell part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.231073 |
| SO _x | -0.053401 |
| NO _x | -0.159375 |
| СО | -2.831220 |
| PM 10 | -0.060502 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -0.024212 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -161.4 |
| | |

14.2 Aircraft & Engines

14.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |
| C | |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

14.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SOx | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|--------------|-----------|-------|------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

14.3 Flight Operations

14.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|----|
| Number of Aircraft: | 23 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 0 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 3 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 12.8 |
| Takeoff [Military] (mins): | 0.2 |
| Takeoff [After Burn] (mins): | 0.2 |
| Climb Out [Intermediate] (mins): | 0.9 |
| Approach [Approach] (mins): | 3.8 |
| Taxi/Idle In [Idle] (mins): | 6.4 |

- Trim Test Idle (mins): 0 Approach (mins): 4.97 Intermediate (mins): 10.45 Military (mins): 6.14 AfterBurn (mins): 2.04

14.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

14.4 Auxiliary Power Unit (APU)

14.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| • | LTO | | | |

14.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| | e) Emission | 1 40001 (10 | · | | | | | |
|-------------|-------------|-------------|-----|-----|----|-------|--------|-------------------|
| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
| | Flow | | | | | | | |

14.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

14.5 Aircraft Engine Test Cell

14.5.1 Aircraft Engine Test Cell Assumptions

| - Engine Test Cell | |
|---|----|
| Total Number of Aircraft Engines Tested Annually: | 46 |

- Default Settings Used: Yes

| - Annual Run-ups / Test Durations | |
|---------------------------------------|--------------|
| Annual Run-ups (Per Aircraft Engine): | 3 (default) |
| Idle Duration (mins): | 0 (default) |
| Approach Duration (mins): | 12 (default) |
| Intermediate Duration (mins): | 0 (default) |
| Military Duration (mins): | 8 (default) |
| After Burner Duration (mins): | 2 (default) |

14.5.2 Aircraft Engine Test Cell Emission Factor(s)

- See Aircraft & Engines Emission Factor(s)

14.5.3 Aircraft Engine Test Cell Formula(s)

- Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)

 $TestCellPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * ARU / 2000$

TestCellPS_{POL}: Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Total Number of Engines (For All Aircraft) ARU: Annual Run-ups (Per Aircraft Engine) 2000: Conversion Factor pounds to TONs

- Aircraft Engine Test Cell Emissions per Year

 $TestCellPS_{IDLE} + TestCellPS_{APPROACH} + TestCellPS_{INTERMEDIATE} + TestCellPS_{MILITARY} + TestCellPS_{AFTERBURN}$

TestCell: Aircraft Engine Test Cell Emissions (TONs) TestCellPS_{IDLE}: Aircraft Engine Test Cell Emissions for Idle Power Setting (TONs) TestCellPS_{APPROACH}: Aircraft Engine Test Cell Emissions for Approach Power Setting (TONs) TestCellPS_{INTERMEDIATE}: Aircraft Engine Test Cell Emissions for Intermediate Power Setting (TONs) TestCellPS_{MILITARY}: Aircraft Engine Test Cell Emissions for Military Power Setting (TONs) TestCellPS_{AFTERBURN}: Aircraft Engine Test Cell Emissions for After Burner Power Setting (TONs)

15. Aircraft

15.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2029 T-7A Increase Trim Test and Test Cell
- Activity Description: Starting in 2029, add trim test and engine test cell for 31 T-7As.
- Activity Start Date Start Month: 1 Start Year: 2029
- Activity End Date Indefinite: Yes End Month: N/A

End Year: N/A

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.327661 |
| SO _x | 0.106706 |
| NO _x | 1.820814 |
| СО | 5.621297 |
| PM 10 | 0.127826 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.114632 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 322.5 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.178820 |
| SO _x | 0.058673 |
| NO _x | 0.974757 |
| CO | 2.836065 |
| PM 10 | 0.065185 |

- Activity Emissions [Test Cell part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | 0.148841 |
| SO _x | 0.048033 |
| NO _x | 0.846056 |
| CO | 2.785232 |
| PM 10 | 0.062641 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.058410 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 177.3 |
| | |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.056222 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 145.2 |
| | |

15.2 Aircraft & Engines

15.2.1 Aircraft & Engines Assumptions

| Aircraft & Engine | |
|--------------------------|-------------|
| Aircraft Designation: | T-7A |
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

15.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

15.3 Flight Operations

15.3.1 Flight Operations Assumptions

| - Flight Oper | ations |
|---------------|--------------|
| Number | of Aircraft: |

| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 0 |
|---|---|
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 1 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 6.8 |
| Takeoff [Military] (mins): | 0.25 |
| Takeoff [After Burn] (mins): | 0.25 |
| Climb Out [Intermediate] (mins): | 1.4 |
| Approach [Approach] (mins): | 4 |
| Taxi/Idle In [Idle] (mins): | 4.4 |

| - Trim Test | |
|----------------------|-------|
| Idle (mins): | 0 |
| Approach (mins): | 4.97 |
| Intermediate (mins): | 10.45 |
| Military (mins): | 6.14 |
| AfterBurn (mins): | 2.04 |

15.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60)^{*} (FC / 1000)^{*} EF^{*} NE^{*} LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines LTO: Number of Landing and Take-off Cycles (for all aircraft) 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE IN} + AEM_{IDLE OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines TGO: Number of Touch-and-Go Cycles (for all aircraft) 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

15.4 Auxiliary Power Unit (APU)

15.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

15.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

15.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs) APU: Number of Auxiliary Power Units OH: Operation Hours for Each LTO (hour) LTO: Number of LTOs EF_{POL}: Emission Factor for Pollutant (lb/hr)

2000: Conversion Factor pounds to tons

15.5 Aircraft Engine Test Cell

15.5.1 Aircraft Engine Test Cell Assumptions

- Engine Test Cell Total Number of Aircraft Engines Tested Annually: 31

- Default Settings Used: Yes

| - Annual Run-ups / Test Durations | |
|---------------------------------------|--------------|
| Annual Run-ups (Per Aircraft Engine): | 1 (default) |
| Idle Duration (mins): | 0 (default) |
| Approach Duration (mins): | 12 (default) |
| Intermediate Duration (mins): | 0 (default) |
| Military Duration (mins): | 8 (default) |
| After Burner Duration (mins): | 2 (default) |

15.5.2 Aircraft Engine Test Cell Emission Factor(s)

- See Aircraft & Engines Emission Factor(s)

15.5.3 Aircraft Engine Test Cell Formula(s)

- Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)

TestCellPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * ARU / 2000

TestCellPS_{POL}: Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Total Number of Engines (For All Aircraft) ARU: Annual Run-ups (Per Aircraft Engine) 2000: Conversion Factor pounds to TONs

- Aircraft Engine Test Cell Emissions per Year

 $TestCellPS_{IDLE} + TestCellPS_{APPROACH} + TestCellPS_{INTERMEDIATE} + TestCellPS_{MILITARY} + TestCellPS_{AFTERBURN}$

TestCell: Aircraft Engine Test Cell Emissions (TONs) TestCellPS_{IDLE}: Aircraft Engine Test Cell Emissions for Idle Power Setting (TONs) TestCellPS_{APPROACH}: Aircraft Engine Test Cell Emissions for Approach Power Setting (TONs)

TestCellPS_{INTERMEDIATE}: Aircraft Engine Test Cell Emissions for Intermediate Power Setting (TONs) TestCellPS_{MILITARY}: Aircraft Engine Test Cell Emissions for Military Power Setting (TONs) TestCellPS_{AFTERBURN}: Aircraft Engine Test Cell Emissions for After Burner Power Setting (TONs)

16. Aircraft

16.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove
- Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2029 T-38C Decrease Trim Test and Test Cell

- Activity Description:

Starting in 2029, remove trim test and engine test cell for 45 T-38Cs.

- Activity Start Date

Start Month:1Start Year:2029

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.863478 |
| SO _x | -0.211221 |
| NO _x | -0.615725 |
| CO | -10.967846 |
| PM 10 | -0.231950 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.086155 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -638.4 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.411379 |
| SO _x | -0.106740 |
| NO _x | -0.303903 |
| СО | -5.428503 |
| PM 10 | -0.113576 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.038783 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -322.6 |
| | |

- Activity Emissions [Test Cell part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.452098 |
| SO _x | -0.104481 |
| NO _x | -0.311821 |
| CO | -5.539343 |
| PM 10 | -0.118374 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -0.047372 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -315.8 |
| | |

16.2 Aircraft & Engines

16.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

16.2.2 Aircraft & Engines Emission Factor(s)

| - All chart & Engline Enhission's Factor's (10/100010 fuer) | | | | | | | | |
|---|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| | Fuel Flow | VOC | SOx | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

16.3 Flight Operations

16.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|----|
| Number of Aircraft: | 45 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 0 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 3 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 12.8 |
| Takeoff [Military] (mins): | 0.2 |
| Takeoff [After Burn] (mins): | 0.2 |
| Climb Out [Intermediate] (mins): | 0.9 |
| Approach [Approach] (mins): | 3.8 |
| Taxi/Idle In [Idle] (mins): | 6.4 |
| | |

- Trim Test

| 0 |
|-------|
| 4.97 |
| 10.45 |
| 6.14 |
| 2.04 |
| |

16.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)

AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

16.4 Auxiliary Power Unit (APU)

16.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|-----------------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

16.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-----|-----|-----|----|-------|--------|-------------------|
| | I'IUW | | | | | | | |

16.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

16.5 Aircraft Engine Test Cell

16.5.1 Aircraft Engine Test Cell Assumptions

```
    Engine Test Cell
    Total Number of Aircraft Engines Tested Annually: 90
```

- Default Settings Used: Yes

| - Annual Run-ups / Test Durations | |
|---------------------------------------|--------------|
| Annual Run-ups (Per Aircraft Engine): | 3 (default) |
| Idle Duration (mins): | 0 (default) |
| Approach Duration (mins): | 12 (default) |

| Intermediate Duration (mins): | 0 (default) |
|-------------------------------|-------------|
| Military Duration (mins): | 8 (default) |
| After Burner Duration (mins): | 2 (default) |

16.5.2 Aircraft Engine Test Cell Emission Factor(s)

- See Aircraft & Engines Emission Factor(s)

16.5.3 Aircraft Engine Test Cell Formula(s)

- Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)

 $TestCellPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * ARU / 2000$

TestCellPS_{POL}: Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Total Number of Engines (For All Aircraft) ARU: Annual Run-ups (Per Aircraft Engine) 2000: Conversion Factor pounds to TONs

- Aircraft Engine Test Cell Emissions per Year

 $TestCellPS_{IDLE} + TestCellPS_{APPROACH} + TestCellPS_{INTERMEDIATE} + TestCellPS_{MILITARY} + TestCellPS_{AFTERBURN}$

TestCell: Aircraft Engine Test Cell Emissions (TONs) TestCellPS_{IDLE}: Aircraft Engine Test Cell Emissions for Idle Power Setting (TONs) TestCellPS_{APPROACH}: Aircraft Engine Test Cell Emissions for Approach Power Setting (TONs) TestCellPS_{INTERMEDIATE}: Aircraft Engine Test Cell Emissions for Intermediate Power Setting (TONs) TestCellPS_{MILITARY}: Aircraft Engine Test Cell Emissions for Military Power Setting (TONs) TestCellPS_{AFTERBURN}: Aircraft Engine Test Cell Emissions for After Burner Power Setting (TONs)

17. Aircraft

17.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location
 County: Clay, MS; Lowndes, MS; Monroe, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2030 T-7A Increase Trim Test and Test Cell
- Activity Description: Starting in 2030, add trim test and engine test cell for 9 T-7As.
- Activity Start Date Start Month: 1 Start Year: 2030

PM 2.5

Pb

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.095127 |
| SO _x | 0.030979 |
| NO _x | 0.528623 |
| СО | 1.631989 |
| PM 10 | 0.037111 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.033280 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 93.6 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]: Pollutant Emissions Per Year (TONs) Pollutant

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.051916 |
| SO _x | 0.017034 |
| NO _x | 0.282994 |
| CO | 0.823374 |
| PM 10 | 0.018925 |

- Activity Emissions [Test Cell part]:

| Pollutant | Emissions Per Year (TONs) | | | |
|-----------------|----------------------------------|--|--|--|
| VOC | 0.043212 | | | |
| SO _x | 0.013945 | | | |
| NO _x | 0.245629 | | | |
| СО | 0.808616 | | | |
| PM 10 | 0.018186 | | | |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| | |
| | |
| | |
| CO ₂ e | 51.5 |
| CO | 51.5 |
| NH ₃ | 0.000000 |
| 10 | 0.000000 |

Emissions Per Year (TONs)

0.016958

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.016322 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 42.1 |
| | |

17.2 Aircraft & Engines

17.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-------------|
| Aircraft Designation: | T-7A |
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

17.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

17.3 Flight Operations

17.3.1 Flight Operations Assumptions

| - Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: | | |
|---|------|--|
| - Default Settings Used: No | | |
| - Flight Operations TIMs (Time In Mode) | | |
| Taxi/Idle Out [Idle] (mins): | 6.8 | |
| Takeoff [Military] (mins): | 0.25 | |
| Takeoff [After Burn] (mins): | 0.25 | |
| Climb Out [Intermediate] (mins): | 1.4 | |
| Approach [Approach] (mins): | 4 | |
| Taxi/Idle In [Idle] (mins): | 4.4 | |

| - Trim Test | |
|----------------------|-------|
| Idle (mins): | 0 |
| Approach (mins): | 4.97 |
| Intermediate (mins): | 10.45 |
| Military (mins): | 6.14 |
| AfterBurn (mins): | 2.04 |

17.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min) 60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

17.4 Auxiliary Power Unit (APU)

17.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

17.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|-------|-------|-------|-------|-------|--------|--------|-------------------|
| | Flow | | | | | | | |
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

17.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

17.5 Aircraft Engine Test Cell

17.5.1 Aircraft Engine Test Cell Assumptions

| - Engine Test Cell | |
|---|---|
| Total Number of Aircraft Engines Tested Annually: | 9 |

- Default Settings Used: Yes

| - Annual Run-ups / Test Durations | |
|---------------------------------------|--------------|
| Annual Run-ups (Per Aircraft Engine): | 1 (default) |
| Idle Duration (mins): | 0 (default) |
| Approach Duration (mins): | 12 (default) |
| Intermediate Duration (mins): | 0 (default) |
| Military Duration (mins): | 8 (default) |
| After Burner Duration (mins): | 2 (default) |
| | |

17.5.2 Aircraft Engine Test Cell Emission Factor(s)

- See Aircraft & Engines Emission Factor(s)

17.5.3 Aircraft Engine Test Cell Formula(s)

- Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs) TestCellPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * ARU / 2000

TestCellPS_{POL}: Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Total Number of Engines (For All Aircraft)
ARU: Annual Run-ups (Per Aircraft Engine)
2000: Conversion Factor pounds to TONs

- Aircraft Engine Test Cell Emissions per Year

 $TestCell PS_{IDLE} + TestCell PS_{APPROACH} + TestCell PS_{INTERMEDIATE} + TestCell PS_{MILITARY} + TestCell PS_{AFTERBURN}$

TestCell: Aircraft Engine Test Cell Emissions (TONs)

TestCellPS_{IDLE}: Aircraft Engine Test Cell Emissions for Idle Power Setting (TONs) TestCellPS_{APPROACH}: Aircraft Engine Test Cell Emissions for Approach Power Setting (TONs) TestCellPS_{INTERMEDIATE}: Aircraft Engine Test Cell Emissions for Intermediate Power Setting (TONs) TestCellPS_{MILITARY}: Aircraft Engine Test Cell Emissions for Military Power Setting (TONs) TestCellPS_{AFTERBURN}: Aircraft Engine Test Cell Emissions for After Burner Power Setting (TONs)

18. Aircraft

18.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove
- Activity Location

County: Clay, MS; Lowndes, MS; Monroe, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2030 T-38C Decrease Trim Test and Test Cell

- Activity Description:

Starting in 2030, remove trim test and engine test cell for 17 T-38Cs.

- Activity Start Date

Start Month:1Start Year:2030

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) | | | | |
|-----------------|----------------------------------|--|--|--|--|
| VOC | -0.326203 | | | | |
| SO _x | -0.079795 | | | | |
| NO _x | -0.232607 | | | | |
| СО | -4.143408 | | | | |
| PM 10 | -0.087626 | | | | |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -0.032548 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -241.2 |
| | |

Emissions Per Year (TONs)

-0.014651

 $\frac{0.000000}{0.000000}$

-121.9

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]: Pollutant Emissions Per Year (TONs) Pollutant

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.155410 |
| SO _x | -0.040324 |
| NO _x | -0.114808 |
| СО | -2.050768 |
| PM 10 | -0.042906 |

- Activity Emissions [Test Cell part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.170793 |
| SO _x | -0.039470 |
| NO _x | -0.117799 |

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| PM 2.5 | -0.017896 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |

PM 2.5

Pb

NH₃

 CO_2e

| СО | -2.092641 |
|-------|-----------|
| PM 10 | -0.044719 |

| CO ₂ e | -119.3 |
|-------------------|--------|
| | |

18.2 Aircraft & Engines

18.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

18.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | 8 | | | | | | | |
|--------------|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

18.3 Flight Operations

18.3.1 Flight Operations Assumptions

| | s (Touch-and- | l Take-off) cycles for all Aircraft: Go) cycles for all Aircraft: rcraft: | 17 0 0 3 |
|-----------------------------|---------------|---|-------------------|
| - Default Settings Used: | No | | |
| - Flight Operations TIMs (T | ime In Mode) | | |
| Taxi/Idle Out [Idle] (mir | ns): | 12.8 | |
| Takeoff [Military] (mins | s): | 0.2 | |
| Takeoff [After Burn] (m | ins): | 0.2 | |
| Climb Out [Intermediat | e] (mins): | 0.9 | |
| Approach [Approach] (1 | nins): | 3.8 | |
| Taxi/Idle In [Idle] (mins |): | 6.4 | |
| - Trim Test | | | |
| Idle (mins): | 0 | | |
| Approach (mins): | 4.97 | | |
| Intermediate (mins): | 10.45 | | |
| Military (mins): | 6.14 | | |

AfterBurn (mins): 2.04

18.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE IN} + AEM_{IDLE OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000poundsEF: Emission Factor (lb/1000lb fuel)NE: Number of EnginesNA: Number of AircraftNTT: Number of Trim Test2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

18.4 Auxiliary Power Unit (APU)

18.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

18.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----------------|----|-------|--------|-------------------|
| | Flow | | | | | | | |

18.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

18.5 Aircraft Engine Test Cell

18.5.1 Aircraft Engine Test Cell Assumptions

- Engine Test Cell Total Number of Aircraft Engines Tested Annually: 34
- Default Settings Used: Yes

| - Annual Run-ups / Test Durations | |
|---------------------------------------|--------------|
| Annual Run-ups (Per Aircraft Engine): | 3 (default) |
| Idle Duration (mins): | 0 (default) |
| Approach Duration (mins): | 12 (default) |
| Intermediate Duration (mins): | 0 (default) |
| Military Duration (mins): | 8 (default) |
| After Burner Duration (mins): | 2 (default) |

18.5.2 Aircraft Engine Test Cell Emission Factor(s)

- See Aircraft & Engines Emission Factor(s)

18.5.3 Aircraft Engine Test Cell Formula(s)

- Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs) TestCellPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * ARU / 2000

TestCellPS_{POL}: Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Total Number of Engines (For All Aircraft) ARU: Annual Run-ups (Per Aircraft Engine) 2000: Conversion Factor pounds to TONs

- Aircraft Engine Test Cell Emissions per Year

 $TestCell P S_{IDLE} + TestCell P S_{APPROACH} + TestCell P S_{INTERMEDIATE} + TestCell P S_{MILITARY} + TestCell P S_{AFTERBURN}$

TestCell: Aircraft Engine Test Cell Emissions (TONs) TestCellPS_{IDLE}: Aircraft Engine Test Cell Emissions for Idle Power Setting (TONs) TestCellPS_{APPROACH}: Aircraft Engine Test Cell Emissions for Approach Power Setting (TONs) TestCellPS_{INTERMEDIATE}: Aircraft Engine Test Cell Emissions for Intermediate Power Setting (TONs) TestCellPS_{MILITARY}: Aircraft Engine Test Cell Emissions for Military Power Setting (TONs) TestCellPS_{AFTERBURN}: Aircraft Engine Test Cell Emissions for After Burner Power Setting (TONs)

19. Personnel

19.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

 Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Add 43 personnel

- Activity Description:

Addition of 43 personnel during the T-7A and T-38C transition period. Conservatively assumed all personnel commute daily.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | No |
|-------------|------|
| End Month: | 12 |
| End Year: | 2029 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.190336 |
| SO _x | 0.001295 |
| NO _x | 0.163202 |
| CO | 2.164712 |
| PM 10 | 0.003741 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.003415 |
| Pb | 0.000000 |
| NH ₃ | 0.011726 |
| CO ₂ e | 186.2 |
| | |

19.2 Personnel Assumptions

| - Number of Personnel | |
|-------------------------------------|----|
| Active Duty Personnel: | 43 |
| Civilian Personnel: | 0 |
| Support Contractor Personnel: | 0 |
| Air National Guard (ANG) Personnel: | 0 |
| Reserve Personnel: | 0 |
| | |

- Default Settings Used: Yes

- Average Personnel Round Trip Commute (mile): 20 (default)

- Personnel Work Schedule

| Active Duty Personnel: | 5 Days Per Week (default) |
|-------------------------------------|----------------------------|
| Civilian Personnel: | 5 Days Per Week (default) |
| Support Contractor Personnel: | 5 Days Per Week (default) |
| Air National Guard (ANG) Personnel: | 4 Days Per Week (default) |
| Reserve Personnel: | 4 Days Per Month (default) |

19.3 Personnel On Road Vehicle Mixture

- On Road Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|-----|
| POVs | 37.55 | 60.32 | 0 | 0.03 | 0.2 | 0 | 1.9 |
| GOVs | 54.49 | 37.73 | 4.67 | 0 | 0 | 3.11 | 0 |

19.4 Personnel Emission Factor(s)

- On Road Vehicle Emission Factors (grams/mile)

| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|---------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |

| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | 0 | 800.000 | 00442.757 |
|------|---------|---------|---------|---------|---------|---------|---|---------|-----------|
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | 0 | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | 0 | 000.054 | 00393.696 |

19.5 Personnel Formula(s)

- Personnel Vehicle Miles Travel for Work Days per Year $VMT_P = NP \ * \ WD \ * \ AC$

VMT_P: Personnel Vehicle Miles Travel (miles/year) NP: Number of Personnel WD: Work Days per Year AC: Average Commute (miles)

- Total Vehicle Miles Travel per Year

 $VMT_{Total} = VMT_{AD} + VMT_{C} + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$

VMT_{Total}: Total Vehicle Miles Travel (miles)
VMT_{AD}: Active Duty Personnel Vehicle Miles Travel (miles)
VMT_C: Civilian Personnel Vehicle Miles Travel (miles)
VMT_{SC}: Support Contractor Personnel Vehicle Miles Travel (miles)
VMT_{ANG}: Air National Guard Personnel Vehicle Miles Travel (miles)
VMT_{AFRC}: Reserve Personnel Vehicle Miles Travel (miles)

- Vehicle Emissions per Year

 $V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{Total}: Total Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Personnel On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

20. Personnel

20.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove
- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: Remove 74 personnel

- Activity Description:

Net decrease of 74 personnel following T-7A arrival and T-38C withdrawal. Conservatively assumed all personnel commute daily.

- Activity Start Date Start Month: 1 Start Year: 2030

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.163778 |
| SO _x | -0.001114 |
| NO _x | -0.140430 |
| СО | -1.862659 |
| PM 10 | -0.003219 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -0.002938 |
| Pb | 0.000000 |
| NH ₃ | -0.010089 |
| CO ₂ e | -160.2 |
| | |

20.2 Personnel Assumptions

| - Number of Personnel | |
|-------------------------------------|----|
| Active Duty Personnel: | 74 |
| Civilian Personnel: | 0 |
| Support Contractor Personnel: | 0 |
| Air National Guard (ANG) Personnel: | 0 |
| Reserve Personnel: | 0 |
| | |

- Default Settings Used: Yes

- Average Personnel Round Trip Commute (mile): 20 (default)

- Personnel Work Schedule

| Active Duty Personnel: | 5 Days Per Week (default) |
|-------------------------------------|----------------------------|
| Civilian Personnel: | 5 Days Per Week (default) |
| Support Contractor Personnel: | 5 Days Per Week (default) |
| Air National Guard (ANG) Personnel: | 4 Days Per Week (default) |
| Reserve Personnel: | 4 Days Per Month (default) |

20.3 Personnel On Road Vehicle Mixture

- On Road Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|-----|
| POVs | 37.55 | 60.32 | 0 | 0.03 | 0.2 | 0 | 1.9 |
| GOVs | 54.49 | 37.73 | 4.67 | 0 | 0 | 3.11 | 0 |

20.4 Personnel Emission Factor(s)

- On Road Vehicle Emission Factors (grams/mile)

| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|---------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

20.5 Personnel Formula(s)

- Personnel Vehicle Miles Travel for Work Days per Year $VMT_P = NP \mbox{ * } WD \mbox{ * } AC$

VMT_P: Personnel Vehicle Miles Travel (miles/year) NP: Number of Personnel WD: Work Days per Year AC: Average Commute (miles)

- Total Vehicle Miles Travel per Year

 $VMT_{Total} = VMT_{AD} + VMT_{C} + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$

VMT_{Total}: Total Vehicle Miles Travel (miles)
 VMT_{AD}: Active Duty Personnel Vehicle Miles Travel (miles)
 VMT_C: Civilian Personnel Vehicle Miles Travel (miles)
 VMT_{SC}: Support Contractor Personnel Vehicle Miles Travel (miles)
 VMT_{ANG}: Air National Guard Personnel Vehicle Miles Travel (miles)
 VMT_{AFRC}: Reserve Personnel Vehicle Miles Travel (miles)

- Vehicle Emissions per Year

 $V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{Total}: Total Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Personnel On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

21. Aircraft

21.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2030 Add T-7A TGOs
- Activity Description: Starting in 2030, increase T-7A TGOs by 6,015.
- Activity Start Date Start Month: 1 Start Year: 2030
- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | 2.840579 |
| SO _x | 1.508339 |
| NO _x | 21.505515 |
| CO | 3.138349 |
| PM 10 | 0.162246 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.137285 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 4592.9 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 2.840579 |
| SO _x | 1.508339 |
| NO _x | 21.505515 |
| CO | 3.138349 |
| PM 10 | 0.162246 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.137285 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 4592.9 |
| | |

21.2 Aircraft & Engines

21.2.1 Aircraft & Engines Assumptions

| Aircraft & Engine | |
|--------------------------|-------------|
| Aircraft Designation: | T-7A |
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |
| | |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

21.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

21.3 Flight Operations

21.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|------|
| Number of Aircraft: | 9 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 6015 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |
| | |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 0 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 3.56 |

0 0

Approach [Approach] (mins): Taxi/Idle In [Idle] (mins):

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

21.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

21.4 Auxiliary Power Unit (APU)

21.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

21.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

21.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

22. Construction / Demolition

22.1 General Information & Timeline Assumptions

- Activity Location

County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: MILCON: Construct GBTS Facility

- Activity Description:

Construction of the GBTS Facility (33,000 square feet) would occur from July 2025 through August 2027.

Site grading would occur on an area of approximately 3.65 acres (159,000 square feet). Site grading would begin in July 2025 and last approximately 4 months.

Trenching for site utilities would require approximately 300 feet of excavation. A 3-foot trench width for utilities was assumed. Trenching would begin in November 2025 and last approximately 2 months.

Construction of the new GBTS facility would total approximately 33,000 square feet. The height of the GBTS facility was assumed to be 15 feet. Construction would begin in January 2026 and last approximately 18 months.

Architectural coatings would be applied to the facility, totaling 33,000 square feet. Architectural coating application would begin in June 2027 and last approximately 1 month.

Paving for driveways, parking areas, and roadways would occur on an area totaling approximately 2.75 acres (120,000 square feet). Paving would begin July 2027 and last approximately 2 months.

Assumed no materials are required to be hauled on- or off-site; excavated spoils will be used on-site.

The analysis assumes the following: (1) no new emergency generators, or if any were needed for new facilities, their emissions would be offset by removing generators that were supporting T-38C operations; (2) for special vehicles and non-road combustion equipment needed to support T-7A operations/facilities, their operation/emissions would be equally offset by eliminating or reusing vehicles and non-road equipment that were supporting T-38C operations; and (3) T-7A fuel cell maintenance, composite repair, NDI testing, and fuel storage/dispensing operations/emissions would be equally offset by eliminating those corresponding operations/emissions supporting the T-38C operations.

- Activity Start Date

Start Month:7Start Month:2025

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 8 |
| End Month: | 2027 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.951152 |
| SO _x | 0.010236 |
| NO _x | 3.131076 |

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| PM 2.5 | 0.113029 |
| Pb | 0.000000 |
| NH ₃ | 0.002861 |

| СО | 4.538396 | CO ₂ e | 989.0 |
|-------|----------|-------------------|-------|
| PM 10 | 6.458026 | | |

22.1 Site Grading Phase

22.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date Start Month: 7 Start Quarter: 1 Start Year: 2025

- Phase Duration Number of Month: 4 Number of Days: 0

22.1.2 Site Grading Phase Assumptions

| - General Site Grading Information | |
|--|--------|
| Area of Site to be Graded (ft ²): | 159000 |
| Amount of Material to be Hauled On-Site (yd ³): | 0 |
| Amount of Material to be Hauled Off-Site (yd ³): | 0 |

| - Site Grading Default Settings | |
|---------------------------------|-------------|
| Default Settings Used: | Yes |
| Average Day(s) worked per week: | 5 (default) |

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|--|------------------------|---------------|
| Graders Composite | 1 | 8 |
| Other Construction Equipment Composite | 1 | 8 |
| Rubber Tired Dozers Composite | 1 | 8 |
| Tractors/Loaders/Backhoes Composite | 2 | 7 |

- Vehicle Exhaust

| Average Hauling Truck Capacity (yd ³): | 20 (default) |
|--|--------------|
| Average Hauling Truck Round Trip Commute (mile): | 20 (default) |

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

22.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite

| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | |
|--|---|--------|--------|--------|--------|--------|-----------------|-------------------|--|--|
| Emission Factors | 0.0676 | 0.0014 | 0.3314 | 0.5695 | 0.0147 | 0.0147 | 0.0061 | 132.89 | | |
| Other Construction Equipment Composite | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | |
| Emission Factors | 0.0442 | 0.0012 | 0.2021 | 0.3473 | 0.0068 | 0.0068 | 0.0039 | 122.60 | | |
| Rubber Tired Dozers Composite | | | | | | | | | | |
| | VOC SO _x NO _x CO PM 10 PM 2.5 CH ₄ CO ₂ e | | | | | | | | | |
| Emission Factors | 0.1671 | 0.0024 | 1.0824 | 0.6620 | 0.0418 | 0.0418 | 0.0150 | 239.45 | | |
| Tractors/Loaders/Backhoes Composite | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 | | |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | Pb | \mathbf{NH}_3 | CO ₂ e |
|------|---------|---------|---------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

22.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

 $PM10_{FD} = (20 * ACRE * WD) / 2000$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³) HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³) HC: Average Hauling Truck Capacity (yd³) (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³) HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

 $\begin{array}{l} V_{POL}: \ Vehicle \ Emissions (TONs) \\ VMT_{VE}: \ Vehicle \ Exhaust \ Vehicle \ Miles \ Travel (miles) \\ 0.002205: \ Conversion \ Factor \ grams \ to \ pounds \\ EF_{POL}: \ Emission \ Factor \ for \ Pollutant \ (grams/mile) \\ VM: \ Vehicle \ Exhaust \ On \ Road \ Vehicle \ Mixture \ (\%) \\ 2000: \ Conversion \ Factor \ pounds \ to \ tons \end{array}$

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

22.2 Trenching/Excavating Phase

22.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date Start Month: 11 Start Quarter: 1 Start Year: 2025

- Phase Duration Number of Month: 2 Number of Days: 0

22.2.2 Trenching / Excavating Phase Assumptions

| - General Trenching/Excavating Information | |
|--|-----|
| Area of Site to be Trenched/Excavated (ft ²): | 900 |
| Amount of Material to be Hauled On-Site (yd ³): | 0 |
| Amount of Material to be Hauled Off-Site (yd ³): | 0 |

- Trenching Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|---|------------------------|---------------|
| Excavators Composite | 2 | 8 |
| Other General Industrial Equipmen Composite | 1 | 8 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³):20 (default)Average Hauling Truck Round Trip Commute (mile):20 (default)

-

| - Vehicle Exhaust Vehicle Mixture (%) | | | | | | | | | | |
|---------------------------------------|------|------|------|------|------|--------|----|--|--|--|
| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC | | | |
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 | | | |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

22.2.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Graders Composite | | | | | | | | |
|-------------------------------------|-----------|-------------|--------|--------|--------|--------|--------|-------------------|
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0676 | 0.0014 | 0.3314 | 0.5695 | 0.0147 | 0.0147 | 0.0061 | 132.89 |
| Other Construction | Equipment | t Composite | e | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0442 | 0.0012 | 0.2021 | 0.3473 | 0.0068 | 0.0068 | 0.0039 | 122.60 |
| Rubber Tired Dozen | s Composi | te | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.1671 | 0.0024 | 1.0824 | 0.6620 | 0.0418 | 0.0418 | 0.0150 | 239.45 |
| Tractors/Loaders/Backhoes Composite | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|---------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

22.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

 $PM10_{FD} = (20 * ACRE * WD) / 2000$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³) HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³) HC: Average Hauling Truck Capacity (yd³) (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³) HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Vehicle Exhaust On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VE}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

22.3 Building Construction Phase

22.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

Start Month:1Start Quarter:1Start Year:2026

| _ | Phase | Durs | ation |
|---|--------|------|-------|
| _ | 1 mase | Dur | auton |

Number of Month: 18 Number of Days: 0

22.3.2 Building Construction Phase Assumptions

- General Building Construction Information

| Office or Industrial |
|----------------------|
| 33000 |
| 15 |
| N/A |
| |

| - Building Construction Default Settings | |
|--|-------------|
| Default Settings Used: | Yes |
| Average Day(s) worked per week: | 5 (default) |

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|-------------------------------------|------------------------|---------------|
| Cranes Composite | 1 | 6 |
| Forklifts Composite | 2 | 6 |
| Generator Sets Composite | 1 | 8 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |
| Welders Composite | 3 | 8 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

22.3.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Cranes Composite | | | | | | | | | | | |
|-------------------------|--------|--------|--------|--------|--------|--------|-----------------|-------------------|--|--|--|
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | | |
| Emission Factors | 0.0680 | 0.0013 | 0.4222 | 0.3737 | 0.0143 | 0.0143 | 0.0061 | 128.77 | | | |
| Forklifts Composite | | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | |

| Emission Factors | 0.0236 | 0.0006 | 0.0859 | 0.2147 | 0.0025 | 0.0025 | 0.0021 | 54.449 | | | | |
|-------------------------------------|--------|--------|--------|--------|--------|--------|-----------------|-------------------|--|--|--|--|
| Generator Sets Composite | | | | | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | | |
| Emission Factors | 0.0287 | 0.0006 | 0.2329 | 0.2666 | 0.0080 | 0.0080 | 0.0025 | 61.057 | | | | |
| Tractors/Loaders/Backhoes Composite | | | | | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | | |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 | | | | |
| Welders Composite | | | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | | | |
| Emission Factors | 0.0214 | 0.0003 | 0.1373 | 0.1745 | 0.0051 | 0.0051 | 0.0019 | 25.650 | | | | |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

22.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

VMT_{VE} = BA * BH * (0.42 / 1000) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

 $VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VT}: Vender Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

22.4 Architectural Coatings Phase

22.4.1 Architectural Coatings Phase Timeline Assumptions

```
- Phase Start Date
Start Month: 6
Start Quarter: 1
Start Year: 2027
```

- Phase Duration Number of Month: 1 Number of Days: 0

22.4.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information Building Category: Non-Residential Total Square Footage (ft²): 33000 Number of Units: N/A
- Architectural Coatings Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

22.4.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

| | | ion i actor | | | | | | | |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | \mathbf{NH}_3 | CO ₂ e |
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

22.4.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

 $VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft²)
800: Conversion Factor square feet to man days (1 ft² / 1 man * day)

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft²)
2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)
0.0116: Emission Factor (lb/ft²)
2000: Conversion Factor pounds to tons

22.5 Paving Phase

22.5.1 Paving Phase Timeline Assumptions

- Phase Start Date Start Month: 7

| Start Quarter: | 1 |
|----------------|------|
| Start Year: | 2027 |

- Phase Duration

Number of Month: 2 Number of Days: 0

22.5.2 Paving Phase Assumptions

- General Paving Information Paving Area (ft²): 120000
- Paving Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|------------------------------------|------------------------|---------------|
| Cement and Mortar Mixers Composite | 4 | 6 |
| Pavers Composite | 1 | 7 |
| Paving Equipment Composite | 2 | 6 |
| Rollers Composite | 1 | 7 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

22.5.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Graders Composite | | | | | | | | | | | | |
|--|------------|---------|--------|--------|--------|--------|-----------------|-------------------|--|--|--|--|
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | | |
| Emission Factors | 0.0676 | 0.0014 | 0.3314 | 0.5695 | 0.0147 | 0.0147 | 0.0061 | 132.89 | | | | |
| Other Construction Equipment Composite | | | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | | | |
| Emission Factors | 0.0442 | 0.0012 | 0.2021 | 0.3473 | 0.0068 | 0.0068 | 0.0039 | 122.60 | | | | |
| Rubber Tired Dozen | s Composi | te | | | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | | |
| Emission Factors | 0.1671 | 0.0024 | 1.0824 | 0.6620 | 0.0418 | 0.0418 | 0.0150 | 239.45 | | | | |
| Tractors/Loaders/B | ackhoes Co | mposite | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | | | |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 | | | | |

| - venicie E | | worker In | he runsen | II Factors (g | grams/mme |) | | | |
|-------------|---------|-----------------|-----------------|---------------|-----------|---------|----|-----------------|-------------------|
| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

22.5.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft²)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)
HC: Average Hauling Truck Capacity (yd³)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs) VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft²)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)² / acre)

23. Construction / Demolition

23.1 General Information & Timeline Assumptions

- Activity Location

County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: MILCON: Construct UMT Facility

- Activity Description:

Construction of the UMT Facility (12,000 square feet) would occur from July 2025 through August 2027.

Site grading would occur on an area of approximately 0.75 acres (32,500 square feet). Site grading would begin in July 2025 and last approximately 4 months.

Trenching for site utilities would require approximately 500 feet of excavation. A 3-foot trench width for utilities was assumed. Trenching would begin in November 2025 and last approximately 2 months.

Construction of the new UMT facility would total approximately 12,000 square feet. The height of the UMT facility was assumed to be 15 feet. Construction would begin in January 2026 and last approximately 18 months.

Architectural coatings would be applied to the facility, totaling 312,000 square feet. Architectural coating application would begin in June 2027 and last approximately 1 month.

Paving for driveways and roadways would occur on an area totaling approximately 0.2 acres (8,750 square feet). Paving would begin July 2027 and last approximately 2 months.

Assumed no materials are required to be hauled on- or off-site; excavated spoils will be used on-site.

- Activity Start Date Start Month: 7

Start Month: 2025

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 8 |
| End Month: | 2027 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.474579 |
| SO _x | 0.006568 |
| NO _x | 1.680257 |
| СО | 2.695038 |
| PM 10 | 1.382261 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.059107 |
| Pb | 0.000000 |
| NH ₃ | 0.001602 |
| CO ₂ e | 636.1 |
| | |

23.1 Site Grading Phase

23.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date Start Month: 7 Start Quarter: 1 Start Year: 2025
- Phase Duration Number of Month: 4 Number of Days: 0

23.1.2 Site Grading Phase Assumptions

| - General Site Grading Information | |
|--|-------|
| Area of Site to be Graded (ft ²): | 32500 |
| Amount of Material to be Hauled On-Site (yd ³): | 0 |
| Amount of Material to be Hauled Off-Site (yd ³): | 0 |

- Site Grading Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of | Hours Per Day |
|--|-----------|---------------|
| | Equipment | |
| Graders Composite | 1 | 6 |
| Other Construction Equipment Composite | 1 | 8 |
| Rubber Tired Dozers Composite | 1 | 6 |
| Tractors/Loaders/Backhoes Composite | 1 | 7 |

- Vehicle Exhaust

| Average Hauling Truck Capacity (yd ³): | 20 (default) |
|--|--------------|
| Average Hauling Truck Round Trip Commute (mile): | 20 (default) |

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC | |
|------|------|------|------|------|------|--------|----|--|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 | |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

23.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Graders Composite | | | | | | | | |
|-------------------------------------|------------|-------------|-----------------|--------|--------|--------|-----------------|-------------------|
| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
| Emission Factors | 0.0676 | 0.0014 | 0.3314 | 0.5695 | 0.0147 | 0.0147 | 0.0061 | 132.89 |
| Other Construction | Equipment | t Composite | e | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
| Emission Factors | 0.0442 | 0.0012 | 0.2021 | 0.3473 | 0.0068 | 0.0068 | 0.0039 | 122.60 |
| Rubber Tired Dozen | s Composit | te | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
| Emission Factors | 0.1671 | 0.0024 | 1.0824 | 0.6620 | 0.0418 | 0.0418 | 0.0150 | 239.45 |
| Tractors/Loaders/Backhoes Composite | | | | | | | | |
| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | | · or mer i rr | | | | | | | |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

23.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

PM10_{FD} = (20 * ACRE * WD) / 2000

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HAOnsite: Amount of Material to be Hauled Off-Site (yd³) HAOnffSite: Amount of Material to be Hauled Off-Site (yd³) HC: Average Hauling Truck Capacity (yd³) (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

23.2 Trenching/Excavating Phase

23.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date Start Month: 11 Start Quarter: 1 Start Year: 2025

- Phase Duration Number of Month: 2 Number of Days: 0

23.2.2 Trenching / Excavating Phase Assumptions

| - General Trenching/Excavating Information | |
|--|------|
| Area of Site to be Trenched/Excavated (ft ²): | 1500 |
| Amount of Material to be Hauled On-Site (yd ³): | 0 |
| Amount of Material to be Hauled Off-Site (yd ³): | 0 |

| - Trenching Default Settings | |
|---------------------------------|-------------|
| Default Settings Used: | Yes |
| Average Day(s) worked per week: | 5 (default) |

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|---|------------------------|---------------|
| Excavators Composite | 2 | 8 |
| Other General Industrial Equipmen Composite | 1 | 8 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³):20 (default)Average Hauling Truck Round Trip Commute (mile):20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

23.2.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Graders Composite | | | | | | | | | | | | |
|--|-------------------------------------|--------|--------|--------|--------|--------|--------|-------------------|--|--|--|--|
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | | |
| Emission Factors | 0.0676 | 0.0014 | 0.3314 | 0.5695 | 0.0147 | 0.0147 | 0.0061 | 132.89 | | | | |
| Other Construction Equipment Composite | | | | | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | | |
| Emission Factors | 0.0442 | 0.0012 | 0.2021 | 0.3473 | 0.0068 | 0.0068 | 0.0039 | 122.60 | | | | |
| Rubber Tired Dozers Composite | | | | | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | | |
| Emission Factors | 0.1671 | 0.0024 | 1.0824 | 0.6620 | 0.0418 | 0.0418 | 0.0150 | 239.45 | | | | |
| Tractors/Loaders/B | Tractors/Loaders/Backhoes Composite | | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | | |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 | | | | |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

23.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

PM10_{FD} = (20 * ACRE * WD) / 2000

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)

ACRE: Total acres (acres) WD: Number of Total Work Days (days) 2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³) HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³) HC: Average Hauling Truck Capacity (yd³) (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³) HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

 $\begin{array}{l} V_{POL}: \ Vehicle \ Emissions (TONs) \\ VMT_{VE}: \ Vehicle \ Exhaust \ Vehicle \ Miles \ Travel (miles) \\ 0.002205: \ Conversion \ Factor \ grams \ to \ pounds \\ EF_{POL}: \ Emission \ Factor \ for \ Pollutant \ (grams/mile) \\ VM: \ Vehicle \ Exhaust \ On \ Road \ Vehicle \ Mixture \ (\%) \\ 2000: \ Conversion \ Factor \ pounds \ to \ tons \end{array}$

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

23.3 Building Construction Phase

23.3.1 Building Construction Phase Timeline Assumptions

| - Phase Start Date | |
|--------------------|----------------|
| Start Month: | 1 |
| Start Quarter: | 1 |
| Start Year: | 2026 |
| - Phase Duration | |
| Number of Mor | 111: 18 |
| Number of Day | s: 0 |

23.3.2 Building Construction Phase Assumptions

General Building Construction Information Building Category: Office or Industrial Area of Building (ft²): 12000 Height of Building (ft): 15 Number of Units: N/A

- Building Construction Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of | Hours Per Day |
|-------------------------------------|-----------|---------------|
| | Equipment | |
| Cranes Composite | 1 | 4 |
| Forklifts Composite | 2 | 6 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

23.3.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Cranes Composite | | | | | | | | |
|-------------------------|--------|--------|--------|--------|--------|--------|-----------------|-------------------|
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
| Emission Factors | 0.0680 | 0.0013 | 0.4222 | 0.3737 | 0.0143 | 0.0143 | 0.0061 | 128.77 |

| Forklifts Composite | | | | | | | | | | | |
|-------------------------------------|--------|--------|--------|--------|--------|--------|-----------------|-------------------|--|--|--|
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | | |
| Emission Factors | 0.0236 | 0.0006 | 0.0859 | 0.2147 | 0.0025 | 0.0025 | 0.0021 | 54.449 | | | |
| Tractors/Loaders/Backhoes Composite | | | | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 | | | |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

23.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

VMT_{VT} = BA * BH * (0.38 / 1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VT}: Vender Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

23.4 Architectural Coatings Phase

23.4.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date Start Month: 6 Start Quarter: 1 Start Year: 2027

- Phase Duration Number of Month: 1 Number of Days: 0

23.4.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information Building Category: Non-Residential Total Square Footage (ft²): 12000 Number of Units: N/A
- Architectural Coatings Default Settings
 Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)
- Worker Trips Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

23.4.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|---------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

23.4.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

 $VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft²)
800: Conversion Factor square feet to man days (1 ft² / 1 man * day)

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft²)
2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)
0.0116: Emission Factor (lb/ft²)
2000: Conversion Factor pounds to tons

23.5 Paving Phase

23.5.1 Paving Phase Timeline Assumptions

- Phase Start Date Start Month: 7 Start Quarter: 1 Start Year: 2027

- Phase Duration

| Number of Month: | 2 |
|------------------|---|
| Number of Days: | 0 |

23.5.2 Paving Phase Assumptions

- General Paving Information Paving Area (ft²): 8750
- Paving Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|-------------------------------------|------------------------|---------------|
| Cement and Mortar Mixers Composite | 4 | 6 |
| Pavers Composite | 1 | 7 |
| Rollers Composite | 1 | 7 |
| Tractors/Loaders/Backhoes Composite | 1 | 7 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

23.5.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Graders Composite | | | | | | | | |
|-------------------------------------|------------|-------------|-----------------|--------|--------|--------|-----------------|-------------------|
| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
| Emission Factors | 0.0676 | 0.0014 | 0.3314 | 0.5695 | 0.0147 | 0.0147 | 0.0061 | 132.89 |
| Other Construction | Equipment | t Composite | e | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
| Emission Factors | 0.0442 | 0.0012 | 0.2021 | 0.3473 | 0.0068 | 0.0068 | 0.0039 | 122.60 |
| Rubber Tired Dozer | s Composit | te | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
| Emission Factors | 0.1671 | 0.0024 | 1.0824 | 0.6620 | 0.0418 | 0.0418 | 0.0150 | 239.45 |
| Tractors/Loaders/Backhoes Composite | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |

| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | 000.044 | 00759.241 |
|------|---------|---------|---------|---------|---------|---------|---------|-----------|
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | 000.054 | 00393.696 |

23.5.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft²)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)
HC: Average Hauling Truck Capacity (yd³)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft²)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)² / acre)

24. Construction / Demolition

24.1 General Information & Timeline Assumptions

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: MILCON: Construct Hush House

- Activity Description:

Construction of the Hush House (24,111 square feet) would occur from November 2025 through November 2026.

Trenching to extend site utilities would require approximately 100 feet of excavation. A 3-foot trench width for utilities was assumed. Trenching would begin in November 2025 and last approximately 1 month.

Construction of the new Hush House would total approximately 24,111 square feet. The height of the Hush House was assumed to be 20 feet. Construction would begin in December 2025 and last approximately 12 months.

Architectural coatings would be applied to the facility, totaling 24,111 square feet. Architectural coating application would begin in November 2026 and last approximately 1 month.

Paving for approach pavements would occur on an area totaling approximately 300 square feet. Paving would begin November 2026 and last approximately 1 months.

Assumed no materials are required to be hauled on- or off-site; excavated spoils will be used on-site.

- Activity Start Date

| Start Month: | 11 |
|--------------|------|
| Start Month: | 2025 |

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 11 |
| End Month: | 2026 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.558724 |
| SO _x | 0.005128 |
| NO _x | 1.550784 |
| СО | 2.357436 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.053680 |
| Pb | 0.000000 |
| NH ₃ | 0.001724 |
| CO ₂ e | 492.5 |

| PM 10 | | 0.056807 | | | | | |
|---|--|--|---|---|--|----------------|------------------|
| 24.1 Trencl | hing/Excavati | ing Phase | | | | | |
| 24.1.1 Tren | ching / Excav | vating Phase Ti | meline A | ssumptions | | | |
| - Phase Start Start Mo Start Qu Start Yea | onth: 11 arter: 1 | | | | | | |
| - Phase Dura Number Number | of Month: 1 | | | | | | |
| 24.1.2 Tren | ching / Excav | vating Phase As | sumptio | ns | | | |
| Area of S Amount | Site to be Tren of Material to | ating Informatio ched/Excavated (be Hauled On-Si be Hauled Off-Si | (ft ²): te (yd ³): | 300 0 0 | | | |
| Default S Average | Default Setting Settings Used: Day(s) worked | Y I per week: 5 | es (default) | | | | |
| - Constructio | on Exhaust (dei Ec | fault) quipment Name | | | Number O | f Hou | rs Per Day |
| | | 1 P | | | Equipmen | | , |
| | | | | | 2 | | |
| Excavators C | | . ~ . | | | | | 8 |
| Other Generation | al Industrial Eq | uipmen Composit | e | | 1 | | 8 |
| Other Generation | | | e | | | | |
| Other Genera Tractors/Loa - Vehicle Exh Average Average | al Industrial Eq aders/Backhoes naust Hauling Trucl Hauling Trucl | Composite k Capacity (yd ³): k Round Trip Co | | 20 (def nile): 20 (def | 1 1 Cault) | | 8 |
| Other Genera Tractors/Loa - Vehicle Exh Average Average | al Industrial Eq aders/Backhoes naust Hauling Truck Hauling Truck naust Vehicle M | Composite k Capacity (yd³): k Round Trip Co Aixture (%) | mmute (n | nile): 20 (def | 1 1 Cault) Cault) | HDDV | 8 8 |
| Other Genera Tractors/Loa - Vehicle Exh Average Average - Vehicle Exh | al Industrial Eq aders/Backhoes Haust Hauling Truck Hauling Truck aust Vehicle M LDGV | Composite k Capacity (yd ³): k Round Trip Co /ixture (%) LDGT | mmute (n HDGV | nile): 20 (def | 1 1 fault) fault) | HDDV 100.00 | 8 8 MC |
| Other Genera Tractors/Loa - Vehicle Exh Average Average - Vehicle Exh POVs - Worker Tri | al Industrial Eq aders/Backhoes Haust Hauling Truch Hauling Truch LDGV 0 | Composite k Capacity (yd³): k Round Trip Co Aixture (%) | mmute (n HDGV 0 | nile): 20 (def | 1 1 Cault) Cault) | HDDV 100.00 | 8 8 |
| Other Genera Tractors/Loa - Vehicle Exh Average Average - Vehicle Exh POVs - Worker Tri Average | al Industrial Eq aders/Backhoes Haust Hauling Truck Hauling Truck aust Vehicle M LDGV 0 ps Worker Round ps Vehicle Mix | Composite k Capacity (yd ³): k Round Trip Co /lixture (%) LDGT 0 d Trip Commute xture (%) | mmute (n HDGV 0 | nile): 20 (def LDDV 0 20 (default) | 1 1 Cault) Cault) | 100.00 | 8 8 8 0 |
| Other Genera Tractors/Loa - Vehicle Exh Average Average - Vehicle Exh POVs - Worker Tri Average | al Industrial Eq aders/Backhoes Hauling Truch Hauling Truch Hauling Truch LDGV 0 ps Worker Round | Composite k Capacity (yd ³): k Round Trip Co /lixture (%) LDGT 0 d Trip Commute | mmute (n HDGV 0 | nile): 20 (def | 1 1 fault) fault) LDDT | | 8 8 MC |

24.1.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| VOC SO _x NO _x CO PM 10 PM 2.5 Pb NH ₃ CO ₂ e | VOC S | SO _x NO _x | CO | PM 10 | PM 2.5 | Pb | \mathbf{NH}_3 | CO ₂ e |
|--|-------|---------------------------------|----|-------|--------|----|-----------------|-------------------|

| LDGV | 000.597 | 000.007 | 000.639 | 005.101 | 000.011 | 000.009 | 000.033 | 00367.095 |
|------|---------|---------|---------|---------|---------|---------|-------------|-----------|
| LDGT | 000.799 | 000.010 | 001.093 | 008.335 | 000.012 | 000.010 | 000.034 | 00489.953 |
| HDGV | 001.373 | 000.015 | 002.807 | 024.705 | 000.026 | 000.023 | 000.045 | 00760.448 |
| LDDV | 000.233 | 000.003 | 000.314 | 003.669 | 000.006 | 000.006 | 000.008 | 00375.756 |
| LDDT | 000.527 | 000.005 | 000.830 | 007.383 | 000.008 | 000.007 | 000.008 | 00585.601 |
| HDDV | 000.773 | 000.014 | 008.040 | 002.706 | 000.363 | 000.334 | 000.028 | 01561.469 |
| MC | 002.788 | 000.008 | 000.733 | 014.953 | 000.027 | 000.024 | 000.050 | 00392.901 |

24.1.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

 $PM10_{FD} = (20 * ACRE * WD) / 2000$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³) HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³) HC: Average Hauling Truck Capacity (yd³) (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³) HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

24.2 Building Construction Phase

24.2.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

Start Month:12Start Quarter:1Start Year:2025

- Phase Duration Number of Month: 12 Number of Days: 0

24.2.2 Building Construction Phase Assumptions

- General Building Construction Information

| Building Category: | Office or Industrial |
|--------------------------------------|----------------------|
| Area of Building (ft ²): | 24111 |
| Height of Building (ft): | 20 |
| Number of Units: | N/A |

Building Construction Default Settings
 Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|-------------------------------------|------------------------|---------------|
| Cranes Composite | 1 | 6 |
| Forklifts Composite | 2 | 6 |
| Generator Sets Composite | 1 | 8 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |
| Welders Composite | 3 | 8 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

24.2.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Cranes Composite | | · | | · | | | | | | |
|----------------------------|---------------------|---------|--------|--------|--------|--------|--------|-------------------|--|--|
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | |
| Emission Factors | 0.0680 | 0.0013 | 0.4222 | 0.3737 | 0.0143 | 0.0143 | 0.0061 | 128.77 | | |
| Forklifts Composite | Forklifts Composite | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH4 | CO ₂ e | | |
| Emission Factors | 0.0236 | 0.0006 | 0.0859 | 0.2147 | 0.0025 | 0.0025 | 0.0021 | 54.449 | | |
| Generator Sets Com | posite | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH4 | CO ₂ e | | |
| Emission Factors | 0.0287 | 0.0006 | 0.2329 | 0.2666 | 0.0080 | 0.0080 | 0.0025 | 61.057 | | |
| Tractors/Loaders/B | ackhoes Co | mposite | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH4 | CO ₂ e | | |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 | | |
| Welders Composite | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH4 | CO ₂ e | | |
| Emission Factors | 0.0214 | 0.0003 | 0.1373 | 0.1745 | 0.0051 | 0.0051 | 0.0019 | 25.650 | | |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | | | | | | / | | | |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

24.2.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase $VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

 $VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

24.3 Architectural Coatings Phase

24.3.1 Architectural Coatings Phase Timeline Assumptions

| 11 |
|------|
| 1 |
| 2026 |
| |

- Phase Duration Number of Month: 1 Number of Days: 0

24.3.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information Building Category: Non-Residential Total Square Footage (ft²): 24111 Number of Units: N/A
- Architectural Coatings Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)
- Worker Trips Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

24.3.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|---------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

24.3.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

 $VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft²)
800: Conversion Factor square feet to man days (1 ft² / 1 man * day)

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft²)
2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)
0.0116: Emission Factor (lb/ft²)
2000: Conversion Factor pounds to tons

24.4 Paving Phase

24.4.1 Paving Phase Timeline Assumptions

- Phase Start Date Start Month: 11 Start Quarter: 1 Start Year: 2026

- Phase Duration Number of Month: 1 Number of Days: 0

24.4.2 Paving Phase Assumptions

- General Paving Information Paving Area (ft²): 300
- Paving Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|-------------------------------------|------------------------|---------------|
| Cement and Mortar Mixers Composite | 4 | 6 |
| Pavers Composite | 1 | 7 |
| Rollers Composite | 1 | 7 |
| Tractors/Loaders/Backhoes Composite | 1 | 7 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

24.4.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.597 | 000.007 | 000.639 | 005.101 | 000.011 | 000.009 | | 000.033 | 00367.095 |
| LDGT | 000.799 | 000.010 | 001.093 | 008.335 | 000.012 | 000.010 | | 000.034 | 00489.953 |
| HDGV | 001.373 | 000.015 | 002.807 | 024.705 | 000.026 | 000.023 | | 000.045 | 00760.448 |
| LDDV | 000.233 | 000.003 | 000.314 | 003.669 | 000.006 | 000.006 | | 000.008 | 00375.756 |
| LDDT | 000.527 | 000.005 | 000.830 | 007.383 | 000.008 | 000.007 | | 000.008 | 00585.601 |
| HDDV | 000.773 | 000.014 | 008.040 | 002.706 | 000.363 | 000.334 | | 000.028 | 01561.469 |
| MC | 002.788 | 000.008 | 000.733 | 014.953 | 000.027 | 000.024 | | 000.050 | 00392.901 |

24.4.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft²)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)
HC: Average Hauling Truck Capacity (yd³)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) WD: Number of Total Work Days (days) WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of Works NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft²)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)² / acre)

25. Construction / Demolition

25.1 General Information & Timeline Assumptions

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: MILCON: Construct Aircraft Shelters

- Activity Description:

Construction of 58 aircraft shelters (sunshades) would occur from November 2025 through November 2026.

Demolition would be required for the existing T-38C shelters. Demolition would include removal of approximately 68 sunshades totaling approximately 180,000 square feet. Demolition would begin in November 2025 and last approximately 6 months.

Construction would include installation of 58 sunshades totaling approximately 265,400 square feet. The height of all sunshades was assumed to be 15 feet. Construction would begin in May 2026 and last approximately 7 months.

- Activity Start Date

 Start Month:
 11

 Start Month:
 2025

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 11 |
| End Month: | 2026 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.279463 |
| SO _x | 0.005621 |

| Pollutant | Total Emissions (TONs) |
|-----------|------------------------|
| PM 2.5 | 0.059502 |
| Pb | 0.000000 |

| NO _x | 1.763321 |
|-----------------|----------|
| CO | 2.287696 |
| PM 10 | 0.627799 |

| NH ₃ | 0.003919 |
|-------------------|----------|
| CO ₂ e | 564.9 |
| | |

25.1 Demolition Phase

25.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date Start Month:

Start Month:11Start Quarter:1Start Year:2025

- Phase Duration Number of Month: 6 Number of Days: 0

25.1.2 Demolition Phase Assumptions

- General Demolition Information
 Area of Building to be demolished (ft²): 180000
 Height of Building to be demolished (ft): 15
- Default Settings Used: Yes
- Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|-------------------------------------|------------------------|---------------|
| Concrete/Industrial Saws Composite | 1 | 8 |
| Rubber Tired Dozers Composite | 1 | 1 |
| Tractors/Loaders/Backhoes Composite | 3 | 8 |

- Vehicle Exhaust

| Average Hauling Truck Capacity (yd ³): | 20 (default) |
|--|--------------|
| Average Hauling Truck Round Trip Commute (mile): | 20 (default) |

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

25.1.3 Demolition Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Concrete/Industrial Saws Composite | | | | | | | | | |
|------------------------------------|-----|-----|-----|----|-------|--------|-----|-------------------|--|
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH4 | CO ₂ e | |

| Emission Factors | 0.0336 | 0.0006 | 0.2470 | 0.3705 | 0.0093 | 0.0093 | 0.0030 | 58.539 | | |
|-------------------------------------|--------|--------|--------|--------|--------|--------|-----------------|-------------------|--|--|
| Rubber Tired Dozers Composite | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | |
| Emission Factors | 0.1671 | 0.0024 | 1.0824 | 0.6620 | 0.0418 | 0.0418 | 0.0150 | 239.45 | | |
| Tractors/Loaders/Backhoes Composite | | | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 | | |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

25.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

 $PM10_{FD} = (0.00042 * BA * BH) / 2000$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
0.00042: Emission Factor (lb/ft³)
BA: Area of Building to be demolished (ft²)
BH: Height of Building to be demolished (ft)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building being demolish (ft²)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd³)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs) VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Vehicle Exhaust On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

25.2 Building Construction Phase

25.2.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

| Start Month: | 5 |
|----------------|------|
| Start Quarter: | 1 |
| Start Year: | 2026 |

- Phase Duration Number of Month: 7 Number of Days: 0

25.2.2 Building Construction Phase Assumptions

- General Building Construction Information

| Building Category: | Office or Industrial |
|--------------------------------------|----------------------|
| Area of Building (ft ²): | 265400 |
| Height of Building (ft): | 15 |
| Number of Units: | N/A |

Building Construction Default Settings
 Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|-------------------------------------|------------------------|---------------|
| Cranes Composite | 1 | 7 |
| Forklifts Composite | 2 | 7 |
| Generator Sets Composite | 1 | 8 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |

| Welders Composite | 3 | 8 |
|-------------------|---|---|

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

25.2.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Cranes Composite | | | | | | | | | | |
|-------------------------------------|---------------------|--------|--------|--------|--------|--------|-----------------|-------------------|--|--|
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | |
| Emission Factors | 0.0680 | 0.0013 | 0.4222 | 0.3737 | 0.0143 | 0.0143 | 0.0061 | 128.77 | | |
| Forklifts Composite | Forklifts Composite | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | |
| Emission Factors | 0.0236 | 0.0006 | 0.0859 | 0.2147 | 0.0025 | 0.0025 | 0.0021 | 54.449 | | |
| Generator Sets Composite | | | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | |
| Emission Factors | 0.0287 | 0.0006 | 0.2329 | 0.2666 | 0.0080 | 0.0080 | 0.0025 | 61.057 | | |
| Tractors/Loaders/Backhoes Composite | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 | | |
| Welders Composite | | | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | |
| Emission Factors | 0.0214 | 0.0003 | 0.1373 | 0.1745 | 0.0051 | 0.0051 | 0.0019 | 25.650 | | |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | | | | | · · · · · · · · · · · · · · · · · · · | / | | | |
|------|---------|---------|-----------------|---------|---------------------------------------|---------|----|-----------------|-------------------|
| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

25.2.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase VMT_{VT} = BA * BH * (0.38 / 1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VT}: Vender Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

26. Construction / Demolition

26.1 General Information & Timeline Assumptions

- Activity Location County: Lowndes, MS

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: MILCON: Addition to Egress Shop

- Activity Description:

Construction of the addition to the Egress Shop would occur from July 2026 through August 2028.

Construction of the Egress Shop addition would total approximately 4,000 square feet. The height of the addition was assumed to be 20 feet. Construction would begin in July 2026 and last approximately 25 months.

Architectural coatings would be applied to the addition, totaling 4,000 square feet. Architectural coating application would begin in August 2028 and last approximately 1 month.

- Activity Start Date

Start Month:7Start Month:2026

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 8 |
| End Month: | 2028 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.289900 |
| SO _x | 0.005043 |
| NO _x | 1.163443 |
| СО | 2.124393 |
| PM 10 | 0.036831 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.036783 |
| Pb | 0.000000 |
| NH ₃ | 0.001413 |
| CO ₂ e | 485.3 |
| | |

26.1 Building Construction Phase

26.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

Start Month:7Start Quarter:1Start Year:2026

- Phase Duration Number of Month: 25 Number of Days: 0

26.1.2 Building Construction Phase Assumptions

- General Building Construction Information

| Building Category: | Office or Industrial |
|--------------------------------------|----------------------|
| Area of Building (ft ²): | 4000 |
| Height of Building (ft): | 20 |
| Number of Units: | N/A |

- Building Construction Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|-------------------------------------|------------------------|---------------|
| Cranes Composite | 1 | 4 |
| Forklifts Composite | 2 | 6 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

26.1.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Cranes Composite | Cranes Composite | | | | | | | | | | | |
|-------------------------|-------------------------------------|--------|--------|--------|--------|--------|--------|-------------------|--|--|--|--|
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | | |
| Emission Factors | 0.0680 | 0.0013 | 0.4222 | 0.3737 | 0.0143 | 0.0143 | 0.0061 | 128.77 | | | | |
| Forklifts Composite | | | | | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | | | |
| Emission Factors | 0.0236 | 0.0006 | 0.0859 | 0.2147 | 0.0025 | 0.0025 | 0.0021 | 54.449 | | | | |
| Tractors/Loaders/B | Tractors/Loaders/Backhoes Composite | | | | | | | | | | | |

| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH4 | CO ₂ e |
|-------------------------|--------|--------|--------|--------|--------|--------|--------|-------------------|
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|---------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

26.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

VMT_{VE} = BA * BH * (0.42 / 1000) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

VMT_{VT} = BA * BH * (0.38 / 1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VT}: Vender Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

26.2 Architectural Coatings Phase

26.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date Start Month: 8 Start Quarter: 1 Start Year: 2028

- Phase Duration Number of Month: 1 Number of Days: 0

26.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information Building Category: Non-Residential Total Square Footage (ft²): 4000 Number of Units: N/A
- Architectural Coatings Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)
- Worker Trips Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

26.2.3 Architectural Coatings Phase Emission Factor(s)

| - WOIKCI | worker rings Emission Factors (grams/mile) | | | | | | | | | |
|----------|--|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|--|
| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e | |
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 | |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 | |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 | |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 | |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 | |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 | |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 | |

- Worker Trips Emission Factors (grams/mile)

26.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

 $VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft²)
800: Conversion Factor square feet to man days (1 ft² / 1 man * day)

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft²)
2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)
0.0116: Emission Factor (lb/ft²)
2000: Conversion Factor pounds to tons

27. Construction / Demolition

27.1 General Information & Timeline Assumptions

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: MILCON: Construct Jet Blast Deflectors

- Activity Description:

Construction of the jet blast deflectors would occur from November 2025 through November 2026.

Construction of the deflectors would total approximately 48,000 feet. The height of the deflectors was assumed to be 12 feet. Construction would begin in November 2025 and last approximately 13 months.

- Activity Start Date

| Start Month: | 11 |
|--------------|------|
| Start Month: | 2025 |

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 11 |
| End Month: | 2026 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.265030 |
| SO _x | 0.004879 |
| NO _x | 1.502261 |
| СО | 2.241723 |
| PM 10 | 0.051185 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.051022 |
| Pb | 0.000000 |
| NH ₃ | 0.001713 |
| CO ₂ e | 469.5 |
| | |

27.1 Building Construction Phase

27.1.1 Building Construction Phase Timeline Assumptions

| Phase Start Date | |
|------------------|------|
| Start Month: | 11 |
| Start Quarter: | 1 |
| Start Year: | 2025 |

-

- Phase Duration Number of Month: 13 Number of Days: 0

27.1.2 Building Construction Phase Assumptions

| - General Building Construct | tion Information |
|--------------------------------------|----------------------|
| Building Category: | Office or Industrial |
| Area of Building (ft ²): | 48000 |
| Height of Building (ft): | 12 |
| Number of Units: | N/A |

| Building Construction Default Settings | | | | | |
|--|-------------|--|--|--|--|
| Default Settings Used: | Yes | | | | |
| Average Day(s) worked per week: | 5 (default) | | | | |

- Construction Exhaust (default)

| Equipment Name | Number Of | Hours Per Day |
|-------------------------------------|-----------|---------------|
| | Equipment | |
| Cranes Composite | 1 | 6 |
| Forklifts Composite | 2 | 6 |
| Generator Sets Composite | 1 | 8 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |
| Welders Composite | 3 | 8 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

27.1.3 Building Construction Phase Emission Factor(s)

| Construction Exhaust Emission 1 actors (10/11041) (actually | | | | | | | | | | |
|---|---------------------|---------|-----------------|--------|--------|--------|-----------------|-------------------|--|--|
| Cranes Composite | | | | | | | | | | |
| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | |
| Emission Factors | 0.0680 | 0.0013 | 0.4222 | 0.3737 | 0.0143 | 0.0143 | 0.0061 | 128.77 | | |
| Forklifts Composite | Forklifts Composite | | | | | | | | | |
| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | |
| Emission Factors | 0.0236 | 0.0006 | 0.0859 | 0.2147 | 0.0025 | 0.0025 | 0.0021 | 54.449 | | |
| Generator Sets Com | posite | | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | | |
| Emission Factors | 0.0287 | 0.0006 | 0.2329 | 0.2666 | 0.0080 | 0.0080 | 0.0025 | 61.057 | | |
| Tractors/Loaders/B | ackhoes Co | mposite | | | | | | | | |
| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 | | |
| Welders Composite | | | | | | | | | | |
| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | | |
| Emission Factors | 0.0214 | 0.0003 | 0.1373 | 0.1745 | 0.0051 | 0.0051 | 0.0019 | 25.650 | | |

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| · emiere B | enere Exhaust & Worker Trips Enission Factors (grams/mile) | | | | | | | | |
|------------|--|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

27.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

 $VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VT}: Vender Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

28. Construction / Demolition

28.1 General Information & Timeline Assumptions

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: FSRM: Renovate Building 452 (Hangar 3)

- Activity Description:

Renovation of Hangar 452 would occur from August 2024 through February 2026.

It was assumed 25 percent of the total square footage of the facility (21,024 square feet * 0.25 = 5,256 square feet) would be construction to equate the renovations. Renovations would begin in August 2024 and last approximately 19 months.

It was assumed architectural coatings would be required for the entire facility (21,024 square feet) following the renovations. Architectural coating application would begin in February 2026 and last approximately 1 month.

- Activity Start Date Start Month: 8 Start Month: 2024

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 2 |
| End Month: | 2026 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.436750 |
| SO _x | 0.003838 |
| NO _x | 0.965344 |
| СО | 1.619187 |
| PM 10 | 0.032164 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.032123 |
| Pb | 0.000000 |
| NH ₃ | 0.001095 |
| CO ₂ e | 369.5 |
| | |

28.1 Building Construction Phase

28.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date Start Month: 8 Start Quarter: 1 Start Year: 2024

| _ | Phase | Duration |
|---|--------|----------|
| | 1 mase | Duration |

Number of Month: 19 Number of Days: 0

28.1.2 Building Construction Phase Assumptions

- General Building Construction Information

| Building Category: | Office or Industrial |
|--------------------------------------|----------------------|
| Area of Building (ft ²): | 5256 |
| Height of Building (ft): | 15 |
| Number of Units: | N/A |

| - Building Construction Default Settings | |
|--|-------------|
| Default Settings Used: | Yes |
| Average Day(s) worked per week: | 5 (default) |

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|-------------------------------------|------------------------|---------------|
| Cranes Composite | 1 | 4 |
| Forklifts Composite | 2 | 6 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

28.1.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Cranes Composite | | | | | | | | |
|-------------------------------------|--------|--------|--------|--------|--------|--------|--------|-------------------|
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0715 | 0.0013 | 0.4600 | 0.3758 | 0.0161 | 0.0161 | 0.0064 | 128.78 |
| Forklifts Composite | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e |
| Emission Factors | 0.0246 | 0.0006 | 0.0973 | 0.2146 | 0.0029 | 0.0029 | 0.0022 | 54.451 |
| Tractors/Loaders/Backhoes Composite | | | | | | | | |

| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
|-------------------------|--------|--------|--------|--------|--------|--------|-----------------|-------------------|
| Emission Factors | 0.0348 | 0.0007 | 0.1980 | 0.3589 | 0.0068 | 0.0068 | 0.0031 | 66.875 |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|---------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

28.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

VMT_{VE} = BA * BH * (0.42 / 1000) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

VMT_{VT} = BA * BH * (0.38 / 1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VT}: Vender Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

28.2 Architectural Coatings Phase

28.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date Start Month: 2 Start Quarter: 1 Start Year: 2026

- Phase Duration Number of Month: 1 Number of Days: 0

28.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information Building Category: Non-Residential Total Square Footage (ft²): 21024 Number of Units: N/A
- Architectural Coatings Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)
- Worker Trips Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

28.2.3 Architectural Coatings Phase Emission Factor(s)

| - worker rings Emission Factors (grams/mile) | | | | | | | | | |
|--|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

- Worker Trips Emission Factors (grams/mile)

28.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

 $VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft²)
800: Conversion Factor square feet to man days (1 ft² / 1 man * day)

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft²)
2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)
0.0116: Emission Factor (lb/ft²)
2000: Conversion Factor pounds to tons

29. Construction / Demolition

29.1 General Information & Timeline Assumptions

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: FSRM: Wash Rack Renovation

- Activity Description:

Renovation of Building 454 to relocate the wash rack would occur from August 2024 through September 2025.

It was assumed 25 percent of the total square footage of the facility (13,124 square feet * 0.25 = 3,281 square feet) would be construction to equate the renovations. Renovations would begin in August 2024 and last approximately 14 months.

It was assumed architectural coatings would be required for the entire facility (13,124 square feet) following the renovations. Architectural coatings application would begin in September 2025 and last approximately 1 month.

- Activity Start Date

| Start Month: | 8 |
|--------------|------|
| Start Month: | 2024 |

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 9 |
| End Month: | 2025 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.294183 |
| SO _x | 0.002825 |
| NO _x | 0.710509 |
| СО | 1.191602 |
| PM 10 | 0.023672 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.023644 |
| Pb | 0.000000 |
| NH ₃ | 0.000796 |
| CO ₂ e | 271.9 |
| | |

29.1 Building Construction Phase

29.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date Start Month: 8 Start Quarter: 1 Start Year: 2024
- Phase Duration Number of Month: 14 Number of Days: 0

29.1.2 Building Construction Phase Assumptions

- General Building Construction Information

| Building Category: | Office or Industrial |
|--------------------------------------|----------------------|
| Area of Building (ft ²): | 3281 |
| Height of Building (ft): | 15 |
| Number of Units: | N/A |

- Building Construction Default Settings

Default Settings Used:YesAverage Day(s) worked per week:5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|------------------|------------------------|---------------|
| Cranes Composite | 1 | 4 |

| Forklifts Composite | 2 | 6 |
|-------------------------------------|---|---|
| Tractors/Loaders/Backhoes Composite | 1 | 8 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

29.1.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

| Cranes Composite | | | | | | | | | |
|----------------------------|-------------------------------------|--------|-----------------|--------|--------|--------|-----------------|-------------------|--|
| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | |
| Emission Factors | 0.0715 | 0.0013 | 0.4600 | 0.3758 | 0.0161 | 0.0161 | 0.0064 | 128.78 | |
| Forklifts Composite | Forklifts Composite | | | | | | | | |
| | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CH4 | CO ₂ e | |
| Emission Factors | 0.0246 | 0.0006 | 0.0973 | 0.2146 | 0.0029 | 0.0029 | 0.0022 | 54.451 | |
| Tractors/Loaders/B | Tractors/Loaders/Backhoes Composite | | | | | | | | |
| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e | |
| Emission Factors | 0.0348 | 0.0007 | 0.1980 | 0.3589 | 0.0068 | 0.0068 | 0.0031 | 66.875 | |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|---------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

29.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment

WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

 $VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs) VMT_{VT}: Vender Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

29.2 Architectural Coatings Phase

29.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date Start Month: 9 Start Quarter: 1 Start Year: 2025

- Phase Duration Number of Month: 1 Number of Days: 0

29.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information Building Category: Non-Residential Total Square Footage (ft²): 13124 Number of Units: N/A
- Architectural Coatings Default Settings
 Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)
- Worker Trips Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

29.2.3 Architectural Coatings Phase Emission Factor(s)

| ti officer . | i i ps Emis | nom i actor | 5 (gi ums/ m | me) | | | | | |
|--------------|-------------|-------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

- Worker Trips Emission Factors (grams/mile)

29.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

 $VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

1: Conversion Factor man days to trips (1 trip / 1 man * day)

WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft²)
800: Conversion Factor square feet to man days (1 ft² / 1 man * day)

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft²)
2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area)
0.0116: Emission Factor (lb/ft²)
2000: Conversion Factor pounds to tons

30. Construction / Demolition

30.1 General Information & Timeline Assumptions

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: FSRM: Antenna Farm

- Activity Description:

Construction of the antenna farm would occur from August 2024 through December 2024.

It was assumed approximately 5,000 square feet would be trenched and excavated for installation of the antenna farm. Trenching/excavation would begin in August 2024 and last approximately 5 months.

Assumed no materials are required to be hauled on- or off-site; excavated spoils will be used on-site.

| - Activity Start Date | |
|-----------------------|------|
| Start Month: | 8 |
| Start Month: | 2024 |

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 12 |
| End Month: | 2024 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.103650 |
| SO _x | 0.002153 |
| NO _x | 0.497117 |

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| PM 2.5 | 0.018234 |
| Pb | 0.000000 |
| NH ₃ | 0.000275 |

| СО | 0.837771 | CO ₂ e | 203.1 |
|-------|----------|-------------------|-------|
| PM 10 | 0.266939 | | |

30.1 Trenching/Excavating Phase

30.1.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date Start Month: 8 Start Quarter: 1 Start Year: 2024

- Phase Duration Number of Month: 5 Number of Days: 0

30.1.2 Trenching / Excavating Phase Assumptions

| - General Trenching/Excavating Information | |
|--|------|
| Area of Site to be Trenched/Excavated (ft ²): | 5000 |
| Amount of Material to be Hauled On-Site (yd ³): | 0 |
| Amount of Material to be Hauled Off-Site (yd ³): | 0 |

| - Trenching Default Settings | |
|---------------------------------|-------------|
| Default Settings Used: | Yes |
| Average Day(s) worked per week: | 5 (default) |

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|---|------------------------|---------------|
| Excavators Composite | 2 | 8 |
| Other General Industrial Equipmen Composite | 1 | 8 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |

- Vehicle Exhaust

| Average Hauling Truck Capacity (yd ³): | 20 (default) |
|--|--------------|
| Average Hauling Truck Round Trip Commute (mile): | 20 (default) |

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

30.1.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.597 | 000.007 | 000.639 | 005.101 | 000.011 | 000.009 | | 000.033 | 00367.095 |
| LDGT | 000.799 | 000.010 | 001.093 | 008.335 | 000.012 | 000.010 | | 000.034 | 00489.953 |
| HDGV | 001.373 | 000.015 | 002.807 | 024.705 | 000.026 | 000.023 | | 000.045 | 00760.448 |
| LDDV | 000.233 | 000.003 | 000.314 | 003.669 | 000.006 | 000.006 | | 000.008 | 00375.756 |
| LDDT | 000.527 | 000.005 | 000.830 | 007.383 | 000.008 | 000.007 | | 000.008 | 00585.601 |
| HDDV | 000.773 | 000.014 | 008.040 | 002.706 | 000.363 | 000.334 | | 000.028 | 01561.469 |
| MC | 002.788 | 000.008 | 000.733 | 014.953 | 000.027 | 000.024 | | 000.050 | 00392.901 |

30.1.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

 $PM10_{FD} = (20 * ACRE * WD) / 2000$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³) HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³) HC: Average Hauling Truck Capacity (yd³) (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³) HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) WD: Number of Total Work Days (days) WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of Works NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

31. Construction / Demolition

31.1 General Information & Timeline Assumptions

- Activity Location

County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: FSRM: Squadron Operations Buildings Renovations

- Activity Description:

Renovation of the Squadron Operations Buildings (Buildings 216 and 234) would occur from July 2025 through August 2028.

It was assumed 25 percent of the total square footage of Building 216 (26,603 square feet) and Building 234 (13,686 square feet) (40,289 total square feet * 0.25 = 10,072.25 square feet) would be construction to equate the renovations. Renovations would begin in July 2025 and last approximately 34 months.

It was assumed architectural coatings would be required for the entire building area (40,289 square feet) following the renovations. Architectural coatings application would begin in August 2028 and last approximately 1 month.

- Activity Start Date

Start Month:7Start Month:2025

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 8 |
| End Month: | 2028 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.798913 |
| SO _x | 0.006868 |
| NO _x | 1.585700 |
| CO | 2.891207 |
| PM 10 | 0.050214 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.050138 |
| Pb | 0.000000 |
| NH ₃ | 0.001947 |
| CO ₂ e | 661.2 |
| | |

31.1 Building Construction Phase

31.1.1 Building Construction Phase Timeline Assumptions

| - Phase Start Date | |
|--------------------|------|
| Start Month: | 7 |
| Start Quarter: | 1 |
| Start Year: | 2025 |

- Phase Duration Number of Month: 34 Number of Days: 0

31.1.2 Building Construction Phase Assumptions

| - General Building Construction Information | | |
|---|----------------------|--|
| Building Category: | Office or Industrial | |
| Area of Building (ft ²): | 10072.25 | |
| Height of Building (ft): | 15 | |
| Number of Units: | N/A | |

| - Building Construction Default Settings | |
|--|-------------|
| Default Settings Used: | Yes |
| Average Day(s) worked per week: | 5 (default) |

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|-------------------------------------|------------------------|---------------|
| Cranes Composite | 1 | 4 |
| Forklifts Composite | 2 | 6 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

31.1.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite

| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
|-------------------------------------|--------|--------|--------|--------|--------|--------|-----------------|-------------------|
| Emission Factors | 0.0680 | 0.0013 | 0.4222 | 0.3737 | 0.0143 | 0.0143 | 0.0061 | 128.77 |
| Forklifts Composite | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
| Emission Factors | 0.0236 | 0.0006 | 0.0859 | 0.2147 | 0.0025 | 0.0025 | 0.0021 | 54.449 |
| Tractors/Loaders/Backhoes Composite | | | | | | | | |
| | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CH ₄ | CO ₂ e |
| Emission Factors | 0.0335 | 0.0007 | 0.1857 | 0.3586 | 0.0058 | 0.0058 | 0.0030 | 66.872 |

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | | it of her if i | | | | / | | | |
|------|---------|----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

31.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) WD: Number of Total Work Days (days) WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of WorksNE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

VMT_{VT} = BA * BH * (0.38 / 1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

 $\begin{array}{l} V_{POL}: \ensuremath{\,\,Venthetarrow}\xspace{1.5} VMT_{VT}: \ensuremath{\,Venthetarrow}\xspace{1.5} VMT_{VT}: \ensuremath{\,Venthetarrow}\xspace{1.5} Venthetarrow\xspace{1.5} VM2002205: \ensuremath{\,Conversion}\xspace{1.5} Factor grams to pounds \\ EF_{POL}: \ensuremath{\,Emission}\xspace{1.5} Factor for Pollutant (grams/mile) \\ VM: \ensuremath{\,Vorker}\xspace{1.5} Trips On Road Vehicle Mixture (\%) \\ 2000: \ensuremath{\,Conversion}\xspace{1.5} Factor pounds to tons \\ \end{array}$

31.2 Architectural Coatings Phase

31.2.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date Start Month: 8 Start Quarter: 1 Start Year: 2028

- Phase Duration Number of Month: 1 Number of Days: 0

31.2.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information Building Category: Non-Residential Total Square Footage (ft²): 40289 Number of Units: N/A
- Architectural Coatings Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

| - Worker Trips Vehicle Mixture (%) | | | | | | | |
|------------------------------------|-------|-------|------|------|------|------|----|
| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

31.2.3 Architectural Coatings Phase Emission Factor(s)

| - Worker Trips Emission Factors (gr | ams/mile) |
|-------------------------------------|-----------|
|-------------------------------------|-----------|

| | | ion i actor | | | | | | | |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | \mathbf{NH}_3 | CO ₂ e |
| LDGV | 000.296 | 000.002 | 000.222 | 003.369 | 000.006 | 000.006 | | 000.022 | 00320.428 |
| LDGT | 000.371 | 000.003 | 000.387 | 004.752 | 000.008 | 000.007 | | 000.024 | 00412.572 |
| HDGV | 000.724 | 000.005 | 000.965 | 014.725 | 000.017 | 000.015 | | 000.044 | 00759.241 |
| LDDV | 000.101 | 000.003 | 000.132 | 002.591 | 000.004 | 000.004 | | 000.008 | 00312.132 |
| LDDT | 000.233 | 000.004 | 000.371 | 004.384 | 000.007 | 000.006 | | 000.008 | 00442.757 |
| HDDV | 000.449 | 000.013 | 004.500 | 001.645 | 000.163 | 000.150 | | 000.028 | 01485.593 |
| MC | 002.664 | 000.003 | 000.707 | 013.134 | 000.026 | 000.023 | | 000.054 | 00393.696 |

31.2.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

 $VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 1: Conversion Factor man days to trips (1 trip / 1 man * day) WT: Average Worker Round Trip Commute (mile) PA: Paint Area (ft²) 800: Conversion Factor square feet to man days ($1 \text{ ft}^2 / 1 \text{ man } * \text{ day}$)

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs) VMT_{WT}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOCAC: Architectural Coating VOC Emissions (TONs) BA: Area of Building (ft²) 2.0: Conversion Factor total area to coated area (2.0 ft² coated area / total area) 0.0116: Emission Factor (lb/ft²) 2000: Conversion Factor pounds to tons

32. Construction / Demolition

32.1 General Information & Timeline Assumptions

- Activity Location County: Lowndes, MS

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: FSRM: Airfield Improvements

- Activity Description:

Aircraft improvements would occur from July 2025 through December 2025.

Airfield improvements would occur on an area totaling approximately 720,000 square feet. Improvements would begin in July 2025 and last approximately 6 months.

- Activity Start Date

| Start Month: | 7 |
|--------------|------|
| Start Month: | 2025 |

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 12 |
| End Month: | 2025 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.157002 |
| SO _x | 0.001830 |
| NO _x | 0.775266 |
| СО | 1.040129 |
| PM 10 | 0.041883 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.041779 |
| Pb | 0.000000 |
| NH ₃ | 0.000618 |
| CO ₂ e | 182.3 |
| | |

32.1 Paving Phase

32.1.1 Paving Phase Timeline Assumptions

- Phase Start Date

Start Month:7Start Quarter:1Start Year:2025

- Phase Duration Number of Month: 6 Number of Days: 0

32.1.2 Paving Phase Assumptions

- General Paving Information Paving Area (ft²): 720000

| - Paving Default Settings | |
|---------------------------------|-------------|
| Default Settings Used: | Yes |
| Average Day(s) worked per week: | 5 (default) |

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|----------------------------|------------------------|---------------|
| Pavers Composite | 1 | 8 |
| Paving Equipment Composite | 2 | 8 |
| Rollers Composite | 2 | 6 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

32.1.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | Pb | \mathbf{NH}_3 | CO ₂ e |
|------|---------|---------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.597 | 000.007 | 000.639 | 005.101 | 000.011 | 000.009 | | 000.033 | 00367.095 |
| LDGT | 000.799 | 000.010 | 001.093 | 008.335 | 000.012 | 000.010 | | 000.034 | 00489.953 |
| HDGV | 001.373 | 000.015 | 002.807 | 024.705 | 000.026 | 000.023 | | 000.045 | 00760.448 |
| LDDV | 000.233 | 000.003 | 000.314 | 003.669 | 000.006 | 000.006 | | 000.008 | 00375.756 |
| LDDT | 000.527 | 000.005 | 000.830 | 007.383 | 000.008 | 000.007 | | 000.008 | 00585.601 |
| HDDV | 000.773 | 000.014 | 008.040 | 002.706 | 000.363 | 000.334 | | 000.028 | 01561.469 |
| MC | 002.788 | 000.008 | 000.733 | 014.953 | 000.027 | 000.024 | | 000.050 | 00392.901 |

32.1.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

 $\begin{array}{l} VMT_{VE}: \mbox{ Vehicle Exhaust Vehicle Miles Travel (miles)} \\ PA: \mbox{ Paving Area (ft^2)} \\ 0.25: \mbox{ Thickness of Paving Area (ft)} \\ (1 / 27): \mbox{ Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)} \\ HC: \mbox{ Average Hauling Truck Capacity (yd^3)} \\ (1 / HC): \mbox{ Conversion Factor cubic yards to trips (1 trip / HC yd^3)} \\ HT: \mbox{ Average Hauling Truck Round Trip Commute (mile/trip)} \end{array}$

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Vehicle Exhaust On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VE}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft²)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)² / acre)

33. Construction / Demolition

33.1 General Information & Timeline Assumptions

- Activity Location
 County: Lowndes, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: FSRM: Trim Pad

- Activity Description:

Construction of a trim pad would occur from August 2025 through February 2026.

Excavation of existing pavement would occur on an area totaling approximately 20,523 square feet. Excavation would begin in August 2025 and last approximately 2 months.

Pavement for the new trim pad would be required for an area totaling approximately 20,523 square feet. Paving would begin in October 2025 and last approximately 5 months.

Assumed no materials are required to be hauled on- or off-site; excavated spoils will be used on-site.

- Activity Start Date

| Start Month: | 8 |
|--------------|------|
| Start Month: | 2025 |

- Activity End Date

| Indefinite: | False |
|-------------|-------|
| End Month: | 2 |
| End Month: | 2026 |

- Activity Emissions:

| Pollutant | Total Emissions (TONs) |
|-----------------|------------------------|
| VOC | 0.113845 |
| SO _x | 0.001880 |
| NO _x | 0.568786 |
| СО | 0.932186 |
| PM 10 | 0.427134 |

| Pollutant | Total Emissions (TONs) |
|-------------------|------------------------|
| PM 2.5 | 0.024167 |
| Pb | 0.000000 |
| NH ₃ | 0.000596 |
| CO ₂ e | 179.1 |
| | |

33.1 Trenching/Excavating Phase

33.1.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date Start Month: 8 Start Quarter: 1 Start Year: 2025

- Phase Duration

Number of Month: 2 Number of Days: 0

33.1.2 Trenching / Excavating Phase Assumptions

General Trenching/Excavating Information Area of Site to be Trenched/Excavated (ft²): 20253 Amount of Material to be Hauled On-Site (yd³): 0 Amount of Material to be Hauled Off-Site (yd³): 0

- Trenching Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|---|------------------------|---------------|
| Excavators Composite | 2 | 8 |
| Other General Industrial Equipmen Composite | 1 | 8 |
| Tractors/Loaders/Backhoes Composite | 1 | 8 |

- Vehicle Exhaust

| Average Hauling Truck Capacity (yd ³): | 20 (default) |
|--|--------------|
| Average Hauling Truck Round Trip Commute (mile): | 20 (default) |

- Vehicle Exhaust Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|-------|-------|------|------|------|------|----|
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 |

33.1.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.597 | 000.007 | 000.639 | 005.101 | 000.011 | 000.009 | | 000.033 | 00367.095 |
| LDGT | 000.799 | 000.010 | 001.093 | 008.335 | 000.012 | 000.010 | | 000.034 | 00489.953 |
| HDGV | 001.373 | 000.015 | 002.807 | 024.705 | 000.026 | 000.023 | | 000.045 | 00760.448 |
| LDDV | 000.233 | 000.003 | 000.314 | 003.669 | 000.006 | 000.006 | | 000.008 | 00375.756 |
| LDDT | 000.527 | 000.005 | 000.830 | 007.383 | 000.008 | 000.007 | | 000.008 | 00585.601 |
| HDDV | 000.773 | 000.014 | 008.040 | 002.706 | 000.363 | 000.334 | | 000.028 | 01561.469 |
| MC | 002.788 | 000.008 | 000.733 | 014.953 | 000.027 | 000.024 | | 000.050 | 00392.901 |

33.1.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

PM10_{FD} = (20 * ACRE * WD) / 2000

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³) HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³) HC: Average Hauling Truck Capacity (yd³) (1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³) HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Vehicle Exhaust On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VE}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

33.2 Paving Phase

33.2.1 Paving Phase Timeline Assumptions

- Phase Start Date Start Month: 10 Start Quarter: 1 Start Year: 2025
- Phase Duration Number of Month: 5 Number of Days: 0

33.2.2 Paving Phase Assumptions

- General Paving Information Paving Area (ft²): 20253
- Paving Default Settings Default Settings Used: Yes Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

| Equipment Name | Number Of Equipment | Hours Per Day |
|-------------------------------------|------------------------|---------------|
| Cement and Mortar Mixers Composite | 4 | 6 |
| Pavers Composite | 1 | 7 |
| Rollers Composite | 1 | 7 |
| Tractors/Loaders/Backhoes Composite | 1 | 7 |

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

| - Vehicle Ex | haust Vehicle | Mixture (| %) |
|--------------|---------------|-----------|----|
|--------------|---------------|-----------|----|

| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC |
|------|------|------|------|------|------|--------|----|
| POVs | 0 | 0 | 0 | 0 | 0 | 100.00 | 0 |

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

| () of her Trips (emere (/ 0) | | | | | | | | |
|--------------------------------|-------|-------|------|------|------|------|----|--|
| | LDGV | LDGT | HDGV | LDDV | LDDT | HDDV | MC | |
| POVs | 50.00 | 50.00 | 0 | 0 | 0 | 0 | 0 | |

33.2.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

| | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|------|---------|-----------------|-----------------|---------|---------|---------|----|-----------------|-------------------|
| LDGV | 000.597 | 000.007 | 000.639 | 005.101 | 000.011 | 000.009 | | 000.033 | 00367.095 |
| LDGT | 000.799 | 000.010 | 001.093 | 008.335 | 000.012 | 000.010 | | 000.034 | 00489.953 |
| HDGV | 001.373 | 000.015 | 002.807 | 024.705 | 000.026 | 000.023 | | 000.045 | 00760.448 |
| LDDV | 000.233 | 000.003 | 000.314 | 003.669 | 000.006 | 000.006 | | 000.008 | 00375.756 |
| LDDT | 000.527 | 000.005 | 000.830 | 007.383 | 000.008 | 000.007 | | 000.008 | 00585.601 |
| HDDV | 000.773 | 000.014 | 008.040 | 002.706 | 000.363 | 000.334 | | 000.028 | 01561.469 |
| MC | 002.788 | 000.008 | 000.733 | 014.953 | 000.027 | 000.024 | | 000.050 | 00392.901 |

33.2.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

 $CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs) NE: Number of Equipment WD: Number of Total Work Days (days) H: Hours Worked per Day (hours) EF_{POL}: Emission Factor for Pollutant (lb/hour) 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

 $VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft²)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)
HC: Average Hauling Truck Capacity (yd³)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

 $V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs) VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Vehicle Exhaust On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

 $VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

 $V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

 V_{POL} : Vehicle Emissions (TONs) VMT_{VE}: Worker Trips Vehicle Miles Travel (miles) 0.002205: Conversion Factor grams to pounds EF_{POL}: Emission Factor for Pollutant (grams/mile) VM: Worker Trips On Road Vehicle Mixture (%) 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

 $VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft²)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)² / acre)

34. Heating

34.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location County: Lowndes, MS Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Heating for New Facilities

- Activity Description:

Heating for new facilities would begin following construction. For the purposes of this analysis, heating was assumed to required starting in January 2029. Heating would be required for the following facilities: GBTS Facility - 33,000 square feet UMT Facility - 12,000 square feet Hush House - 24,111 square feet Addition to the Egress Shop - 4,000 square feet

Total ares to be heated - 73,111 square feet

- Activity Start Date Start Month: 1

| Start Year: | 2029 |
|-------------|------|
|-------------|------|

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.014227 |
| SO _x | 0.001552 |
| NO _x | 0.258674 |
| CO | 0.217286 |
| PM 10 | 0.019659 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.019659 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 311.4 |
| | |

34.2 Heating Assumptions

- Heating

Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method

 Area of floorspace to be heated (ft²):
 Type of fuel:
 Type of boiler/furnace:
 Industrial (10 250 MMBtu/hr)
 Heat Value (MMBtu/ft³):
 0.00105
 Energy Intensity (MMBtu/ft²):
- Default Settings Used: Yes
- Boiler/Furnace Usage Operating Time Per Year (hours): 900 (default)

34.3 Heating Emission Factor(s)

- Heating Emission Factors (lb/1000000 scf)

| VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | Pb | NH ₃ | CO ₂ e |
|-----|-----|-----------------|----|-------|--------|----|-----------------|-------------------|
| 5.5 | 0.6 | 100 | 84 | 7.6 | 7.6 | | | 120390 |

34.4 Heating Formula(s)

- Heating Fuel Consumption ft³ per Year

FC_{HER}= HA * EI / HV / 1000000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method HA: Area of floorspace to be heated (ft²)
EI: Energy Intensity Requirement (MMBtu/ft²)
HV: Heat Value (MMBTU/ft³)
1000000: Conversion Factor

- Heating Emissions per Year

 $HE_{POL} = FC * EF_{POL} / 2000$

HE_{POL}: Heating Emission Emissions (TONs) FC: Fuel Consumption EF_{POL}: Emission Factor for Pollutant

2000: Conversion Factor pounds to tons

ROI 2: Birmingham and Birmingham 2 MOAs

This section includes the following:

- Alternative 1 ACAM Report
- Alternative 1 ACAM Detail Report
- Alternative 2 ACAM Report
- Alternative 2 ACAM Detail Report
- Alternative 3 ACAM Report
- Alternative 3 ACAM Detail Report

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base:COLUMBUS AFBState:AlabamaCounty(s):Bibb, AL; Dallas, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Sumter, ALRegulatory Area(s):NOT IN A REGULATORY AREA

b. Action Title: T-7A Recapitalization at Columbus AFB - Alternative 1

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2028

e. Action Description:

The Proposed Action is recapitalization of the T-38C Talon flight training program at Columbus AFB with T-7A Red Hawk aircraft. Recapitalization would entail introduction of T-7A aircraft and flight operations at Columbus AFB and associated special use airspace to replace all T-38C aircraft assigned to the installation; introduction of nighttime (between 10 a.m. and 7 a.m.) T-7A flight operations; changes to the number of personnel and dependents in the Columbus AFB region; and construction and upgrade of operations, support, and maintenance facilities.

For Alternative 1, Columbus AFB would receive 61 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in 61 T-7A aircraft being delivered to Columbus AFB; however, T-7A operations would be performed at an intensity approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Columbus AFB would receive 77 T-7A aircraft and perform T-7A operations at an intensity identical to Alternative 2. Alternative 3 also incorporates a MILCON project alternative to construct 12 additional shelters for the T-7A aircraft. Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in the EIS provides analysis to evaluate future capacity needs. The No Action Alternative would not implement T-7A recapitalization at Columbus AFB.

f. Point of Contact:

| Name: | Carolyn Hein |
|---------------|--------------|
| Title: | Contractor |
| Organization: | HDR |
| Email: | |
| Phone Number: | |

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

_____ applicable __X__ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all

algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

....

Analysis Summary:

| 2028 | | | | |
|---------------------|------------------|--------------------------|------------------------|--|
| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | | |
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) | |
| NOT IN A REGULATORY | Y AREA | | | |
| VOC | 1.517 | 250 | No | |
| NOx | 25.205 | 250 | No | |
| СО | -9.093 | 250 | No | |
| SOx | 0.483 | 250 | No | |
| PM 10 | -0.262 | 250 | No | |
| PM 2.5 | 0.096 | 250 | No | |
| Pb | 0.000 | 25 | No | |
| NH3 | 0.000 | 250 | No | |
| CO2e | 1461.6 | | | |

2020

| 2029 | | | | |
|---------------------|------------------|--------------------------|------------------------|--|
| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | | |
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) | |
| NOT IN A REGULATORY | AREA | | | |
| VOC | 1.517 | 250 | No | |
| NOx | 25.205 | 250 | No | |
| CO | -9.093 | 250 | No | |
| SOx | 0.483 | 250 | No | |
| PM 10 | -0.262 | 250 | No | |
| PM 2.5 | 0.096 | 250 | No | |
| Pb | 0.000 | 25 | No | |
| NH3 | 0.000 | 250 | No | |
| CO2e | 1461.6 | | | |

| 2030 | | | | |
|---------------------|------------------|--------------------------|------------------------|--|
| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | | |
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) | |
| NOT IN A REGULATORY | AREA | | | |
| VOC | 3.034 | 250 | No | |
| NOx | 50.410 | 250 | No | |
| CO | -18.187 | 250 | No | |
| SOx | 0.965 | 250 | No | |
| PM 10 | -0.525 | 250 | No | |
| PM 2.5 | 0.191 | 250 | No | |
| Pb | 0.000 | 25 | No | |
| NH3 | 0.000 | 250 | No | |
| CO2e | 2923.3 | | | |

2031 - (Steady State)

| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | |
|---------------------|------------------|--------------------------|------------------------|
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) |
| NOT IN A REGULATORY | AREA | | |
| VOC | 3.034 | 250 | No |
| NOx | 50.410 | 250 | No |
| CO | -18.187 | 250 | No |
| SOx | 0.965 | 250 | No |
| PM 10 | -0.525 | 250 | No |
| PM 2.5 | 0.191 | 250 | No |
| Pb | 0.000 | 25 | No |
| NH3 | 0.000 | 250 | No |
| CO2e | 2923.3 | | |

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.

mA

Carolyn Hein, Contractor

2/17/2023 DATE

1. General Information

- Action Location

Base:COLUMBUS AFBState:AlabamaCounty(s):Bibb, AL; Dallas, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Sumter, ALRegulatory Area(s):NOT IN A REGULATORY AREA

- Action Title: T-7A Recapitalization at Columbus AFB - Alternative 1

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2028

- Action Purpose and Need:

The purpose of the Proposed Action is to continue the T-7A recapitalization program by recapitalizing Columbus AFB to prepare pilots to operate the more technologically advanced T-7A aircraft.

The Proposed Action is needed because the current training practices with the older T-38C aircraft fail to prepare pilots for the technological advancements of fourth and fifth generation aircraft. By 2031, more than 60 percent of the Combat Air Force will be comprised of fifth generation aircraft, requiring a modern and capable training platform with capabilities beyond those currently available in the T-38C. Additionally, training systems provided with the newer T-7A aircraft allow for enhanced and improved flight and simulator training. The T-7A recapitalization program will allow DAF to provide more efficient and effective instructor and pilot training for operating fourth and fifth generation aircraft. T-7A recapitalization at Columbus AFB would allow DAF to continue the geographically phased T-7A recapitalization sequence ensuring DAF pilot training requirements are met.

- Action Description:

The Proposed Action is recapitalization of the T-38C Talon flight training program at Columbus AFB with T-7A Red Hawk aircraft. Recapitalization would entail introduction of T-7A aircraft and flight operations at Columbus AFB and associated special use airspace to replace all T-38C aircraft assigned to the installation; introduction of nighttime (between 10 a.m. and 7 a.m.) T-7A flight operations; changes to the number of personnel and dependents in the Columbus AFB region; and construction and upgrade of operations, support, and maintenance facilities.

For Alternative 1, Columbus AFB would receive 61 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in 61 T-7A aircraft being delivered to Columbus AFB; however, T-7A operations would be performed at an intensity approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Columbus AFB would receive 77 T-7A aircraft and perform T-7A operations at an intensity identical to Alternative 2. Alternative 3 also incorporates a MILCON project alternative to construct 12 additional shelters for the T-7A aircraft. Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in the EIS provides analysis to evaluate future capacity needs. The No Action Alternative would not implement T-7A recapitalization at Columbus AFB.

- Point of Contact

| Name: | Carolyn Hein |
|---------------|--------------|
| Title: | Contractor |
| Organization: | HDR |
| Email: | |
| Phone Number: | |

- Activity List:

| | 10, 11, 10, 10, 10, 10, 10, 10, 10, 10, | |
|---------------|---|---|
| Activity Type | | Activity Title |
| 2. | Aircraft | 2028 and 2029 T-7A MOA Low-Altitude Operations |
| 3. | Aircraft | 2028 and 2029 T-38C MOA Low-Altitude Operations |
| 4. | Aircraft | 2030 T-7A MOA Low-Altitude Operations |
| 5. | Aircraft | 2030 T-38C MOA Low-Altitude Operations |

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Aircraft

2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location

- Activity Title: 2028 and 2029 T-7A MOA Low-Altitude Operations

- Activity Description:

2028 and 2029: Starting in 2028, add 474 T-7A low-altitude operations in Birmingham and Birmingham 2 MOAs.

- Activity Start Date

Start Month:1Start Year:2028

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 1.774053 |
| SO _x | 0.849576 |
| NO _x | 25.863346 |
| CO | 1.532166 |
| PM 10 | 0.125002 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.109376 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 2570.5 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|----|------------------|----------------------------------|
| VOC | 1.774053 | PN | M 2.5 | 0.109376 |
| SO _x | 0.849576 | Pt |) | 0.000000 |
| NO _x | 25.863346 | N | H ₃ | 0.000000 |
| СО | 1.532166 | C | O ₂ e | 2570.5 |
| PM 10 | 0.125002 | | | |

2.2 Aircraft & Engines

County: Bibb, AL; Dallas, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Sumter, AL **Regulatory Area(s):** NOT IN A REGULATORY AREA

2.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine Aircraft Designation: T-7A Engine Model: F404- Primary Function: Traine Aircraft has After burn: Yes Number of Engines: 1 | GE-102 er | |
|---|---|---------------------------|
| - Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogat Original Aircraft Name: Original Engine Name: | e? No | |
| 2.2.2 Aircraft & Engines Emissio | on Factor(s) | |
| - Aircraft & Engine Emissions Factor Proprietary Information. Contact engine's Emission Factors. | ors (lb/1000lb fuel) Air Quality Subject Matter Expert for More In | nformation regarding this |
| 2.3 Flight Operations | | |
| 2.3.1 Flight Operations Assumpt | ions | |
| | ing and Take-off) cycles for all Aircraft: h-and-Go) cycles for all Aircraft: per Aircraft: | 52 474 0 0 |
| - Default Settings Used: No | | |
| - Flight Operations TIMs (Time In M Taxi/Idle Out [Idle] (mins): Takeoff [Military] (mins): Takeoff [After Burn] (mins): Climb Out [Intermediate] (mins Approach [Approach] (mins): Taxi/Idle In [Idle] (mins): | 0 19.55 0 | |
| Trim Test Idle (mins): Approach (mins): 27 Intermediate (mins): 9 Military (mins): 9 AfterBurn (mins): 3 2.3.2 Flight Operations Formula Aircraft Emissions per Mode for L | | |

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)

60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

2.4 Auxiliary Power Unit (APU)

2.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of per Aircr | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

2.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

2.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

3. Aircraft

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Bibb, AL; Dallas, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Sumter, AL **Regulatory Area(s):** NOT IN A REGULATORY AREA

- Activity Title: 2028 and 2029 T-38C MOA Low-Altitude Operations

- Activity Description:

2028 and 2029: Starting in 2028, remove 474 T-38C low-altitude operations in Birmingham and Birmingham 2 MOAs.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.257151 |
| SO _x | -0.366869 |
| NO _x | -0.658306 |
| СО | -10.625476 |
| PM 10 | -0.387441 |

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| PM 2.5 | -0.013715 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO_2e | -1108.8 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.257151 |
| SO _x | -0.366869 |
| NO _x | -0.658306 |
| СО | -10.625476 |
| PM 10 | -0.387441 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.013715 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -1108.8 |
| | |

3.2 Aircraft & Engines

3.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

3.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|--------------|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

3.3 Flight Operations

3.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|-----|
| Number of Aircraft: | 68 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 474 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 19.55 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |
| | |

12

27

9

9

3

- Trim Test Idle (mins): Approach (mins): Intermediate (mins):

Military (mins):

AfterBurn (mins):

3.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines LTO: Number of Landing and Take-off Cycles (for all aircraft) 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE IN} + AEM_{IDLE OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AELTO: Aircraft Emissions (TONs) AEM_{IDLE IN}: Aircraft Emissions for Idle-In Mode (TONs) AEMIDLE OUT: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

3.4 Auxiliary Power Unit (APU)

3.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each | Exempt Source? | Designation | Manufacturer |
|-------------------------------|-----------------------------|-------------------|-------------|--------------|
| 1 | LTO | | | |

3.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----|----|-------|--------|-------------------|
| | Flow | | | | | | | |

3.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year APU_{POL} = APU * OH * LTO * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

4. Aircraft

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Bibb, AL; Dallas, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Sumter, AL **Regulatory Area(s):** NOT IN A REGULATORY AREA

- Activity Title: 2030 T-7A MOA Low-Altitude Operations

- Activity Description:

2030: Starting in 2030, add 474 T-7A low-altitude operations in Birmingham and Birmingham 2 MOAs.

- Activity Start Date

Start Month:1Start Year:2030

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 1.774053 |
| SO _x | 0.849576 |
| NO _x | 25.863346 |
| СО | 1.532166 |
| PM 10 | 0.125002 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.109376 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 2570.5 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|---|-----------|----------------------------------|
| VOC | 1.774053 | I | PM 2.5 | 0.109376 |
| SO _x | 0.849576 | I | Pb | 0.000000 |
| NO _x | 25.863346 | 1 | NH3 | 0.000000 |

| СО | 1.532166 |
|-------|----------|
| PM 10 | 0.125002 |

| CO ₂ e | 2570.5 |
|-------------------|--------|
| | |

4.2 Aircraft & Engines

4.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-------------|
| Aircraft Designation: | T-7A |
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

4.2.2 Aircraft & Engines Emission Factor(s)

Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

4.3 Flight Operations

4.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|-----|
| Number of Aircraft: | 9 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 474 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 19.55 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

| Trim Test | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

4.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)

AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

4.4 Auxiliary Power Unit (APU)

4.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| | | | | |
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

4.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

4.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

5. Aircraft

5.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Bibb, AL; Dallas, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Sumter, AL **Regulatory Area(s):** NOT IN A REGULATORY AREA

- Activity Title: 2030 T-38C MOA Low-Altitude Operations

- Activity Description:

2030: Starting in 2030, remove 474 T-38C low-altitude operations in Birmingham and Birmingham 2 MOAs.

| - | Activity | Start | Date |
|---|----------|-------|------|
|---|----------|-------|------|

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.257151 |
| SO _x | -0.366869 |
| NO _x | -0.658306 |
| СО | -10.625476 |
| PM 10 | -0.387441 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.013715 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -1108.8 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | -0.257151 | PM 2.5 | -0.013715 |
| SO _x | -0.366869 | Pb | 0.000000 |
| NO _x | -0.658306 | NH ₃ | 0.000000 |
| СО | -10.625476 | CO ₂ e | -1108.8 |
| PM 10 | -0.387441 | | |

5.2 Aircraft & Engines

5.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

5.2.2 Aircraft & Engines Emission Factor(s)

Fuel Flow VOC **NO**_x CO **PM 10** PM 2.5 CO₂e **SO**_x Idle 520.00 16.80 1.07 1.08 177.45 4.70 4.02 3234 854.00 7.84 1.07 0.84 106.29 2.80 1.85 3234 Approach Intermediate 1030.00 2.78 1.07 0.70 65.07 1.79 0.69 3234 Military 2220.00 0.75 1.07 1.92 30.99 1.13 0.04 3234

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |
|---|--|---------------|------------|----------------|------------|------------------|------|------|
| 5.3 Flight O | - | Accumntion | A.C. | | | | | |
| 5.3.1 Flight | Operations A | Assumption | 15 | | | | | |
| Number o Number o | itions of Aircraft: of Annual LTC of Annual TGC of Annual Trin | Os (Touch-a | nd-Go) cyc | | | it: 17 0 0 | | |
| - Default Setti | ngs Used: | No | | | | | | |
| - Flight Opera | tions TIMs (1 | Fime In Mod | le) | | | | | |
| | Out [Idle] (mi | | , | 0 | | | | |
| | Military] (min | | | 19.55 | | | | |
| Takeoff [A | After Burn] (n | nins): | | 0 | | | | |
| Climb Ou | t [Intermedia | te] (mins): | | 0 | | | | |
| Approach | [Approach] (| (mins): | | 0 | | | | |
| Taxi/Idle | In [Idle] (min | s): | | 0 | | | | |
| - Trim Test | | | | | | | | |
| Idle (mins | s): | 12 | | | | | | |
| Approach | (mins): | 27 | | | | | | |
| Intermedi | ate (mins): | 9 | | | | | | |
| Military (| | 9 | | | | | | |
| AfterBurr | n (mins): | 3 | | | | | | |
| 5.3.2 Flight | Operations I | Formula(s) | | | | | | |
| - Aircraft Emi AEM _{POL} = (TII | | | |) / 2000 | | | | |
| TIM: Tim | Aircraft Emiss e in Mode (mi | in) | | de (TONs) | | | | |
| FC: Fuel l | ersion Factor n Flow Rate (lb/l | hr) | | | | | | |
| | version Facto | | | | | | | |
| | sion Factor (lb | | | | | | | |
| | ber of Engines | | (C 1 (| c 11 · | C) | | | |
| | nber of Landir | | | tor all aircra | tt) | | | |
| 2000: Cor | version Factor | r pounds to T | UNs | | | | | |
| - Aircraft Emi | issions for LT | Os per Year | | | | | | |

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

5.4 Auxiliary Power Unit (APU)

5.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

5.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----|----|-------|--------|-------------------|
| | Flow | | | | | | | |

5.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base:COLUMBUS AFBState:AlabamaCounty(s):Bibb, AL; Dallas, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Sumter, ALRegulatory Area(s):NOT IN A REGULATORY AREA

b. Action Title: T-7A Recapitalization at Columbus AFB - Alternative 2

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2028

e. Action Description:

The Proposed Action is recapitalization of the T-38C Talon flight training program at Columbus AFB with T-7A Red Hawk aircraft. Recapitalization would entail introduction of T-7A aircraft and flight operations at Columbus AFB and associated special use airspace to replace all T-38C aircraft assigned to the installation; introduction of nighttime (between 10 a.m. and 7 a.m.) T-7A flight operations; changes to the number of personnel and dependents in the Columbus AFB region; and construction and upgrade of operations, support, and maintenance facilities.

For Alternative 1, Columbus AFB would receive 61 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in 61 T-7A aircraft being delivered to Columbus AFB; however, T-7A operations would be performed at an intensity approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Columbus AFB would receive 77 T-7A aircraft and perform T-7A operations at an intensity identical to Alternative 2. Alternative 3 also incorporates a MILCON project alternative to construct 12 additional shelters for the T-7A aircraft. Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in the EIS provides analysis to evaluate future capacity needs. The No Action Alternative would not implement T-7A recapitalization at Columbus AFB.

f. Point of Contact:

| Name: | Carolyn Hein |
|---------------|--------------|
| Title: | Contractor |
| Organization: | HDR |
| Email: | |
| Phone Number: | |

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

_____ applicable __X__ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all

algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

....

Analysis Summary:

| 2028 | | | | |
|---------------------|---|--------------------|------------------------|--|
| Pollutant | Action Emissions INSIGNIFICANCE INDICATOR | | | |
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) | |
| NOT IN A REGULATORY | AREA | | | |
| VOC | 2.031 | 250 | No | |
| NOx | 31.919 | 250 | No | |
| СО | -6.015 | 250 | No | |
| SOx | 0.791 | 250 | No | |
| PM 10 | -0.133 | 250 | No | |
| PM 2.5 | 0.127 | 250 | No | |
| Pb | 0.000 | 25 | No | |
| NH3 | 0.000 | 250 | No | |
| CO2e | 2393.1 | | | |

| Pollutant | Action Emissions | sions INSIGNIFICANCE INDICATOR | | |
|---------------------|------------------|--------------------------------|------------------------|--|
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) | |
| NOT IN A REGULATORY | AREA | | | |
| VOC | 2.031 | 250 | No | |
| NOx | 31.919 | 250 | No | |
| СО | -6.015 | 250 | No | |
| SOx | 0.791 | 250 | No | |
| PM 10 | -0.133 | 250 | No | |
| PM 2.5 | 0.127 | 250 | No | |
| Pb | 0.000 | 25 | No | |
| NH3 | 0.000 | 250 | No | |
| CO2e | 2393.1 | | | |

| 2030 | | | | |
|---------------------|---|--------------------|------------------------|--|
| Pollutant | Action Emissions INSIGNIFICANCE INDICATOR | | | |
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) | |
| NOT IN A REGULATORY | AREA | | | |
| VOC | 3.932 | 250 | No | |
| NOx | 63.505 | 250 | No | |
| СО | -17.411 | 250 | No | |
| SOx | 1.396 | 250 | No | |
| PM 10 | -0.462 | 250 | No | |
| PM 2.5 | 0.247 | 250 | No | |
| Pb | 0.000 | 25 | No | |
| NH3 | 0.000 | 250 | No | |
| CO2e | 4224.8 | | | |

2031 - (Steady State)

| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | | |
|---------------------|------------------|--------------------------|------------------------|--|
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) | |
| NOT IN A REGULATORY | AREA | | | |
| VOC | 3.932 | 250 | No | |
| NOx | 63.505 | 250 | No | |
| CO | -17.411 | 250 | No | |
| SOx | 1.396 | 250 | No | |
| PM 10 | -0.462 | 250 | No | |
| PM 2.5 | 0.247 | 250 | No | |
| Pb | 0.000 | 25 | No | |
| NH3 | 0.000 | 250 | No | |
| CO2e | 4224.8 | | | |

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.

mA

Carolyn Hein, Contractor

2/17/2023 DATE

1. General Information

- Action Location

Base:COLUMBUS AFBState:AlabamaCounty(s):Bibb, AL; Dallas, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Sumter, ALRegulatory Area(s):NOT IN A REGULATORY AREA

- Action Title: T-7A Recapitalization at Columbus AFB - Alternative 2

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2028

- Action Purpose and Need:

The purpose of the Proposed Action is to continue the T-7A recapitalization program by recapitalizing Columbus AFB to prepare pilots to operate the more technologically advanced T-7A aircraft.

The Proposed Action is needed because the current training practices with the older T-38C aircraft fail to prepare pilots for the technological advancements of fourth and fifth generation aircraft. By 2031, more than 60 percent of the Combat Air Force will be comprised of fifth generation aircraft, requiring a modern and capable training platform with capabilities beyond those currently available in the T-38C. Additionally, training systems provided with the newer T-7A aircraft allow for enhanced and improved flight and simulator training. The T-7A recapitalization program will allow DAF to provide more efficient and effective instructor and pilot training for operating fourth and fifth generation aircraft. T-7A recapitalization at Columbus AFB would allow DAF to continue the geographically phased T-7A recapitalization sequence ensuring DAF pilot training requirements are met.

- Action Description:

The Proposed Action is recapitalization of the T-38C Talon flight training program at Columbus AFB with T-7A Red Hawk aircraft. Recapitalization would entail introduction of T-7A aircraft and flight operations at Columbus AFB and associated special use airspace to replace all T-38C aircraft assigned to the installation; introduction of nighttime (between 10 a.m. and 7 a.m.) T-7A flight operations; changes to the number of personnel and dependents in the Columbus AFB region; and construction and upgrade of operations, support, and maintenance facilities.

For Alternative 1, Columbus AFB would receive 61 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in 61 T-7A aircraft being delivered to Columbus AFB; however, T-7A operations would be performed at an intensity approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Columbus AFB would receive 77 T-7A aircraft and perform T-7A operations at an intensity identical to Alternative 2. Alternative 3 also incorporates a MILCON project alternative to construct 12 additional shelters for the T-7A aircraft. Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in the EIS provides analysis to evaluate future capacity needs. The No Action Alternative would not implement T-7A recapitalization at Columbus AFB.

- Point of Contact

| Name: | Carolyn Hein |
|---------------|--------------|
| Title: | Contractor |
| Organization: | HDR |
| Email: | |
| Phone Number: | |

- Activity List:

| | 10, 11, 10, 10, 10, 10, 10, 10, 10, 10, | |
|---------------|---|---|
| Activity Type | | Activity Title |
| 2. | Aircraft | 2028 and 2029 T-7A MOA Low-Altitude Operations |
| 3. | Aircraft | 2028 and 2029 T-38C MOA Low-Altitude Operations |
| 4. | Aircraft | 2030 T-7A MOA Low-Altitude Operations |
| 5. | Aircraft | 2030 T-38C MOA Low-Altitude Operations |

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Aircraft

2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Bibb, AL; Dallas, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Sumter, AL **Regulatory Area(s):** NOT IN A REGULATORY AREA

- Activity Title: 2028 and 2029 T-7A MOA Low-Altitude Operations

- Activity Description:

2028 and 2029: Starting in 2028, add 594 T-7A low-altitude operations in Birmingham and Birmingham 2 MOAs.

- Activity Start Date

Start Month:1Start Year:2028

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 2.223180 |
| SO _x | 1.064658 |
| NO _x | 32.411029 |
| СО | 1.920057 |
| PM 10 | 0.156648 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.137067 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 3221.2 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Po | llutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|---------|---------------------------|
| VOC | 2.223180 | PM 2. | 5 | 0.137067 |
| SO _x | 1.064658 | Pb | | 0.000000 |
| NO _x | 32.411029 | NH ₃ | | 0.000000 |
| СО | 1.920057 | CO ₂ e | | 3221.2 |
| PM 10 | 0.156648 | | | |

2.2 Aircraft & Engines

2.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine Aircraft Designation: Engine Model: Primary Function: Aircraft has After burn: Number of Engines: | T-7A F404-GE-102 Trainer Yes 1 | | |
|---|--|--|-------------------------|
| - Aircraft & Engine Surrogat Is Aircraft & Engine a Su Original Aircraft Name: Original Engine Name: | | | |
| 2.2.2 Aircraft & Engines H | Emission Factor(s) | | |
| - Aircraft & Engine Emission Proprietary Information. C engine's Emission Factors. | | fuel) bject Matter Expert for More Info | ormation regarding this |
| 2.3 Flight Operations | | | |
| 2.3.1 Flight Operations As | sumptions | | |
| Number of Annual TGOs Number of Annual Trim | s (Touch-and-Go) cy Test(s) per Aircraft: | | 52 594 0 0 |
| - Default Settings Used: 1 | No | | |
| - Flight Operations TIMs (Tir Taxi/Idle Out [Idle] (min Takeoff [Military] (mins) Takeoff [After Burn] (mi Climb Out [Intermediate Approach [Approach] (m Taxi/Idle In [Idle] (mins) | s): : ns):] (mins): iins): | 0 19.55 0 0 0 0 | |
| Trim Test Idle (mins): Approach (mins): Intermediate (mins): Military (mins): AfterBurn (mins): 2.3.2 Flight Operations For Aircraft Emissions non Mod | | | |
| - Aircraft Emissions per Mod | e for LTOs per Year | | |

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)

60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

2.4 Auxiliary Power Unit (APU)

2.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

2.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

2.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

3. Aircraft

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Bibb, AL; Dallas, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Sumter, AL **Regulatory Area(s):** NOT IN A REGULATORY AREA

- Activity Title: 2028 and 2029 T-38C MOA Low-Altitude Operations

- Activity Description:

2028 and 2029: Starting in 2028, remove 354 T-38C low-altitude operations in Birmingham and Birmingham 2 MOAs.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.192049 |
| SO _x | -0.273991 |
| NO _x | -0.491647 |
| СО | -7.935482 |
| PM 10 | -0.289354 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.010243 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -828.1 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.192049 |
| SO _x | -0.273991 |
| NO _x | -0.491647 |
| СО | -7.935482 |
| PM 10 | -0.289354 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.010243 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -828.1 |
| | |

3.2 Aircraft & Engines

3.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

3.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|--------------|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

3.3 Flight Operations

3.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|-----|
| Number of Aircraft: | 68 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 354 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 19.55 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |
| | |

- Trim Test Idla (mine)

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

3.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines LTO: Number of Landing and Take-off Cycles (for all aircraft) 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE IN} + AEM_{IDLE OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AELTO: Aircraft Emissions (TONs) AEM_{IDLE IN}: Aircraft Emissions for Idle-In Mode (TONs) AEMIDLE OUT: Aircraft Emissions for Idle-Out Mode (TONs) AEMAPPROACH: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

3.4 Auxiliary Power Unit (APU)

3.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each | Exempt Source? | Designation | Manufacturer |
|-------------------------------|-----------------------------|-------------------|-------------|--------------|
| 1 | LTO | | | |

3.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----------------|----|-------|--------|-------------------|
| | Flow | | | | | | | |

3.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year APU_{POL} = APU * OH * LTO * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

4. Aircraft

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Bibb, AL; Dallas, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Sumter, AL **Regulatory Area(s):** NOT IN A REGULATORY AREA

- Activity Title: 2030 T-7A MOA Low-Altitude Operations

- Activity Description:

2030: Starting in 2030, add 594 T-7A low-altitude operations in Birmingham and Birmingham 2 MOAs.

- Activity Start Date

Start Month:1Start Year:2030

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 2.223180 |
| SO _x | 1.064658 |
| NO _x | 32.411029 |
| СО | 1.920057 |
| PM 10 | 0.156648 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.137067 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 3221.2 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-----------------|----------------------------------|
| VOC | 2.223180 | PM 2.5 | 0.137067 |
| SO _x | 1.064658 | Pb | 0.000000 |
| NO _x | 32.411029 | NH ₃ | 0.000000 |

| СО | 1.920057 |
|-------|----------|
| PM 10 | 0.156648 |

| CO ₂ e | 3221.2 |
|-------------------|--------|
| | |

4.2 Aircraft & Engines

4.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-------------|
| Aircraft Designation: | T-7A |
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

4.2.2 Aircraft & Engines Emission Factor(s)

Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

4.3 Flight Operations

4.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|-----|
| Number of Aircraft: | 9 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 594 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 19.55 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

| - Trim Test | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

4.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)

AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

4.4 Auxiliary Power Unit (APU)

4.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| | | | | |
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

4.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

4.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

5. Aircraft

5.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Bibb, AL; Dallas, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Sumter, AL **Regulatory Area(s):** NOT IN A REGULATORY AREA

- Activity Title: 2030 T-38C MOA Low-Altitude Operations

- Activity Description:

2030: Starting in 2030, remove 594 T-38C low-altitude operations in Birmingham and Birmingham 2 MOAs.

| - | Activity | Start | Date |
|---|----------|-------|------|
|---|----------|-------|------|

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -0.322252 |
| SO _x | -0.459747 |
| NO _x | -0.824966 |
| CO | -13.315470 |
| PM 10 | -0.485527 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -0.017187 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -1389.6 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|-------------------|---------------------------|
| VOC | -0.322252 | PM 2.5 | -0.017187 |
| SO _x | -0.459747 | Pb | 0.000000 |
| NO _x | -0.824966 | NH ₃ | 0.000000 |
| СО | -13.315470 | CO ₂ e | -1389.6 |
| PM 10 | -0.485527 | | |

5.2 Aircraft & Engines

5.2.1 Aircraft & Engines Assumptions

| T-38C |
|-----------|
| J85-GE-5R |
| Trainer |
| Yes |
| 2 |
| |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

5.2.2 Aircraft & Engines Emission Factor(s)

Fuel Flow VOC **NO**_x CO **PM 10** PM 2.5 CO₂e **SO**_x Idle 520.00 16.80 1.07 1.08 177.45 4.70 4.02 3234 854.00 7.84 1.07 0.84 106.29 2.80 1.85 3234 Approach Intermediate 1030.00 2.78 1.07 0.70 65.07 1.79 0.69 3234 Military 2220.00 0.75 1.07 1.92 30.99 1.13 0.04 3234

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| After Burn 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |
|---|----------------|---------------|----------------|----------|------|------|------|
| 5.3 Flight Operations | | | | | | | |
| 5.3.1 Flight Operations | Assumption | ns | | | | | |
| | r | | | | | | |
| - Flight Operations | | | | | | | |
| Number of Aircraft: | | | | | 17 | | |
| Number of Annual LT | | | | | | 94 | |
| Number of Annual TG Number of Annual Tri | | | cies for all A | ircrait: | 0 | | |
| Number of Annual III | im resu(s) pe | | | | 0 | | |
| - Default Settings Used: | No | | | | | | |
| - Flight Operations TIMs (| | de) | | | | | |
| Taxi/Idle Out [Idle] (m | | | 0 | | | | |
| Takeoff [Military] (min | | | 19.55 | | | | |
| Takeoff [After Burn] (Climb Out [Intermedia | | | 0 0 | | | | |
| Approach [Approach] | | | 0 | | | | |
| Taxi/Idle In [Idle] (mir | | | 0 | | | | |
| - Trim Test | | | | | | | |
| Idle (mins): | 12 | | | | | | |
| Approach (mins): | 27 | | | | | | |
| Intermediate (mins): Military (mins): | 9 9 | | | | | | |
| Military (mins): AfterBurn (mins): | 3 | | | | | | |
| | | | | | | | |
| 5.3.2 Flight Operations | Formula(s) | | | | | | |
| - Aircraft Emissions per M | | | | | | | |
| $AEM_{POL} = (TIM / 60) * (FC)$ | / 1000) * EF | * NE * LTO | O / 2000 | | | | |
| AEM _{POL} : Aircraft Emis | ssions per Pol | llutant & Mo | ode (TONs) | | | | |
| TIM: Time in Mode (m | | | | | | | |
| 60: Conversion Factor | | ours | | | | | |
| FC: Fuel Flow Rate (lb) | | 1000 1 | | | | | |
| 1000: Conversion Facto EF: Emission Factor (lb | | | | | | | |
| NE: Number of Engine | |) | | | | | |
| LTO: Number of Landi | | -off Cycles (| for all aircra | ft) | | | |
| 2000: Conversion Facto | | | | , | | | |
| | | | | | | | |

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

5.4 Auxiliary Power Unit (APU)

5.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

5.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----|----|-------|--------|-------------------|
| | Flow | | | | | | | |

5.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base:COLUMBUS AFBState:AlabamaCounty(s):Bibb, AL; Dallas, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Sumter, ALRegulatory Area(s):NOT IN A REGULATORY AREA

b. Action Title: T-7A Recapitalization at Columbus AFB - Alternative 3

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2028

e. Action Description:

The Proposed Action is recapitalization of the T-38C Talon flight training program at Columbus AFB with T-7A Red Hawk aircraft. Recapitalization would entail introduction of T-7A aircraft and flight operations at Columbus AFB and associated special use airspace to replace all T-38C aircraft assigned to the installation; introduction of nighttime (between 10 a.m. and 7 a.m.) T-7A flight operations; changes to the number of personnel and dependents in the Columbus AFB region; and construction and upgrade of operations, support, and maintenance facilities.

For Alternative 1, Columbus AFB would receive 61 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in 61 T-7A aircraft being delivered to Columbus AFB; however, T-7A operations would be performed at an intensity approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Columbus AFB would receive 77 T-7A aircraft and perform T-7A operations at an intensity identical to Alternative 2. Alternative 3 also incorporates a MILCON project alternative to construct 12 additional shelters for the T-7A aircraft. Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in the EIS provides analysis to evaluate future capacity needs. The No Action Alternative would not implement T-7A recapitalization at Columbus AFB.

f. Point of Contact:

| Name: | Carolyn Hein |
|---------------|--------------|
| Title: | Contractor |
| Organization: | HDR |
| Email: | |
| Phone Number: | |

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

_____ applicable __X__ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all

algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

....

Analysis Summary:

| 2028 | | | | | |
|---------------------|---|--------------------|------------------------|--|--|
| Pollutant | Action Emissions INSIGNIFICANCE INDICATOR | | | | |
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) | | |
| NOT IN A REGULATORY | AREA | | | | |
| VOC | 2.031 | 250 | No | | |
| NOx | 31.919 | 250 | No | | |
| СО | -6.015 | 250 | No | | |
| SOx | 0.791 | 250 | No | | |
| PM 10 | -0.133 | 250 | No | | |
| PM 2.5 | 0.127 | 250 | No | | |
| Pb | 0.000 | 25 | No | | |
| NH3 | 0.000 | 250 | No | | |
| CO2e | 2393.1 | | | | |

| Pollutant | t Action Emissions INSIGNIFICANCE INDICATOR | | | |
|---------------------|---|--------------------|------------------------|--|
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) | |
| NOT IN A REGULATORY | AREA | | | |
| VOC | 2.031 | 250 | No | |
| NOx | 31.919 | 250 | No | |
| СО | -6.015 | 250 | No | |
| SOx | 0.791 | 250 | No | |
| PM 10 | -0.133 | 250 | No | |
| PM 2.5 | 0.127 | 250 | No | |
| Pb | 0.000 | 25 | No | |
| NH3 | 0.000 | 250 | No | |
| CO2e | 2393.1 | | | |

| 2030 | | | | |
|---------------------|---|--------------------|------------------------|--|
| Pollutant | Pollutant Action Emissions INSIGNIFICANCE INDICATOR | | | |
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) | |
| NOT IN A REGULATORY | AREA | | | |
| VOC | 3.932 | 250 | No | |
| NOx | 63.505 | 250 | No | |
| СО | -17.411 | 250 | No | |
| SOx | 1.396 | 250 | No | |
| PM 10 | -0.462 | 250 | No | |
| PM 2.5 | 0.247 | 250 | No | |
| Pb | 0.000 | 25 | No | |
| NH3 | 0.000 | 250 | No | |
| CO2e | 4224.8 | | | |

2031 - (Steady State)

| Pollutant | Action Emissions | Action Emissions INSIGNIFICANCE INDICATOR | |
|---------------------|------------------|---|------------------------|
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) |
| NOT IN A REGULATORY | AREA | | |
| VOC | 3.932 | 250 | No |
| NOx | 63.505 | 250 | No |
| CO | -17.411 | 250 | No |
| SOx | 1.396 | 250 | No |
| PM 10 | -0.462 | 250 | No |
| PM 2.5 | 0.247 | 250 | No |
| Pb | 0.000 | 25 | No |
| NH3 | 0.000 | 250 | No |
| CO2e | 4224.8 | | |

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.

mA

Carolyn Hein, Contractor

2/17/2023 DATE

1. General Information

- Action Location

Base:COLUMBUS AFBState:AlabamaCounty(s):Bibb, AL; Dallas, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Sumter, ALRegulatory Area(s):NOT IN A REGULATORY AREA

- Action Title: T-7A Recapitalization at Columbus AFB - Alternative 3

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2028

- Action Purpose and Need:

The purpose of the Proposed Action is to continue the T-7A recapitalization program by recapitalizing Columbus AFB to prepare pilots to operate the more technologically advanced T-7A aircraft.

The Proposed Action is needed because the current training practices with the older T-38C aircraft fail to prepare pilots for the technological advancements of fourth and fifth generation aircraft. By 2031, more than 60 percent of the Combat Air Force will be comprised of fifth generation aircraft, requiring a modern and capable training platform with capabilities beyond those currently available in the T-38C. Additionally, training systems provided with the newer T-7A aircraft allow for enhanced and improved flight and simulator training. The T-7A recapitalization program will allow DAF to provide more efficient and effective instructor and pilot training for operating fourth and fifth generation aircraft. T-7A recapitalization at Columbus AFB would allow DAF to continue the geographically phased T-7A recapitalization sequence ensuring DAF pilot training requirements are met.

- Action Description:

The Proposed Action is recapitalization of the T-38C Talon flight training program at Columbus AFB with T-7A Red Hawk aircraft. Recapitalization would entail introduction of T-7A aircraft and flight operations at Columbus AFB and associated special use airspace to replace all T-38C aircraft assigned to the installation; introduction of nighttime (between 10 a.m. and 7 a.m.) T-7A flight operations; changes to the number of personnel and dependents in the Columbus AFB region; and construction and upgrade of operations, support, and maintenance facilities.

For Alternative 1, Columbus AFB would receive 61 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in 61 T-7A aircraft being delivered to Columbus AFB; however, T-7A operations would be performed at an intensity approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Columbus AFB would receive 77 T-7A aircraft and perform T-7A operations at an intensity identical to Alternative 2. Alternative 3 also incorporates a MILCON project alternative to construct 12 additional shelters for the T-7A aircraft. Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in the EIS provides analysis to evaluate future capacity needs. The No Action Alternative would not implement T-7A recapitalization at Columbus AFB.

- Point of Contact

| Name: | Carolyn Hein |
|---------------|--------------|
| Title: | Contractor |
| Organization: | HDR |
| Email: | |
| Phone Number: | |

- Activity List:

| | 10, 11, 10, 10, 10, 10, 10, 10, 10, 10, | |
|---------------|---|---|
| Activity Type | | Activity Title |
| 2. | Aircraft | 2028 and 2029 T-7A MOA Low-Altitude Operations |
| 3. | Aircraft | 2028 and 2029 T-38C MOA Low-Altitude Operations |
| 4. | Aircraft | 2030 T-7A MOA Low-Altitude Operations |
| 5. | Aircraft | 2030 T-38C MOA Low-Altitude Operations |

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Aircraft

2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location

- Activity Title: 2028 and 2029 T-7A MOA Low-Altitude Operations

- Activity Description:

2028 and 2029: Starting in 2028, add 594 T-7A low-altitude operations in Birmingham and Birmingham 2 MOAs.

- Activity Start Date

Start Month:1Start Year:2028

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 2.223180 |
| SO _x | 1.064658 |
| NO _x | 32.411029 |
| СО | 1.920057 |
| PM 10 | 0.156648 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.137067 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 3221.2 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Po | llutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|---------|---------------------------|
| VOC | 2.223180 | PM 2. | 5 | 0.137067 |
| SO _x | 1.064658 | Pb | | 0.000000 |
| NO _x | 32.411029 | NH ₃ | | 0.000000 |
| СО | 1.920057 | CO ₂ e | | 3221.2 |
| PM 10 | 0.156648 | | | |

2.2 Aircraft & Engines

County: Bibb, AL; Dallas, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Sumter, AL **Regulatory Area(s):** NOT IN A REGULATORY AREA

2.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine Aircraft Designation: Engine Model: Primary Function: Aircraft has After burn: Number of Engines: | T-7A F404-GE-102 Trainer Yes 1 | | | |
|--|--|--|-------------------------|--|
| - Aircraft & Engine Surrogat Is Aircraft & Engine a Su Original Aircraft Name: Original Engine Name: | | | | |
| 2.2.2 Aircraft & Engines H | Emission Factor(s) | | | |
| - Aircraft & Engine Emission Proprietary Information. C engine's Emission Factors. | | fuel) Ibject Matter Expert for More Info | ormation regarding this | |
| 2.3 Flight Operations | | | | |
| 2.3.1 Flight Operations As | sumptions | | | |
| Number of Annual TGOs Number of Annual Trim | (Touch-and-Go) cy | | 68 594 0 0 | |
| a | | | | |
| - Flight Operations TIMs (Tin Taxi/Idle Out [Idle] (mins) Takeoff [Military] (mins) Takeoff [After Burn] (mi Climb Out [Intermediate Approach [Approach] (m Taxi/Idle In [Idle] (mins) | s): : ns): (mins): ins): | 0 19.55 0 0 0 0 | | |
| - Trim Test Idle (mins): Approach (mins): Intermediate (mins): Military (mins): AfterBurn (mins): 2.3.2 Flight Operations Fo | 12 27 9 9 3 rmula(s) | | | |
| | | | | |
| - Aircraft Emissions per Mode for LTOs per Year | | | | |

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)

60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

2.4 Auxiliary Power Unit (APU)

2.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

2.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

2.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

3. Aircraft

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Bibb, AL; Dallas, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Sumter, AL **Regulatory Area(s):** NOT IN A REGULATORY AREA

- Activity Title: 2028 and 2029 T-38C MOA Low-Altitude Operations

- Activity Description:

2028 and 2029: Starting in 2028, remove 354 T-38C low-altitude operations in Birmingham and Birmingham 2 MOAs.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.192049 |
| SO _x | -0.273991 |
| NO _x | -0.491647 |
| СО | -7.935482 |
| PM 10 | -0.289354 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.010243 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -828.1 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.192049 |
| SO _x | -0.273991 |
| NO _x | -0.491647 |
| СО | -7.935482 |
| PM 10 | -0.289354 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.010243 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -828.1 |
| | |

3.2 Aircraft & Engines

3.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

3.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|--------------|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

3.3 Flight Operations

3.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|-----|
| Number of Aircraft: | 68 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 354 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 19.55 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |
| | |

| - | Trim Test |
|---|-------------|
| | Idle (mins) |

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

3.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines LTO: Number of Landing and Take-off Cycles (for all aircraft) 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE IN} + AEM_{IDLE OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE IN}: Aircraft Emissions for Idle-In Mode (TONs) AEMIDLE OUT: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

3.4 Auxiliary Power Unit (APU)

3.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each | Exempt Source? | Designation | Manufacturer |
|-------------------------------|-----------------------------|-------------------|-------------|--------------|
| 1 | LTO | | | |

3.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----|----|-------|--------|-------------------|
| | Flow | | | | | | | |

3.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year APU_{POL} = APU * OH * LTO * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

4. Aircraft

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Bibb, AL; Dallas, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Sumter, AL **Regulatory Area(s):** NOT IN A REGULATORY AREA

- Activity Title: 2030 T-7A MOA Low-Altitude Operations

- Activity Description:

2030: Starting in 2030, add 594 T-7A low-altitude operations in Birmingham and Birmingham 2 MOAs.

- Activity Start Date

Start Month:1Start Year:2030

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 2.223180 |
| SO _x | 1.064658 |
| NO _x | 32.411029 |
| СО | 1.920057 |
| PM 10 | 0.156648 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.137067 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 3221.2 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|-----------------|----------------------------------|
| VOC | 2.223180 | PM 2.5 | 0.137067 |
| SO _x | 1.064658 | Pb | 0.000000 |
| NO _x | 32.411029 | NH ₃ | 0.000000 |

| СО | 1.920057 |
|-------|----------|
| PM 10 | 0.156648 |

| CO ₂ e | 3221.2 |
|-------------------|--------|
| | |

4.2 Aircraft & Engines

4.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-------------|
| Aircraft Designation: | T-7A |
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

4.2.2 Aircraft & Engines Emission Factor(s)

Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

4.3 Flight Operations

4.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|-----|
| Number of Aircraft: | 9 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 594 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 19.55 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |
| raxinute in fruit, (mins): | 0 |

| - Trim Test | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

4.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)

AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

4.4 Auxiliary Power Unit (APU)

4.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| | | | | |
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

4.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

4.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

5. Aircraft

5.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Bibb, AL; Dallas, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Sumter, AL **Regulatory Area(s):** NOT IN A REGULATORY AREA

- Activity Title: 2030 T-38C MOA Low-Altitude Operations

- Activity Description:

2030: Starting in 2030, remove 594 T-38C low-altitude operations in Birmingham and Birmingham 2 MOAs.

| - | Activity | Start | Date |
|---|----------|-------|------|
|---|----------|-------|------|

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.322252 |
| SO _x | -0.459747 |
| NO _x | -0.824966 |
| СО | -13.315470 |
| PM 10 | -0.485527 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -0.017187 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -1389.6 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|-------------------|---------------------------|
| VOC | -0.322252 | PM 2.5 | -0.017187 |
| SO _x | -0.459747 | Pb | 0.000000 |
| NO _x | -0.824966 | NH ₃ | 0.000000 |
| СО | -13.315470 | CO ₂ e | -1389.6 |
| PM 10 | -0.485527 | | |

5.2 Aircraft & Engines

5.2.1 Aircraft & Engines Assumptions

| T-38C |
|-----------|
| J85-GE-5R |
| Trainer |
| Yes |
| 2 |
| |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

5.2.2 Aircraft & Engines Emission Factor(s)

Fuel Flow VOC **NO**_x CO **PM 10** PM 2.5 CO₂e **SO**_x Idle 520.00 16.80 1.07 1.08 177.45 4.70 4.02 3234 854.00 7.84 1.07 0.84 106.29 2.80 1.85 3234 Approach Intermediate 1030.00 2.78 1.07 0.70 65.07 1.79 0.69 3234 Military 2220.00 0.75 1.07 1.92 30.99 1.13 0.04 3234

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |
|---|--|---------------|--------------|-----------------|-------|-------------------------------|------|------|
| | 5.3 Flight Operations 5.3.1 Flight Operations Assumptions | | | | | | | |
| 5.5.1 Flight | Operations A | Assumption | IS | | | | | |
| Number o | | Os (Touch-a | nd-Go) cyc | | | 17 `t: 59 0 0 | | |
| - Default Setti | ngs Used: | No | | | | | | |
| - Flight Opera | tions TIMs (7 | Fime In Mod | le) | | | | | |
| | Out [Idle] (mi | |) | 0 | | | | |
| | Military] (min | | | 19.55 | | | | |
| | After Burn] (r | | | 0 | | | | |
| Climb Ou | t [Intermedia | te] (mins): | | 0 | | | | |
| | [Approach] (| | | 0 | | | | |
| Taxi/Idle | In [Idle] (min | s): | | 0 | | | | |
| - Trim Test | | | | | | | | |
| Idle (mins |): | 12 | | | | | | |
| Approach | · | 27 | | | | | | |
| | ate (mins): | 9 | | | | | | |
| Military (1 | | 9 | | | | | | |
| AfterBurn | n (mins): | 3 | | | | | | |
| 5.3.2 Flight | Operations I | Formula(s) | | | | | | |
| - Aircraft Emi AEM _{POL} = (TIN | | | | D / 2000 | | | | |
| TIM: Tim | Aircraft Emiss e in Mode (mi | in) | | de (TONs) | | | | |
| FC: Fuel I | ersion Factor n Flow Rate (lb/ | hr) | | | | | | |
| | version Facto | | | | | | | |
| | sion Factor (lb | | | | | | | |
| | ber of Engines | | off Cualas (| for all aircore | ፁ) | | | |
| | nber of Landir | | | for all allera | | | | |
| 2000: Cor | version Facto | i pounds to 1 | UINS | | | | | |
| - Aircraft Emi | ssions for LT | Os per Year | | | | | | |

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

5.4 Auxiliary Power Unit (APU)

5.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

5.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----|----|-------|--------|-------------------|
| | Flow | | | | | | | |

5.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

ROI 3: Range R-4404

This section includes the following:

- Alternative 1 ACAM Report
- Alternative 1 ACAM Detail Report
- Alternative 2 ACAM Report
- Alternative 2 ACAM Detail Report
- Alternative 3 ACAM Report
- Alternative 3 ACAM Detail Report

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location: Base: COLUMBUS AFB State: Mississippi County(s): Noxubee, MS Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: T-7A Recapitalization at Columbus AFB - Alternative 1

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2028

e. Action Description:

The Proposed Action is recapitalization of the T-38C Talon flight training program at Columbus AFB with T-7A Red Hawk aircraft. Recapitalization would entail introduction of T-7A aircraft and flight operations at Columbus AFB and associated special use airspace to replace all T-38C aircraft assigned to the installation; introduction of nighttime (between 10 a.m. and 7 a.m.) T-7A flight operations; changes to the number of personnel and dependents in the Columbus AFB region; and construction and upgrade of operations, support, and maintenance facilities.

For Alternative 1, Columbus AFB would receive 61 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in 61 T-7A aircraft being delivered to Columbus AFB; however, T-7A operations would be performed at an intensity approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Columbus AFB would receive 77 T-7A aircraft and perform T-7A operations at an intensity identical to Alternative 2. Alternative 3 also incorporates a MILCON project alternative to construct 12 additional shelters for the T-7A aircraft. Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in the EIS provides analysis to evaluate future capacity needs. The No Action Alternative would not implement T-7A recapitalization at Columbus AFB.

f. Point of Contact:

| Name: | Carolyn Hein |
|---------------|--------------|
| Title: | Contractor |
| Organization: | HDR |
| Email: | |
| Phone Number: | |

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

_____ applicable __X__ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all

algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

....

Analysis Summary:

| 2028 | | | | | | | |
|---------------------|--------------------------|--------------------------|------------------------|--|--|--|--|
| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | | | | | |
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) | | | | |
| NOT IN A REGULATORY | NOT IN A REGULATORY AREA | | | | | | |
| VOC | 0.929 | 250 | No | | | | |
| NOx | 15.435 | 250 | No | | | | |
| СО | -5.568 | 250 | No | | | | |
| SOx | 0.296 | 250 | No | | | | |
| PM 10 | -0.161 | 250 | No | | | | |
| PM 2.5 | 0.059 | 250 | No | | | | |
| Pb | 0.000 | 25 | No | | | | |
| NH3 | 0.000 | 250 | No | | | | |
| CO2e | 895.1 | | | | | | |

2029

| Pollutant | Action Emissions | Action Emissions INSIGNIFICANCE INDICATOR | | | | | |
|---------------------|--------------------------|---|------------------------|--|--|--|--|
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) | | | | |
| NOT IN A REGULATORY | NOT IN A REGULATORY AREA | | | | | | |
| VOC | 0.929 | 250 | No | | | | |
| NOx | 15.435 | 250 | No | | | | |
| СО | -5.568 | 250 | No | | | | |
| SOx | 0.296 | 250 | No | | | | |
| PM 10 | -0.161 | 250 | No | | | | |
| PM 2.5 | 0.059 | 250 | No | | | | |
| Pb | 0.000 | 25 | No | | | | |
| NH3 | 0.000 | 250 | No | | | | |
| CO2e | 895.1 | | | | | | |

| 2030 | | | | |
|---------------------|------------------|--------------------|------------------------|--|
| Pollutant | Action Emissions | INSIGNIFICAN | ICE INDICATOR | |
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) | |
| NOT IN A REGULATORY | AREA | | | |
| VOC | 1.858 | 250 | No | |
| NOx | 30.869 | 250 | No | |
| СО | -11.136 | 250 | No | |
| SOx | 0.591 | 250 | No | |
| PM 10 | -0.321 | 250 | No | |
| PM 2.5 | 0.117 | 250 | No | |
| Pb | 0.000 | 25 | No | |
| NH3 | 0.000 | 250 | No | |
| CO2e | 1790.2 | | | |

2031 - (Steady State)

| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | | | | | |
|---------------------|--------------------------|--------------------------|------------------------|--|--|--|--|
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) | | | | |
| NOT IN A REGULATORY | NOT IN A REGULATORY AREA | | | | | | |
| VOC | 1.858 | 250 | No | | | | |
| NOx | 30.869 | 250 | No | | | | |
| CO | -11.136 | 250 | No | | | | |
| SOx | 0.591 | 250 | No | | | | |
| PM 10 | -0.321 | 250 | No | | | | |
| PM 2.5 | 0.117 | 250 | No | | | | |
| Pb | 0.000 | 25 | No | | | | |
| NH3 | 0.000 | 250 | No | | | | |
| CO2e | 1790.2 | | | | | | |

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.

mA

Carolyn Hein, Contractor

2/17/2023 DATE

1. General Information

- Action Location

Base:COLUMBUS AFBState:MississippiCounty(s):Noxubee, MSRegulatory Area(s):NOT IN A REGULATORY AREA

- Action Title: T-7A Recapitalization at Columbus AFB - Alternative 1

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2028

- Action Purpose and Need:

The purpose of the Proposed Action is to continue the T-7A recapitalization program by recapitalizing Columbus AFB to prepare pilots to operate the more technologically advanced T-7A aircraft.

The Proposed Action is needed because the current training practices with the older T-38C aircraft fail to prepare pilots for the technological advancements of fourth and fifth generation aircraft. By 2031, more than 60 percent of the Combat Air Force will be comprised of fifth generation aircraft, requiring a modern and capable training platform with capabilities beyond those currently available in the T-38C. Additionally, training systems provided with the newer T-7A aircraft allow for enhanced and improved flight and simulator training. The T-7A recapitalization program will allow DAF to provide more efficient and effective instructor and pilot training for operating fourth and fifth generation aircraft. T-7A recapitalization at Columbus AFB would allow DAF to continue the geographically phased T-7A recapitalization sequence ensuring DAF pilot training requirements are met.

- Action Description:

The Proposed Action is recapitalization of the T-38C Talon flight training program at Columbus AFB with T-7A Red Hawk aircraft. Recapitalization would entail introduction of T-7A aircraft and flight operations at Columbus AFB and associated special use airspace to replace all T-38C aircraft assigned to the installation; introduction of nighttime (between 10 a.m. and 7 a.m.) T-7A flight operations; changes to the number of personnel and dependents in the Columbus AFB region; and construction and upgrade of operations, support, and maintenance facilities.

For Alternative 1, Columbus AFB would receive 61 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in 61 T-7A aircraft being delivered to Columbus AFB; however, T-7A operations would be performed at an intensity approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Columbus AFB would receive 77 T-7A aircraft and perform T-7A operations at an intensity identical to Alternative 2. Alternative 3 also incorporates a MILCON project alternative to construct 12 additional shelters for the T-7A aircraft. Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in the EIS provides analysis to evaluate future capacity needs. The No Action Alternative would not implement T-7A recapitalization at Columbus AFB.

- Point of Contact

| Name: | Carolyn Hein |
|---------------|--------------|
| Title: | Contractor |
| Organization: | HDR |
| Email: | |
| Phone Number: | |

- Activity List:

| | Activity Type | Activity Title |
|----|---------------|---|
| 2. | Aircraft | 2028 and 2029 T-7A Range Low-Altitude Operations |
| 3. | Aircraft | 2028 and 2029 T-38C Range Low-Altitude Operations |
| 4. | Aircraft | 2030 T-7A Range Low-Altitude Operations |
| 5. | Aircraft | 2030 T-38C Range Low-Altitude Operations |

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Aircraft

2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location County: Noxubee, MS

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2028 and 2029 T-7A Range Low-Altitude Operations

- Activity Description:

2028 and 2029: Starting in 2028, add 291 T-7A low-altitude operations in R-4404.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 1.086349 |
| SO _x | 0.520262 |
| NO _x | 15.837650 |
| СО | 0.938328 |
| PM 10 | 0.076545 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.066977 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 1574.1 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|-------------------|----------------------------------|
| VOC | 1.086349 | PM 2.5 | 0.066977 |
| SO _x | 0.520262 | Pb | 0.000000 |
| NO _x | 15.837650 | NH ₃ | 0.000000 |
| СО | 0.938328 | CO ₂ e | 1574.1 |
| PM 10 | 0.076545 | | |

2.2 Aircraft & Engines

2.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | | |
|---|--|--------------------------|
| Aircraft Designation: | T-7A | |
| Engine Model: | F404-GE-102 | |
| Primary Function: | Trainer | |
| Aircraft has After burn: | | |
| Number of Engines: | 1 | |
| Tumber of Engines. | • | |
| - Aircraft & Engine Surrogat Is Aircraft & Engine a Su Original Aircraft Name: Original Engine Name: | | |
| 2.2.2 Aircraft & Engines F | Emission Factor(s) | |
| - Aircraft & Engine Emission Proprietary Information. C engine's Emission Factors. | s Factors (lb/1000lb fuel) Contact Air Quality Subject Matter Expert for More In | formation regarding this |
| 2.3 Flight Operations | | |
| 2.3.1 Flight Operations As | sumptions | |
| - Flight Operations | | |
| Number of Aircraft: | | 52 |
| | (Landing and Take-off) cycles for all Aircraft: | 291 |
| | (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim | · · · | 0 |
| | lo | |
| - Flight Operations TIMs (Tin | ne In Mode) | |
| Taxi/Idle Out [Idle] (mins | | |
| Takeoff [Military] (mins) | | |
| Takeoff [After Burn] (mi | | |
| Climb Out [Intermediate | | |
| Approach [Approach] (m | | |
| Taxi/Idle In [Idle] (mins): | 0 | |
| | | |

| - Trim Test | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

2.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min) 60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

2.4 Auxiliary Power Unit (APU)

2.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

2.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

2.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

3. Aircraft

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

Activity Location
 County: Noxubee, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2028 and 2029 T-38C Range Low-Altitude Operations

- Activity Description: 2028 and 2029: Starting in 2028, remove 291 T-38C low-altitude operations in R-4404.

- Activity Start Date

| S | Star | t | Month: | 1 |
|---|----------|---|------------|-----|
| | . | | X 7 | 202 |

Start Year: 2028

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.157467 |
| SO _x | -0.224653 |
| NO _x | -0.403116 |
| СО | -6.506552 |
| PM 10 | -0.237251 |

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| PM 2.5 | -0.008398 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO_2e | -679.0 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.157467 |
| SO _x | -0.224653 |
| NO _x | -0.403116 |
| CO | -6.506552 |
| PM 10 | -0.237251 |

| t & APU) part[: | |
|-------------------|----------------------------------|
| Pollutant | Emissions Per Year (TONs) |
| PM 2.5 | -0.008398 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -679.0 |
| | |

3.2 Aircraft & Engines

3.2.1 Aircraft & Engines Assumptions

| Aircraft Designation: | T-38C |
|--------------------------|-----------|
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

3.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | 0 | | <u></u> | | | | | |
|--------------|------------------|-------|---------|-----------------|--------|-------|--------|-------------------|
| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

3.3 Flight Operations

3.3.1 Flight Operations Assumptions

| - Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: | | | | |
|---|------------|------|--|--|
| - Default Settings Used: | No | | | |
| - Flight Operations TIMs (T | · · · · · | | | |
| Taxi/Idle Out [Idle] (mi | ns): | 0 | | |
| Takeoff [Military] (min | s): | 19.5 | | |
| Takeoff [After Burn] (n | nins): | 0 | | |
| Climb Out [Intermediate] (mins): | | 0 | | |
| Approach [Approach] (| mins): | 0 | | |
| Taxi/Idle In [Idle] (mins | s): | 0 | | |
| - Trim Test | | | | |
| Idle (mins): | 12 | | | |
| Approach (mins): | 27 | | | |
| Intermediate (mins): | 9 | | | |
| Military (mins): | 9 | | | |
| AfterBurn (mins): | | | | |
| 3.3.2 Flight Operations F | 'ormula(s) | | | |
| - Aircraft Emissions per Mo AEM _{POL} = (TIM / 60) * (FC / | | | | |

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min) 60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

3.4 Auxiliary Power Unit (APU)

3.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

3.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----------------|----|-------|--------|-------------------|
| | Flow | | | | | | | |

3.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year APU_{POL} = APU * OH * LTO * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

4. Aircraft

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

Activity Location
 County: Noxubee, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2030 T-7A Range Low-Altitude Operations

- Activity Description:

2030: Starting in 2030, add 291 T-7A low-altitude operations in R-4404.

- Activity Start Date Start Month: 1 Start Year: 2030
- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 1.086349 |
| SO _x | 0.520262 |
| NO _x | 15.837650 |
| CO | 0.938328 |
| PM 10 | 0.076545 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.066977 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 1574.1 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | |
|-----------------|----------------------------------|--|
| VOC | 1.086349 | |
| SO _x | 0.520262 | |
| NO _x | 15.837650 | |
| CO | 0.938328 | |
| PM 10 | 0.076545 | |

| a n o partj. | | | |
|-------------------|----------------------------------|--|--|
| Pollutant | Emissions Per Year (TONs) | | |
| PM 2.5 | 0.066977 | | |
| Pb | 0.000000 | | |
| NH ₃ | 0.000000 | | |
| CO ₂ e | 1574.1 | | |
| | | | |

4.2 Aircraft & Engines

4.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-------------|
| Aircraft Designation: | T-7A |
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

4.2.2 Aircraft & Engines Emission Factor(s)

Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

4.3 Flight Operations

4.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|-----|
| Number of Aircraft: | 9 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 291 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 19.5 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

- Trim Test Idle (mins): 12 Approach (mins): 27 Intermediate (mins): 9 Military (mins): 9 AfterBurn (mins): 3

4.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

4.4 Auxiliary Power Unit (APU)

4.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

4.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-----------------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

4.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

5. Aircraft

5.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove
- Activity Location
 County: Noxubee, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2030 T-38C Range Low-Altitude Operations

- Activity Description:

2030: Starting in 2030, remove 291 T-38C low-altitude operations in R-4404.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) | | | | |
|-----------------|----------------------------------|--|--|--|--|
| VOC | -0.157467 | | | | |
| SO _x | -0.224653 | | | | |
| NO _x | -0.403116 | | | | |
| CO | -6.506552 | | | | |
| PM 10 | -0.237251 | | | | |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -0.008398 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -679.0 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]

| | in give operations (includes |
|-----------------|----------------------------------|
| Pollutant | Emissions Per Year (TONs) |
| VOC | -0.157467 |
| SO _x | -0.224653 |
| NO _x | -0.403116 |
| CO | -6.506552 |
| PM 10 | -0.237251 |

| t & APU) part[: | |
|-------------------|----------------------------------|
| Pollutant | Emissions Per Year (TONs) |
| PM 2.5 | -0.008398 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -679.0 |
| | |

5.2 Aircraft & Engines

5.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

| Aircraft Designation: | T-38C |
|--------------------------|-----------|
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

5.2.2 Aircraft & Engines Emission Factor(s)

| - Aircraft & Engine Emissions Factors (lb/100 | 01b fuel) |
|---|-----------|
|---|-----------|

| | | | (10/1000101) | | | | | |
|--------------|------------------|-------|--------------|-----------------|--------|-------|--------|-------------------|
| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

5.3 Flight Operations

5.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|-----|
| Number of Aircraft: | 17 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 291 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 19.5 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

5.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEMPOL: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

5.4 Auxiliary Power Unit (APU)

5.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| 1 | LTO | | | |

5.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----------------|----|-------|--------|-------------------|
| | Flow | | | | | | | |

5.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year APU_{POL} = APU * OH * LTO * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location: Base: COLUMBUS AFB State: Mississippi County(s): Noxubee, MS Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: T-7A Recapitalization at Columbus AFB - Alternative 2

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2028

e. Action Description:

The Proposed Action is recapitalization of the T-38C Talon flight training program at Columbus AFB with T-7A Red Hawk aircraft. Recapitalization would entail introduction of T-7A aircraft and flight operations at Columbus AFB and associated special use airspace to replace all T-38C aircraft assigned to the installation; introduction of nighttime (between 10 a.m. and 7 a.m.) T-7A flight operations; changes to the number of personnel and dependents in the Columbus AFB region; and construction and upgrade of operations, support, and maintenance facilities.

For Alternative 1, Columbus AFB would receive 61 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in 61 T-7A aircraft being delivered to Columbus AFB; however, T-7A operations would be performed at an intensity approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Columbus AFB would receive 77 T-7A aircraft and perform T-7A operations at an intensity identical to Alternative 2. Alternative 3 also incorporates a MILCON project alternative to construct 12 additional shelters for the T-7A aircraft. Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in the EIS provides analysis to evaluate future capacity needs. The No Action Alternative would not implement T-7A recapitalization at Columbus AFB.

f. Point of Contact:

| Name: | Carolyn Hein |
|---------------|--------------|
| Title: | Contractor |
| Organization: | HDR |
| Email: | |
| Phone Number: | |

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

_____ applicable __X__ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all

algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

....

Analysis Summary:

| | 2 | 028 | | |
|---------------------|------------------|--------------------------|------------------------|--|
| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | | |
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) | |
| NOT IN A REGULATORY | AREA | | | |
| VOC | 1.237 | 250 | No | |
| NOx | 19.453 | 250 | No | |
| СО | -3.726 | 250 | No | |
| SOx | 0.480 | 250 | No | |
| PM 10 | -0.083 | 250 | No | |
| PM 2.5 | 0.077 | 250 | No | |
| Pb | 0.000 | 25 | No | |
| NH3 | 0.000 | 250 | No | |
| CO2e | 1452.6 | | | |

| 2029 | | | | |
|---------------------|------------------|--------------------------|------------------------|--|
| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | | |
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) | |
| NOT IN A REGULATORY | AREA | | | |
| VOC | 1.237 | 250 | No | |
| NOx | 19.453 | 250 | No | |
| СО | -3.726 | 250 | No | |
| SOx | 0.480 | 250 | No | |
| PM 10 | -0.083 | 250 | No | |
| PM 2.5 | 0.077 | 250 | No | |
| Pb | 0.000 | 25 | No | |
| NH3 | 0.000 | 250 | No | |
| CO2e | 1452.6 | | | |

2020

| | 2 | 030 | | |
|---------------------|------------------|--------------------------|------------------------|--|
| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | | |
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) | |
| NOT IN A REGULATORY | AREA | | | |
| VOC | 2.395 | 250 | No | |
| NOx | 38.706 | 250 | No | |
| СО | -10.672 | 250 | No | |
| SOx | 0.849 | 250 | No | |
| PM 10 | -0.284 | 250 | No | |
| PM 2.5 | 0.150 | 250 | No | |
| Pb | 0.000 | 25 | No | |
| NH3 | 0.000 | 250 | No | |
| CO2e | 2569.1 | | | |

2031 - (Steady State)

| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | | |
|---------------------|------------------|--------------------------|------------------------|--|
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) | |
| NOT IN A REGULATORY | AREA | | | |
| VOC | 2.395 | 250 | No | |
| NOx | 38.706 | 250 | No | |
| CO | -10.672 | 250 | No | |
| SOx | 0.849 | 250 | No | |
| PM 10 | -0.284 | 250 | No | |
| PM 2.5 | 0.150 | 250 | No | |
| Pb | 0.000 | 25 | No | |
| NH3 | 0.000 | 250 | No | |
| CO2e | 2569.1 | | | |

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.

mA

Carolyn Hein, Contractor

2/17/2023 DATE

1. General Information

- Action Location

Base:COLUMBUS AFBState:MississippiCounty(s):Noxubee, MSRegulatory Area(s):NOT IN A REGULATORY AREA

- Action Title: T-7A Recapitalization at Columbus AFB - Alternative 2

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2028

- Action Purpose and Need:

The purpose of the Proposed Action is to continue the T-7A recapitalization program by recapitalizing Columbus AFB to prepare pilots to operate the more technologically advanced T-7A aircraft.

The Proposed Action is needed because the current training practices with the older T-38C aircraft fail to prepare pilots for the technological advancements of fourth and fifth generation aircraft. By 2031, more than 60 percent of the Combat Air Force will be comprised of fifth generation aircraft, requiring a modern and capable training platform with capabilities beyond those currently available in the T-38C. Additionally, training systems provided with the newer T-7A aircraft allow for enhanced and improved flight and simulator training. The T-7A recapitalization program will allow DAF to provide more efficient and effective instructor and pilot training for operating fourth and fifth generation aircraft. T-7A recapitalization at Columbus AFB would allow DAF to continue the geographically phased T-7A recapitalization sequence ensuring DAF pilot training requirements are met.

- Action Description:

The Proposed Action is recapitalization of the T-38C Talon flight training program at Columbus AFB with T-7A Red Hawk aircraft. Recapitalization would entail introduction of T-7A aircraft and flight operations at Columbus AFB and associated special use airspace to replace all T-38C aircraft assigned to the installation; introduction of nighttime (between 10 a.m. and 7 a.m.) T-7A flight operations; changes to the number of personnel and dependents in the Columbus AFB region; and construction and upgrade of operations, support, and maintenance facilities.

For Alternative 1, Columbus AFB would receive 61 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in 61 T-7A aircraft being delivered to Columbus AFB; however, T-7A operations would be performed at an intensity approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Columbus AFB would receive 77 T-7A aircraft and perform T-7A operations at an intensity identical to Alternative 2. Alternative 3 also incorporates a MILCON project alternative to construct 12 additional shelters for the T-7A aircraft. Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in the EIS provides analysis to evaluate future capacity needs. The No Action Alternative would not implement T-7A recapitalization at Columbus AFB.

- Point of Contact

| Name: | Carolyn Hein |
|---------------|--------------|
| Title: | Contractor |
| Organization: | HDR |
| Email: | |
| Phone Number: | |

- Activity List:

| | Activity Type | Activity Title |
|----|---------------|---|
| 2. | Aircraft | 2028 and 2029 T-7A Range Low-Altitude Operations |
| 3. | Aircraft | 2028 and 2029 T-38C Range Low-Altitude Operations |
| 4. | Aircraft | 2030 T-7A Range Low-Altitude Operations |
| 5. | Aircraft | 2030 T-38C Range Low-Altitude Operations |

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Aircraft

2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location County: Noxubee, MS Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2028 and 2029 T-7A Range Low-Altitude Operations

- Activity Description:

2028 and 2029: Starting in 2028, add 363 T-7A low-altitude operations in R-4404.

- Activity Start Date

Start Month:1Start Year:2028

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 1.355136 |
| SO _x | 0.648987 |
| NO _x | 19.756243 |
| СО | 1.170491 |
| PM 10 | 0.095484 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.083549 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 1963.6 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-----|-------------------|----------------------------------|
| VOC | 1.355136 |]] | PM 2.5 | 0.083549 |
| SO _x | 0.648987 | | Pb | 0.000000 |
| NO _x | 19.756243 |]] | NH3 | 0.000000 |
| СО | 1.170491 | (| CO ₂ e | 1963.6 |
| PM 10 | 0.095484 | | | |

2.2 Aircraft & Engines

2.2.1 Aircraft & Engines Assumptions

| Aircraft & Engine Aircraft Designation: Engine Model: Primary Function: Aircraft has After burn: Number of Engines: Aircraft & Engine Surrogat | 1 | | | |
|--|---|--------------------------|--|--|
| Is Aircraft & Engine a Su Original Aircraft Name: Original Engine Name: | | | | |
| 2.2.2 Aircraft & Engines H | Emission Factor(s) | | | |
| - Aircraft & Engine Emission Proprietary Information. C engine's Emission Factors. | Contact Air Quality Subject Matter Expert for More In | formation regarding this | | |
| 2.3 Flight Operations | | | | |
| 2.3.1 Flight Operations As | ssumptions | | | |
| | s (Landing and Take-off) cycles for all Aircraft: s (Touch-and-Go) cycles for all Aircraft: Test(s) per Aircraft: | 52 363 0 0 | | |
| - Default Settings Used: | No | | | |
| - Flight Operations TIMs (Tin Taxi/Idle Out [Idle] (min Takeoff [Military] (mins) Takeoff [After Burn] (mi Climb Out [Intermediate Approach [Approach] (m Taxi/Idle In [Idle] (mins) | s): 0 i: 19.5 ins): 0 inins): 0 | | | |
| - Trim Test Idle (mins): Approach (mins): Intermediate (mins): Military (mins): AfterBurn (mins): | 12 27 9 9 3 | | | |
| 2.3.2 Flight Operations Formula(s) | | | | |
| - Aircraft Emissions per Mode for LTOs per Vear | | | | |

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)

60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

2.4 Auxiliary Power Unit (APU)

2.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of per Aircr | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

2.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

2.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

3. Aircraft

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

Activity Location
 County: Noxubee, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2028 and 2029 T-38C Range Low-Altitude Operations

- Activity Description: 2028 and 2029: Starting in 2028, remove 219 T-38C low-altitude operations in R-4404.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.118506 |
| SO _x | -0.169069 |
| NO _x | -0.303376 |
| СО | -4.896683 |
| PM 10 | -0.178550 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.006320 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -511.0 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.118506 |
| SO _x | -0.169069 |
| NO _x | -0.303376 |
| СО | -4.896683 |
| PM 10 | -0.178550 |

| t & APU) partj: | |
|-------------------|---------------------------|
| Pollutant | Emissions Per Year (TONs) |
| PM 2.5 | -0.006320 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -511.0 |
| | |

3.2 Aircraft & Engines

3.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

3.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SO _x | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|--------------|-----------|-------|-----------------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

3.3 Flight Operations

3.3.1 Flight Operations Assumptions

| - Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: | | | | |
|---|--------------|------|--|--|
| - Default Settings Used: | No | | | |
| - Flight Operations TIMs (T | ime In Mode) | | | |
| Taxi/Idle Out [Idle] (mi | ns): | 0 | | |
| Takeoff [Military] (min | s): | 19.5 | | |
| Takeoff [After Burn] (n | nins): | 0 | | |
| Climb Out [Intermedia | te] (mins): | 0 | | |
| Approach [Approach] (| mins): | 0 | | |
| Taxi/Idle In [Idle] (mins | 5): | 0 | | |
| - Trim Test | | | | |
| Idle (mins): | 12 | | | |
| Approach (mins): | 27 | | | |
| Intermediate (mins): | 9 | | | |
| Military (mins): | 9 | | | |
| AfterBurn (mins): | 3 | | | |
| 3.3.2 Flight Operations F | Formula(s) | | | |

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)

60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

3.4 Auxiliary Power Unit (APU)

3.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

3.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----------------|----|-------|--------|-------------------|
| | Flow | | | | | | | |

3.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year APU_{POL} = APU * OH * LTO * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

4. Aircraft

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

Activity Location
 County: Noxubee, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2030 T-7A Range Low-Altitude Operations

- Activity Description:

2030: Starting in 2030, add 363 T-7A low-altitude operations in R-4404.

- Activity Start Date

Start Month:1Start Year:2030

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 1.355136 |
| SO _x | 0.648987 |
| NO _x | 19.756243 |
| СО | 1.170491 |
| PM 10 | 0.095484 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.083549 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 1963.6 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Polluta | nt Emissions Per Year (TONs) |
|-----------------|---------------------------|-------------------|--------------------------------|
| VOC | 1.355136 | PM 2.5 | 0.083549 |
| SO _x | 0.648987 | Pb | 0.000000 |
| NO _x | 19.756243 | NH ₃ | 0.000000 |
| СО | 1.170491 | CO ₂ e | 1963.6 |

| PM 10 | 0.095484 | |
|--|---|---|
| 4.2 Aircraft & Engines | | |
| 4.2.1 Aircraft & Engines | Assumptions | |
| 0 | | |
| - Aircraft & Engine Aircraft Designation: | T-7A | |
| Engine Model: | F404-GE-102 | |
| Primary Function: Aircraft has After burn: | Trainer Yes | |
| Number of Engines: | 1 | |
| Aircraft & Engine Surroga | te | |
| Is Aircraft & Engine a S | | |
| Original Aircraft Name: Original Engine Name: | | |
| 1.2.2 Aircraft & Engines | Emission Factor(s) | |
| | | |
| Aircraft & Engine Emission Proprietary Information. engine's Emission Factors | Contact Air Quality Subject Matter Expe | ert for More Information regarding this |
| 4.3 Flight Operations | | |
| 4.3.1 Flight Operations A | ssumptions | |
| - Flight Operations | | 2 |
| Number of Aircraft: Number of Annual LTO | s (Landing and Take-off) cycles for all | 9 Aircraft: 363 |
| Number of Annual TGC | s (Touch-and-Go) cycles for all Aircra | oft: 0 |
| Number of Annual Trim | Test(s) per Aircraft: | 0 |
| Default Settings Used: | No | |
| - Flight Operations TIMs (T | | |
| Taxi/Idle Out [Idle] (min Takeoff [Military] (mins | | |
| Takeoff [After Burn] (m | | |
| Climb Out [Intermediat | e] (mins): 0 | |
| Approach [Approach] (1 Taxi/Idle In [Idle] (mins | | |
| Trim Test | | |
| Idle (mins): | 12 | |
| Approach (mins): | 27 | |
| Intermediate (mins): Military (mins): | 9 9 | |
| AfterBurn (mins): | 3 | |
| 1.3.2 Flight Operations F | ormula(s) | |
| inshe operations i | () | |

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)

AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

4.4 Auxiliary Power Unit (APU)

4.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

4.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

4.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

5. Aircraft

5.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

Activity Location
 County: Noxubee, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2030 T-38C Range Low-Altitude Operations

- Activity Description:

2030: Starting in 2030, remove 363 T-38C low-altitude operations in R-4404.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -0.196428 |
| SO _x | -0.280238 |
| NO _x | -0.502857 |
| СО | -8.116420 |
| PM 10 | -0.295952 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.010476 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -847.0 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | -0.196428 | PM 2.5 | -0.010476 |
| SO _x | -0.280238 | Pb | 0.000000 |
| NO _x | -0.502857 | NH ₃ | 0.000000 |
| СО | -8.116420 | CO ₂ e | -847.0 |
| PM 10 | -0.295952 | | |

5.2 Aircraft & Engines

5.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

 Aircraft Designation: T-38C
 Engine Model: J85-GE-5R
 Primary Function: Trainer
 Aircraft has After burn: Yes
 Number of Engines: 2
- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

5.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SOx | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|--------------|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

5.3 Flight Operations

5.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|-----|
| Number of Aircraft: | 17 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 363 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 19.5 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

| Trim Test | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

5.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE IN} + AEM_{IDLE OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

5.4 Auxiliary Power Unit (APU)

5.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|-----------------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| - | LTO | | | |

5.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----|----|-------|--------|-------------------|
| | Flow | | | | | | | |

5.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location: Base: COLUMBUS AFB State: Mississippi County(s): Noxubee, MS Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: T-7A Recapitalization at Columbus AFB - Alternative 3

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2028

e. Action Description:

The Proposed Action is recapitalization of the T-38C Talon flight training program at Columbus AFB with T-7A Red Hawk aircraft. Recapitalization would entail introduction of T-7A aircraft and flight operations at Columbus AFB and associated special use airspace to replace all T-38C aircraft assigned to the installation; introduction of nighttime (between 10 a.m. and 7 a.m.) T-7A flight operations; changes to the number of personnel and dependents in the Columbus AFB region; and construction and upgrade of operations, support, and maintenance facilities.

For Alternative 1, Columbus AFB would receive 61 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in 61 T-7A aircraft being delivered to Columbus AFB; however, T-7A operations would be performed at an intensity approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Columbus AFB would receive 77 T-7A aircraft and perform T-7A operations at an intensity identical to Alternative 2. Alternative 3 also incorporates a MILCON project alternative to construct 12 additional shelters for the T-7A aircraft. Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in the EIS provides analysis to evaluate future capacity needs. The No Action Alternative would not implement T-7A recapitalization at Columbus AFB.

f. Point of Contact:

| Name: | Carolyn Hein |
|---------------|--------------|
| Title: | Contractor |
| Organization: | HDR |
| Email: | |
| Phone Number: | |

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

_____ applicable __X__ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all

algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

....

Analysis Summary:

| 2028 | | | | |
|---------------------|------------------|--------------------------|------------------------|--|
| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | | |
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) | |
| NOT IN A REGULATORY | AREA | | | |
| VOC | 1.237 | 250 | No | |
| NOx | 19.453 | 250 | No | |
| СО | -3.726 | 250 | No | |
| SOx | 0.480 | 250 | No | |
| PM 10 | -0.083 | 250 | No | |
| PM 2.5 | 0.077 | 250 | No | |
| Pb | 0.000 | 25 | No | |
| NH3 | 0.000 | 250 | No | |
| CO2e | 1452.6 | | | |

| 2029 | | | | |
|---------------------|------------------|--------------------------|------------------------|--|
| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | | |
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) | |
| NOT IN A REGULATORY | AREA | | | |
| VOC | 1.237 | 250 | No | |
| NOx | 19.453 | 250 | No | |
| СО | -3.726 | 250 | No | |
| SOx | 0.480 | 250 | No | |
| PM 10 | -0.083 | 250 | No | |
| PM 2.5 | 0.077 | 250 | No | |
| Pb | 0.000 | 25 | No | |
| NH3 | 0.000 | 250 | No | |
| CO2e | 1452.6 | | | |

2020

| 2030 | | | | |
|---------------------|------------------|----------------------------------|------------------------|--|
| Pollutant | Action Emissions | issions INSIGNIFICANCE INDICATOR | | |
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) | |
| NOT IN A REGULATORY | AREA | | | |
| VOC | 2.395 | 250 | No | |
| NOx | 38.706 | 250 | No | |
| СО | -10.672 | 250 | No | |
| SOx | 0.849 | 250 | No | |
| PM 10 | -0.284 | 250 | No | |
| PM 2.5 | 0.150 | 250 | No | |
| Pb | 0.000 | 25 | No | |
| NH3 | 0.000 | 250 | No | |
| CO2e | 2569.1 | | | |

2031 - (Steady State)

| Pollutant | Action Emissions | INSIGNIFICANCE INDICATOR | |
|---------------------|------------------|--------------------------|------------------------|
| | (ton/yr) | Indicator (ton/yr) | Exceedance (Yes or No) |
| NOT IN A REGULATORY | AREA | | |
| VOC | 2.395 | 250 | No |
| NOx | 38.706 | 250 | No |
| CO | -10.672 | 250 | No |
| SOx | 0.849 | 250 | No |
| PM 10 | -0.284 | 250 | No |
| PM 2.5 | 0.150 | 250 | No |
| Pb | 0.000 | 25 | No |
| NH3 | 0.000 | 250 | No |
| CO2e | 2569.1 | | |

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.

mA

Carolyn Hein, Contractor

2/21/2023 DATE

1. General Information

- Action Location

Base:COLUMBUS AFBState:MississippiCounty(s):Noxubee, MSRegulatory Area(s):NOT IN A REGULATORY AREA

- Action Title: T-7A Recapitalization at Columbus AFB - Alternative 3

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2028

- Action Purpose and Need:

The purpose of the Proposed Action is to continue the T-7A recapitalization program by recapitalizing Columbus AFB to prepare pilots to operate the more technologically advanced T-7A aircraft.

The Proposed Action is needed because the current training practices with the older T-38C aircraft fail to prepare pilots for the technological advancements of fourth and fifth generation aircraft. By 2031, more than 60 percent of the Combat Air Force will be comprised of fifth generation aircraft, requiring a modern and capable training platform with capabilities beyond those currently available in the T-38C. Additionally, training systems provided with the newer T-7A aircraft allow for enhanced and improved flight and simulator training. The T-7A recapitalization program will allow DAF to provide more efficient and effective instructor and pilot training for operating fourth and fifth generation aircraft. T-7A recapitalization at Columbus AFB would allow DAF to continue the geographically phased T-7A recapitalization sequence ensuring DAF pilot training requirements are met.

- Action Description:

The Proposed Action is recapitalization of the T-38C Talon flight training program at Columbus AFB with T-7A Red Hawk aircraft. Recapitalization would entail introduction of T-7A aircraft and flight operations at Columbus AFB and associated special use airspace to replace all T-38C aircraft assigned to the installation; introduction of nighttime (between 10 a.m. and 7 a.m.) T-7A flight operations; changes to the number of personnel and dependents in the Columbus AFB region; and construction and upgrade of operations, support, and maintenance facilities.

For Alternative 1, Columbus AFB would receive 61 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in 61 T-7A aircraft being delivered to Columbus AFB; however, T-7A operations would be performed at an intensity approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Columbus AFB would receive 77 T-7A aircraft and perform T-7A operations at an intensity identical to Alternative 2. Alternative 3 also incorporates a MILCON project alternative to construct 12 additional shelters for the T-7A aircraft. Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in the EIS provides analysis to evaluate future capacity needs. The No Action Alternative would not implement T-7A recapitalization at Columbus AFB.

- Point of Contact

Name:Carolyn HeinTitle:ContractorOrganization:HDREmail:Phone Number:

- Activity List:

| | Activity Type | Activity Title |
|----|---------------|---|
| 2. | Aircraft | 2028 and 2029 T-7A Range Low-Altitude Operations |
| 3. | Aircraft | 2028 and 2029 T-38C Range Low-Altitude Operations |
| 4. | Aircraft | 2030 T-7A Range Low-Altitude Operations |
| 5. | Aircraft | 2030 T-38C Range Low-Altitude Operations |

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Aircraft

2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add
- Activity Location County: Noxubee, MS

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2028 and 2029 T-7A Range Low-Altitude Operations

- Activity Description:

2028 and 2029: Starting in 2028, add 363 T-7A low-altitude operations in R-4404.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) | | |
|-----------------|---------------------------|--|--|
| VOC | 1.355136 | | |
| SO _x | 0.648987 | | |
| NO _x | 19.756243 | | |
| СО | 1.170491 | | |
| PM 10 | 0.095484 | | |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.083549 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 1963.6 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | 1.355136 | PM 2.5 | 0.083549 |
| SO _x | 0.648987 | Pb | 0.000000 |
| NO _x | 19.756243 | NH ₃ | 0.000000 |
| СО | 1.170491 | CO ₂ e | 1963.6 |
| PM 10 | 0.095484 | | |

2.2 Aircraft & Engines

0

2.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | | |
|---|---|------------------------------------|
| Aircraft Designation: | T-7A | |
| Engine Model: | F404-GE-102 | |
| Primary Function: | Trainer | |
| Aircraft has After burn: | | |
| Number of Engines: | 1 | |
| - Aircraft & Engine Surrogat Is Aircraft & Engine a Su Original Aircraft Name: Original Engine Name: | | |
| 2.2.2 Aircraft & Engines H | mission Factor(s) | |
| - Aircraft & Engine Emission Proprietary Information. C engine's Emission Factors. | s Factors (lb/1000lb fuel) Contact Air Quality Subject Matter Expert fo | or More Information regarding this |
| 2.3 Flight Operations | | |
| 2.3.1 Flight Operations As | sumptions | |
| - Flight Operations | | |
| Number of Aircraft: | | 68 |
| | (Landing and Take-off) cycles for all Air | |
| | (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim | Test(s) per Aircraft: | 0 |
| - Default Settings Used: N | lo | |
| - Flight Operations TIMs (Ti | ne In Mode) | |
| Taxi/Idle Out [Idle] (min | | |
| Takeoff [Military] (mins) | | |
| Takeoff [After Burn] (mi | ns): 0 | |
| Climb Out [Intermediate | | |
| Approach [Approach] (m | ins): 0 | |

- Trim Test Idle (mins): 12 Approach (mins): 27 9 Intermediate (mins): 9 Military (mins): AfterBurn (mins): 3

Taxi/Idle In [Idle] (mins):

2.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min) 60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

2.4 Auxiliary Power Unit (APU)

2.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

2.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

2.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

3. Aircraft

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

Activity Location
 County: Noxubee, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2028 and 2029 T-38C Range Low-Altitude Operations

- Activity Description: 2028 and 2029: Starting in 2028, remove 219 T-38C low-altitude operations in R-4404.

- Activity Start Date

| Start Month: | 1 |
|--------------|-----|
| | 202 |

Start Year: 2028

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.118506 |
| SO _x | -0.169069 |
| NO _x | -0.303376 |
| СО | -4.896683 |
| PM 10 | -0.178550 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.006320 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -511.0 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.118506 |
| SO _x | -0.169069 |
| NO _x | -0.303376 |
| CO | -4.896683 |
| PM 10 | -0.178550 |

| t & APU) part[: | |
|-------------------|----------------------------------|
| Pollutant | Emissions Per Year (TONs) |
| PM 2.5 | -0.006320 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -511.0 |
| | |

3.2 Aircraft & Engines

3.2.1 Aircraft & Engines Assumptions

| - Aircraft | & | Engine |
|------------|---|--------|
|------------|---|--------|

| Aircraft Designation: | T-38C |
|--------------------------|-----------|
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

3.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | 0 | | <u></u> | | | | | |
|--------------|------------------|-------|---------|-----------------|--------|-------|--------|-------------------|
| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

3.3 Flight Operations

3.3.1 Flight Operations Assumptions

| - Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: | | | | |
|---|---------------------------------|---|--|--|
| - Default Settings Used: | No | | | |
| - Flight Operations TIMs (1 | Time In Mode) | | | |
| Taxi/Idle Out [Idle] (mi | ns): | 0 | | |
| Takeoff [Military] (min | Takeoff [Military] (mins): 19.5 | | | |
| Takeoff [After Burn] (mins): 0 | | | | |
| Climb Out [Intermediate] (mins): 0 | | | | |
| Approach [Approach] (| mins): | 0 | | |
| Taxi/Idle In [Idle] (min | s): | 0 | | |
| - Trim Test | | | | |
| Idle (mins): | 12 | | | |
| Approach (mins): | 27 | | | |
| Intermediate (mins): | 9 | | | |
| Military (mins): | 9 | | | |
| AfterBurn (mins): | 3 | | | |
| 3.3.2 Flight Operations I | Formula(s) | | | |
| - Aircraft Emissions per Mo AEM _{POL} = (TIM / 60) * (FC / | | | | |

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min) 60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

3.4 Auxiliary Power Unit (APU)

3.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

3.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----------------|----|-------|--------|-------------------|
| | Flow | | | | | | | |

3.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year APU_{POL} = APU * OH * LTO * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

4. Aircraft

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

Activity Location
 County: Noxubee, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2030 T-7A Range Low-Altitude Operations

- Activity Description:

2030: Starting in 2030, add 363 T-7A low-altitude operations in R-4404.

- Activity Start Date Start Month: 1 Start Year: 2030
- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 1.355136 |
| SO _x | 0.648987 |
| NO _x | 19.756243 |
| CO | 1.170491 |
| PM 10 | 0.095484 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.083549 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 1963.6 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | 1.355136 |
| SO _x | 0.648987 |
| NO _x | 19.756243 |
| CO | 1.170491 |
| PM 10 | 0.095484 |

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| PM 2.5 | 0.083549 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO_2e | 1963.6 |
| | |

4.2 Aircraft & Engines

4.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-------------|
| Aircraft Designation: | T-7A |
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

4.2.2 Aircraft & Engines Emission Factor(s)

Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

4.3 Flight Operations

4.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|-----|
| Number of Aircraft: | 9 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 363 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 19.5 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

- Trim Test Idle (mins): 12 Approach (mins): 27 Intermediate (mins): 9 Military (mins): 9 AfterBurn (mins): 3

4.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

4.4 Auxiliary Power Unit (APU)

4.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

4.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-----------------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

4.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

5. Aircraft

5.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove
- Activity Location
 County: Noxubee, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA
- Activity Title: 2030 T-38C Range Low-Altitude Operations

- Activity Description:

2030: Starting in 2030, remove 363 T-38C low-altitude operations in R-4404.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.196428 |
| SO _x | -0.280238 |
| NO _x | -0.502857 |
| CO | -8.116420 |
| PM 10 | -0.295952 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -0.010476 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -847.0 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]

| | in give operations (includes |
|-----------------|----------------------------------|
| Pollutant | Emissions Per Year (TONs) |
| VOC | -0.196428 |
| SO _x | -0.280238 |
| NO _x | -0.502857 |
| CO | -8.116420 |
| PM 10 | -0.295952 |

| t & APU) part[: | |
|-------------------|----------------------------------|
| Pollutant | Emissions Per Year (TONs) |
| PM 2.5 | -0.010476 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -847.0 |
| | |

5.2 Aircraft & Engines

5.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

| Aircraft Designation: | T-38C |
|--------------------------|-----------|
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

5.2.2 Aircraft & Engines Emission Factor(s)

| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|--------------|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

5.3 Flight Operations

5.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|-----|
| Number of Aircraft: | 17 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 363 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 19.5 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

5.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEMPOL: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

5.4 Auxiliary Power Unit (APU)

5.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|--------------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| I · · · · · | LTO | | | |

5.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----------------|----|-------|--------|-------------------|
| | Flow | | | | | | | |

5.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year APU_{POL} = APU * OH * LTO * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

ROI 4: MTRs (IR-066, IR-068, IR-091, VR-1014, and VR-1031)

This section includes the following:

- Alternative 1 ACAM Report
- Alternative 1 ACAM Detail Report
- Alternative 2 ACAM Report
- Alternative 2 ACAM Detail Report
- Alternative 3 ACAM Report
- Alternative 3 ACAM Detail Report

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base: COLUMBUS AFB

State (s): Alabama, Arkansas, Mississippi, Tennessee

County(s): Autauga, AL; Bibb, AL; Blount, AL; Chilton, AL; Choctaw, AL; Clarke, AL; Clay, AL; Colbert, AL; Coosa, AL; Cullman, AL; Dallas, AL; Elmore, AL; Franklin, AL; Greene, AL; Hale, AL; Jefferson, AL; Lauderdale, AL; Lawrence, AL; Marengo, AL; Marion, AL; Perry, AL; Pickens, AL; Shelby, AL; St. Clair, AL; Sumter, AL; Talladega, AL; Tallapoosa, AL; Tuscaloosa, AL; Walker, AL; Wilcox, AL; Winston, AL; Lee, AR; Phillips, AR; Alcorn, MS; Benton, MS; Bolivar, MS; Calhoun, MS; Carroll, MS; Chickasaw, MS; Clay, MS; Coahoma, MS; Grenada, MS; Itawamba, MS; Kemper, MS; Lafayette, MS; Lee, MS; Leflore, MS; Lowndes, MS; Marshall, MS; Monroe, MS; Montgomery, MS; Noxubee, MS; Panola, MS; Pontotoc, MS; Prentiss, MS; Quitman, MS; Sunflower, MS; Tallahatchie, MS; Tate, MS; Tippah, MS; Tishomingo, MS; Tunica, MS; Union, MS; Webster, MS; Yalobusha, MS; Chester, TN; Decatur, TN; Hardeman, TN; Hardin, TN; Lawrence, TN, McNairy, TN, Wayne, TN **Regulatory Area(s):** NOT IN A REGULATORY AREA; Birmingham, AL

b. Action Title: T-7A Recapitalization at Columbus AFB - Alternative 1

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2028

e. Action Description:

The Proposed Action is recapitalization of the T-38C Talon flight training program at Columbus AFB with T-7A Red Hawk aircraft. Recapitalization would entail introduction of T-7A aircraft and flight operations at Columbus AFB and associated special use airspace to replace all T-38C aircraft assigned to the installation; introduction of nighttime (between 10 a.m. and 7 a.m.) T-7A flight operations; changes to the number of personnel and dependents in the Columbus AFB region; and construction and upgrade of operations, support, and maintenance facilities.

For Alternative 1, Columbus AFB would receive 61 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in 61 T-7A aircraft being delivered to Columbus AFB; however, T-7A operations would be performed at an intensity approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Columbus AFB would receive 77 T-7A aircraft and perform T-7A operations at an intensity identical to Alternative 2. Alternative 3 also incorporates a MILCON project alternative to construct 12 additional shelters for the T-7A aircraft. Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in the EIS provides analysis to evaluate future capacity needs. The No Action Alternative would not implement T-7A recapitalization at Columbus AFB.

f. Point of Contact:

| Name: | Carolyn Hein |
|----------------------|--------------|
| Title: | Contractor |
| Organization: | HDR |
| Email: | |
| Phone Number: | |

2. Analysis: Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the "worst-case" and "steady state" (net gain/loss upon action fully implemented) emissions. General Conformity under the Clean Air Act, Section 1.76 has been evaluated for the action described above according to the requirements of 40 CFR 93, Subpart B.

Based on the analysis, the requirements of this rule are:

_____ applicable __X__ not applicable

Conformity Analysis Summary:

| | 20 | 28 | |
|---------------------|------------------|--------------------|------------------------|
| Pollutant | Action Emissions | GENERAL (| CONFORMITY |
| | (ton/yr) | Threshold (ton/yr) | Exceedance (Yes or No) |
| NOT IN A REGULATORY | AREA | | |
| VOC | -4.540 | | |
| NOx | 31.743 | | |
| СО | -94.308 | | |
| SOx | -0.526 | | |
| PM 10 | -2.249 | | |
| PM 2.5 | -0.916 | | |
| Pb | 0.000 | | |
| NH3 | 0.000 | | |
| CO2e | -1585.8 | | |
| Birmingham, AL | | | |
| VOC | 1.069 | 100 | No |
| NOx | 17.774 | 100 | No |
| СО | -6.406 | | |
| SOx | 0.341 | 100 | No |
| PM 10 | -0.185 | | |
| PM 2.5 | 0.067 | 100 | No |
| Pb | 0.000 | | |
| NH3 | 0.000 | 100 | No |
| CO2e | 1033.6 | | |
| Birmingham, AL | | | |
| VOC | 1.251 | 100 | No |
| NOx | 20.756 | 100 | No |
| СО | -7.524 | | |
| SOx | 0.393 | 100 | No |
| PM 10 | -0.216 | | |
| PM 2.5 | 0.079 | 100 | No |
| Pb | 0.000 | | |
| NH3 | 0.000 | 100 | No |
| CO2e | 1188.7 | | |

2029

| Pollutant | Action Emissions | GENERAL CONFORMITY | | | | |
|---------------------|--------------------------|--------------------|------------------------|--|--|--|
| | (ton/yr) | Threshold (ton/yr) | Exceedance (Yes or No) | | | |
| NOT IN A REGULATORY | NOT IN A REGULATORY AREA | | | | | |
| VOC | -4.540 | | | | | |
| NOx | 31.743 | | | | | |
| СО | -94.308 | | | | | |
| SOx | -0.526 | | | | | |
| PM 10 | -2.249 | | | | | |

| PM 2.5 | -0.916 | | |
|----------------|---------|-----|----|
| Pb | 0.000 | | |
| NH3 | 0.000 | | |
| CO2e | -1585.8 | | |
| Birmingham, AL | | | |
| VOC | 1.069 | 100 | No |
| NOx | 17.774 | 100 | No |
| СО | -6.406 | | |
| SOx | 0.341 | 100 | No |
| PM 10 | -0.185 | | |
| PM 2.5 | 0.067 | 100 | No |
| Pb | 0.000 | | |
| NH3 | 0.000 | 100 | No |
| CO2e | 1033.6 | | |
| Birmingham, AL | | | |
| VOC | 1.251 | 100 | No |
| NOx | 20.756 | 100 | No |
| СО | -7.524 | | |
| SOx | 0.393 | 100 | No |
| PM 10 | -0.216 | | |
| PM 2.5 | 0.079 | 100 | No |
| Pb | 0.000 | | |
| NH3 | 0.000 | 100 | No |
| CO2e | 1188.7 | | |

2030

| 2030 | | | | | |
|---------------------|------------------|--------------------|------------------------|--|--|
| Pollutant | Action Emissions | GENERAL O | CONFORMITY | | |
| | (ton/yr) | Threshold (ton/yr) | Exceedance (Yes or No) | | |
| NOT IN A REGULATORY | AREA | | | | |
| VOC | -2.453 | | | | |
| NOx | 66.406 | | | | |
| СО | -106.827 | | | | |
| SOx | 0.136 | | | | |
| PM 10 | -2.610 | | | | |
| PM 2.5 | -0.784 | | | | |
| Pb | 0.000 | | | | |
| NH3 | 0.000 | | | | |
| CO2e | 418.8 | | | | |
| Birmingham, AL | | | | | |
| VOC | 2.139 | 100 | No | | |
| NOx | 35.549 | 100 | No | | |
| СО | -12.811 | | | | |
| SOx | 0.683 | 100 | No | | |
| PM 10 | -0.370 | | | | |
| PM 2.5 | 0.135 | 100 | No | | |
| Pb | 0.000 | | | | |
| NH3 | 0.000 | 100 | No | | |
| CO2e | 2067.2 | | | | |
| Birmingham, AL | | | | | |
| VOC | 2.502 | 100 | No | | |
| NOx | 41.512 | 100 | No | | |
| СО | -15.047 | | | | |
| SOx | 0.786 | 100 | No | | |

| PM 10 | -0.433 | | |
|--------|--------|-----|----|
| PM 2.5 | 0.158 | 100 | No |
| Pb | 0.000 | | |
| NH3 | 0.000 | 100 | No |
| CO2e | 2377.4 | | |

2031 - (Steady State)

| Pollutant Action Emissions GENERAL CONFORMITY | | | | |
|---|------------------|---|------------------------|--|
| Fonutant | (ton/yr) | GENERAL CONFORMITY Threshold (ton/yr) Exceedance (Yes or No | | |
| NOT IN A DECULATORY | | Inresnoid (ton/yr) | Exceedance (Yes or No) | |
| NOT IN A REGULATORY | | 1 | | |
| NOx | -2.453 66.406 | | | |
| | | | | |
| <u>CO</u> | -106.827 | | | |
| SOx DM 10 | 0.136 | | | |
| PM 10 | -2.610 | | | |
| PM 2.5 | -0.784 | | | |
| Pb | 0.000 | | | |
| NH3 | 0.000 | | | |
| CO2e | 418.8 | | | |
| Birmingham, AL | | | | |
| VOC | 2.139 | 100 | No | |
| NOx | 35.549 | 100 | No | |
| СО | -12.811 | | | |
| SOx | 0.683 | 100 | No | |
| PM 10 | -0.370 | | | |
| PM 2.5 | 0.135 | 100 | No | |
| Pb | 0.000 | | | |
| NH3 | 0.000 | 100 | No | |
| CO2e | 2067.2 | | | |
| Birmingham, AL | | | | |
| VOC | 2.502 | 100 | No | |
| NOx | 41.512 | 100 | No | |
| СО | -15.047 | | | |
| SOx | 0.786 | 100 | No | |
| PM 10 | -0.433 | | | |
| PM 2.5 | 0.158 | 100 | No | |
| Pb | 0.000 | | | |
| NH3 | 0.000 | 100 | No | |
| CO2e | 2377.4 | | | |

None of estimated emissions associated with this action are above the conformity threshold values established at 40 CFR 93.153 (b); Therefore, the requirements of the General Conformity Rule are not applicable.

Cumput

Carolyn Hein, Contractor

2/17/2023 DATE

1. General Information

- Action Location

Base: COLUMBUS AFB

State: Alabama, Arkansas, Mississippi, Tennessee

County(s): Autauga, AL; Bibb, AL; Blount, AL; Chilton, AL; Choctaw, AL; Clarke, AL; Clay, AL; Colbert, AL; Coosa, AL; Cullman, AL; Dallas, AL; Elmore, AL; Franklin, AL; Greene, AL; Hale, AL; Jefferson, AL; Lauderdale, AL; Lawrence, AL; Marengo, AL; Marion, AL; Perry, AL; Pickens, AL; Shelby, AL; St. Clair, AL; Sumter, AL; Talladega, AL; Tallapoosa, AL; Tuscaloosa, AL; Walker, AL; Wilcox, AL; Winston, AL; Lee, AR; Phillips, AR; Alcorn, MS; Benton, MS; Bolivar, MS; Calhoun, MS; Carroll, MS; Chickasaw, MS; Clay, MS; Coahoma, MS; Grenada, MS; Itawamba, MS; Kemper, MS; Lafayette, MS; Lee, MS; Leflore, MS; Lowndes, MS; Marshall, MS; Monroe, MS; Montgomery, MS; Noxubee, MS; Panola, MS; Pontotoc, MS; Prentiss, MS; Quitman, MS; Sunflower, MS; Tallahatchie, MS; Tate, MS; Tippah, MS; Tishomingo, MS; Tunica, MS; Union, MS; Webster, MS; Yalobusha, MS; Chester, TN; Decatur, TN; Hardeman, TN; Hardin, TN; Lawrence, TN, McNairy, TN, Wayne, TN
Regulatory Area(s): NOT IN A REGULATORY AREA; Birmingham, AL

- Action Title: T-7A Recapitalization at Columbus AFB - Alternative 1

- Project Number/s (if applicable):
- Projected Action Start Date: 1 / 2028

- Action Purpose and Need:

The purpose of the Proposed Action is to continue the T-7A recapitalization program by recapitalizing Columbus AFB to prepare pilots to operate the more technologically advanced T-7A aircraft.

The Proposed Action is needed because the current training practices with the older T-38C aircraft fail to prepare pilots for the technological advancements of fourth and fifth generation aircraft. By 2031, more than 60 percent of the Combat Air Force will be comprised of fifth generation aircraft, requiring a modern and capable training platform with capabilities beyond those currently available in the T-38C. Additionally, training systems provided with the newer T-7A aircraft allow for enhanced and improved flight and simulator training. The T-7A recapitalization program will allow DAF to provide more efficient and effective instructor and pilot training for operating fourth and fifth generation aircraft. T-7A recapitalization at Columbus AFB would allow DAF to continue the geographically phased T-7A recapitalization sequence ensuring DAF pilot training requirements are met.

- Action Description:

The Proposed Action is recapitalization of the T-38C Talon flight training program at Columbus AFB with T-7A Red Hawk aircraft. Recapitalization would entail introduction of T-7A aircraft and flight operations at Columbus AFB and associated special use airspace to replace all T-38C aircraft assigned to the installation; introduction of nighttime (between 10 a.m. and 7 a.m.) T-7A flight operations; changes to the number of personnel and dependents in the Columbus AFB region; and construction and upgrade of operations, support, and maintenance facilities.

For Alternative 1, Columbus AFB would receive 61 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in 61 T-7A aircraft being delivered to Columbus AFB; however, T-7A operations would be performed at an intensity approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Columbus AFB would receive 77 T-7A aircraft and perform T-7A operations at an intensity identical to Alternative 2. Alternative 3 also incorporates a MILCON project alternative to construct 12 additional shelters for the T-7A aircraft. Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in the EIS provides analysis to evaluate future capacity needs. The No Action Alternative would not implement T-7A recapitalization at Columbus AFB.

- Point of Contact

| Name: | Carolyn Hein |
|----------------------|--------------|
| Title: | Contractor |
| Organization: | HDR |
| Email: | |
| Phone Number: | |

- Activity List:

| | Activity Type | Activity Title |
|-----|---------------|---|
| 2. | Aircraft | 2028 and 2029 T-7A MTR Low-Altitude Operations (IR-066) |
| 3. | Aircraft | 2028 and 2029 T-7A MTR Low-Altitude Operations (IR-068) |
| 4. | Aircraft | 2028 and 2029 T-7A MTR Low-Altitude Operations (IR-091) |
| 5. | Aircraft | 2028 and 2029 T-7A MTR Low-Altitude Operations (VR-1014) |
| 6. | Aircraft | 2028 and 2029 T-7A MTR Low-Altitude Operations (VR-1031) |
| 7. | Aircraft | 2028 and 2029 T-38C MTR Low-Altitude Operations (IR-066) |
| 8. | Aircraft | 2028 and 2029 T-38C MTR Low-Altitude Operations (IR-068) |
| 9. | Aircraft | 2028 and 2029 T-38C MTR Low-Altitude Operations (IR-091) |
| 10. | Aircraft | 2028 and 2029 T-38C MTR Low-Altitude Operations (VR-1014) |
| 11. | Aircraft | 2028 and 2029 T-38C MTR Low-Altitude Operations (VR-1031) |
| 12. | Aircraft | 2030 T-7A MTR Low-Altitude Operations (IR-066) |
| 13. | Aircraft | 2030 T-7A MTR Low-Altitude Operations (IR-068) |
| 14. | Aircraft | 2030 T-7A MTR Low-Altitude Operations (IR-091) |
| 15. | Aircraft | 2030 T-7A MTR Low-Altitude Operations (VR-1014) |
| 16. | Aircraft | 2030 T-7A MTR Low-Altitude Operations (VR-1031) |
| 17. | Aircraft | 2030 T-38C MTR Low-Altitude Operations (IR-066) |
| 18. | Aircraft | 2030 T-38C MTR Low-Altitude Operations (IR-068) |
| 19. | Aircraft | 2030 T-38C MTR Low-Altitude Operations (IR-091) |
| 20. | Aircraft | 2030 T-38C MTR Low-Altitude Operations (VR-1014) |
| 21. | Aircraft | 2030 T-38C MTR Low-Altitude Operations (VR-1031) |

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Aircraft

2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
 - County: Blount, AL; Colbert, AL; Cullman, AL; Franklin, AL; Lauderdale, AL; Marion, AL; Walker, AL; Winston, AL; Alcorn, MS; Benton, MS; Itawamba, MS; Lee, MS; Monroe, MS; Prentiss, MS; Tippah, MS; Tishomingo, MS; Union, MS; Chester, TN; Decatur, TN; Hardeman, TN; Hardin, TN; Lawrence, TN; McNairy, TN; Wayne, TN

Regulatory Area(s): NOT IN A REGULATORY AREA; Birmingham, AL

- Activity Title: 2028 and 2029 T-7A MTR Low-Altitude Operations (IR-066)

- Activity Description:

2028 and 2029: Starting in 2028, add 219 T-7A low-altitude operations in IR-066.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.157025 |
| SO _x | 0.080184 |
| NO _x | 2.316546 |
| CO | 0.159112 |
| PM 10 | 0.011049 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.009668 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 243.6 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | |
|-----------------|----------------------------------|--|
| VOC | 0.157025 | |
| SO _x | 0.080184 | |
| NO _x | 2.316546 | |
| CO | 0.159112 | |
| PM 10 | 0.011049 | |

| t & APU) part[: | |
|-------------------|----------------------------------|
| Pollutant | Emissions Per Year (TONs) |
| PM 2.5 | 0.009668 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 243.6 |
| | |

2.2 Aircraft & Engines

2.2.1 Aircraft & Engines Assumptions

| - Aircraft | & | Engine |
|------------|---|--------|
|------------|---|--------|

| Aircraft Designation: | T-7A |
|--------------------------|-------------|
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

2.2.2 Aircraft & Engines Emission Factor(s)

Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

2.3 Flight Operations

2.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|-----|
| Number of Aircraft: | 52 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 219 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |

Number of Annual Trim Test(s) per Aircraft:

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 3.74 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |
| / | |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

2.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)

0

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

2.4 Auxiliary Power Unit (APU)

2.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

2.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

2.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

3. Aircraft

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
 - County: Lee, AR; Phillips, AR; Bolivar, MS; Calhoun, MS; Carroll, MS; Coahoma, MS; Grenada, MS; Leflore, MS; Montgomery, MS; Panola, MS; Quitman, MS; Sunflower, MS; Tallahatchie, MS; Tunica, MS; Webster, MS; Yalobusha, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2028 and 2029 T-7A MTR Low-Altitude Operations (IR-068)

- Activity Description:

2028 and 2029: Starting in 2028, add 69 T-7A low-altitude operations in IR-068.

- Activity Start Date Start Month: 1

Start Year: 2028

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | 0.362966 |
| SO _x | 0.173033 |
| NO _x | 5.287240 |
| CO | 0.309763 |
| PM 10 | 0.025577 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.022380 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 523.4 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|-------------------|---------------------------|
| VOC | 0.362966 | PM 2.5 | 0.022380 |
| SO _x | 0.173033 | Pb | 0.000000 |
| NO _x | 5.287240 | NH ₃ | 0.000000 |
| СО | 0.309763 | CO ₂ e | 523.4 |
| PM 10 | 0.025577 | | |

3.2 Aircraft & Engines

3.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine Aircraft Designation: Engine Model: Primary Function: Aircraft has After burn: Number of Engines: | T-7A F404-GE-102 Trainer Yes 1 | | |
|---|---|---|-------------------------|
| - Aircraft & Engine Surrogat Is Aircraft & Engine a Su Original Aircraft Name: Original Engine Name: | | | |
| 3.2.2 Aircraft & Engines I | Emission Factor(s) | | |
| - Aircraft & Engine Emission Proprietary Information. C engine's Emission Factors. | Contact Air Quality Su | fuel) bject Matter Expert for More Info | ormation regarding this |
| 3.3 Flight Operations | | | |
| 3.3.1 Flight Operations As | ssumptions | | |
| Number of Annual TGO Number of Annual Trim | s (Touch-and-Go) cyc Test(s) per Aircraft: | off) cycles for all Aircraft: cles for all Aircraft: | 52 69 0 0 |
| | No | | |
| - Flight Operations TIMs (Ti Taxi/Idle Out [Idle] (min Takeoff [Military] (mins) Takeoff [After Burn] (mi Climb Out [Intermediate Approach [Approach] (n Taxi/Idle In [Idle] (mins) | s): :: ns): :] (mins): iins): | 0 27.48 0 0 0 0 | |
| Trim Test Idle (mins): Approach (mins): Intermediate (mins): Military (mins): AfterBurn (mins): 3.3.2 Flight Operations For the fight operations For | | | |
| - Aircraft Emissions per Mod | e for LTOs per Year | | |

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)

60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

3.4 Auxiliary Power Unit (APU)

3.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

3.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

3.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

4. Aircraft

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Benton, MS; Calhoun, MS; Carroll, MS; Chickasaw, MS; Clay, MS; Grenada, MS; Lafayette, MS; Marshall, MS; Montgomery, MS; Panola, MS; Pontotoc, MS; Quitman, MS; Tallahatchie, MS; Tate, MS; Union, MS; Webster, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2028 and 2029 T-7A MTR Low-Altitude Operations (IR-091)

- Activity Description:

2028 and 2029: Starting in 2028, add 87 T-7A low-altitude operationss in IR-091.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.457652 |
| SO _x | 0.218172 |
| NO _x | 6.666520 |
| CO | 0.390571 |
| PM 10 | 0.032250 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.028219 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 659.9 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.457652 |
| SO _x | 0.218172 |
| NO _x | 6.666520 |
| СО | 0.390571 |
| PM 10 | 0.032250 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.028219 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 659.9 |
| | |

4.2 Aircraft & Engines

4.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-------------|
| Aircraft Designation: | T-7A |
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

4.2.2 Aircraft & Engines Emission Factor(s)

C

Aircraft & Engine Emissions Factors (lb/1000lb fuel)
 Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

4.3 Flight Operations

4.3.1 Flight Operations Assumptions

| - Flight Operations | | |
|----------------------------|--|----|
| Number of Aircraft: | | 52 |
| Number of Annual LT | Os (Landing and Take-off) cycles for all Aircraft: | 87 |
| Number of Annual TG | Os (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Tri | im Test(s) per Aircraft: | 0 |
| - Default Settings Used: | No | |
| - Flight Operations TIMs (| Time In Mode) | |

| Taxi/Idle Out [Idle] (mins): | 0 |
|----------------------------------|-------|
| Takeoff [Military] (mins): | 27.48 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |
| | |

12

27

9

- Trim Test Idle (mins): Approach (mins): Intermediate (mins):

| Military (mins): | 9 |
|-------------------|---|
| AfterBurn (mins): | 3 |

4.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000poundsEF: Emission Factor (lb/1000lb fuel)NE: Number of EnginesTGO: Number of Touch-and-Go Cycles (for all aircraft)2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

4.4 Auxiliary Power Unit (APU)

4.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

4.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| | | 1 40001 (18 |) | | | | | |
|-------------|------|-------------|-----|-----|----|-------|--------|-------------------|
| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
| | Flow | | | | | | | |

| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |
|----------|-------|-------|-------|-------|-------|--------|--------|-------|
|----------|-------|-------|-------|-------|-------|--------|--------|-------|

4.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

5. Aircraft

5.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Blount, AL; Cullman, AL; Franklin, AL; Jefferson, AL; Lawrence, AL; Marion, AL; Pickens, AL; Tuscaloosa, AL; Walker, AL; Winston, AL; Itawamba, MS; Monroe, MS
 Regulatory Area(s): Birmingham, AL; NOT IN A REGULATORY AREA; Birmingham, AL

- Activity Title: 2028 and 2029 T-7A MTR Low-Altitude Operations (VR-1014)

- Activity Description:

2028 and 2029: Starting in 2028, add 150 T-7A low-altitude operations in VR-1014.

- Activity Start Date

| Start | Month: | 1 |
|-------|--------|------|
| Start | Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 1.093637 |
| SO _x | 0.519727 |
| NO _x | 15.921832 |
| СО | 0.925650 |
| PM 10 | 0.077071 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.067437 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 1571.7 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|-------------------|---------------------------|
| VOC | 1.093637 | PM 2.5 | 0.067437 |
| SO _x | 0.519727 | Pb | 0.000000 |
| NO _x | 15.921832 | NH ₃ | 0.000000 |
| СО | 0.925650 | CO ₂ e | 1571.7 |

| DM 10 0.077071 | |
|---|-----------------------------------|
| PM 10 0.077071 | |
| 5.2 Aircraft & Engines | |
| 5.2.1 Aircraft & Engines Assumptions | |
| Aircraft & Engine Aircraft Designation: T-7A Engine Model: F404-GE-102 Primary Function: Trainer Aircraft has After burn: Yes Number of Engines: 1 | |
| - Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name: | |
| 5.2.2 Aircraft & Engines Emission Factor(s) | |
| Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for engine's Emission Factors. | r More Information regarding this |
| 5.3 Flight Operations | |
| 5.3.1 Flight Operations Assumptions | |
| - Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Air Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: | 52 craft: 150 0 0 |
| - Default Settings Used: No | |
| Flight Operations TIMs (Time In Mode) Taxi/Idle Out [Idle] (mins): Takeoff [Military] (mins): Takeoff [After Burn] (mins): Climb Out [Intermediate] (mins): O Approach [Approach] (mins): O Taxi/Idle In [Idle] (mins): | |
| - Trim Test Idle (mins): 12 Approach (mins): 27 Intermediate (mins): 9 Military (mins): 9 AfterBurn (mins): 3 5.3.2 Flight Operations Formula(s) | |
| o i i i i i i i i i i | |

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)

AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

5.4 Auxiliary Power Unit (APU)

5.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

5.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

5.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

6. Aircraft

6.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
 - County: Autauga, AL; Bibb, AL; Chilton, AL; Choctaw, AL; Clarke, AL; Clay, AL; Coosa, AL; Dallas, AL; Elmore, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Pickens, AL; Shelby, AL; St. Clair, AL; Talladega, AL; Tallapoosa, AL; Tuscaloosa, AL; Wilcox, AL; Kemper, MS; Lowndes, MS; Noxubee, MS

Regulatory Area(s): Birmingham, AL; NOT IN A REGULATORY AREA

- Activity Title: 2028 and 2029 T-7A MTR Low-Altitude Operations (VR-1031)

- Activity Description:

2028 and 2029: Starting in 2028, add 60 T-7A low-altitude operations in VR-1031.

- Activity Start Date

Start Month:1Start Year:2028

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.369247 |
| SO _x | 0.175740 |
| NO _x | 5.377166 |
| CO | 0.313771 |
| PM 10 | 0.026021 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.022768 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 531.5 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.369247 |
| SO _x | 0.175740 |
| NO _x | 5.377166 |
| CO | 0.313771 |
| PM 10 | 0.026021 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.022768 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 531.5 |
| | |

6.2 Aircraft & Engines

6.2.1 Aircraft & Engines Assumptions

| Aircraft & Engine | |
|--------------------------|-------------|
| Aircraft Designation: | T-7A |
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

6.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

6.3 Flight Operations

6.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|----|
| Number of Aircraft: | 52 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 60 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 32.15 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |
| | |

12

27

9

9

3

- Trim Test Idle (mins): Approach (mins): Intermediate (mins): Military (mins):

AfterBurn (mins):

6.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

6.4 Auxiliary Power Unit (APU)

6.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

6.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

| - Auxiliary Power Unit (APU) Emission Factor (10/117) | | | | | | | | |
|---|-------|-------|-------|-------|-------|--------|--------|-------------------|
| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
| | Flow | | | | | | | |
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

6.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

7. Aircraft

7.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Blount, AL; Colbert, AL; Cullman, AL; Franklin, AL; Lauderdale, AL; Marion, AL; Walker, AL; Winston, AL; Alcorn, MS; Benton, MS; Itawamba, MS; Lee, MS; Monroe, MS; Prentiss, MS; Tippah, MS; Tishomingo, MS; Union, MS; Chester, TN; Decatur, TN; Hardeman, TN; Hardin, TN; Lawrence, TN; McNairy, TN; Wayne, TN

Regulatory Area(s): NOT IN A REGULATORY AREA; Birmingham, AL

- Activity Title: 2028 and 2029 T-38C MTR Low-Altitude Operations (IR-066)

- Activity Description:

2028 and 2029: Starting in 2028, remove 219 T-38C low-altitude operations in IR-066.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -0.022729 |
| SO _x | -0.032427 |
| NO _x | -0.058186 |
| СО | -0.939159 |
| PM 10 | -0.034245 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -0.001212 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -98.0 |
| | |

| <u></u> | | | | |
|-----------------|----------------------------------|-----------------|------------------------------|--|
| Pollutant | Emissions Per Year (TONs) | Pollutar | nt Emissions Per Year (TONs) | |
| VOC | -0.022729 | PM 2.5 | -0.001212 | |
| SO _x | -0.032427 | Pb | 0.000000 | |
| NO _x | -0.058186 | NH ₃ | 0.000000 | |
| CO | -0.939159 | CO_2e | -98.0 | |
| PM 10 | -0.034245 | | | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

7.2 Aircraft & Engines

7.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |
| 8 | |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

7.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|--------------|------------------|-------|-----------------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

7.3 Flight Operations

7.3.1 Flight Operations Assumptions

- Flight Operations

| Number of Aircraft: | 68 |
|---|-----|
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 219 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 3.74 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

| - Trim Test | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

7.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

7.4 Auxiliary Power Unit (APU)

7.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

7.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----------------|----|-------|--------|-------------------|
| | Flow | | | | | | | |

7.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

8. Aircraft

8.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

 County: Lee, AR; Phillips, AR; Bolivar, MS; Calhoun, MS; Carroll, MS; Coahoma, MS; Grenada, MS; Leflore, MS; Montgomery, MS; Panola, MS; Quitman, MS; Sunflower, MS; Tallahatchie, MS; Tunica, MS; Webster, MS; Yalobusha, MS
 Parelatory: Area(a): NOT IN A RECULTATORY AREA

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2028 and 2029 T-38C MTR Low-Altitude Operations (IR-068)

- Activity Description:

2028 and 2029: Starting in 2028, remove 69 T-38C low-altitude operations in IR-068.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.052617 |
| SO _x | -0.075067 |
| NO _x | -0.134700 |
| СО | -2.174148 |
| PM 10 | -0.079277 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.002806 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -226.9 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|---|-------------------|----------------------------------|
| VOC | -0.052617 | | PM 2.5 | -0.002806 |
| SO _x | -0.075067 | | Pb | 0.000000 |
| NO _x | -0.134700 | | NH ₃ | 0.000000 |
| CO | -2.174148 | | CO ₂ e | -226.9 |
| PM 10 | -0.079277 |] | | |

8.2 Aircraft & Engines

8.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

8.2.2 Aircraft & Engines Emission Factor(s)

| An cruit & Englite Emissions 1 actors (10/100010 fuer) | | | | | | | | |
|--|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

8.3 Flight Operations

8.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|----|
| Number of Aircraft: | 68 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 69 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 27.48 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

8.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

8.4 Auxiliary Power Unit (APU)

8.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| | · · · · · | | Designation | Manufacturer |
| per Aircraft | Hours for Each | Source? | | |
| - | LTO | | | |

8.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----------------|----|-------|--------|-------------------|
| | Flow | | | | | | | |

8.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

9. Aircraft

9.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Benton, MS; Calhoun, MS; Carroll, MS; Chickasaw, MS; Clay, MS; Grenada, MS; Lafayette, MS; Marshall, MS; Montgomery, MS; Panola, MS; Pontotoc, MS; Quitman, MS; Tallahatchie, MS; Tate, MS; Union, MS; Webster, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA

Regulatory Area(s). NOT IN A REGULATORT AREA

- Activity Title: 2028 and 2029 T-38C MTR Low-Altitude Operations (IR-091)

- Activity Description:

2028 and 2029: Starting in 2028, remove 87 T-38C low-altitude operations in IR-091.

- Activity Start Date

Start Month: 1 Start Year: 2028

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -6.693144 |
| SO _x | -1.282574 |
| NO _x | -3.090821 |
| CO | -84.530812 |
| PM 10 | -1.988078 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -1.050946 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -3876.5 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -6.693144 |
| SO _x | -1.282574 |
| NO _x | -3.090821 |
| CO | -84.530812 |
| PM 10 | -1.988078 |

| & APU) part]: | |
|-------------------|---------------------------|
| Pollutant | Emissions Per Year (TONs) |
| PM 2.5 | -1.050946 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -3876.5 |
| | |

9.2 Aircraft & Engines

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9.2.1 Aircraft & Engines Assumptions

| Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

9.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| An cruit & Engine Emissions I actors (15/100015 fuel) | | | | | | | | |
|---|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

9.3 Flight Operations

9.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|----|
| Number of Aircraft: | 68 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 87 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 12 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 27.48 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |
| - Trim Test | |
| Idle (mins): 12 | |

| iule (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

9.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)

AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

9.4 Auxiliary Power Unit (APU)

9.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

9.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----------------|----|-------|--------|-------------------|
| | Flow | | | | | | | |

9.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year APU_{POL} = APU * OH * LTO * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs) APU: Number of Auxiliary Power Units OH: Operation Hours for Each LTO (hour)

LTO: Number of LTOs EF_{POL}: Emission Factor for Pollutant (lb/hr) 2000: Conversion Factor pounds to tons

10. Aircraft

10.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Blount, AL; Cullman, AL; Franklin, AL; Jefferson, AL; Lawrence, AL; Marion, AL; Pickens, AL; Tuscaloosa, AL; Walker, AL; Winston, AL; Itawamba, MS; Monroe, MS
 Regulatory Area(s): Birmingham, AL; NOT IN A REGULATORY AREA; Birmingham, AL

- Activity Title: 2028 and 2029 T-38C MTR Low-Altitude Operations (VR-1014)

- Activity Description:

2028 and 2029: Starting in 2028, remove 150 T-38C low-altitude operations in VR-1014.

- Activity Start Date

Start Month:1Start Year:2028

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.158550 |
| SO _x | -0.226197 |
| NO _x | -0.405887 |
| СО | -6.551271 |
| PM 10 | -0.238881 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.008456 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -683.7 |
| | |

| - Activity Emissions | [Flight Operation | s (includes Trim | Test & APU) part]: |
|----------------------|-------------------|------------------|--------------------|
|----------------------|-------------------|------------------|--------------------|

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | -0.158550 | PM 2.5 | -0.008456 |
| SO _x | -0.226197 | Pb | 0.000000 |
| NO _x | -0.405887 | NH ₃ | 0.000000 |
| СО | -6.551271 | CO ₂ e | -683.7 |
| PM 10 | -0.238881 | | |

10.2 Aircraft & Engines

10.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |

Aircraft has After burn:YesNumber of Engines:2

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

10.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | | VOC | 0.0 | | 00 | DN / 10 | DICAS | 60 |
|--------------|-----------|-------|------|-----------------|--------|---------|--------|-------------------|
| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

10.3 Flight Operations

10.3.1 Flight Operations Assumptions

| Number of Aircraft: | 68 |
|---|-----|
| | |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 150 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 38.09 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

- Trim Test Idle (mins): 12 Approach (mins): 27 Intermediate (mins): 9 Military (mins): 9 AfterBurn (mins): 3

10.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)NE: Number of EnginesLTO: Number of Landing and Take-off Cycles (for all aircraft)2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs)

AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

10.4 Auxiliary Power Unit (APU)

10.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

10.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-----|-----|-----------------|----|-------|--------|-------------------|
|-------------|--------------|-----|-----|-----------------|----|-------|--------|-------------------|

10.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

11. Aircraft

11.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Autauga, AL; Bibb, AL; Chilton, AL; Choctaw, AL; Clarke, AL; Clay, AL; Coosa, AL; Dallas, AL; Elmore, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Pickens, AL; Shelby, AL; St. Clair, AL; Talladega, AL; Tallapoosa, AL; Tuscaloosa, AL; Wilcox, AL; Kemper, MS; Lowndes, MS; Noxubee, MS

Regulatory Area(s): Birmingham, AL; NOT IN A REGULATORY AREA

- Activity Title: 2028 and 2029 T-38C MTR Low-Altitude Operations (VR-1031)
- Activity Description:

2028 and 2029: Starting in 2028, remove 60 T-38C low-altitude operations in VR-1031.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.053530 |
| SO _x | -0.076369 |
| NO _x | -0.137036 |
| СО | -2.211849 |
| PM 10 | -0.080651 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.002855 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -230.8 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | | | | |
|-----------------|----------------------------------|--|--|--|--|
| VOC | -0.053530 | | | | |
| SO _x | -0.076369 | | | | |
| NO _x | -0.137036 | | | | |
| СО | -2.211849 | | | | |
| PM 10 | -0.080651 | | | | |

| t & APU) part[: | |
|-------------------|----------------------------------|
| Pollutant | Emissions Per Year (TONs) |
| PM 2.5 | -0.002855 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -230.8 |
| | |

11.2 Aircraft & Engines

11.2.1 Aircraft & Engines Assumptions

| - | Aircraft | & | Engine |
|---|----------|---|--------|
|---|----------|---|--------|

| Aircraft Designation: | T-38C |
|--------------------------|-----------|
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

11.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SO _x | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|--------------|------------------|-------|-----------------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

11.3 Flight Operations

11.3.1 Flight Operations Assumptions

| | 68 |
|-----------------------------------|---|
| ike-off) cycles for all Aircraft: | 60 |
| cycles for all Aircraft: | 0 |
| aft: | 0 |
| | |
| | |
| 0 | |
| 32.15 | |
| 0 | |
| 0 | |
| 0 | |
| 0 | |
| | cycles for all Aircraft: aft: 0 32.15 0 0 0 |

| Trim Test | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

11.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000poundsEF: Emission Factor (lb/1000lb fuel)NE: Number of EnginesTGO: Number of Touch-and-Go Cycles (for all aircraft)2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

11.4 Auxiliary Power Unit (APU)

11.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APUOperationper AircraftHours for EachLTO | Exempt Source? | Designation | Manufacturer |
|---|-------------------|-------------|--------------|
|---|-------------------|-------------|--------------|

11.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----|----|-------|--------|-------------------|
| | Flow | | | | | | | |

11.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

12. Aircraft

12.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Blount, AL; Colbert, AL; Cullman, AL; Franklin, AL; Lauderdale, AL; Marion, AL; Walker, AL; Winston, AL; Alcorn, MS; Benton, MS; Itawamba, MS; Lee, MS; Monroe, MS; Prentiss, MS; Tippah, MS; Tishomingo, MS; Union, MS; Chester, TN; Decatur, TN; Hardeman, TN; Hardin, TN; Lawrence, TN; McNairy, TN; Wayne, TN

Regulatory Area(s): NOT IN A REGULATORY AREA; Birmingham, AL

- Activity Title: 2030 T-7A MTR Low-Altitude Operations (IR-066)

- Activity Description:

2030: Starting in 2030, add 219 T-7A low-altitude operations in IR-066.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.157025 |
| SO _x | 0.080184 |
| NO _x | 2.316546 |
| СО | 0.159112 |
| PM 10 | 0.011049 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.009668 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 243.6 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | |
|-----------------|---------------------------|--|
| VOC | 0.157025 | |
| SO _x | 0.080184 | |
| NO _x | 2.316546 | |
| CO | 0.159112 | |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.009668 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 243.6 |

| PM 10 | 0.011049 | | |
|---|---|----------------------------------|--------------------------|
| 2.2 Aircraft & Engine | es | | |
| 2.2.1 Aircraft & Engi | nes Assumptions | | |
| Aircraft & Engine | | | |
| Aircraft Designation: | T-7A | | |
| Engine Model: | F404-GE-102 | | |
| Primary Function: | Trainer | | |
| Aircraft has After bu Number of Engines: | rn: Yes 1 | | |
| Aircraft & Engine Surro | nasta | | |
| Is Aircraft & Engine | | | |
| Original Aircraft Na | | | |
| Original Engine Nam | | | |
| 2.2.2 Aircraft & Engi | nes Emission Factor(s |) | |
| Aircraft & Engine Emis | sions Factors (1b/10001b | fuel) | |
| | | bject Matter Expert for More Inf | formation regarding this |
| engine's Emission Fact | | j | |
| 2.2 Elight Onerations | | | |
| 2.3 Flight Operations | | | |
| 2.3.1 Flight Operation | s Assumptions | | |
| Flight Operations | | | |
| Number of Aircraft: | | | 9 |
| | | -off) cycles for all Aircraft: | 219 |
| | GOs (Touch-and-Go) cy rim Test(s) per Aircraft | | 0 0 |
| | | | 0 |
| Default Settings Used: | No | | |
| Flight Operations TIMs | . , | 0 | |
| Taxi/Idle Out [Idle] (Takeoff [Military] (m | | 0 3.74 | |
| Takeoff [After Burn] | | 0 | |
| Climb Out [Intermed | | 0 | |
| Approach [Approach | | 0 | |
| Taxi/Idle In [Idle] (m | ins): | 0 | |
| Trim Test | | | |
| Idle (mins): | 12 | | |
| Approach (mins): | 27 | | |
| Intermediate (mins): | 9 | | |
| Military (mins): | 9 3 | | |
| AfterBurn (mins): | 5 | | |
| 2.3.2 Flight Operation | ıs Formula(s) | | |
| Aircraft Emissions per I | Aode for LTOs per Year | r | |
| | | O / 2000 | |

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)

AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

12.4 Auxiliary Power Unit (APU)

12.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

12.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

12.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year APU_{POL} = APU * OH * LTO * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

13. Aircraft

13.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
 - **County:** Lee, AR; Phillips, AR; Bolivar, MS; Calhoun, MS; Carroll, MS; Coahoma, MS; Grenada, MS; Leflore, MS; Montgomery, MS; Panola, MS; Quitman, MS; Sunflower, MS; Tallahatchie, MS; Tunica, MS; Webster, MS; Yalobusha, MS

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2030 T-7A MTR Low-Altitude Operations (IR-068)

- Activity Description:

2030: Starting in 2030, add 69 T-7A low-altitude operations in IR-068.

| - | Activity | Start Date | |
|---|----------|------------|--|
|---|----------|------------|--|

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.362966 |
| SO _x | 0.173033 |
| NO _x | 5.287240 |
| СО | 0.309763 |
| PM 10 | 0.025577 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.022380 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 523.4 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|-------------------|----------------------------------|
| VOC | 0.362966 | PM 2.5 | 0.022380 |
| SO _x | 0.173033 | Pb | 0.000000 |
| NO _x | 5.287240 | NH ₃ | 0.000000 |
| СО | 0.309763 | CO ₂ e | 523.4 |
| PM 10 | 0.025577 | | |

13.2 Aircraft & Engines

13.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-------------|
| Aircraft Designation: | T-7A |
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

13.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

13.3 Flight Operations

13.3.1 Flight Operations Assumptions

| · Flight Operations | |
|---|----|
| Number of Aircraft: | 9 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 69 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 27.48 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

13.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEMPOL: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

13.4 Auxiliary Power Unit (APU)

13.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

13.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

| Designation | Fuel | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|-------|-------|-------|-----------------|-------|--------|--------|-------------------|
| | Flow | | | | | | | |
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

13.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

14. Aircraft

14.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Benton, MS; Calhoun, MS; Carroll, MS; Chickasaw, MS; Clay, MS; Grenada, MS; Lafayette, MS; Marshall, MS; Montgomery, MS; Panola, MS; Pontotoc, MS; Quitman, MS; Tallahatchie, MS; Tate, MS; Union, MS; Webster, MS
 Parallatary: Area(a): NOT IN A REGULATORY AREA

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2030 T-7A MTR Low-Altitude Operations (IR-091)

- Activity Description:

2030: Starting in 2030, add 87 T-7A low-altitude operations in IR-091.

- Activity Start Date

Start Month:1Start Year:2030

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.457652 |
| SO _x | 0.218172 |
| NO _x | 6.666520 |
| СО | 0.390571 |
| PM 10 | 0.032250 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.028219 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 659.9 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]: Pollutant Emissions Per Year (TONs) Pollutant Emissions Per Year (TONs)

| VOC | 0.457652 |
|-----------------|----------|
| SO _x | 0.218172 |
| NO _x | 6.666520 |
| СО | 0.390571 |
| PM 10 | 0.032250 |

| PM 2.5 | 0.028219 |
|-------------------|----------|
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 659.9 |
| | |

14.2 Aircraft & Engines

14.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

 Aircraft Designation: T-7A
 Engine Model: F404-GE-102
 Primary Function: Trainer
 Aircraft has After burn: Yes
 Number of Engines: 1
- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

14.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

14.3 Flight Operations

14.3.1 Flight Operations Assumptions

| - Flight Operations | | |
|--------------------------|--|----|
| Number of Aircraft: | | 9 |
| Number of Annual LT | Os (Landing and Take-off) cycles for all Aircraft: | 87 |
| Number of Annual TC | GOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Tr | im Test(s) per Aircraft: | 0 |
| - Default Settings Used: | No | |

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 27.48 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

| - Trim Test | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

14.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

14.4 Auxiliary Power Unit (APU)

14.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

14.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

14.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

15. Aircraft

15.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Blount, AL; Cullman, AL; Franklin, AL; Jefferson, AL; Lawrence, AL; Marion, AL; Pickens, AL; Tuscaloosa, AL; Walker, AL; Winston, AL; Itawamba, MS; Monroe, MS

Regulatory Area(s): Birmingham, AL; NOT IN A REGULATORY AREA; Birmingham, AL

- Activity Title: 2030 T-7A MTR Low-Altitude Operations (VR-1014)

- Activity Description:

2030: Starting in 2030, add 150 T-7A low-altitude operations in VR-1014.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 1.093637 |
| SO _x | 0.519727 |
| NO _x | 15.921832 |
| CO | 0.925650 |
| PM 10 | 0.077071 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.067437 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 1571.7 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | 1.093637 | PM 2.5 | 0.067437 |
| SO _x | 0.519727 | Pb | 0.000000 |
| NO _x | 15.921832 | NH ₃ | 0.000000 |
| CO | 0.925650 | CO ₂ e | 1571.7 |
| PM 10 | 0.077071 | | |

15.2 Aircraft & Engines

15.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-------------|
| Aircraft Designation: | T-7A |
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

15.2.2 Aircraft & Engines Emission Factor(s)

Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

15.3 Flight Operations

15.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|-----|
| Number of Aircraft: | 9 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 150 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 38.09 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

| Trim Test | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

15.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

15.4 Auxiliary Power Unit (APU)

15.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

15.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

| Designation | Fuel Flow | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

15.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

16. Aircraft

16.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Autauga, AL; Bibb, AL; Chilton, AL; Choctaw, AL; Clarke, AL; Clay, AL; Coosa, AL; Dallas, AL; Elmore, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Pickens, AL; Shelby, AL; St. Clair, AL; Talladega, AL; Tallapoosa, AL; Tuscaloosa, AL; Wilcox, AL; Kemper, MS; Lowndes, MS; Noxubee, MS

Regulatory Area(s): Birmingham, AL; NOT IN A REGULATORY AREA

- Activity Title: 2030 T-7A MTR Low-Altitude Operations (VR-1031)

- Activity Description:

2030: Starting in 2030, add 60 T-7A low-altitude operations in VR-1031.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) | | | | |
|-----------------|---------------------------|--|--|--|--|
| VOC | 0.369247 | | | | |
| SO _x | 0.175740 | | | | |
| NO _x | 5.377166 | | | | |
| СО | 0.313771 | | | | |
| PM 10 | 0.026021 | | | | |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.022768 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 531.5 |
| | |

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | 0.369247 |
| SO _x | 0.175740 |
| NO _x | 5.377166 |
| CO | 0.313771 |
| PM 10 | 0.026021 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.022768 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 531.5 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

16.2 Aircraft & Engines

16.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-------------|
| Aircraft Designation: | T-7A |
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |
| _ | |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

16.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

16.3 Flight Operations

16.3.1 Flight Operations Assumptions

| Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: | | |
|--|-------|--|
| - Default Settings Used: No | | |
| - Flight Operations TIMs (Time In Mode) | | |
| Taxi/Idle Out [Idle] (mins): | 0 | |
| Takeoff [Military] (mins): | 32.15 | |
| Takeoff [After Burn] (mins): | 0 | |
| Climb Out [Intermediate] (mins): | 0 | |
| Approach [Approach] (mins): | 0 | |
| Taxi/Idle In [Idle] (mins): | 0 | |
| - Trim Test | | |
| $\mathbf{Idle}(\mathbf{mins}), \qquad 12$ | | |

| I rim Test | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |

| Military (mins): | 9 |
|-------------------|---|
| AfterBurn (mins): | 3 |

16.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)TD: Test Duration (min)60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

16.4 Auxiliary Power Unit (APU)

16.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

16.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

16.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

17. Aircraft

17.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Blount, AL; Colbert, AL; Cullman, AL; Franklin, AL; Lauderdale, AL; Marion, AL; Walker, AL; Winston, AL; Alcorn, MS; Benton, MS; Itawamba, MS; Lee, MS; Monroe, MS; Prentiss, MS; Tippah, MS; Tishomingo, MS; Union, MS; Chester, TN; Decatur, TN; Hardeman, TN; Hardin, TN; Lawrence, TN; McNairy, TN; Wayne, TN

Regulatory Area(s): NOT IN A REGULATORY AREA; Birmingham, AL

- Activity Title: 2030 T-38C MTR Low-Altitude Operations (IR-066)

- Activity Description:

2030: Starting in 2030, remove 219 T-38C low-altitude operations in IR-066.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) | | | | | |
|---------------------------|---------------------------|--|--|--|--|--|
| VOC | -0.022729 | | | | | |
| SO _x -0.032427 | | | | | | |
| NO _x | -0.058186 | | | | | |
| СО | -0.939159 | | | | | |
| PM 10 | -0.034245 | | | | | |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.001212 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -98.0 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | -0.022729 | PM 2.5 | -0.001212 |
| SO _x | -0.032427 | Pb | 0.000000 |
| NO _x | -0.058186 | NH ₃ | 0.000000 |
| СО | -0.939159 | CO ₂ e | -98.0 |
| PM 10 | -0.034245 | | |

17.2 Aircraft & Engines

17.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

| Aircraft Designation: | T-38C |
|--------------------------|-----------|
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

17.2.2 Aircraft & Engines Emission Factor(s)

| An crait & Englite Emission's Lactor's (10/100010 lact) | | | | | | | | |
|---|------------------|-------|-----------------|-----------------|--------|-------|--------|-------------------|
| | Fuel Flow | VOC | SO _x | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

17.3 Flight Operations

17.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|-----|
| Number of Aircraft: | 17 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 219 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 3.74 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

17.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

17.4 Auxiliary Power Unit (APU)

17.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | - | |
| | LTO | | | |

17.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation Fuel Flow | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CO ₂ e |
|--------------------------|-----|-----|-----|----|-------|--------|-------------------|
|--------------------------|-----|-----|-----|----|-------|--------|-------------------|

17.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

18. Aircraft

18.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove
- Activity Location

County: Lee, AR; Phillips, AR; Bolivar, MS; Calhoun, MS; Carroll, MS; Coahoma, MS; Grenada, MS; Leflore, MS; Montgomery, MS; Panola, MS; Quitman, MS; Sunflower, MS; Tallahatchie, MS; Tunica, MS; Webster, MS; Yalobusha, MS

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2030 T-38C MTR Low-Altitude Operations (IR-068)

- Activity Description:

2030: Starting in 2030, remove 69 T-38C low-altitude operations in IR-068.

- Activity Start Date

Start Month:1Start Year:2030

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.052617 |
| SO _x | -0.075067 |
| NO _x | -0.134700 |
| CO | -2.174148 |
| PM 10 | -0.079277 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -0.002806 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -226.9 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.052617 |
| SO _x | -0.075067 |
| NO _x | -0.134700 |
| СО | -2.174148 |
| PM 10 | -0.079277 |

Pollutant Emissions Per Year (TONs) PM 2.5 -0.002806 Pb 0.000000 NH₃ 0.000000 CO₂e -226.9

18.2 Aircraft & Engines

18.2.1 Aircraft & Engines Assumptions

| Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

18.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|--------------|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

18.3 Flight Operations

18.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|----|
| Number of Aircraft: | 17 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 69 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

| Taxi/Idle Out [Idle] (mins): | 0 |
|----------------------------------|-------|
| Takeoff [Military] (mins): | 27.48 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |
| | |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

18.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

18.4 Auxiliary Power Unit (APU)

18.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

18.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----|----|-------|--------|-------------------|
| | Flow | | | | | | | |

18.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year APU_{POL} = APU * OH * LTO * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs) APU: Number of Auxiliary Power Units OH: Operation Hours for Each LTO (hour) LTO: Number of LTOs

EF_{POL}: Emission Factor for Pollutant (lb/hr) 2000: Conversion Factor pounds to tons

19. Aircraft

19.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove
- Activity Location

County: Benton, MS; Calhoun, MS; Carroll, MS; Chickasaw, MS; Clay, MS; Grenada, MS; Lafayette, MS; Marshall, MS; Montgomery, MS; Panola, MS; Pontotoc, MS; Quitman, MS; Tallahatchie, MS; Tate, MS; Union, MS; Webster, MS

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2030 T-38C MTR Low-Altitude Operations (IR-091)

- Activity Description:

2030: Starting in 2030, remove 87 T-38C low-altitude operations in IR-091.

- Activity Start Date

Start Month:1Start Year:2030

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.066344 |
| SO _x | -0.094650 |
| NO _x | -0.169840 |
| СО | -2.741317 |
| PM 10 | -0.099958 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -0.003538 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -286.1 |
| | |

| - Activity Emissions | [Flight Operation | s (includes Trim | Test & APU) part]: |
|----------------------|-------------------|------------------|--------------------|
|----------------------|-------------------|------------------|--------------------|

| Pollutant | Emissions Per Year (TONs) | | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|---|-------------------|----------------------------------|
| VOC | -0.066344 | | PM 2.5 | -0.003538 |
| SO _x | -0.094650 | | Pb | 0.000000 |
| NO _x | -0.169840 |] | NH ₃ | 0.000000 |
| СО | -2.741317 |] | CO ₂ e | -286.1 |
| PM 10 | -0.099958 |] | | |

19.2 Aircraft & Engines

19.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |

Aircraft has After burn:YesNumber of Engines:2

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

19.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|--------------|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

19.3 Flight Operations

19.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|----|
| Number of Aircraft: | 17 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 87 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 27.48 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

- Trim Test Idle (mins): 12 Approach (mins): 27 Intermediate (mins): 9 Military (mins): 9 AfterBurn (mins): 3

19.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)NE: Number of EnginesLTO: Number of Landing and Take-off Cycles (for all aircraft)2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs)

AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

19.4 Auxiliary Power Unit (APU)

19.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

19.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-----|-----|-----------------|----|-------|--------|-------------------|
|-------------|--------------|-----|-----|-----------------|----|-------|--------|-------------------|

19.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

20. Aircraft

20.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Blount, AL; Cullman, AL; Franklin, AL; Jefferson, AL; Lawrence, AL; Marion, AL; Pickens, AL; Tuscaloosa, AL; Walker, AL; Winston, AL; Itawamba, MS; Monroe, MS

Regulatory Area(s): Birmingham, AL; NOT IN A REGULATORY AREA; Birmingham, AL

- Activity Title: 2030 T-38C MTR Low-Altitude Operations (VR-1014)

- Activity Description:

2030: Starting in 2030, remove 150 T-38C low-altitude operations in VR-1014.

- Activity Start Date Start Month: 1 Start Year: 2030

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -0.158550 |
| SO _x | -0.226197 |
| NO _x | -0.405887 |
| CO | -6.551271 |
| PM 10 | -0.238881 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.008456 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -683.7 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | -0.158550 | PM 2.5 | -0.008456 |
| SO _x | -0.226197 | Pb | 0.000000 |
| NO _x | -0.405887 | NH ₃ | 0.000000 |
| CO | -6.551271 | CO ₂ e | -683.7 |
| PM 10 | -0.238881 | | |

20.2 Aircraft & Engines

20.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

| Aircraft Designation: | T-38C |
|--------------------------|-----------|
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

20.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|--------------|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

20.3 Flight Operations

20.3.1 Flight Operations Assumptions

Number of Aircraft:

⁻ Flight Operations

| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 150 |
|---|-----|
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 38.09 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |
| | |

- Trim Test Idle (mins): 12 Approach (mins): 27 Intermediate (mins): 9 Military (mins): 9 AfterBurn (mins): 3

20.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE IN} + AEM_{IDLE OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines TGO: Number of Touch-and-Go Cycles (for all aircraft) 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

20.4 Auxiliary Power Unit (APU)

20.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| | (| | | |
|---------------|----------------|---------|-------------|--------------|
| Number of APU | Operation | Exempt | Designation | Manufacturer |
| per Aircraft | Hours for Each | Source? | | |
| _ | LTO | | | |

20.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designat | tion | Fuel Flow | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|----------|------|--------------|-----|-----|-----|----|-------|--------|-------------------|
| | | FIOW | | | | | | | |

20.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

21. Aircraft

21.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location
 - County: Autauga, AL; Bibb, AL; Chilton, AL; Choctaw, AL; Clarke, AL; Clay, AL; Coosa, AL; Dallas, AL; Elmore, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Pickens, AL; Shelby, AL; St. Clair, AL; Talladega, AL; Tallapoosa, AL; Tuscaloosa, AL; Wilcox, AL; Kemper, MS; Lowndes, MS; Noxubee, MS

Regulatory Area(s): Birmingham, AL; NOT IN A REGULATORY AREA

- Activity Title: 2030 T-38C MTR Low-Altitude Operations (VR-1031)

- Activity Description:

2030: Starting in 2030, remove 60 T-38C low-altitude operations in VR-1031.

- Activity Start Date

Start Month:1Start Year:2030

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.053530 |
| SO _x | -0.076369 |
| NO _x | -0.137036 |
| СО | -2.211849 |
| PM 10 | -0.080651 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.002855 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -230.8 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Po |
|-----------------|---------------------------|-------------------|
| VOC | -0.053530 | PM 2. |
| SO _x | -0.076369 | Pb |
| NO _x | -0.137036 | NH ₃ |
| CO | -2.211849 | CO ₂ e |
| PM 10 | -0.080651 | |

| Pollutant | Emissions Per Year (TONs) | | | | | |
|-------------------|----------------------------------|--|--|--|--|--|
| PM 2.5 | -0.002855 | | | | | |
| Pb | 0.000000 | | | | | |
| NH ₃ | 0.000000 | | | | | |
| CO ₂ e | -230.8 | | | | | |
| | | | | | | |

21.2 Aircraft & Engines

21.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
 Aircraft Designation: T-38C
 Engine Model: J85-GE-5R
 Primary Function: Trainer
 Aircraft has After burn: Yes
 Number of Engines: 2
- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

21.2.2 Aircraft & Engines Emission Factor(s)

| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e | |
|--------------|------------------|-------|------|-----------------|--------|-------|--------|-------------------|--|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 | |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 | |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 | |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 | |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 | |

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

21.3 Flight Operations

21.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|----|
| Number of Aircraft: | 17 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 60 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 32.15 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |
| | |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

21.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE IN} + AEM_{IDLE OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines

NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

21.4 Auxiliary Power Unit (APU)

21.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| 11411141 9 1 0 11 01 0 | | | | |
|------------------------|-----------------------|---------|-------------|--------------|
| Number of APU | Operation | Exempt | Designation | Manufacturer |
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

21.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation Fue Flow | | SOx | NOx | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------------------|--|-----|-----|----|-------|--------|-------------------|
|-------------------------|--|-----|-----|----|-------|--------|-------------------|

21.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base: COLUMBUS AFB

State: Alabama, Arkansas, Mississippi, Tennessee

County(s): Autauga, AL; Bibb, AL; Blount, AL; Chilton, AL; Choctaw, AL; Clarke, AL; Clay, AL; Colbert, AL; Coosa, AL; Cullman, AL; Dallas, AL; Elmore, AL; Franklin, AL; Greene, AL; Hale, AL; Jefferson, AL; Lauderdale, AL; Lawrence, AL; Marengo, AL; Marion, AL; Perry, AL; Pickens, AL; Shelby, AL; St. Clair, AL; Sumter, AL; Talladega, AL; Tallapoosa, AL; Tuscaloosa, AL; Walker, AL; Wilcox, AL; Winston, AL; Lee, AR; Phillips, AR; Alcorn, MS; Benton, MS; Bolivar, MS; Calhoun, MS; Carroll, MS; Chickasaw, MS; Clay, MS; Coahoma, MS; Grenada, MS; Itawamba, MS; Kemper, MS; Lafayette, MS; Lee, MS; Leflore, MS; Lowndes, MS; Marshall, MS; Monroe, MS; Montgomery, MS; Noxubee, MS; Panola, MS; Pontotoc, MS; Prentiss, MS; Quitman, MS; Sunflower, MS; Tallahatchie, MS; Tate, MS; Tippah, MS; Tishomingo, MS; Tunica, MS; Union, MS; Webster, MS; Yalobusha, MS; Chester, TN; Decatur, TN; Hardeman, TN; Hardin, TN; Lawrence, TN, McNairy, TN, Wayne, TN **Regulatory Area(s):** NOT IN A REGULATORY AREA; Birmingham, AL

b. Action Title: T-7A Recapitalization at Columbus AFB - Alternative 2

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2028

e. Action Description:

The Proposed Action is recapitalization of the T-38C Talon flight training program at Columbus AFB with T-7A Red Hawk aircraft. Recapitalization would entail introduction of T-7A aircraft and flight operations at Columbus AFB and associated special use airspace to replace all T-38C aircraft assigned to the installation; introduction of nighttime (between 10 a.m. and 7 a.m.) T-7A flight operations; changes to the number of personnel and dependents in the Columbus AFB region; and construction and upgrade of operations, support, and maintenance facilities.

For Alternative 1, Columbus AFB would receive 61 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in 61 T-7A aircraft being delivered to Columbus AFB; however, T-7A operations would be performed at an intensity approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Columbus AFB would receive 77 T-7A aircraft and perform T-7A operations at an intensity identical to Alternative 2. Alternative 3 also incorporates a MILCON project alternative to construct 12 additional shelters for the T-7A aircraft. Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in the EIS provides analysis to evaluate future capacity needs. The No Action Alternative would not implement T-7A recapitalization at Columbus AFB.

f. Point of Contact:

| Name: | Carolyn Hein |
|---------------|--------------|
| Title: | Contractor |
| Organization: | HDR |
| Email: | |
| Phone Number: | |

2. Analysis: Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the "worst-case" and "steady state" (net gain/loss upon action fully implemented) emissions. General Conformity under the Clean Air Act, Section 1.76 has been evaluated for the action described above according to the requirements of 40 CFR 93, Subpart B.

Based on the analysis, the requirements of this rule are:

_____ applicable __X__ not applicable

Conformity Analysis Summary:

| 2028 | | | |
|---------------------|------------------|--------------------|------------------------|
| Pollutant | Action Emissions | GENERAL (| CONFORMITY |
| | (ton/yr) | Threshold (ton/yr) | Exceedance (Yes or No) |
| NOT IN A REGULATORY | AREA | | |
| VOC | -3.833 | | |
| NOx | 40.966 | | |
| СО | -90.081 | | |
| SOx | -0.103 | | |
| PM 10 | -2.071 | | |
| PM 2.5 | -0.873 | | |
| Pb | 0.000 | | |
| NH3 | 0.000 | | |
| CO2e | -307.6 | | |
| Birmingham, AL | | | |
| VOC | 1.414 | 100 | No |
| NOx | 22.279 | 100 | No |
| CO | -4.340 | | |
| SOx | 0.548 | 100 | No |
| PM 10 | -0.098 | | |
| PM 2.5 | 0.088 | 100 | No |
| Pb | 0.000 | | |
| NH3 | 0.000 | 100 | No |
| CO2e | 1659.1 | | |
| Birmingham, AL | | | |
| VOC | 1.678 | 100 | No |
| NOx | 26.329 | 100 | No |
| СО | -4.972 | | |
| SOx | 0.648 | 100 | No |
| PM 10 | -0.109 | | |
| PM 2.5 | 0.105 | 100 | No |
| Pb | 0.000 | | |
| NH3 | 0.000 | 100 | No |
| CO2e | 1958.7 | | |

2029

| Pollutant | Action Emissions | GENERAL C | ONFORMITY |
|--------------------------|------------------|--------------------|------------------------|
| | (ton/yr) | Threshold (ton/yr) | Exceedance (Yes or No) |
| NOT IN A REGULATORY AREA | | | |
| VOC | -3.833 | | |
| NOx | 40.966 | | |
| СО | -90.081 | | |
| SOx | -0.103 | | |
| PM 10 | -2.071 | | |

| PM 2.5 | -0.873 | | |
|----------------|--------|-----|----|
| Pb | 0.000 | | |
| NH3 | 0.000 | | |
| CO2e | -307.6 | | |
| Birmingham, AL | | | |
| VOC | 1.414 | 100 | No |
| NOx | 22.279 | 100 | No |
| СО | -4.340 | | |
| SOx | 0.548 | 100 | No |
| PM 10 | -0.098 | | |
| PM 2.5 | 0.088 | 100 | No |
| Pb | 0.000 | | |
| NH3 | 0.000 | 100 | No |
| CO2e | 1659.1 | | |
| Birmingham, AL | | | |
| VOC | 1.678 | 100 | No |
| NOx | 26.329 | 100 | No |
| СО | -4.972 | | |
| SOx | 0.648 | 100 | No |
| PM 10 | -0.109 | | |
| PM 2.5 | 0.105 | 100 | No |
| Pb | 0.000 | | |
| NH3 | 0.000 | 100 | No |
| CO2e | 1958.7 | | |

2030

| 2050 | | | |
|---------------------|--------------------------------|--------------------|------------------------|
| Pollutant | Action Emissions GENERAL CONFO | | CONFORMITY |
| | (ton/yr) | Threshold (ton/yr) | Exceedance (Yes or No) |
| NOT IN A REGULATORY | AREA | | |
| VOC | -1.219 | | |
| NOx | 84.394 | | |
| СО | -105.766 | | |
| SOx | 0.726 | | |
| PM 10 | -2.523 | | |
| PM 2.5 | -0.708 | | |
| Pb | 0.000 | | |
| NH3 | 0.000 | | |
| CO2e | 2203.8 | | |
| Birmingham, AL | | | |
| VOC | 2.741 | 100 | No |
| NOx | 44.333 | 100 | No |
| СО | -12.289 | | |
| SOx | 0.972 | 100 | No |
| PM 10 | -0.328 | | |
| PM 2.5 | 0.172 | 100 | No |
| Pb | 0.000 | | |
| NH3 | 0.000 | 100 | No |
| CO2e | 2941.7 | | |
| Birmingham, AL | | | |
| VOC | 3.248 | 100 | No |
| NOx | 52.381 | 100 | No |
| СО | -14.415 | | |
| SOx | 1.141 | 100 | No |

| PM 10 | -0.380 | | |
|--------|--------|-----|----|
| PM 2.5 | 0.204 | 100 | No |
| Pb | 0.000 | | |
| NH3 | 0.000 | 100 | No |
| CO2e | 3450.7 | | |

2031 - (Steady State)

| 2031 - (Steady State) Pollutant Action Emissions GENERAL CONFORMITY | | | |
|---|------------------|--------------------|------------------------|
| Pollutant | Action Emissions | | |
| NOT DI A DECLU ATODI | (ton/yr) | Threshold (ton/yr) | Exceedance (Yes or No) |
| NOT IN A REGULATORY | | 1 | |
| VOC | -1.219 | | |
| NOx | 84.394 | | |
| СО | -105.766 | | |
| SOx | 0.726 | | |
| PM 10 | -2.523 | | |
| PM 2.5 | -0.708 | | |
| Pb | 0.000 | | |
| NH3 | 0.000 | | |
| CO2e | 2203.8 | | |
| Birmingham, AL | | | |
| VOC | 2.741 | 100 | No |
| NOx | 44.333 | 100 | No |
| СО | -12.289 | | |
| SOx | 0.972 | 100 | No |
| PM 10 | -0.328 | | |
| PM 2.5 | 0.172 | 100 | No |
| Pb | 0.000 | | |
| NH3 | 0.000 | 100 | No |
| CO2e | 2941.7 | | |
| Birmingham, AL | | | |
| VOC | 3.248 | 100 | No |
| NOx | 52.381 | 100 | No |
| СО | -14.415 | | |
| SOx | 1.141 | 100 | No |
| PM 10 | -0.380 | | |
| PM 2.5 | 0.204 | 100 | No |
| Pb | 0.000 | | |
| NH3 | 0.000 | 100 | No |
| CO2e | 3450.7 | | |

None of estimated emissions associated with this action are above the conformity threshold values established at 40 CFR 93.153 (b); Therefore, the requirements of the General Conformity Rule are not applicable.

Cumput

Carolyn Hein, Contractor

2/17/2023 DATE

1. General Information

- Action Location

Base: COLUMBUS AFB

State: Alabama, Arkansas, Mississippi, Tennessee

County(s): Autauga, AL; Bibb, AL; Blount, AL; Chilton, AL; Choctaw, AL; Clarke, AL; Clay, AL; Colbert, AL; Coosa, AL; Cullman, AL; Dallas, AL; Elmore, AL; Franklin, AL; Greene, AL; Hale, AL; Jefferson, AL; Lauderdale, AL; Lawrence, AL; Marengo, AL; Marion, AL; Perry, AL; Pickens, AL; Shelby, AL; St. Clair, AL; Sumter, AL; Talladega, AL; Tallapoosa, AL; Tuscaloosa, AL; Walker, AL; Wilcox, AL; Winston, AL; Lee, AR; Phillips, AR; Alcorn, MS; Benton, MS; Bolivar, MS; Calhoun, MS; Carroll, MS; Chickasaw, MS; Clay, MS; Coahoma, MS; Grenada, MS; Itawamba, MS; Kemper, MS; Lafayette, MS; Lee, MS; Leflore, MS; Lowndes, MS; Marshall, MS; Monroe, MS; Montgomery, MS; Noxubee, MS; Panola, MS; Pontotoc, MS; Prentiss, MS; Quitman, MS; Sunflower, MS; Tallahatchie, MS; Tate, MS; Tippah, MS; Tishomingo, MS; Tunica, MS; Union, MS; Webster, MS; Yalobusha, MS; Chester, TN; Decatur, TN; Hardeman, TN; Hardin, TN; Lawrence, TN, McNairy, TN, Wayne, TN
Regulatory Area(s): NOT IN A REGULATORY AREA; Birmingham, AL

- Action Title: T-7A Recapitalization at Columbus AFB - Alternative 2

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2028

- Action Purpose and Need:

The purpose of the Proposed Action is to continue the T-7A recapitalization program by recapitalizing Columbus AFB to prepare pilots to operate the more technologically advanced T-7A aircraft.

The Proposed Action is needed because the current training practices with the older T-38C aircraft fail to prepare pilots for the technological advancements of fourth and fifth generation aircraft. By 2031, more than 60 percent of the Combat Air Force will be comprised of fifth generation aircraft, requiring a modern and capable training platform with capabilities beyond those currently available in the T-38C. Additionally, training systems provided with the newer T-7A aircraft allow for enhanced and improved flight and simulator training. The T-7A recapitalization program will allow DAF to provide more efficient and effective instructor and pilot training for operating fourth and fifth generation aircraft. T-7A recapitalization at Columbus AFB would allow DAF to continue the geographically phased T-7A recapitalization sequence ensuring DAF pilot training requirements are met.

- Action Description:

The Proposed Action is recapitalization of the T-38C Talon flight training program at Columbus AFB with T-7A Red Hawk aircraft. Recapitalization would entail introduction of T-7A aircraft and flight operations at Columbus AFB and associated special use airspace to replace all T-38C aircraft assigned to the installation; introduction of nighttime (between 10 a.m. and 7 a.m.) T-7A flight operations; changes to the number of personnel and dependents in the Columbus AFB region; and construction and upgrade of operations, support, and maintenance facilities.

For Alternative 1, Columbus AFB would receive 61 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in 61 T-7A aircraft being delivered to Columbus AFB; however, T-7A operations would be performed at an intensity approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Columbus AFB would receive 77 T-7A aircraft and perform T-7A operations at an intensity identical to Alternative 2. Alternative 3 also incorporates a MILCON project alternative to construct 12 additional shelters for the T-7A aircraft. Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in the EIS provides analysis to evaluate future capacity needs. The No Action Alternative would not implement T-7A recapitalization at Columbus AFB.

- Point of Contact

| Name: | Carolyn Hein |
|----------------------|--------------|
| Title: | Contractor |
| Organization: | HDR |
| Email: | |
| Phone Number: | |

- Activity List:

| | Activity Type | Activity Title |
|-----|---------------|---|
| 2. | Aircraft | 2028 and 2029 T-7A MTR Low-Altitude Operations (IR-066) |
| 3. | Aircraft | 2028 and 2029 T-7A MTR Low-Altitude Operations (IR-068) |
| 4. | Aircraft | 2028 and 2029 T-7A MTR Low-Altitude Operations (IR-091) |
| 5. | Aircraft | 2028 and 2029 T-7A MTR Low-Altitude Operations (VR-1014) |
| 6. | Aircraft | 2028 and 2029 T-7A MTR Low-Altitude Operations (VR-1031) |
| 7. | Aircraft | 2028 and 2029 T-38C MTR Low-Altitude Operations (IR-066) |
| 8. | Aircraft | 2028 and 2029 T-38C MTR Low-Altitude Operations (IR-068) |
| 9. | Aircraft | 2028 and 2029 T-38C MTR Low-Altitude Operations (IR-091) |
| 10. | Aircraft | 2028 and 2029 T-38C MTR Low-Altitude Operations (VR-1014) |
| 11. | Aircraft | 2028 and 2029 T-38C MTR Low-Altitude Operations (VR-1031) |
| 12. | Aircraft | 2030 T-7A MTR Low-Altitude Operations (IR-066) |
| 13. | Aircraft | 2030 T-7A MTR Low-Altitude Operations (IR-068) |
| 14. | Aircraft | 2030 T-7A MTR Low-Altitude Operations (IR-091) |
| 15. | Aircraft | 2030 T-7A MTR Low-Altitude Operations (VR-1014) |
| 16. | Aircraft | 2030 T-7A MTR Low-Altitude Operations (VR-1031) |
| 17. | Aircraft | 2030 T-38C MTR Low-Altitude Operations (IR-066) |
| 18. | Aircraft | 2030 T-38C MTR Low-Altitude Operations (IR-068) |
| 19. | Aircraft | 2030 T-38C MTR Low-Altitude Operations (IR-091) |
| 20. | Aircraft | 2030 T-38C MTR Low-Altitude Operations (VR-1014) |
| 21. | Aircraft | 2030 T-38C MTR Low-Altitude Operations (VR-1031) |

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Aircraft

2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
 - County: Blount, AL; Colbert, AL; Cullman, AL; Franklin, AL; Lauderdale, AL; Marion, AL; Walker, AL; Winston, AL; Alcorn, MS; Benton, MS; Itawamba, MS; Lee, MS; Monroe, MS; Prentiss, MS; Tippah, MS; Tishomingo, MS; Union, MS; Chester, TN; Decatur, TN; Hardeman, TN; Hardin, TN; Lawrence, TN; McNairy, TN; Wayne, TN

Regulatory Area(s): NOT IN A REGULATORY AREA; Birmingham, AL

- Activity Title: 2028 and 2029 T-7A MTR Low-Altitude Operations (IR-066)

- Activity Description:

2028 and 2029: Starting in 2028, add 273 T-7A low-altitude operations in IR-066.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.195744 |
| SO _x | 0.099955 |
| NO _x | 2.887749 |
| СО | 0.198345 |
| PM 10 | 0.013773 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.012051 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 303.7 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | 0.195744 |
| SO _x | 0.099955 |
| NO _x | 2.887749 |
| СО | 0.198345 |
| PM 10 | 0.013773 |

| & APU) part]: | |
|-------------------|----------------------------------|
| Pollutant | Emissions Per Year (TONs) |
| PM 2.5 | 0.012051 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 303.7 |
| | |

2.2 Aircraft & Engines

2.2.1 Aircraft & Engines Assumptions

| - Aircraft | & | Engine |
|------------|---|--------|
|------------|---|--------|

| Aircraft Designation: | T-7A |
|--------------------------|-------------|
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

2.2.2 Aircraft & Engines Emission Factor(s)

Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

2.3 Flight Operations

2.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|-----|
| Number of Aircraft: | 52 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 273 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |

Number of Annual Trim Test(s) per Aircraft:

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 3.74 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |
| · · · · | |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

2.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)

0

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

2.4 Auxiliary Power Unit (APU)

2.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

2.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

2.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

3. Aircraft

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
 - County: Lee, AR; Phillips, AR; Bolivar, MS; Calhoun, MS; Carroll, MS; Coahoma, MS; Grenada, MS; Leflore, MS; Montgomery, MS; Panola, MS; Quitman, MS; Sunflower, MS; Tallahatchie, MS; Tunica, MS; Webster, MS; Yalobusha, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2028 and 2029 T-7A MTR Low-Altitude Operations (IR-068)

- Activity Description:

2028 and 2029: Starting in 2028, add 87 T-7A low-altitude operations in IR-068.

- Activity Start Date Start Month: 1

Start Year: 2028

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | 0.457652 |
| SO _x | 0.218172 |
| NO _x | 6.666520 |
| CO | 0.390571 |
| PM 10 | 0.032250 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.028219 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 659.9 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | 0.457652 | PM 2.5 | 0.028219 |
| SO _x | 0.218172 | Pb | 0.000000 |
| NO _x | 6.666520 | NH ₃ | 0.000000 |
| CO | 0.390571 | CO ₂ e | 659.9 |
| PM 10 | 0.032250 | | |

3.2 Aircraft & Engines

3.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine Aircraft Designation: Engine Model: Primary Function: Aircraft has After burn: Number of Engines: | T-7A F404-GE-102 Trainer Yes 1 | | |
|---|--|---|------------------------|
| - Aircraft & Engine Surrogat Is Aircraft & Engine a Su Original Aircraft Name: Original Engine Name: | | | |
| 3.2.2 Aircraft & Engines H | Emission Factor(s) | | |
| - Aircraft & Engine Emission Proprietary Information. C engine's Emission Factors. | Contact Air Quality Sub | uel) ject Matter Expert for More Info | rmation regarding this |
| 3.3 Flight Operations | | | |
| 3.3.1 Flight Operations As | sumptions | | |
| Flight Operations Number of Aircraft: Number of Annual LTOs Number of Annual TGOs Number of Annual Trim Default Settings Used: N | s (Touch-and-Go) cycl | | 52 87 0 0 |
| - Flight Operations TIMs (Tir Taxi/Idle Out [Idle] (min Takeoff [Military] (mins) Takeoff [After Burn] (mi Climb Out [Intermediate Approach [Approach] (m Taxi/Idle In [Idle] (mins) | s): : ns):] (mins): iins): | 0 27.48 0 0 0 0 | |
| - Trim Test Idle (mins): Approach (mins): Intermediate (mins): Military (mins): AfterBurn (mins): | 12 27 9 9 3 | | |
| 3.3.2 Flight Operations Fo | ormula(s) | | |
| - Aircraft Emissions per Mod | e for LTOs per Year | 2000 | |

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)

60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

3.4 Auxiliary Power Unit (APU)

3.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

3.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

3.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

4. Aircraft

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Benton, MS; Calhoun, MS; Carroll, MS; Chickasaw, MS; Clay, MS; Grenada, MS; Lafayette, MS; Marshall, MS; Montgomery, MS; Panola, MS; Pontotoc, MS; Quitman, MS; Tallahatchie, MS; Tate, MS; Union, MS; Webster, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2028 and 2029 T-7A MTR Low-Altitude Operations (IR-091)

- Activity Description:

2028 and 2029: Starting in 2028, add 108 T-7A low-altitude operations in IR-091.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.568120 |
| SO _x | 0.270834 |
| NO _x | 8.275680 |
| СО | 0.484847 |
| PM 10 | 0.040034 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.035030 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 819.2 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.568120 |
| SO _x | 0.270834 |
| NO _x | 8.275680 |
| СО | 0.484847 |
| PM 10 | 0.040034 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.035030 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 819.2 |
| | |

4.2 Aircraft & Engines

4.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-------------|
| Aircraft Designation: | T-7A |
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

4.2.2 Aircraft & Engines Emission Factor(s)

Aircraft & Engine Emissions Factors (lb/1000lb fuel)
 Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

4.3 Flight Operations

4.3.1 Flight Operations Assumptions

| - Flight Operations | | | |
|-----------------------------|----------------------------------|--------------------------|-----|
| Number of Aircraft: | | | 52 |
| Number of Annual LTO | Ds (Landing and Take-off) | cycles for all Aircraft: | 108 |
| | Os (Touch-and-Go) cycles | | 0 |
| Number of Annual Tri | · · · | | 0 |
| - Default Settings Used: | No | | |
| - Flight Operations TIMs (1 | fime In Mode) | | |
| Taxi/Idle Out [Idle] (mi | ins): | 0 | |
| Takeoff [Military] (mins): | | 27.48 | |
| Takeoff [After Burn] (r | nins): | 0 | |
| Climb Out [Intermedia | te] (mins): | 0 | |
| Approach [Approach] (| mins): | 0 | |
| Taxi/Idle In [Idle] (min | s): | 0 | |
| - Trim Test | | | |
| Idle (mins): | 12 | | |
| Approach (mins): | 27 | | |
| Intermediate (mins): | 9 | | |
| Military (mins): | 9 | | |
| AfterBurn (mins): | 3 | | |

4.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000poundsEF: Emission Factor (lb/1000lb fuel)NE: Number of EnginesTGO: Number of Touch-and-Go Cycles (for all aircraft)2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

4.4 Auxiliary Power Unit (APU)

4.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

4.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| | | 1 40001 (18 |) | | | | | |
|-------------|------|-------------|-----|-----|----|-------|--------|-------------------|
| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
| | Flow | | | | | | | |

| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |
|----------|-------|-------|-------|-------|-------|--------|--------|-------|
|----------|-------|-------|-------|-------|-------|--------|--------|-------|

4.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

5. Aircraft

5.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Blount, AL; Cullman, AL; Franklin, AL; Jefferson, AL; Lawrence, AL; Marion, AL; Pickens, AL; Tuscaloosa, AL; Walker, AL; Winston, AL; Itawamba, MS; Monroe, MS
 Regulatory Area(s): Birmingham, AL; NOT IN A REGULATORY AREA; Birmingham, AL

- Activity Title: 2028 and 2029 T-7A MTR Low-Altitude Operations (VR-1014)

- Activity Description:

2028 and 2029: Starting in 2028, add 186 T-7A low-altitude operationss in VR-1014.

- Activity Start Date

| Start | Month: | 1 |
|-------|--------|------|
| Start | Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 1.356109 |
| SO _x | 0.644461 |
| NO _x | 19.743072 |
| СО | 1.147806 |
| PM 10 | 0.095568 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.083622 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 1948.9 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|-------------------|----------------------------------|
| VOC | 1.356109 | PM 2.5 | 0.083622 |
| SO _x | 0.644461 | Pb | 0.000000 |
| NO _x | 19.743072 | NH ₃ | 0.000000 |
| СО | 1.147806 | CO ₂ e | 1948.9 |

| PM 10 | 0.095568 | |
|---|--|--------------------------|
| 5.2 Aircraft & Engines | | |
| 5.2.1 Aircraft & Engine | s Assumptions | |
| - Aircraft & Engine Aircraft Designation: Engine Model: Primary Function: Aircraft has After bur Number of Engines: | T-7A F404-GE-102 Trainer | |
| - Aircraft & Engine Surrog Is Aircraft & Engine a Original Aircraft Nam Original Engine Name | Surrogate? No e: | |
| 5.2.2 Aircraft & Engine | s Emission Factor(s) | |
| | ions Factors (lb/1000lb fuel) . Contact Air Quality Subject Matter Expert for More Inf ors. | formation regarding this |
| 5.3 Flight Operations | | |
| 5.3.1 Flight Operations | Assumptions | |
| Number of Annual TC | Os (Landing and Take-off) cycles for all Aircraft: Os (Touch-and-Go) cycles for all Aircraft: im Test(s) per Aircraft: | 52 186 0 0 |
| - Default Settings Used: | No | |
| - Flight Operations TIMs (Taxi/Idle Out [Idle] (n Takeoff [Military] (mi Takeoff [After Burn] (Climb Out [Intermedi Approach [Approach] Taxi/Idle In [Idle] (mi | nins): 0 ns): 38.09 mins): 0 ate] (mins): 0 (mins): 0 | |
| - Trim Test Idle (mins): Approach (mins): Intermediate (mins): Military (mins): AfterBurn (mins): | 12 27 9 9 3 | |
| 5.3.2 Flight Operations | Formula(s) | |

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)

AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

5.4 Auxiliary Power Unit (APU)

5.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

5.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

5.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

6. Aircraft

6.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
 - County: Autauga, AL; Bibb, AL; Chilton, AL; Choctaw, AL; Clarke, AL; Clay, AL; Coosa, AL; Dallas, AL; Elmore, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Pickens, AL; Shelby, AL; St. Clair, AL; Talladega, AL; Tallapoosa, AL; Tuscaloosa, AL; Wilcox, AL; Kemper, MS; Lowndes, MS; Noxubee, MS

Regulatory Area(s): Birmingham, AL; NOT IN A REGULATORY AREA

- Activity Title: 2028 and 2029 T-7A MTR Low-Altitude Operations (VR-1031)

- Activity Description:

2028 and 2029: Starting in 2028, add 78 T-7A low-altitude operations in VR-1031.

- Activity Start Date

Start Month:1Start Year:2028

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) | |
|-----------------|---------------------------|--|
| VOC | 0.480021 | |
| SO _x | 0.228462 | |
| NO _x | 6.990315 | |
| СО | 0.407902 | |
| PM 10 | 0.033827 | |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.029599 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 691.0 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | |
|-----------------|---------------------------|--|
| VOC | 0.480021 | |
| SO _x | 0.228462 | |
| NO _x | 6.990315 | |
| CO | 0.407902 | |
| PM 10 | 0.033827 | |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.029599 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 691.0 |
| | |

6.2 Aircraft & Engines

6.2.1 Aircraft & Engines Assumptions

| Aircraft & Engine | |
|--------------------------|-------------|
| Aircraft Designation: | T-7A |
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

6.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

6.3 Flight Operations

6.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|----|
| Number of Aircraft: | 52 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 78 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): 0 | |
| Takeoff [Military] (mins): 32 | 2.15 |
| Takeoff [After Burn] (mins): 0 | |
| Climb Out [Intermediate] (mins): 0 | |
| Approach [Approach] (mins): 0 | |
| Taxi/Idle In [Idle] (mins):0 | |

- Trim Test Idle (mins): 12 Approach (mins): 27 Intermediate (mins): 9 Military (mins): 9 AfterBurn (mins): 3

6.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

6.4 Auxiliary Power Unit (APU)

6.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

6.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

| - Auxiliary Power Unit (APU) Emission Factor (10/117) | | | | | | | | |
|---|-------|-------|-------|-------|-------|--------|--------|-------------------|
| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
| | Flow | | | | | | | |
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

6.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

7. Aircraft

7.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Blount, AL; Colbert, AL; Cullman, AL; Franklin, AL; Lauderdale, AL; Marion, AL; Walker, AL; Winston, AL; Alcorn, MS; Benton, MS; Itawamba, MS; Lee, MS; Monroe, MS; Prentiss, MS; Tippah, MS; Tishomingo, MS; Union, MS; Chester, TN; Decatur, TN; Hardeman, TN; Hardin, TN; Lawrence, TN; McNairy, TN; Wayne, TN

Regulatory Area(s): NOT IN A REGULATORY AREA; Birmingham, AL

- Activity Title: 2028 and 2029 T-38C MTR Low-Altitude Operations (IR-066)

- Activity Description:

2028 and 2029: Starting in 2028, remove 165 T-38C low-altitude operations in IR-066.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -0.017125 |
| SO _x | -0.024431 |
| NO _x | -0.043839 |
| СО | -0.707585 |
| PM 10 | -0.025801 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -0.000913 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -73.8 |
| | |

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | -0.017125 | PM 2.5 | -0.000913 |
| SO _x | -0.024431 | Pb | 0.000000 |
| NO _x | -0.043839 | NH ₃ | 0.000000 |
| СО | -0.707585 | CO ₂ e | -73.8 |
| PM 10 | -0.025801 | | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

7.2 Aircraft & Engines

7.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |
| 5 | |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

7.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|--------------|------------------|-------|-----------------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

7.3 Flight Operations

7.3.1 Flight Operations Assumptions

- Flight Operations

| Number of Aircraft: | 68 |
|---|-----|
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 165 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 3.74 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

| - Trim Test | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

7.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

7.4 Auxiliary Power Unit (APU)

7.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | 0 | |
| | LTO | | | |

7.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----------------|----|-------|--------|-------------------|
| | Flow | | | | | | | |

7.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

8. Aircraft

8.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

 County: Lee, AR; Phillips, AR; Bolivar, MS; Calhoun, MS; Carroll, MS; Coahoma, MS; Grenada, MS; Leflore, MS; Montgomery, MS; Panola, MS; Quitman, MS; Sunflower, MS; Tallahatchie, MS; Tunica, MS; Webster, MS; Yalobusha, MS
 Parelatory: Area(a): NOT IN A RECULTATORY AREA

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2028 and 2029 T-38C MTR Low-Altitude Operations (IR-068)

- Activity Description:

2028 and 2029: Starting in 2028, remove 51 T-38C low-altitude operations in IR-068.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | Yes | | |
|-------------|-----|--|--|
| End Month: | N/A | | |
| End Year: | N/A | | |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -0.038891 |
| SO _x | -0.055485 |
| NO _x | -0.099561 |
| СО | -1.606979 |
| PM 10 | -0.058596 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.002074 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -167.7 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | -0.038891 | PM 2.5 | -0.002074 |
| SO _x | -0.055485 | Pb | 0.000000 |
| NO _x | -0.099561 | NH ₃ | 0.000000 |
| CO | -1.606979 | CO ₂ e | -167.7 |
| PM 10 | -0.058596 | | |

8.2 Aircraft & Engines

8.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

8.2.2 Aircraft & Engines Emission Factor(s)

| - An er art & Englite Emissions Factors (10/100010 fuer) | | | | | | | | |
|--|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

8.3 Flight Operations

8.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|--|
| Number of Aircraft: | |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | |
| Number of Annual Trim Test(s) per Aircraft: | |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 27.48 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

8.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

8.4 Auxiliary Power Unit (APU)

8.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| J | | | | |
|---------------|----------------|---------|-------------|--------------|
| Number of APU | Operation | Exempt | Designation | Manufacturer |
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

8.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----------------|----|-------|--------|-------------------|
| | Flow | | | | | | | |

8.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

9. Aircraft

9.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Benton, MS; Calhoun, MS; Carroll, MS; Chickasaw, MS; Clay, MS; Grenada, MS; Lafayette, MS; Marshall, MS; Montgomery, MS; Panola, MS; Pontotoc, MS; Quitman, MS; Tallahatchie, MS; Tate, MS; Union, MS; Webster, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA

Regulatory Alea(s). NOT IN A RECOLATOR TAKEA

- Activity Title: 2028 and 2029 T-38C MTR Low-Altitude Operations (IR-091)

- Activity Description:

2028 and 2029: Starting in 2028, remove 66 T-38C low-altitude operations in IR-091.

- Activity Start Date

Start Month: 1 Start Year: 2028

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -6.677130 |
| SO _x | -1.259727 |
| NO _x | -3.049826 |
| CO | -83.869115 |
| PM 10 | -1.963950 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -1.050092 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -3807.4 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -6.677130 |
| SO _x | -1.259727 |
| NO _x | -3.049826 |
| CO | -83.869115 |
| PM 10 | -1.963950 |

| & APU) part]: | |
|-------------------|---------------------------|
| Pollutant | Emissions Per Year (TONs) |
| PM 2.5 | -1.050092 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -3807.4 |
| | |

9.2 Aircraft & Engines

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9.2.1 Aircraft & Engines Assumptions

| Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

9.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| The chart of Englise Emissions I actors (16/100016 fact) | | | | | | | | |
|--|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

9.3 Flight Operations

9.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|----|
| Number of Aircraft: | 68 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 66 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 12 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 27.48 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |
| - Trim Test | |
| Idle (mins): 12 | |

| rule (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

9.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)

AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

9.4 Auxiliary Power Unit (APU)

9.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

9.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----|----|-------|--------|-------------------|
| | Flow | | | | | | | |

9.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year APU_{POL} = APU * OH * LTO * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs) APU: Number of Auxiliary Power Units OH: Operation Hours for Each LTO (hour)

LTO: Number of LTOs EF_{POL}: Emission Factor for Pollutant (lb/hr) 2000: Conversion Factor pounds to tons

10. Aircraft

10.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Blount, AL; Cullman, AL; Franklin, AL; Jefferson, AL; Lawrence, AL; Marion, AL; Pickens, AL; Tuscaloosa, AL; Walker, AL; Winston, AL; Itawamba, MS; Monroe, MS
 Regulatory Area(s): Birmingham, AL; NOT IN A REGULATORY AREA; Birmingham, AL

- Activity Title: 2028 and 2029 T-38C MTR Low-Altitude Operations (VR-1014)

- Activity Description:

2028 and 2029: Starting in 2028, remove 114 T-38C low-altitude operations in VR-1014.

- Activity Start Date

Start Month:1Start Year:2028

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.120498 |
| SO _x | -0.171910 |
| NO _x | -0.308474 |
| СО | -4.978966 |
| PM 10 | -0.181550 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -0.006427 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -519.6 |
| | |

| - Activity Emissions | [Flight Operations | (includes Trim T | est & APU) part]: |
|----------------------|--------------------|------------------|-------------------|
|----------------------|--------------------|------------------|-------------------|

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | -0.120498 | PM 2.5 | -0.006427 |
| SO _x | -0.171910 | Pb | 0.000000 |
| NO _x | -0.308474 | NH ₃ | 0.000000 |
| СО | -4.978966 | CO ₂ e | -519.6 |
| PM 10 | -0.181550 | | |

10.2 Aircraft & Engines

10.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |

Aircraft has After burn:YesNumber of Engines:2

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

10.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | | VOC | 0.0 | | 00 | DN / 10 | DIAAZ | 00 |
|--------------|-----------|-------|------|-----------------|--------|---------|--------|-------------------|
| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

10.3 Flight Operations

10.3.1 Flight Operations Assumptions

| Number of Aircraft: | 68 |
|---|-----|
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 114 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 38.09 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

- Trim Test Idle (mins): 12 Approach (mins): 27 Intermediate (mins): 9 Military (mins): 9 AfterBurn (mins): 3

10.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)NE: Number of EnginesLTO: Number of Landing and Take-off Cycles (for all aircraft)2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs)

AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

10.4 Auxiliary Power Unit (APU)

10.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

10.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel VOC Flow | SO _x | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------------------|-----------------|-----------------|----|-------|--------|-------------------|
|-------------|------------------|-----------------|-----------------|----|-------|--------|-------------------|

10.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

11. Aircraft

11.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Autauga, AL; Bibb, AL; Chilton, AL; Choctaw, AL; Clarke, AL; Clay, AL; Coosa, AL; Dallas, AL; Elmore, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Pickens, AL; Shelby, AL; St. Clair, AL; Talladega, AL; Tallapoosa, AL; Tuscaloosa, AL; Wilcox, AL; Kemper, MS; Lowndes, MS; Noxubee, MS

Regulatory Area(s): Birmingham, AL; NOT IN A REGULATORY AREA

- Activity Title: 2028 and 2029 T-38C MTR Low-Altitude Operations (VR-1031)
- Activity Description:

2028 and 2029: Starting in 2028, remove 42 T-38C low-altitude operations in VR-1031.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.037471 |
| SO _x | -0.053458 |
| NO _x | -0.095925 |
| CO | -1.548294 |
| PM 10 | -0.056456 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -0.001998 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -161.6 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | | | |
|-----------------|----------------------------------|--|--|--|
| VOC | -0.037471 | | | |
| SO _x | -0.053458 | | | |
| NO _x | -0.095925 | | | |
| СО | -1.548294 | | | |
| PM 10 | -0.056456 | | | |

| t & APU) part]: | |
|-------------------|---------------------------|
| Pollutant | Emissions Per Year (TONs) |
| PM 2.5 | -0.001998 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -161.6 |
| | |

11.2 Aircraft & Engines

11.2.1 Aircraft & Engines Assumptions

| - | Aircraft | & | Engine |
|---|----------|---|--------|
|---|----------|---|--------|

| Aircraft Designation: | T-38C |
|--------------------------|-----------|
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

11.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SO _x | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|--------------|------------------|-------|-----------------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

11.3 Flight Operations

11.3.1 Flight Operations Assumptions

0

| - Flight Operations | | |
|---|-----------------------------------|----|
| Number of Aircraft: | | 68 |
| Number of Annual LTOs (Landing and Ta | ake-off) cycles for all Aircraft: | 42 |
| Number of Annual TGOs (Touch-and-Go) | cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircr | aft: | 0 |
| - Default Settings Used: No | | |
| - Flight Operations TIMs (Time In Mode) | | |
| Taxi/Idle Out [Idle] (mins): | 0 | |
| Takeoff [Military] (mins): | 32.15 | |
| Takeoff [After Burn] (mins): | 0 | |
| Climb Out [Intermediate] (mins): | 0 | |
| Approach [Approach] (mins): | 0 | |

Approacn [Approacn] (mins): Taxi/Idle In [Idle] (mins):

| Trim Test | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

_

11.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000poundsEF: Emission Factor (lb/1000lb fuel)NE: Number of EnginesTGO: Number of Touch-and-Go Cycles (for all aircraft)2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

11.4 Auxiliary Power Unit (APU)

11.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| | Number per Ai | | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|--|------------------|--|------------------------------------|-------------------|-------------|--------------|
|--|------------------|--|------------------------------------|-------------------|-------------|--------------|

11.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----|----|-------|--------|-------------------|
| | Flow | | | | | | | |

11.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

12. Aircraft

12.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Blount, AL; Colbert, AL; Cullman, AL; Franklin, AL; Lauderdale, AL; Marion, AL; Walker, AL; Winston, AL; Alcorn, MS; Benton, MS; Itawamba, MS; Lee, MS; Monroe, MS; Prentiss, MS; Tippah, MS; Tishomingo, MS; Union, MS; Chester, TN; Decatur, TN; Hardeman, TN; Hardin, TN; Lawrence, TN; McNairy, TN; Wayne, TN

Regulatory Area(s): NOT IN A REGULATORY AREA; Birmingham, AL

- Activity Title: 2030 T-7A MTR Low-Altitude Operations (IR-066)

- Activity Description:

2030: Starting in 2030, add 273 T-7A low-altitude operations in IR-066.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.195744 |
| SO _x | 0.099955 |
| NO _x | 2.887749 |
| СО | 0.198345 |
| PM 10 | 0.013773 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.012051 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 303.7 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | 0.195744 | PM 2.5 | 0.012051 |
| SO _x | 0.099955 | Pb | 0.000000 |
| NO _x | 2.887749 | NH ₃ | 0.000000 |
| СО | 0.198345 | CO ₂ e | 303.7 |

A ID CONFORMITS/ A DDI ICA DII ITS/ MODEL DEDODT DETAT

| PM 10 | 0.013773 | | |
|---|---|--|-------|
| 2.2 Aircraft & | Engines | | |
| 2.2.1 Aircraft | & Engines Assumptions | | |
| Aircraft & Engi | | | |
| Aircraft Desig | nation: T-7A | | |
| Engine Mode Primary Fun | | | |
| Aircraft has A | | | |
| Number of E | igines: 1 | | |
| Aircraft & Engi | | | |
| Is Aircraft & Original Airc | Engine a Surrogate? No | | |
| Original Airc Original Engi | | | |
| 222 Aircraft | & Engines Emission Factor(s) | | |
| | 0 | | |
| Proprietary Int | ne Emissions Factors (lb/1000lb fuel) Formation. Contact Air Ouality Subject M | atter Expert for More Information regardir | ng th |
| | | | - |
| engine's Emiss | | | - |
| - | ion Factors. | | - |
| 2.3 Flight Ope | ion Factors. | | - |
| 12.3 Flight Ope | ion Factors. rations erations Assumptions | | - |
| 12.3 Flight Ope 12.3.1 Flight Ope Flight Operation Number of Ai | ion Factors. rations verations Assumptions s rcraft: | 9 | - |
| 12.3 Flight Ope 12.3.1 Flight Operation Flight Operation Number of Air Numb | ion Factors. rations erations Assumptions s rcraft: mual LTOs (Landing and Take-off) cyc | 9 eles for all Aircraft: 273 | - |
| 12.3 Flight Ope 12.3.1 Flight Ope Flight Operation Number of Ai Number of Ai Number of Ai | ion Factors. rations verations Assumptions s rcraft: | 9 eles for all Aircraft: 273 | |
| 12.3 Flight Ope 12.3.1 Flight Operation Flight Operation Number of Air Number of Air Number | ion Factors. rations eerations Assumptions s rcraft: mual LTOs (Landing and Take-off) cyo mual TGOs (Touch-and-Go) cycles for mual Trim Test(s) per Aircraft: | eles for all Aircraft: 273 all Aircraft: 0 | |
| 12.3 Flight Ope 12.3.1 Flight Op Flight Operation Number of Ai Number of Ai Number of Ai Number of Ai Number of Ai | ion Factors. rations eerations Assumptions s rcraft: mual LTOs (Landing and Take-off) cyd mual TGOs (Touch-and-Go) cycles for mual Trim Test(s) per Aircraft: Used: No | eles for all Aircraft: 273 all Aircraft: 0 | |
| 12.3 Flight Ope 12.3.1 Flight Operation 12.3.1 Flight Operation Number of Air Number of Ai | ion Factors. rations perations Assumptions s rcraft: nual LTOs (Landing and Take-off) cyc nual TGOs (Touch-and-Go) cycles for nual Trim Test(s) per Aircraft: Used: No s TIMs (Time In Mode) [Idle] (mins): 0 | eles for all Aircraft: 273 all Aircraft: 0 0 | |
| 12.3 Flight Ope 12.3.1 Flight Operation Number of Ai Number of Ai Number of Ai Number of Ai Default Settings Flight Operation Taxi/Idle Out Takeoff [Mili | ion Factors. rations perations Assumptions s rcraft: nual LTOs (Landing and Take-off) cyc nual TGOs (Touch-and-Go) cycles for nual Trim Test(s) per Aircraft: Used: No s TIMs (Time In Mode) [Idle] (mins): 0 ary] (mins): 3.7 | eles for all Aircraft: 273 all Aircraft: 0 0 | |
| 2.3 Flight Ope 2.3.1 Flight Operation Number of Ai Number of Ai Number of Ai Number of Ai Default Settings Flight Operation Taxi/Idle Out Takeoff [Mili Takeoff [Afte | ion Factors. rations perations Assumptions s rcraft: nual LTOs (Landing and Take-off) cyd nual TGOs (Touch-and-Go) cycles for nual Trim Test(s) per Aircraft: Used: No s TIMs (Time In Mode) [Idle] (mins): 0 ary] (mins): 3.7 r Burn] (mins): 0 | eles for all Aircraft: 273 all Aircraft: 0 0 | |
| 2.3 Flight Ope 2.3.1 Flight Op Flight Operation Number of Ai Number of Ai Number of Ai Number of Ai Default Settings Flight Operation Taxi/Idle Out Takeoff [Mili Takeoff [Afte Climb Out [In Approach [A] | ion Factors. rations perations Assumptions s rcraft: mual LTOs (Landing and Take-off) cyd mual TGOs (Touch-and-Go) cycles for mual Trim Test(s) per Aircraft: Used: No s TIMs (Time In Mode) [Idle] (mins): 0 cary] (mins): 3.7 r Burn] (mins): 0 oproach] (mins): 0 | eles for all Aircraft: 273 all Aircraft: 0 0 | |
| 12.3 Flight Ope 12.3.1 Flight Operation Number of Ai Number of Ai Number of Ai Number of Ai Number of Ai Default Settings Flight Operation Taxi/Idle Out Takeoff [Mili Takeoff [Afte Climb Out [In | ion Factors. rations perations Assumptions s rcraft: mual LTOs (Landing and Take-off) cyd mual TGOs (Touch-and-Go) cycles for mual Trim Test(s) per Aircraft: Used: No s TIMs (Time In Mode) [Idle] (mins): 0 cary] (mins): 3.7 r Burn] (mins): 0 oproach] (mins): 0 | eles for all Aircraft: 273 all Aircraft: 0 0 | |
| 12.3 Flight Ope 12.3.1 Flight Operation Number of Ai Number of Ai Number of Ai Number of Ai Default Settings Flight Operation Taxi/Idle Out Takeoff [Mili Takeoff [Afte Climb Out [In Approach [A] Taxi/Idle In [| ion Factors. rations perations Assumptions s rcraft: unual LTOs (Landing and Take-off) cyd nual TGOs (Touch-and-Go) cycles for nual Trim Test(s) per Aircraft: Used: No s TIMs (Time In Mode) [Idle] (mins): 0 ary] (mins): 3.7 r Burn] (mins): 0 proach] (mins): 0 dle] (mins): 0 | eles for all Aircraft: 273 all Aircraft: 0 0 | |
| 12.3 Flight Ope 12.3.1 Flight Operation Number of Ai Number of Ai Number of Ai Number of Ai Default Settings Flight Operation Taxi/Idle Out Takeoff [Mili Takeoff [Afte Climb Out [Ii Approach [A] Taxi/Idle In [Trim Test Idle (mins): | ion Factors. rations perations Assumptions s rcraft: unual LTOs (Landing and Take-off) cyd nual TGOs (Touch-and-Go) cycles for nual Trim Test(s) per Aircraft: Used: No s TIMs (Time In Mode) [Idle] (mins): 0 ary] (mins): 3.7 r Burn] (mins): 0 proach] (mins): 0 12 | eles for all Aircraft: 273 all Aircraft: 0 0 | |
| 12.3 Flight Ope 12.3.1 Flight Operation Number of Ai Number of Ai Number of Ai Number of Ai Default Settings Flight Operation Taxi/Idle Out Takeoff [Mili Takeoff [Mili Takeoff [Afte Climb Out [Ii Approach [A] Taxi/Idle In [Trim Test Idle (mins): Approach (m | ion Factors. rations perations Assumptions s rcraft: mual LTOs (Landing and Take-off) cyclos mual TGOs (Touch-and-Go) cycles for mual Trim Test(s) per Aircraft: Used: No s TIMs (Time In Mode) [Idle] (mins): 0 ary] (mins): 3.7 r Burn] (mins): 0 termediate] (mins): 0 oproach] (mins): 0 Il2 ns): 27 | eles for all Aircraft: 273 all Aircraft: 0 0 | |
| 12.3 Flight Ope 12.3.1 Flight Operation Number of Ai Number of Ai Number of Ai Number of Ai Default Settings Flight Operation Taxi/Idle Out Takeoff [Mili Takeoff [Afte Climb Out [Ii Approach [A] Taxi/Idle In [Trim Test Idle (mins): | ion Factors. rations perations Assumptions s rcraft: nual LTOs (Landing and Take-off) cyclonal TGOs (Touch-and-Go) cycles for nual Trim Test(s) per Aircraft: Used: No s TIMs (Time In Mode) [Idle] (mins): 0 ary] (mins): 3.7 r Burn] (mins): 0 termediate] (mins): 0 oproach] (mins): 0 dle] (mins): 0 12 ns): 27 (mins): 9 s): 9 | eles for all Aircraft: 273 all Aircraft: 0 0 | |

12.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)

AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

12.4 Auxiliary Power Unit (APU)

12.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

12.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

12.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year APU_{POL} = APU * OH * LTO * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

13. Aircraft

13.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
 - **County:** Lee, AR; Phillips, AR; Bolivar, MS; Calhoun, MS; Carroll, MS; Coahoma, MS; Grenada, MS; Leflore, MS; Montgomery, MS; Panola, MS; Quitman, MS; Sunflower, MS; Tallahatchie, MS; Tunica, MS; Webster, MS; Yalobusha, MS

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2030 T-7A MTR Low-Altitude Operations (IR-068)

- Activity Description:

2030: Starting in 2030, add 87 T-7A low-altitude operations in IR-068.

| - | Activity | Start Date |
|---|----------|------------|
|---|----------|------------|

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.457652 |
| SO _x | 0.218172 |
| NO _x | 6.666520 |
| СО | 0.390571 |
| PM 10 | 0.032250 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.028219 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 659.9 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|-------------------|----------------------------------|
| VOC | 0.457652 | PM 2.5 | 0.028219 |
| SO _x | 0.218172 | Pb | 0.000000 |
| NO _x | 6.666520 | NH ₃ | 0.000000 |
| СО | 0.390571 | CO ₂ e | 659.9 |
| PM 10 | 0.032250 | | |

13.2 Aircraft & Engines

13.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-------------|
| Aircraft Designation: | T-7A |
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

13.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

13.3 Flight Operations

13.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|----|
| Number of Aircraft: | 9 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 87 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 27.48 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

13.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEMPOL: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

13.4 Auxiliary Power Unit (APU)

13.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

13.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|-------|-------|-------|-------|-------|--------|--------|-------------------|
| | Flow | | | | | | | |
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

13.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

14. Aircraft

14.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Benton, MS; Calhoun, MS; Carroll, MS; Chickasaw, MS; Clay, MS; Grenada, MS; Lafayette, MS; Marshall, MS; Montgomery, MS; Panola, MS; Pontotoc, MS; Quitman, MS; Tallahatchie, MS; Tate, MS; Union, MS; Webster, MS
 Parallatary: Ama(a): NOT IN A RECULATORY AREA

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2030 T-7A MTR Low-Altitude Operations (IR-091)

- Activity Description:

2030: Starting in 2030, add 108 T-7A low-altitude operations in IR-091.

- Activity Start Date

Start Month:1Start Year:2030

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.568120 |
| SO _x | 0.270834 |
| NO _x | 8.275680 |
| СО | 0.484847 |
| PM 10 | 0.040034 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.035030 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 819.2 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]: Pollutant Emissions Per Year (TONs) Pollutant Emissions Per Year (TONs)

| VOC | 0.568120 |
|-----------------|----------|
| SO _x | 0.270834 |
| NO _x | 8.275680 |
| СО | 0.484847 |
| PM 10 | 0.040034 |

| PM 2.5 | 0.035030 |
|-------------------|----------|
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 819.2 |
| | |

14.2 Aircraft & Engines

14.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

 Aircraft Designation: T-7A
 Engine Model: F404-GE-102
 Primary Function: Trainer
 Aircraft has After burn: Yes
 Number of Engines: 1
- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

14.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

14.3 Flight Operations

AfterBurn (mins):

14.3.1 Flight Operations Assumptions

| - Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: | | | | |
|---|--------------|-------|--|--|
| - Default Settings Used: | No | | | |
| - Flight Operations TIMs (T | ime In Mode) | | | |
| Taxi/Idle Out [Idle] (mi | ns): | 0 | | |
| Takeoff [Military] (mins): | | 27.48 | | |
| Takeoff [After Burn] (mins): | | 0 | | |
| Climb Out [Intermediat | 0 | | | |
| Approach [Approach] (| mins): | 0 | | |
| Taxi/Idle In [Idle] (mins): 0 | | | | |
| - Trim Test | | | | |
| Idle (mins): | 12 | | | |
| Approach (mins): | 27 | | | |
| Intermediate (mins): | 9 | | | |
| Military (mins): 9 | | | | |

3

14.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

14.4 Auxiliary Power Unit (APU)

14.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

14.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

14.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

15. Aircraft

15.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Blount, AL; Cullman, AL; Franklin, AL; Jefferson, AL; Lawrence, AL; Marion, AL; Pickens, AL; Tuscaloosa, AL; Walker, AL; Winston, AL; Itawamba, MS; Monroe, MS

Regulatory Area(s): Birmingham, AL; NOT IN A REGULATORY AREA; Birmingham, AL

- Activity Title: 2030 T-7A MTR Low-Altitude Operations (VR-1014)

- Activity Description:

2030: Starting in 2030, add 186 T-7A low-altitude operations in VR-1014.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) | | | |
|-----------------|----------------------------------|--|--|--|
| VOC | 1.356109 | | | |
| SO _x | 0.644461 | | | |
| NO _x | 19.743072 | | | |
| CO | 1.147806 | | | |
| PM 10 | 0.095568 | | | |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.083622 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 1948.9 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | 1.356109 | PM 2.5 | 0.083622 |
| SO _x | 0.644461 | Pb | 0.000000 |
| NO _x | 19.743072 | NH ₃ | 0.000000 |
| CO | 1.147806 | CO ₂ e | 1948.9 |
| PM 10 | 0.095568 | | |

15.2 Aircraft & Engines

15.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-------------|
| Aircraft Designation: | T-7A |
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

15.2.2 Aircraft & Engines Emission Factor(s)

Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

15.3 Flight Operations

15.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|-----|
| Number of Aircraft: | 9 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 186 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| 0 |
|-------|
| 38.09 |
| 0 |
| 0 |
| 0 |
| 0 |
| |

| Trim Test | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

15.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE IN} + AEM_{IDLE OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

15.4 Auxiliary Power Unit (APU)

15.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each | Exempt Source? | Designation | Manufacturer |
|-------------------------------|-----------------------------|-------------------|-------------|---------------------|
| 1 | LTO 0.25 | No | 4501687C | Hamilton Sundstrand |

15.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

| Designation | Fuel Flow | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

15.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

16. Aircraft

16.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Autauga, AL; Bibb, AL; Chilton, AL; Choctaw, AL; Clarke, AL; Clay, AL; Coosa, AL; Dallas, AL; Elmore, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Pickens, AL; Shelby, AL; St. Clair, AL; Talladega, AL; Tallapoosa, AL; Tuscaloosa, AL; Wilcox, AL; Kemper, MS; Lowndes, MS; Noxubee, MS

Regulatory Area(s): Birmingham, AL; NOT IN A REGULATORY AREA

- Activity Title: 2030 T-7A MTR Low-Altitude Operations (VR-1031)

- Activity Description:

2030: Starting in 2030, add 78 T-7A low-altitude operations in VR-1031.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.480021 |
| SO _x | 0.228462 |
| NO _x | 6.990315 |
| СО | 0.407902 |
| PM 10 | 0.033827 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.029599 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 691.0 |
| | |

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.480021 |
| SO _x | 0.228462 |
| NO _x | 6.990315 |
| CO | 0.407902 |
| PM 10 | 0.033827 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.029599 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 691.0 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

16.2 Aircraft & Engines

16.2.1 Aircraft & Engines Assumptions

| T-7A |
|-------------|
| F404-GE-102 |
| Trainer |
| Yes |
| 1 |
| |
| |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

16.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

16.3 Flight Operations

16.3.1 Flight Operations Assumptions

| - Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: | | |
|---|-------|--|
| - Default Settings Used: No | | |
| - Flight Operations TIMs (Time In Mode) | | |
| Taxi/Idle Out [Idle] (mins): | 0 | |
| Takeoff [Military] (mins): | 32.15 | |
| Takeoff [After Burn] (mins): | 0 | |
| Climb Out [Intermediate] (mins): | 0 | |
| Approach [Approach] (mins): | 0 | |
| Taxi/Idle In [Idle] (mins): | 0 | |
| - Trim Test | | |
| Idle (mine). 12 | | |

| I filli I est | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |

| Military (mins): | 9 |
|-------------------|---|
| AfterBurn (mins): | 3 |

16.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)TD: Test Duration (min)60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

16.4 Auxiliary Power Unit (APU)

16.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

16.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

16.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

17. Aircraft

17.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Blount, AL; Colbert, AL; Cullman, AL; Franklin, AL; Lauderdale, AL; Marion, AL; Walker, AL; Winston, AL; Alcorn, MS; Benton, MS; Itawamba, MS; Lee, MS; Monroe, MS; Prentiss, MS; Tippah, MS; Tishomingo, MS; Union, MS; Chester, TN; Decatur, TN; Hardeman, TN; Hardin, TN; Lawrence, TN; McNairy, TN; Wayne, TN

Regulatory Area(s): NOT IN A REGULATORY AREA; Birmingham, AL

- Activity Title: 2030 T-38C MTR Low-Altitude Operations (IR-066)

- Activity Description:

2030: Starting in 2030, remove 273 T-38C low-altitude operations in IR-066.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) | | | | | |
|---------------------------|---------------------------|--|--|--|--|--|
| VOC | -0.028333 | | | | | |
| SO _x -0.040422 | | | | | | |
| NO _x | -0.072533 | | | | | |
| СО | -1.170732 | | | | | |
| PM 10 | -0.042689 | | | | | |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.001511 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -122.2 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | -0.028333 | PM 2.5 | -0.001511 |
| SO _x | -0.040422 | Pb | 0.000000 |
| NO _x | -0.072533 | NH ₃ | 0.000000 |
| СО | -1.170732 | CO ₂ e | -122.2 |
| PM 10 | -0.042689 | | |

17.2 Aircraft & Engines

17.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

| Aircraft Designation: | T-38C |
|--------------------------|-----------|
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

17.2.2 Aircraft & Engines Emission Factor(s)

| The chart & Englise Emission's Lactor's (16/100010 Lact) | | | | | | | | |
|--|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

17.3 Flight Operations

17.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|-----|
| Number of Aircraft: | 17 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 273 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 3.74 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

17.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

17.4 Auxiliary Power Unit (APU)

17.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | - | |
| | LTO | | | |

17.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation Fuel Flow | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CO ₂ e |
|--------------------------|-----|-----|-----|----|-------|--------|-------------------|
|--------------------------|-----|-----|-----|----|-------|--------|-------------------|

17.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

18. Aircraft

18.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove
- Activity Location

County: Lee, AR; Phillips, AR; Bolivar, MS; Calhoun, MS; Carroll, MS; Coahoma, MS; Grenada, MS; Leflore, MS; Montgomery, MS; Panola, MS; Quitman, MS; Sunflower, MS; Tallahatchie, MS; Tunica, MS; Webster, MS; Yalobusha, MS

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2030 T-38C MTR Low-Altitude Operations (IR-068)

- Activity Description:

2030: Starting in 2030, remove 87 T-38C low-altitude operations in IR-068.

- Activity Start Date

Start Month:1Start Year:2030

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -0.066344 |
| SO _x | -0.094650 |
| NO _x | -0.169840 |
| СО | -2.741317 |
| PM 10 | -0.099958 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -0.003538 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -286.1 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.066344 |
| SO _x | -0.094650 |
| NO _x | -0.169840 |
| CO | -2.741317 |
| PM 10 | -0.099958 |

Pollutant Emissions Per Year (TONs) PM 2.5 -0.003538 Pb 0.000000 NH₃ 0.000000 CO₂e -286.1

18.2 Aircraft & Engines

18.2.1 Aircraft & Engines Assumptions

| Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

18.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|--------------|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

18.3 Flight Operations

18.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|----|
| Number of Aircraft: | 17 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 87 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

| Taxi/Idle Out [Idle] (mins): | 0 |
|----------------------------------|-------|
| Takeoff [Military] (mins): | 27.48 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |
| | |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

18.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

18.4 Auxiliary Power Unit (APU)

18.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

18.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----|----|-------|--------|-------------------|
| | Flow | | | | | | | |

18.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year APU_{POL} = APU * OH * LTO * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs) APU: Number of Auxiliary Power Units OH: Operation Hours for Each LTO (hour) LTO: Number of LTOs

EF_{POL}: Emission Factor for Pollutant (lb/hr) 2000: Conversion Factor pounds to tons

19. Aircraft

19.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove
- Activity Location

County: Benton, MS; Calhoun, MS; Carroll, MS; Chickasaw, MS; Clay, MS; Grenada, MS; Lafayette, MS; Marshall, MS; Montgomery, MS; Panola, MS; Pontotoc, MS; Quitman, MS; Tallahatchie, MS; Tate, MS; Union, MS; Webster, MS

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2030 T-38C MTR Low-Altitude Operations (IR-091)

- Activity Description:

2030: Starting in 2030, remove 108 T-38C low-altitude operations in IR-091.

- Activity Start Date

Start Month:1Start Year:2030

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.082358 |
| SO _x | -0.117497 |
| NO _x | -0.210835 |
| СО | -3.403014 |
| PM 10 | -0.124085 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.004392 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -355.1 |
| | |

| - Activity Emissions | [Flight Operation | s (includes Trim | Test & APU) part]: |
|----------------------|-------------------|------------------|--------------------|
|----------------------|-------------------|------------------|--------------------|

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | -0.082358 | PM 2.5 | -0.004392 |
| SO _x | -0.117497 | Pb | 0.000000 |
| NO _x | -0.210835 | NH ₃ | 0.000000 |
| СО | -3.403014 | CO ₂ e | -355.1 |
| PM 10 | -0.124085 | | |

19.2 Aircraft & Engines

19.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |

Aircraft has After burn:YesNumber of Engines:2

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

19.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | | VOC | 0.0 | | 00 | DN / 10 | DICAS | 60 |
|--------------|-----------|-------|------|-----------------|--------|---------|--------|-------------------|
| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

19.3 Flight Operations

19.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|-----|
| Number of Aircraft: | 17 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 108 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 27.48 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

| - Trim Test | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

19.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)NE: Number of EnginesLTO: Number of Landing and Take-off Cycles (for all aircraft)2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs)

AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

19.4 Auxiliary Power Unit (APU)

19.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

19.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel VOC Flow | SO _x | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------------------|-----------------|-----------------|----|-------|--------|-------------------|
|-------------|------------------|-----------------|-----------------|----|-------|--------|-------------------|

19.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

20. Aircraft

20.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Blount, AL; Cullman, AL; Franklin, AL; Jefferson, AL; Lawrence, AL; Marion, AL; Pickens, AL; Tuscaloosa, AL; Walker, AL; Winston, AL; Itawamba, MS; Monroe, MS

Regulatory Area(s): Birmingham, AL; NOT IN A REGULATORY AREA; Birmingham, AL

- Activity Title: 2030 T-38C MTR Low-Altitude Operations (VR-1014)

- Activity Description:

2030: Starting in 2030, remove 186 T-38C low-altitude operations in VR-1014.

- Activity Start Date Start Month: 1 Start Year: 2030

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant Emissions Per Year (TON | |
|-----------------------------------|-----------|
| VOC | -0.196602 |
| SO _x | -0.280485 |
| NO _x | -0.503300 |
| CO | -8.123575 |
| PM 10 | -0.296213 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.010485 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -847.7 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Polluta |
|-----------------|----------------------------------|-------------------|
| VOC | -0.196602 | PM 2.5 |
| SO _x | -0.280485 | Pb |
| NO _x | -0.503300 | NH ₃ |
| CO | -8.123575 | CO ₂ e |
| PM 10 | -0.296213 | |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -0.010485 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -847.7 |
| | |

20.2 Aircraft & Engines

20.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

| T-38C |
|-----------|
| J85-GE-5R |
| Trainer |
| Yes |
| 2 |
| |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

20.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | a | | | | | | | |
|--------------|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

20.3 Flight Operations

20.3.1 Flight Operations Assumptions

⁻ Flight Operations

Number of Aircraft:

| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 186 |
|---|-----|
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 38.09 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |
| raziviute in fruitej (minis). | 0 |

- Trim Test Idle (mins): 12 Approach (mins): 27 Intermediate (mins): 9 Military (mins): 9 AfterBurn (mins): 3

20.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE IN} + AEM_{IDLE OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines TGO: Number of Touch-and-Go Cycles (for all aircraft) 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

20.4 Auxiliary Power Unit (APU)

20.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| | (| | | |
|---------------|----------------|---------|-------------|--------------|
| Number of APU | Operation | Exempt | Designation | Manufacturer |
| per Aircraft | Hours for Each | Source? | | |
| _ | LTO | | | |

20.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designat | tion | Fuel Flow | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|----------|------|--------------|-----|-----|-----|----|-------|--------|-------------------|
| | | FIOW | | | | | | | |

20.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

21. Aircraft

21.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location
 - County: Autauga, AL; Bibb, AL; Chilton, AL; Choctaw, AL; Clarke, AL; Clay, AL; Coosa, AL; Dallas, AL; Elmore, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Pickens, AL; Shelby, AL; St. Clair, AL; Talladega, AL; Tallapoosa, AL; Tuscaloosa, AL; Wilcox, AL; Kemper, MS; Lowndes, MS; Noxubee, MS

Regulatory Area(s): Birmingham, AL; NOT IN A REGULATORY AREA

- Activity Title: 2030 T-38C MTR Low-Altitude Operations (VR-1031)

- Activity Description:

2030: Starting in 2030, remove 78 T-38C low-altitude operations in VR-1031.

- Activity Start Date

Start Month:1Start Year:2030

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.069589 |
| SO _x | -0.099280 |
| NO _x | -0.178147 |
| СО | -2.875404 |
| PM 10 | -0.104847 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.003711 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -300.1 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | |
|-----------------|----------------------------------|-------------------|--|
| VOC | -0.069589 | PM 2.5 | |
| SO _x | -0.099280 | Pb | |
| NO _x | -0.178147 | NH ₃ | |
| CO | -2.875404 | CO ₂ e | |
| PM 10 | -0.104847 | | |

| Pollutant | Emissions Per Year (TONs) | | | |
|-------------------|----------------------------------|--|--|--|
| PM 2.5 | -0.003711 | | | |
| Pb | 0.000000 | | | |
| NH ₃ | 0.000000 | | | |
| CO ₂ e | -300.1 | | | |
| | | | | |

21.2 Aircraft & Engines

21.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
 Aircraft Designation: T-38C
 Engine Model: J85-GE-5R
 Primary Function: Trainer
 Aircraft has After burn: Yes
 Number of Engines: 2
- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

21.2.2 Aircraft & Engines Emission Factor(s)

| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|--------------|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

21.3 Flight Operations

21.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|----|
| Number of Aircraft: | 17 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 78 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 32.15 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

21.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines

NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

21.4 Auxiliary Power Unit (APU)

21.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer | | |
|---------------|-----------------------|---------|-------------|--------------|--|--|
| per Aircraft | Hours for Each | Source? | | | | |
| | LTO | | | | | |

21.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation Fue Flow | | SOx | NOx | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------------------|--|-----|-----|----|-------|--------|-------------------|
|-------------------------|--|-----|-----|----|-------|--------|-------------------|

21.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base: COLUMBUS AFB

State: Alabama, Arkansas, Mississippi, Tennessee

County(s): Autauga, AL; Bibb, AL; Blount, AL; Chilton, AL; Choctaw, AL; Clarke, AL; Clay, AL; Colbert, AL; Coosa, AL; Cullman, AL; Dallas, AL; Elmore, AL; Franklin, AL; Greene, AL; Hale, AL; Jefferson, AL; Lauderdale, AL; Lawrence, AL; Marengo, AL; Marion, AL; Perry, AL; Pickens, AL; Shelby, AL; St. Clair, AL; Sumter, AL; Talladega, AL; Tallapoosa, AL; Tuscaloosa, AL; Walker, AL; Wilcox, AL; Winston, AL; Lee, AR; Phillips, AR; Alcorn, MS; Benton, MS; Bolivar, MS; Calhoun, MS; Carroll, MS; Chickasaw, MS; Clay, MS; Coahoma, MS; Grenada, MS; Itawamba, MS; Kemper, MS; Lafayette, MS; Lee, MS; Leflore, MS; Lowndes, MS; Marshall, MS; Monroe, MS; Montgomery, MS; Noxubee, MS; Panola, MS; Pontotoc, MS; Prentiss, MS; Quitman, MS; Sunflower, MS; Tallahatchie, MS; Tate, MS; Tippah, MS; Tishomingo, MS; Tunica, MS; Union, MS; Webster, MS; Yalobusha, MS; Chester, TN; Decatur, TN; Hardeman, TN; Hardin, TN; Lawrence, TN, McNairy, TN, Wayne, TN **Regulatory Area(s):** NOT IN A REGULATORY AREA; Birmingham, AL

b. Action Title: T-7A Recapitalization at Columbus AFB - Alternative 3

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2028

e. Action Description:

The Proposed Action is recapitalization of the T-38C Talon flight training program at Columbus AFB with T-7A Red Hawk aircraft. Recapitalization would entail introduction of T-7A aircraft and flight operations at Columbus AFB and associated special use airspace to replace all T-38C aircraft assigned to the installation; introduction of nighttime (between 10 a.m. and 7 a.m.) T-7A flight operations; changes to the number of personnel and dependents in the Columbus AFB region; and construction and upgrade of operations, support, and maintenance facilities.

For Alternative 1, Columbus AFB would receive 61 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in 61 T-7A aircraft being delivered to Columbus AFB; however, T-7A operations would be performed at an intensity approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Columbus AFB would receive 77 T-7A aircraft and perform T-7A operations at an intensity identical to Alternative 2. Alternative 3 also incorporates a MILCON project alternative to construct 12 additional shelters for the T-7A aircraft. Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in the EIS provides analysis to evaluate future capacity needs. The No Action Alternative would not implement T-7A recapitalization at Columbus AFB.

f. Point of Contact:

| Name: | Carolyn Hein |
|---------------|--------------|
| Title: | Contractor |
| Organization: | HDR |
| Email: | |
| Phone Number: | |

2. Analysis: Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the "worst-case" and "steady state" (net gain/loss upon action fully implemented) emissions. General Conformity under the Clean Air Act, Section 1.76 has been evaluated for the action described above according to the requirements of 40 CFR 93, Subpart B.

Based on the analysis, the requirements of this rule are:

_____ applicable __X__ not applicable

Conformity Analysis Summary:

| 2028 | | | | | | | |
|--------------------------|------------------|--------------------|------------------------|--|--|--|--|
| Pollutant | Action Emissions | GENERAL (| CONFORMITY | | | | |
| | (ton/yr) | Threshold (ton/yr) | Exceedance (Yes or No) | | | | |
| NOT IN A REGULATORY AREA | | | | | | | |
| VOC | 2.793 | | | | | | |
| NOx | 43.887 | | | | | | |
| СО | -8.292 | | | | | | |
| SOx | 1.085 | | | | | | |
| PM 10 | -0.183 | | | | | | |
| PM 2.5 | 0.174 | | | | | | |
| Pb | 0.000 | | | | | | |
| NH3 | 0.000 | | | | | | |
| CO2e | 3282.9 | | | | | | |
| Birmingham, AL | | | | | | | |
| VOC | 1.414 | 100 | No | | | | |
| NOx | 22.279 | 100 | No | | | | |
| СО | -4.340 | | | | | | |
| SOx | 0.548 | 100 | No | | | | |
| PM 10 | -0.098 | | | | | | |
| PM 2.5 | 0.088 | 100 | No | | | | |
| Pb | 0.000 | | | | | | |
| NH3 | 0.000 | 100 | No | | | | |
| CO2e | 1659.1 | | | | | | |
| Birmingham, AL | | | | | | | |
| VOC | 1.678 | 100 | No | | | | |
| NOx | 26.329 | 100 | No | | | | |
| СО | -4.972 | | | | | | |
| SOx | 0.648 | 100 | No | | | | |
| PM 10 | -0.109 | | | | | | |
| PM 2.5 | 0.105 | 100 | No | | | | |
| Pb | 0.000 | | | | | | |
| NH3 | 0.000 | 100 | No | | | | |
| CO2e | 1958.7 | | | | | | |

2029

| Pollutant | Action Emissions | GENERAL CONFORMITY | |
|---------------------|------------------|--------------------|------------------------|
| | (ton/yr) | Threshold (ton/yr) | Exceedance (Yes or No) |
| NOT IN A REGULATORY | AREA | | |
| VOC | 2.793 | | |
| NOx | 43.887 | | |
| СО | -8.292 | | |
| SOx | 1.085 | | |
| PM 10 | -0.183 | | |

| PM 2.5 | 0.174 | | |
|----------------|-----------|-----|----|
| Pb | 0.000 | | |
| NH3 | 0.000 | | |
| CO2e | 3282.9 | | |
| | 3282.9 | | |
| Birmingham, AL | · · · · · | | |
| VOC | 1.414 | 100 | No |
| NOx | 22.279 | 100 | No |
| CO | -4.340 | | |
| SOx | 0.548 | 100 | No |
| PM 10 | -0.098 | | |
| PM 2.5 | 0.088 | 100 | No |
| Pb | 0.000 | | |
| NH3 | 0.000 | 100 | No |
| CO2e | 1659.1 | | |
| Birmingham, AL | | | |
| VOC | 1.678 | 100 | No |
| NOx | 26.329 | 100 | No |
| СО | -4.972 | | |
| SOx | 0.648 | 100 | No |
| PM 10 | -0.109 | | |
| PM 2.5 | 0.105 | 100 | No |
| Pb | 0.000 | | |
| NH3 | 0.000 | 100 | No |
| CO2e | 1958.7 | | |

2030

| 2030 | | | |
|----------------------------|----------|--------------------|-------------------------------|
| Pollutant Action Emissions | | GENERAL O | CONFORMITY |
| | (ton/yr) | Threshold (ton/yr) | Exceedance (Yes or No) |
| NOT IN A REGULATORY | AREA | | |
| VOC | 5.408 | | |
| NOx | 87.315 | | |
| СО | -23.977 | | |
| SOx | 1.914 | | |
| PM 10 | -0.635 | | |
| PM 2.5 | 0.339 | | |
| Pb | 0.000 | | |
| NH3 | 0.000 | | |
| CO2e | 5794.3 | | |
| Birmingham, AL | | | |
| VOC | 2.741 | 100 | No |
| NOx | 44.333 | 100 | No |
| СО | -12.289 | | |
| SOx | 0.972 | 100 | No |
| PM 10 | -0.328 | | |
| PM 2.5 | 0.172 | 100 | No |
| Pb | 0.000 | | |
| NH3 | 0.000 | 100 | No |
| CO2e | 2941.7 | | |
| Birmingham, AL | | | |
| VOC | 3.248 | 100 | No |
| NOx | 52.381 | 100 | No |
| СО | -14.415 | | |
| SOx | 1.141 | 100 | No |
| | | | |

| PM 10 | -0.380 | | |
|--------|--------|-----|----|
| PM 2.5 | 0.204 | 100 | No |
| Pb | 0.000 | | |
| NH3 | 0.000 | 100 | No |
| CO2e | 3450.7 | | |

2031 - (Steady State)

| Pollutant Action Emissions GENERAL CONFORMITY | | | CONFORMITY | | |
|---|----------|--------------------|------------------------|--|--|
| Tonutant | (ton/yr) | Threshold (ton/yr) | Exceedance (Yes or No) | | |
| NOT IN A REGULATORY AREA | | | | | |
| VOC | 5.408 | | | | |
| NOx | 87.315 | | | | |
| СО | -23.977 | | | | |
| SOx | 1.914 | | | | |
| PM 10 | -0.635 | | | | |
| PM 2.5 | 0.339 | | | | |
| Pb | 0.000 | | | | |
| NH3 | 0.000 | | | | |
| CO2e | 5794.3 | | | | |
| Birmingham, AL | | | | | |
| VOC | 2.741 | 100 | No | | |
| NOx | 44.333 | 100 | No | | |
| СО | -12.289 | | | | |
| SOx | 0.972 | 100 | No | | |
| PM 10 | -0.328 | | | | |
| PM 2.5 | 0.172 | 100 | No | | |
| Pb | 0.000 | | | | |
| NH3 | 0.000 | 100 | No | | |
| CO2e | 2941.7 | | | | |
| Birmingham, AL | | | | | |
| VOC | 3.248 | 100 | No | | |
| NOx | 52.381 | 100 | No | | |
| СО | -14.415 | | | | |
| SOx | 1.141 | 100 | No | | |
| PM 10 | -0.380 | | | | |
| PM 2.5 | 0.204 | 100 | No | | |
| Pb | 0.000 | | | | |
| NH3 | 0.000 | 100 | No | | |
| CO2e | 3450.7 | | | | |

None of estimated emissions associated with this action are above the conformity threshold values established at 40 CFR 93.153 (b); Therefore, the requirements of the General Conformity Rule are not applicable.

Cumpont

Carolyn Hein, Contractor

2/17/2023 DATE

1. General Information

- Action Location

Base: COLUMBUS AFB

State: Alabama, Arkansas, Mississippi, Tennessee

County(s): Autauga, AL; Bibb, AL; Blount, AL; Chilton, AL; Choctaw, AL; Clarke, AL; Clay, AL; Colbert, AL; Coosa, AL; Cullman, AL; Dallas, AL; Elmore, AL; Franklin, AL; Greene, AL; Hale, AL; Jefferson, AL; Lauderdale, AL; Lawrence, AL; Marengo, AL; Marion, AL; Perry, AL; Pickens, AL; Shelby, AL; St. Clair, AL; Sumter, AL; Talladega, AL; Tallapoosa, AL; Tuscaloosa, AL; Walker, AL; Wilcox, AL; Winston, AL; Lee, AR; Phillips, AR; Alcorn, MS; Benton, MS; Bolivar, MS; Calhoun, MS; Carroll, MS; Chickasaw, MS; Clay, MS; Coahoma, MS; Grenada, MS; Itawamba, MS; Kemper, MS; Lafayette, MS; Lee, MS; Leflore, MS; Lowndes, MS; Marshall, MS; Monroe, MS; Montgomery, MS; Noxubee, MS; Panola, MS; Pontotoc, MS; Prentiss, MS; Quitman, MS; Sunflower, MS; Tallahatchie, MS; Tate, MS; Tippah, MS; Tishomingo, MS; Tunica, MS; Union, MS; Webster, MS; Yalobusha, MS; Chester, TN; Decatur, TN; Hardeman, TN; Hardin, TN; Lawrence, TN, McNairy, TN, Wayne, TN
Regulatory Area(s): NOT IN A REGULATORY AREA; Birmingham, AL

- Action Title: T-7A Recapitalization at Columbus AFB - Alternative 3

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2028

- Action Purpose and Need:

The purpose of the Proposed Action is to continue the T-7A recapitalization program by recapitalizing Columbus AFB to prepare pilots to operate the more technologically advanced T-7A aircraft.

The Proposed Action is needed because the current training practices with the older T-38C aircraft fail to prepare pilots for the technological advancements of fourth and fifth generation aircraft. By 2031, more than 60 percent of the Combat Air Force will be comprised of fifth generation aircraft, requiring a modern and capable training platform with capabilities beyond those currently available in the T-38C. Additionally, training systems provided with the newer T-7A aircraft allow for enhanced and improved flight and simulator training. The T-7A recapitalization program will allow DAF to provide more efficient and effective instructor and pilot training for operating fourth and fifth generation aircraft. T-7A recapitalization at Columbus AFB would allow DAF to continue the geographically phased T-7A recapitalization sequence ensuring DAF pilot training requirements are met.

- Action Description:

The Proposed Action is recapitalization of the T-38C Talon flight training program at Columbus AFB with T-7A Red Hawk aircraft. Recapitalization would entail introduction of T-7A aircraft and flight operations at Columbus AFB and associated special use airspace to replace all T-38C aircraft assigned to the installation; introduction of nighttime (between 10 a.m. and 7 a.m.) T-7A flight operations; changes to the number of personnel and dependents in the Columbus AFB region; and construction and upgrade of operations, support, and maintenance facilities.

For Alternative 1, Columbus AFB would receive 61 T-7A aircraft and perform sufficient operations for sustaining pilot training while simultaneously phasing out the T-38C aircraft. Alternative 2 would also result in 61 T-7A aircraft being delivered to Columbus AFB; however, T-7A operations would be performed at an intensity approximately 25 percent greater than Alternative 1 to cover a scenario in which DAF requires a surge or increase in pilot training operations above the current plan. For Alternative 3, Columbus AFB would receive 77 T-7A aircraft and perform T-7A operations at an intensity identical to Alternative 2. Alternative 3 also incorporates a MILCON project alternative to construct 12 additional shelters for the T-7A aircraft. Alternative 3 is intended to provide DAF with operational flexibility, and inclusion of this alternative in the EIS provides analysis to evaluate future capacity needs. The No Action Alternative would not implement T-7A recapitalization at Columbus AFB.

- Point of Contact

| Name: | Carolyn Hein |
|----------------------|--------------|
| Title: | Contractor |
| Organization: | HDR |
| Email: | |
| Phone Number: | |

- Activity List:

| | Activity Type | Activity Title |
|-----|---------------|---|
| 2. | Aircraft | 2028 and 2029 T-7A MTR Low-Altitude Operations (IR-066) |
| 3. | Aircraft | 2028 and 2029 T-7A MTR Low-Altitude Operations (IR-068) |
| 4. | Aircraft | 2028 and 2029 T-7A MTR Low-Altitude Operations (IR-091) |
| 5. | Aircraft | 2028 and 2029 T-7A MTR Low-Altitude Operations (VR-1014) |
| 6. | Aircraft | 2028 and 2029 T-7A MTR Low-Altitude Operations (VR-1031) |
| 7. | Aircraft | 2028 and 2029 T-38C MTR Low-Altitude Operations (IR-066) |
| 8. | Aircraft | 2028 and 2029 T-38C MTR Low-Altitude Operations (IR-068) |
| 9. | Aircraft | 2028 and 2029 T-38C MTR Low-Altitude Operations (IR-091) |
| 10. | Aircraft | 2028 and 2029 T-38C MTR Low-Altitude Operations (VR-1014) |
| 11. | Aircraft | 2028 and 2029 T-38C MTR Low-Altitude Operations (VR-1031) |
| 12. | Aircraft | 2030 T-7A MTR Low-Altitude Operations (IR-066) |
| 13. | Aircraft | 2030 T-7A MTR Low-Altitude Operations (IR-068) |
| 14. | Aircraft | 2030 T-7A MTR Low-Altitude Operations (IR-091) |
| 15. | Aircraft | 2030 T-7A MTR Low-Altitude Operations (VR-1014) |
| 16. | Aircraft | 2030 T-7A MTR Low-Altitude Operations (VR-1031) |
| 17. | Aircraft | 2030 T-38C MTR Low-Altitude Operations (IR-066) |
| 18. | Aircraft | 2030 T-38C MTR Low-Altitude Operations (IR-068) |
| 19. | Aircraft | 2030 T-38C MTR Low-Altitude Operations (IR-091) |
| 20. | Aircraft | 2030 T-38C MTR Low-Altitude Operations (VR-1014) |
| 21. | Aircraft | 2030 T-38C MTR Low-Altitude Operations (VR-1031) |

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Aircraft

2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
 - County: Blount, AL; Colbert, AL; Cullman, AL; Franklin, AL; Lauderdale, AL; Marion, AL; Walker, AL; Winston, AL; Alcorn, MS; Benton, MS; Itawamba, MS; Lee, MS; Monroe, MS; Prentiss, MS; Tippah, MS; Tishomingo, MS; Union, MS; Chester, TN; Decatur, TN; Hardeman, TN; Hardin, TN; Lawrence, TN; McNairy, TN; Wayne, TN

Regulatory Area(s): NOT IN A REGULATORY AREA; Birmingham, AL

- Activity Title: 2028 and 2029 T-7A MTR Low-Altitude Operations (IR-066)

- Activity Description:

2028 and 2029: Starting in 2028, add 273 T-7A low-altitude operations in IR-066.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.195744 |
| SO _x | 0.099955 |
| NO _x | 2.887749 |
| СО | 0.198345 |
| PM 10 | 0.013773 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.012051 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 303.7 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | |
|-----------------|----------------------------------|--|
| VOC | 0.195744 | |
| SO _x | 0.099955 | |
| NO _x | 2.887749 | |
| СО | 0.198345 | |
| PM 10 | 0.013773 | |

| z & APU) part[: | | |
|-------------------|----------------------------------|--|
| Pollutant | Emissions Per Year (TONs) | |
| PM 2.5 | 0.012051 | |
| Pb | 0.000000 | |
| NH ₃ | 0.000000 | |
| CO ₂ e | 303.7 | |
| | | |

2.2 Aircraft & Engines

2.2.1 Aircraft & Engines Assumptions

| - Aircraft | & | Engine |
|------------|---|--------|
|------------|---|--------|

| Aircraft Designation: | T-7A |
|--------------------------|-------------|
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

2.2.2 Aircraft & Engines Emission Factor(s)

Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

2.3 Flight Operations

2.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|-----|
| Number of Aircraft: | 68 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 273 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |

Number of Annual Trim Test(s) per Aircraft:

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 3.74 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |
| · · · · | |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

2.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)

0

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

2.4 Auxiliary Power Unit (APU)

2.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

2.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

2.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

3. Aircraft

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
 - County: Lee, AR; Phillips, AR; Bolivar, MS; Calhoun, MS; Carroll, MS; Coahoma, MS; Grenada, MS; Leflore, MS; Montgomery, MS; Panola, MS; Quitman, MS; Sunflower, MS; Tallahatchie, MS; Tunica, MS; Webster, MS; Yalobusha, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2028 and 2029 T-7A MTR Low-Altitude Operations (IR-068)

- Activity Description:

2028 and 2029: Starting in 2028, add 87 T-7A low-altitude operations in IR-068.

- Activity Start Date Start Month: 1

Start Year: 2028

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | 0.457652 |
| SO _x | 0.218172 |
| NO _x | 6.666520 |
| CO | 0.390571 |
| PM 10 | 0.032250 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.028219 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 659.9 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | 0.457652 | PM 2.5 | 0.028219 |
| SO _x | 0.218172 | Pb | 0.000000 |
| NO _x | 6.666520 | NH ₃ | 0.000000 |
| СО | 0.390571 | CO ₂ e | 659.9 |
| PM 10 | 0.032250 | | |

3.2 Aircraft & Engines

3.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine Aircraft Designation: Engine Model: Primary Function: Aircraft has After burn: Number of Engines: | T-7A F404-GE-102 Trainer Yes 1 | | |
|--|--|--|-------------------------|
| - Aircraft & Engine Surrogat Is Aircraft & Engine a Su Original Aircraft Name: Original Engine Name: | | | |
| 3.2.2 Aircraft & Engines H | Emission Factor(s) | | |
| - Aircraft & Engine Emission Proprietary Information. C engine's Emission Factors. | Contact Air Quality Sul | uel) oject Matter Expert for More Info | ormation regarding this |
| 3.3 Flight Operations | | | |
| 3.3.1 Flight Operations As | sumptions | | |
| Number of Annual TGOs Number of Annual Trim | s (Touch-and-Go) cyc | off) cycles for all Aircraft: les for all Aircraft: | 68 87 0 0 |
| - Flight Operations TIMs (Tir Taxi/Idle Out [Idle] (min Takeoff [Military] (mins) Takeoff [After Burn] (mi Climb Out [Intermediate Approach [Approach] (m Taxi/Idle In [Idle] (mins) | s): :: ns):] (mins): iins): | 0 27.48 0 0 0 0 | |
| - Trim Test Idle (mins): Approach (mins): Intermediate (mins): Military (mins): AfterBurn (mins): | 12 27 9 9 3 | | |
| 3.3.2 Flight Operations Fo | ormula(s) | | |
| - Aircraft Emissions per Mod | e for LTOs per Year | 2/2000 | |

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)

60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

3.4 Auxiliary Power Unit (APU)

3.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

3.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

3.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

4. Aircraft

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Benton, MS; Calhoun, MS; Carroll, MS; Chickasaw, MS; Clay, MS; Grenada, MS; Lafayette, MS; Marshall, MS; Montgomery, MS; Panola, MS; Pontotoc, MS; Quitman, MS; Tallahatchie, MS; Tate, MS; Union, MS; Webster, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2028 and 2029 T-7A MTR Low-Altitude Operations (IR-091)

- Activity Description:

2028 and 2029: Starting in 2028, add 108 T-7A low-altitude operationss in IR-091.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.568120 |
| SO _x | 0.270834 |
| NO _x | 8.275680 |
| СО | 0.484847 |
| PM 10 | 0.040034 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.035030 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 819.2 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.568120 |
| SO _x | 0.270834 |
| NO _x | 8.275680 |
| СО | 0.484847 |
| PM 10 | 0.040034 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.035030 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 819.2 |
| | |

4.2 Aircraft & Engines

4.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-------------|
| Aircraft Designation: | T-7A |
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

.....

4.2.2 Aircraft & Engines Emission Factor(s)

Aircraft & Engine Emissions Factors (lb/1000lb fuel)
 Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

4.3 Flight Operations

4.3.1 Flight Operations Assumptions

| - Flight Operations | | | | | |
|---|---|-------|----|--|--|
| Number of Aircraft: | | | 68 | | |
| Number of Annual LT(| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | | | | |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | | | | | |
| Number of Annual Trim Test(s) per Aircraft: | | | | | |
| - Default Settings Used: | No | | | | |
| - Flight Operations TIMs (7 | Гime In Mode) | | | | |
| Taxi/Idle Out [Idle] (mi | Taxi/Idle Out [Idle] (mins): 0 | | | | |
| Takeoff [Military] (min | is): | 27.48 | | | |
| Takeoff [After Burn] (r | nins): | 0 | | | |
| Climb Out [Intermedia | te] (mins): | 0 | | | |
| Approach [Approach] (| (mins): | 0 | | | |
| Taxi/Idle In [Idle] (min | s): | 0 | | | |
| - Trim Test | | | | | |
| Idle (mins): | 12 | | | | |
| Approach (mins): | 27 | | | | |
| Intermediate (mins): | 9 | | | | |
| Military (mins): | 9 | | | | |
| AfterBurn (mins): | 3 | | | | |

4.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000poundsEF: Emission Factor (lb/1000lb fuel)NE: Number of EnginesTGO: Number of Touch-and-Go Cycles (for all aircraft)2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

4.4 Auxiliary Power Unit (APU)

4.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

4.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| | | 1 40001 (18 |) | | | | | |
|-------------|------|-------------|-----|-----|----|-------|--------|-------------------|
| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
| | Flow | | | | | | | |

| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |
|----------|-------|-------|-------|-------|-------|--------|--------|-------|
|----------|-------|-------|-------|-------|-------|--------|--------|-------|

4.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

5. Aircraft

5.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Blount, AL; Cullman, AL; Franklin, AL; Jefferson, AL; Lawrence, AL; Marion, AL; Pickens, AL; Tuscaloosa, AL; Walker, AL; Winston, AL; Itawamba, MS; Monroe, MS
 Regulatory Area(s): Birmingham, AL; NOT IN A REGULATORY AREA; Birmingham, AL

- Activity Title: 2028 and 2029 T-7A MTR Low-Altitude Operations (VR-1014)

- Activity Description:

2028 and 2029: Starting in 2028, add 186 T-7A low-altitude operations in VR-1014.

- Activity Start Date

| Start | Month: | 1 |
|-------|--------|------|
| Start | Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) | | |
|-----------------|----------------------------------|--|--|
| VOC | 1.356109 | | |
| SO _x | 0.644461 | | |
| NO _x | 19.743072 | | |
| СО | 1.147806 | | |
| PM 10 | 0.095568 | | |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.083622 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 1948.9 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|-------------------|----------------------------------|
| VOC | 1.356109 | PM 2.5 | 0.083622 |
| SO _x | 0.644461 | Pb | 0.000000 |
| NO _x | 19.743072 | NH ₃ | 0.000000 |
| СО | 1.147806 | CO ₂ e | 1948.9 |

| DM 10 0.000 | 55(9 | | |
|---|--------------------|--------------------------------|---------------------------|
| PM 10 0.093 | 5568 | | |
| 5.2 Aircraft & Engines | | | |
| 5.2.1 Aircraft & Engines Assu | mptions | | |
| 8 | 04-GE-102 iner | | |
| - Aircraft & Engine Surrogate Is Aircraft & Engine a Surrog Original Aircraft Name: Original Engine Name: | gate? No | | |
| 5.2.2 Aircraft & Engines Emis | sion Factor(s) | | |
| - Aircraft & Engine Emissions Fac Proprietary Information. Conta engine's Emission Factors. | | | nformation regarding this |
| 5.3 Flight Operations | | | |
| 5.3.1 Flight Operations Assum | ptions | | |
| - Flight Operations Number of Aircraft: Number of Annual LTOs (La Number of Annual TGOs (To Number of Annual Trim Test | uch-and-Go) cycles | | 68 186 0 0 |
| - Default Settings Used: No | | | |
| - Flight Operations TIMs (Time In Taxi/Idle Out [Idle] (mins): Takeoff [Military] (mins): Takeoff [After Burn] (mins): Climb Out [Intermediate] (mi Approach [Approach] (mins): Taxi/Idle In [Idle] (mins): | ins): | 0 38.09 0 0 0 0 | |
| - Trim Test Idle (mins): 12 Approach (mins): 27 Intermediate (mins): 9 Military (mins): 9 AfterBurn (mins): 3 | | | |
| 5.3.2 Flight Operations Formu | lla(s) | | |

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)

AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

5.4 Auxiliary Power Unit (APU)

5.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

5.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

5.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

6. Aircraft

6.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
 - County: Autauga, AL; Bibb, AL; Chilton, AL; Choctaw, AL; Clarke, AL; Clay, AL; Coosa, AL; Dallas, AL; Elmore, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Pickens, AL; Shelby, AL; St. Clair, AL; Talladega, AL; Tallapoosa, AL; Tuscaloosa, AL; Wilcox, AL; Kemper, MS; Lowndes, MS; Noxubee, MS

Regulatory Area(s): Birmingham, AL; NOT IN A REGULATORY AREA

- Activity Title: 2028 and 2029 T-7A MTR Low-Altitude Operations (VR-1031)

- Activity Description:

2028 and 2029: Starting in 2028, add 78 T-7A low-altitude operations in VR-1031.

- Activity Start Date

Start Month:1Start Year:2028

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.480021 |
| SO _x | 0.228462 |
| NO _x | 6.990315 |
| СО | 0.407902 |
| PM 10 | 0.033827 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.029599 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 691.0 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.480021 |
| SO _x | 0.228462 |
| NO _x | 6.990315 |
| CO | 0.407902 |
| PM 10 | 0.033827 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.029599 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 691.0 |
| | |

6.2 Aircraft & Engines

6.2.1 Aircraft & Engines Assumptions

| Aircraft & Engine | |
|--------------------------|-------------|
| Aircraft Designation: | T-7A |
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

6.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

6.3 Flight Operations

6.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|----|
| Number of Aircraft: | 68 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 78 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 32.15 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |
| | |

| - Trim Test | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

6.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

6.4 Auxiliary Power Unit (APU)

6.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

6.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

| - Auxiliary Power Unit (APU) Emission Factor (10/117) | | | | | | | | |
|---|-------|-------|-------|-------|-------|--------|--------|-------------------|
| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
| | Flow | | | | | | | |
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

6.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

7. Aircraft

7.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Blount, AL; Colbert, AL; Cullman, AL; Franklin, AL; Lauderdale, AL; Marion, AL; Walker, AL; Winston, AL; Alcorn, MS; Benton, MS; Itawamba, MS; Lee, MS; Monroe, MS; Prentiss, MS; Tippah, MS; Tishomingo, MS; Union, MS; Chester, TN; Decatur, TN; Hardeman, TN; Hardin, TN; Lawrence, TN; McNairy, TN; Wayne, TN

Regulatory Area(s): NOT IN A REGULATORY AREA; Birmingham, AL

- Activity Title: 2028 and 2029 T-38C MTR Low-Altitude Operations (IR-066)

- Activity Description:

2028 and 2029: Starting in 2028, remove 165 T-38C low-altitude operations in IR-066.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -0.017125 |
| SO _x | -0.024431 |
| NO _x | -0.043839 |
| СО | -0.707585 |
| PM 10 | -0.025801 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -0.000913 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -73.8 |
| | |

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | -0.017125 | PM 2.5 | -0.000913 |
| SO _x | -0.024431 | Pb | 0.000000 |
| NO _x | -0.043839 | NH ₃ | 0.000000 |
| СО | -0.707585 | CO ₂ e | -73.8 |
| PM 10 | -0.025801 | | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

7.2 Aircraft & Engines

7.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |
| 5 | |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

7.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SO _x | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|--------------|------------------|-------|-----------------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

7.3 Flight Operations

7.3.1 Flight Operations Assumptions

- Flight Operations

| Number of Aircraft: | 68 |
|---|-----|
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 165 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 3.74 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

| - Trim Test | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

7.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

7.4 Auxiliary Power Unit (APU)

7.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | 0 | |
| | LTO | | | |

7.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----------------|----|-------|--------|-------------------|
| | Flow | | | | | | | |

7.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

8. Aircraft

8.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

 County: Lee, AR; Phillips, AR; Bolivar, MS; Calhoun, MS; Carroll, MS; Coahoma, MS; Grenada, MS; Leflore, MS; Montgomery, MS; Panola, MS; Quitman, MS; Sunflower, MS; Tallahatchie, MS; Tunica, MS; Webster, MS; Yalobusha, MS
 Parelatory: Area(a): NOT IN A RECULTATORY AREA

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2028 and 2029 T-38C MTR Low-Altitude Operations (IR-068)

- Activity Description:

2028 and 2029: Starting in 2028, remove 51 T-38C low-altitude operations in IR-068.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | Yes | | |
|-------------|-----|--|--|
| End Month: | N/A | | |
| End Year: | N/A | | |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -0.038891 |
| SO _x | -0.055485 |
| NO _x | -0.099561 |
| СО | -1.606979 |
| PM 10 | -0.058596 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.002074 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -167.7 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | -0.038891 | PM 2.5 | -0.002074 |
| SO _x | -0.055485 | Pb | 0.000000 |
| NO _x | -0.099561 | NH ₃ | 0.000000 |
| CO | -1.606979 | CO ₂ e | -167.7 |
| PM 10 | -0.058596 | | |

8.2 Aircraft & Engines

8.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

8.2.2 Aircraft & Engines Emission Factor(s)

| - An er art & Englite Emissions Factors (10/100010 fuer) | | | | | | | | |
|--|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

8.3 Flight Operations

8.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|--|
| Number of Aircraft: | |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | |
| Number of Annual Trim Test(s) per Aircraft: | |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 27.48 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

8.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

8.4 Auxiliary Power Unit (APU)

8.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| J | | | | |
|---------------|----------------|---------|-------------|--------------|
| Number of APU | Operation | Exempt | Designation | Manufacturer |
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

8.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----------------|----|-------|--------|-------------------|
| | Flow | | | | | | | |

8.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

9. Aircraft

9.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Benton, MS; Calhoun, MS; Carroll, MS; Chickasaw, MS; Clay, MS; Grenada, MS; Lafayette, MS; Marshall, MS; Montgomery, MS; Panola, MS; Pontotoc, MS; Quitman, MS; Tallahatchie, MS; Tate, MS; Union, MS; Webster, MS
 Regulatory Area(s): NOT IN A REGULATORY AREA

Regulatory Alea(s). NOT IN A RECOLATOR TAKEA

- Activity Title: 2028 and 2029 T-38C MTR Low-Altitude Operations (IR-091)

- Activity Description:

2028 and 2029: Starting in 2028, remove 66 T-38C low-altitude operations in IR-091.

- Activity Start Date

Start Month: 1 Start Year: 2028

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.050330 |
| SO _x | -0.071804 |
| NO _x | -0.128844 |
| СО | -2.079620 |
| PM 10 | -0.075830 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.002684 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -217.0 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -0.050330 |
| SO _x | -0.071804 |
| NO _x | -0.128844 |
| CO | -2.079620 |
| PM 10 | -0.075830 |

| & APU) part]: | |
|-------------------|----------------------------------|
| Pollutant | Emissions Per Year (TONs) |
| PM 2.5 | -0.002684 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -217.0 |
| | |

9.2 Aircraft & Engines

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9.2.1 Aircraft & Engines Assumptions

| Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

9.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| The chart of Englise Emissions I actors (16/100016 fact) | | | | | | | | |
|--|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

9.3 Flight Operations

9.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|----|
| Number of Aircraft: | 68 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 66 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 27.48 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |
| - Trim Test | |
| Idle (mins): 12 | |

| rule (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

9.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)

AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

9.4 Auxiliary Power Unit (APU)

9.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

9.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----|----|-------|--------|-------------------|
| | Flow | | | | | | | |

9.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year APU_{POL} = APU * OH * LTO * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs) APU: Number of Auxiliary Power Units OH: Operation Hours for Each LTO (hour)

LTO: Number of LTOs EF_{POL}: Emission Factor for Pollutant (lb/hr) 2000: Conversion Factor pounds to tons

10. Aircraft

10.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Blount, AL; Cullman, AL; Franklin, AL; Jefferson, AL; Lawrence, AL; Marion, AL; Pickens, AL; Tuscaloosa, AL; Walker, AL; Winston, AL; Itawamba, MS; Monroe, MS
 Regulatory Area(s): Birmingham, AL; NOT IN A REGULATORY AREA; Birmingham, AL

- Activity Title: 2028 and 2029 T-38C MTR Low-Altitude Operations (VR-1014)

- Activity Description:

2028 and 2029: Starting in 2028, remove 114 T-38C low-altitude operations in VR-1014.

- Activity Start Date

Start Month:1Start Year:2028

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.120498 |
| SO _x | -0.171910 |
| NO _x | -0.308474 |
| СО | -4.978966 |
| PM 10 | -0.181550 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -0.006427 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -519.6 |
| | |

| - Activity Emissions | [Flight Operations | (includes Trim T | est & APU) part]: |
|----------------------|--------------------|------------------|-------------------|
|----------------------|--------------------|------------------|-------------------|

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | -0.120498 | PM 2.5 | -0.006427 |
| SO _x | -0.171910 | Pb | 0.000000 |
| NO _x | -0.308474 | NH ₃ | 0.000000 |
| СО | -4.978966 | CO ₂ e | -519.6 |
| PM 10 | -0.181550 | | |

10.2 Aircraft & Engines

10.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |

Aircraft has After burn:YesNumber of Engines:2

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

10.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | | VOC | 0.0 | | 00 | DN / 10 | DIAAZ | 00 |
|--------------|-----------|-------|------|-----------------|--------|---------|--------|-------------------|
| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

10.3 Flight Operations

10.3.1 Flight Operations Assumptions

| Number of Aircraft: | 68 |
|---|-----|
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 114 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 38.09 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

- Trim Test Idle (mins): 12 Approach (mins): 27 Intermediate (mins): 9 Military (mins): 9 AfterBurn (mins): 3

10.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)NE: Number of EnginesLTO: Number of Landing and Take-off Cycles (for all aircraft)2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs)

AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

10.4 Auxiliary Power Unit (APU)

10.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

10.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel VOC Flow | SO _x | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------------------|-----------------|-----------------|----|-------|--------|-------------------|
|-------------|------------------|-----------------|-----------------|----|-------|--------|-------------------|

10.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

11. Aircraft

11.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Autauga, AL; Bibb, AL; Chilton, AL; Choctaw, AL; Clarke, AL; Clay, AL; Coosa, AL; Dallas, AL; Elmore, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Pickens, AL; Shelby, AL; St. Clair, AL; Talladega, AL; Tallapoosa, AL; Tuscaloosa, AL; Wilcox, AL; Kemper, MS; Lowndes, MS; Noxubee, MS

Regulatory Area(s): Birmingham, AL; NOT IN A REGULATORY AREA

- Activity Title: 2028 and 2029 T-38C MTR Low-Altitude Operations (VR-1031)
- Activity Description:

2028 and 2029: Starting in 2028, remove 42 T-38C low-altitude operations in VR-1031.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2028 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.037471 |
| SO _x | -0.053458 |
| NO _x | -0.095925 |
| CO | -1.548294 |
| PM 10 | -0.056456 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -0.001998 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -161.6 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | | | |
|-----------------|----------------------------------|--|--|--|
| VOC | -0.037471 | | | |
| SO _x | -0.053458 | | | |
| NO _x | -0.095925 | | | |
| СО | -1.548294 | | | |
| PM 10 | -0.056456 | | | |

| t & APU) part]: | |
|-------------------|---------------------------|
| Pollutant | Emissions Per Year (TONs) |
| PM 2.5 | -0.001998 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -161.6 |
| | |

11.2 Aircraft & Engines

11.2.1 Aircraft & Engines Assumptions

| - | Aircraft | & | Engine |
|---|----------|---|--------|
|---|----------|---|--------|

| Aircraft Designation: | T-38C |
|--------------------------|-----------|
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

11.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SO _x | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|--------------|------------------|-------|-----------------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

11.3 Flight Operations

11.3.1 Flight Operations Assumptions

0

| - Flight Operations | | |
|---|-----------------------------------|----|
| Number of Aircraft: | | 68 |
| Number of Annual LTOs (Landing and Ta | ake-off) cycles for all Aircraft: | 42 |
| Number of Annual TGOs (Touch-and-Go) | cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircr | aft: | 0 |
| - Default Settings Used: No | | |
| - Flight Operations TIMs (Time In Mode) | | |
| Taxi/Idle Out [Idle] (mins): | 0 | |
| Takeoff [Military] (mins): | 32.15 | |
| Takeoff [After Burn] (mins): | 0 | |
| Climb Out [Intermediate] (mins): | 0 | |
| Approach [Approach] (mins): | 0 | |

Approacn [Approacn] (mins): Taxi/Idle In [Idle] (mins):

| Trim Test | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

_

11.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000poundsEF: Emission Factor (lb/1000lb fuel)NE: Number of EnginesTGO: Number of Touch-and-Go Cycles (for all aircraft)2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

11.4 Auxiliary Power Unit (APU)

11.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| | Number per Ai | | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|--|------------------|--|------------------------------------|-------------------|-------------|--------------|
|--|------------------|--|------------------------------------|-------------------|-------------|--------------|

11.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----|----|-------|--------|-------------------|
| | Flow | | | | | | | |

11.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

12. Aircraft

12.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Blount, AL; Colbert, AL; Cullman, AL; Franklin, AL; Lauderdale, AL; Marion, AL; Walker, AL; Winston, AL; Alcorn, MS; Benton, MS; Itawamba, MS; Lee, MS; Monroe, MS; Prentiss, MS; Tippah, MS; Tishomingo, MS; Union, MS; Chester, TN; Decatur, TN; Hardeman, TN; Hardin, TN; Lawrence, TN; McNairy, TN; Wayne, TN

Regulatory Area(s): NOT IN A REGULATORY AREA; Birmingham, AL

- Activity Title: 2030 T-7A MTR Low-Altitude Operations (IR-066)

- Activity Description:

2030: Starting in 2030, add 273 T-7A low-altitude operations in IR-066.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.195744 |
| SO _x | 0.099955 |
| NO _x | 2.887749 |
| СО | 0.198345 |
| PM 10 | 0.013773 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.012051 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 303.7 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | 0.195744 | PM 2.5 | 0.012051 |
| SO _x | 0.099955 | Pb | 0.000000 |
| NO _x | 2.887749 | NH ₃ | 0.000000 |
| СО | 0.198345 | CO ₂ e | 303.7 |

A ID CONFORMITS/ A DDI ICA DII ITS/ MODEL DEDODT DETAT

| PM 10 | 0.013773 | | |
|---|---|--|-------|
| 2.2 Aircraft & | Engines | | |
| 2.2.1 Aircraft | & Engines Assumptions | | |
| Aircraft & Engi | | | |
| Aircraft Desig | nation: T-7A | | |
| Engine Mode Primary Fun | | | |
| Aircraft has A | | | |
| Number of E | igines: 1 | | |
| Aircraft & Engi | | | |
| Is Aircraft & Original Airc | Engine a Surrogate? No | | |
| Original Airc Original Engi | | | |
| 222 Aircraft | & Engines Emission Factor(s) | | |
| | 0 | | |
| Proprietary Int | ne Emissions Factors (lb/1000lb fuel) Formation. Contact Air Ouality Subject M | atter Expert for More Information regardir | ng th |
| | | | - |
| engine's Emiss | | | - |
| - | ion Factors. | | - |
| 2.3 Flight Ope | ion Factors. | | - |
| 12.3 Flight Ope | ion Factors. rations erations Assumptions | | - |
| 12.3 Flight Ope 12.3.1 Flight Ope Flight Operation Number of Ai | ion Factors. rations verations Assumptions s rcraft: | 9 | - |
| 12.3 Flight Ope 12.3.1 Flight Operation Flight Operation Number of Air Numb | ion Factors. rations erations Assumptions s rcraft: mual LTOs (Landing and Take-off) cyc | 9 eles for all Aircraft: 273 | - |
| 12.3 Flight Ope 12.3.1 Flight Ope Flight Operation Number of Ai Number of Ai Number of Ai | ion Factors. rations verations Assumptions s rcraft: | 9 eles for all Aircraft: 273 | |
| 12.3 Flight Ope 12.3.1 Flight Operation Flight Operation Number of Air Number of Air Number | ion Factors. rations eerations Assumptions s rcraft: mual LTOs (Landing and Take-off) cyo mual TGOs (Touch-and-Go) cycles for mual Trim Test(s) per Aircraft: | eles for all Aircraft: 273 all Aircraft: 0 | |
| 12.3 Flight Ope 12.3.1 Flight Op Flight Operation Number of Ai Number of Ai Number of Ai Number of Ai Number of Ai | ion Factors. rations eerations Assumptions s rcraft: mual LTOs (Landing and Take-off) cyd mual TGOs (Touch-and-Go) cycles for mual Trim Test(s) per Aircraft: Used: No | eles for all Aircraft: 273 all Aircraft: 0 | |
| 12.3 Flight Ope 12.3.1 Flight Operation 12.3.1 Flight Operation Number of Air Number of Ai | ion Factors. rations perations Assumptions s rcraft: nual LTOs (Landing and Take-off) cyc nual TGOs (Touch-and-Go) cycles for nual Trim Test(s) per Aircraft: Used: No s TIMs (Time In Mode) [Idle] (mins): 0 | eles for all Aircraft: 273 all Aircraft: 0 0 | |
| 12.3 Flight Ope 12.3.1 Flight Operation Number of Ai Number of Ai Number of Ai Number of Ai Default Settings Flight Operation Taxi/Idle Out Takeoff [Mili | ion Factors. rations perations Assumptions s rcraft: nual LTOs (Landing and Take-off) cyc nual TGOs (Touch-and-Go) cycles for nual Trim Test(s) per Aircraft: Used: No s TIMs (Time In Mode) [Idle] (mins): 0 ary] (mins): 3.7 | eles for all Aircraft: 273 all Aircraft: 0 0 | |
| 2.3 Flight Ope 2.3.1 Flight Operation Number of Ai Number of Ai Number of Ai Number of Ai Default Settings Flight Operation Taxi/Idle Out Takeoff [Mili Takeoff [Afte | ion Factors. rations perations Assumptions s rcraft: nual LTOs (Landing and Take-off) cyd nual TGOs (Touch-and-Go) cycles for nual Trim Test(s) per Aircraft: Used: No s TIMs (Time In Mode) [Idle] (mins): 0 ary] (mins): 3.7 r Burn] (mins): 0 | eles for all Aircraft: 273 all Aircraft: 0 0 | |
| 2.3 Flight Ope 2.3.1 Flight Op Flight Operation Number of Ai Number of Ai Number of Ai Number of Ai Default Settings Flight Operation Taxi/Idle Out Takeoff [Mili Takeoff [Afte Climb Out [In Approach [A] | ion Factors. rations perations Assumptions s rcraft: mual LTOs (Landing and Take-off) cyd mual TGOs (Touch-and-Go) cycles for mual Trim Test(s) per Aircraft: Used: No s TIMs (Time In Mode) [Idle] (mins): 0 cary] (mins): 3.7 r Burn] (mins): 0 oproach] (mins): 0 | eles for all Aircraft: 273 all Aircraft: 0 0 | |
| 12.3 Flight Ope 12.3.1 Flight Operation Number of Ai Number of Ai Number of Ai Number of Ai Number of Ai Default Settings Flight Operation Taxi/Idle Out Takeoff [Mili Takeoff [Afte Climb Out [In | ion Factors. rations perations Assumptions s rcraft: mual LTOs (Landing and Take-off) cyd mual TGOs (Touch-and-Go) cycles for mual Trim Test(s) per Aircraft: Used: No s TIMs (Time In Mode) [Idle] (mins): 0 cary] (mins): 3.7 r Burn] (mins): 0 oproach] (mins): 0 | eles for all Aircraft: 273 all Aircraft: 0 0 | |
| 12.3 Flight Ope 12.3.1 Flight Operation Number of Ai Number of Ai Number of Ai Number of Ai Default Settings Flight Operation Taxi/Idle Out Takeoff [Mili Takeoff [Afte Climb Out [In Approach [A] Taxi/Idle In [| ion Factors. rations perations Assumptions s rcraft: unual LTOs (Landing and Take-off) cyd nual TGOs (Touch-and-Go) cycles for nual Trim Test(s) per Aircraft: Used: No s TIMs (Time In Mode) [Idle] (mins): 0 ary] (mins): 3.7 r Burn] (mins): 0 proach] (mins): 0 dle] (mins): 0 | eles for all Aircraft: 273 all Aircraft: 0 0 | |
| 12.3 Flight Ope 12.3.1 Flight Operation Number of Ai Number of Ai Number of Ai Number of Ai Default Settings Flight Operation Taxi/Idle Out Takeoff [Mili Takeoff [Afte Climb Out [Ii Approach [A] Taxi/Idle In [Trim Test Idle (mins): | ion Factors. rations perations Assumptions s rcraft: unual LTOs (Landing and Take-off) cyd nual TGOs (Touch-and-Go) cycles for nual Trim Test(s) per Aircraft: Used: No s TIMs (Time In Mode) [Idle] (mins): 0 ary] (mins): 3.7 r Burn] (mins): 0 proach] (mins): 0 12 | eles for all Aircraft: 273 all Aircraft: 0 0 | |
| 12.3 Flight Ope 12.3.1 Flight Operation Number of Ai Number of Ai Number of Ai Number of Ai Default Settings Flight Operation Taxi/Idle Out Takeoff [Mili Takeoff [Mili Takeoff [Afte Climb Out [Ii Approach [A] Taxi/Idle In [Trim Test Idle (mins): Approach (m | ion Factors. rations perations Assumptions s rcraft: mual LTOs (Landing and Take-off) cyclos mual TGOs (Touch-and-Go) cycles for mual Trim Test(s) per Aircraft: Used: No s TIMs (Time In Mode) [Idle] (mins): 0 ary] (mins): 3.7 r Burn] (mins): 0 termediate] (mins): 0 oproach] (mins): 0 Il2 ns): 27 | eles for all Aircraft: 273 all Aircraft: 0 0 | |
| 12.3 Flight Ope 12.3.1 Flight Operation Number of Ai Number of Ai Number of Ai Number of Ai Default Settings Flight Operation Taxi/Idle Out Takeoff [Mili Takeoff [Afte Climb Out [Ii Approach [A] Taxi/Idle In [Trim Test Idle (mins): | ion Factors. rations perations Assumptions s rcraft: nual LTOs (Landing and Take-off) cyclonal TGOs (Touch-and-Go) cycles for nual Trim Test(s) per Aircraft: Used: No s TIMs (Time In Mode) [Idle] (mins): 0 ary] (mins): 3.7 r Burn] (mins): 0 termediate] (mins): 0 oproach] (mins): 0 dle] (mins): 0 12 ns): 27 (mins): 9 s): 9 | eles for all Aircraft: 273 all Aircraft: 0 0 | |

12.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs) TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)

AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

12.4 Auxiliary Power Unit (APU)

12.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

12.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SO _x | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-----------------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

12.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year APU_{POL} = APU * OH * LTO * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

13. Aircraft

13.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
 - **County:** Lee, AR; Phillips, AR; Bolivar, MS; Calhoun, MS; Carroll, MS; Coahoma, MS; Grenada, MS; Leflore, MS; Montgomery, MS; Panola, MS; Quitman, MS; Sunflower, MS; Tallahatchie, MS; Tunica, MS; Webster, MS; Yalobusha, MS

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2030 T-7A MTR Low-Altitude Operations (IR-068)

- Activity Description:

2030: Starting in 2030, add 87 T-7A low-altitude operations in IR-068.

| - | Activity | Start Date |
|---|----------|------------|
|---|----------|------------|

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.457652 |
| SO _x | 0.218172 |
| NO _x | 6.666520 |
| СО | 0.390571 |
| PM 10 | 0.032250 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | 0.028219 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 659.9 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|-------------------|----------------------------------|
| VOC | 0.457652 | PM 2.5 | 0.028219 |
| SO _x | 0.218172 | Pb | 0.000000 |
| NO _x | 6.666520 | NH ₃ | 0.000000 |
| СО | 0.390571 | CO ₂ e | 659.9 |
| PM 10 | 0.032250 | | |

13.2 Aircraft & Engines

13.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-------------|
| Aircraft Designation: | T-7A |
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

13.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

13.3 Flight Operations

13.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|----|
| Number of Aircraft: | 9 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 87 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 27.48 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

13.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEMPOL: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

13.4 Auxiliary Power Unit (APU)

13.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

13.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|-------|-------|-------|-------|-------|--------|--------|-------------------|
| | Flow | | | | | | | |
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

13.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

14. Aircraft

14.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Benton, MS; Calhoun, MS; Carroll, MS; Chickasaw, MS; Clay, MS; Grenada, MS; Lafayette, MS; Marshall, MS; Montgomery, MS; Panola, MS; Pontotoc, MS; Quitman, MS; Tallahatchie, MS; Tate, MS; Union, MS; Webster, MS
 Parallatary: Ama(a): NOT IN A RECULATORY AREA

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2030 T-7A MTR Low-Altitude Operations (IR-091)

- Activity Description:

2030: Starting in 2030, add 108 T-7A low-altitude operations in IR-091.

- Activity Start Date

Start Month:1Start Year:2030

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.568120 |
| SO _x | 0.270834 |
| NO _x | 8.275680 |
| СО | 0.484847 |
| PM 10 | 0.040034 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.035030 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 819.2 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]: Pollutant Emissions Per Year (TONs) Pollutant Emissions Per Year (TONs)

| VOC | 0.568120 |
|-----------------|----------|
| SO _x | 0.270834 |
| NO _x | 8.275680 |
| СО | 0.484847 |
| PM 10 | 0.040034 |

| PM 2.5 | 0.035030 |
|-------------------|----------|
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 819.2 |
| | |

14.2 Aircraft & Engines

14.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

 Aircraft Designation: T-7A
 Engine Model: F404-GE-102
 Primary Function: Trainer
 Aircraft has After burn: Yes
 Number of Engines: 1
- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

14.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

14.3 Flight Operations

AfterBurn (mins):

14.3.1 Flight Operations Assumptions

| - Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: | | | | |
|---|--------------|-------|--|--|
| - Default Settings Used: | No | | | |
| - Flight Operations TIMs (T | ime In Mode) | | | |
| Taxi/Idle Out [Idle] (mi | ns): | 0 | | |
| Takeoff [Military] (mins): | | 27.48 | | |
| Takeoff [After Burn] (mins): | | 0 | | |
| Climb Out [Intermediat | 0 | | | |
| Approach [Approach] (| mins): | 0 | | |
| Taxi/Idle In [Idle] (mins): 0 | | | | |
| - Trim Test | | | | |
| Idle (mins): | 12 | | | |
| Approach (mins): | 27 | | | |
| Intermediate (mins): | 9 | | | |
| Military (mins): 9 | | | | |

3

14.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

14.4 Auxiliary Power Unit (APU)

14.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

14.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

14.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

15. Aircraft

15.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Blount, AL; Cullman, AL; Franklin, AL; Jefferson, AL; Lawrence, AL; Marion, AL; Pickens, AL; Tuscaloosa, AL; Walker, AL; Winston, AL; Itawamba, MS; Monroe, MS

Regulatory Area(s): Birmingham, AL; NOT IN A REGULATORY AREA; Birmingham, AL

- Activity Title: 2030 T-7A MTR Low-Altitude Operations (VR-1014)

- Activity Description:

2030: Starting in 2030, add 186 T-7A low-altitude operations in VR-1014.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) | | | |
|-----------------|----------------------------------|--|--|--|
| VOC | 1.356109 | | | |
| SO _x | 0.644461 | | | |
| NO _x | 19.743072 | | | |
| CO | 1.147806 | | | |
| PM 10 | 0.095568 | | | |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.083622 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 1948.9 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | 1.356109 | PM 2.5 | 0.083622 |
| SO _x | 0.644461 | Pb | 0.000000 |
| NO _x | 19.743072 | NH ₃ | 0.000000 |
| CO | 1.147806 | CO ₂ e | 1948.9 |
| PM 10 | 0.095568 | | |

15.2 Aircraft & Engines

15.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-------------|
| Aircraft Designation: | T-7A |
| Engine Model: | F404-GE-102 |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 1 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

15.2.2 Aircraft & Engines Emission Factor(s)

Aircraft & Engine Emissions Factors (lb/1000lb fuel) Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

15.3 Flight Operations

15.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|-----|
| Number of Aircraft: | 9 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 186 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| 0 |
|-------|
| 38.09 |
| 0 |
| 0 |
| 0 |
| 0 |
| |

| Trim Test | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

15.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE IN} + AEM_{IDLE OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

15.4 Auxiliary Power Unit (APU)

15.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each | Exempt Source? | Designation | Manufacturer |
|-------------------------------|-----------------------------|-------------------|-------------|---------------------|
| 1 | LTO 0.25 | No | 4501687C | Hamilton Sundstrand |

15.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

| Designation | Fuel Flow | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

15.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

16. Aircraft

16.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Autauga, AL; Bibb, AL; Chilton, AL; Choctaw, AL; Clarke, AL; Clay, AL; Coosa, AL; Dallas, AL; Elmore, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Pickens, AL; Shelby, AL; St. Clair, AL; Talladega, AL; Tallapoosa, AL; Tuscaloosa, AL; Wilcox, AL; Kemper, MS; Lowndes, MS; Noxubee, MS

Regulatory Area(s): Birmingham, AL; NOT IN A REGULATORY AREA

- Activity Title: 2030 T-7A MTR Low-Altitude Operations (VR-1031)

- Activity Description:

2030: Starting in 2030, add 78 T-7A low-altitude operations in VR-1031.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.480021 |
| SO _x | 0.228462 |
| NO _x | 6.990315 |
| СО | 0.407902 |
| PM 10 | 0.033827 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.029599 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 691.0 |
| | |

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | 0.480021 |
| SO _x | 0.228462 |
| NO _x | 6.990315 |
| CO | 0.407902 |
| PM 10 | 0.033827 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | 0.029599 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | 691.0 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

16.2 Aircraft & Engines

16.2.1 Aircraft & Engines Assumptions

| T-7A |
|-------------|
| F404-GE-102 |
| Trainer |
| Yes |
| 1 |
| |
| |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

16.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

16.3 Flight Operations

16.3.1 Flight Operations Assumptions

| - Flight Operations Number of Aircraft: Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: Number of Annual Trim Test(s) per Aircraft: | | 9 78 0 0 |
|---|-------|-------------------|
| - Default Settings Used: No | | |
| - Flight Operations TIMs (Time In Mode) | | |
| Taxi/Idle Out [Idle] (mins): | 0 | |
| Takeoff [Military] (mins): | 32.15 | |
| Takeoff [After Burn] (mins): | 0 | |
| Climb Out [Intermediate] (mins): | 0 | |
| Approach [Approach] (mins): | 0 | |
| Taxi/Idle In [Idle] (mins): | 0 | |
| - Trim Test | | |
| Idle (mine). 12 | | |

| I filli I est | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |

| Military (mins): | 9 |
|-------------------|---|
| AfterBurn (mins): | 3 |

16.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)TD: Test Duration (min)60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

16.4 Auxiliary Power Unit (APU)

16.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU per Aircraft | Operation Hours for Each LTO | Exempt Source? | Designation | Manufacturer |
|-------------------------------|------------------------------------|-------------------|-------------|---------------------|
| 1 | 0.25 | No | 4501687C | Hamilton Sundstrand |

16.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-------|-------|-----------------|-------|--------|--------|-------------------|
| 4501687C | 211.0 | 0.010 | 0.230 | 1.380 | 1.070 | -1.000 | -1.000 | 740.4 |

16.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

17. Aircraft

17.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Blount, AL; Colbert, AL; Cullman, AL; Franklin, AL; Lauderdale, AL; Marion, AL; Walker, AL; Winston, AL; Alcorn, MS; Benton, MS; Itawamba, MS; Lee, MS; Monroe, MS; Prentiss, MS; Tippah, MS; Tishomingo, MS; Union, MS; Chester, TN; Decatur, TN; Hardeman, TN; Hardin, TN; Lawrence, TN; McNairy, TN; Wayne, TN

Regulatory Area(s): NOT IN A REGULATORY AREA; Birmingham, AL

- Activity Title: 2030 T-38C MTR Low-Altitude Operations (IR-066)

- Activity Description:

2030: Starting in 2030, remove 273 T-38C low-altitude operations in IR-066.

- Activity Start Date

| Start Month: | 1 |
|--------------|------|
| Start Year: | 2030 |

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -0.028333 |
| SO _x | -0.040422 |
| NO _x | -0.072533 |
| СО | -1.170732 |
| PM 10 | -0.042689 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.001511 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -122.2 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | -0.028333 | PM 2.5 | -0.001511 |
| SO _x | -0.040422 | Pb | 0.000000 |
| NO _x | -0.072533 | NH ₃ | 0.000000 |
| СО | -1.170732 | CO ₂ e | -122.2 |
| PM 10 | -0.042689 | | |

17.2 Aircraft & Engines

17.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

| Aircraft Designation: | T-38C |
|--------------------------|-----------|
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

17.2.2 Aircraft & Engines Emission Factor(s)

| The chart of Englise Emissions I detors (15/100015 Idet) | | | | | | | | |
|--|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

17.3 Flight Operations

17.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|-----|
| Number of Aircraft: | 17 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 273 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 3.74 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

17.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

17.4 Auxiliary Power Unit (APU)

17.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | - | |
| | LTO | | | |

17.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation Fuel Flow | VOC | SOx | NOx | СО | PM 10 | PM 2.5 | CO ₂ e |
|--------------------------|-----|-----|-----|----|-------|--------|-------------------|
|--------------------------|-----|-----|-----|----|-------|--------|-------------------|

17.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

18. Aircraft

18.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove
- Activity Location

County: Lee, AR; Phillips, AR; Bolivar, MS; Calhoun, MS; Carroll, MS; Coahoma, MS; Grenada, MS; Leflore, MS; Montgomery, MS; Panola, MS; Quitman, MS; Sunflower, MS; Tallahatchie, MS; Tunica, MS; Webster, MS; Yalobusha, MS

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2030 T-38C MTR Low-Altitude Operations (IR-068)

- Activity Description:

2030: Starting in 2030, remove 87 T-38C low-altitude operations in IR-068.

- Activity Start Date

Start Month:1Start Year:2030

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|---------------------------|
| VOC | -0.066344 |
| SO _x | -0.094650 |
| NO _x | -0.169840 |
| СО | -2.741317 |
| PM 10 | -0.099958 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|---------------------------|
| PM 2.5 | -0.003538 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -286.1 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.066344 |
| SO _x | -0.094650 |
| NO _x | -0.169840 |
| CO | -2.741317 |
| PM 10 | -0.099958 |

Pollutant Emissions Per Year (TONs) PM 2.5 -0.003538 Pb 0.000000 NH₃ 0.000000 CO₂e -286.1

18.2 Aircraft & Engines

18.2.1 Aircraft & Engines Assumptions

| Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |
| Aircraft has After burn: | Yes |
| Number of Engines: | 2 |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

18.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|--------------|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

18.3 Flight Operations

18.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|----|
| Number of Aircraft: | 17 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 87 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

| Taxi/Idle Out [Idle] (mins): | 0 |
|----------------------------------|-------|
| Takeoff [Military] (mins): | 27.48 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |
| | |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

18.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

 $AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs) TD: Test Duration (min) 60: Conversion Factor minutes to hours FC: Fuel Flow Rate (lb/hr) 1000: Conversion Factor pounds to 1000pounds EF: Emission Factor (lb/1000lb fuel) NE: Number of Engines NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

18.4 Auxiliary Power Unit (APU)

18.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

18.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------|-----|-----|-----|----|-------|--------|-------------------|
| | Flow | | | | | | | |

18.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year APU_{POL} = APU * OH * LTO * EF_{POL} / 2000

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs) APU: Number of Auxiliary Power Units OH: Operation Hours for Each LTO (hour) LTO: Number of LTOs

EF_{POL}: Emission Factor for Pollutant (lb/hr) 2000: Conversion Factor pounds to tons

19. Aircraft

19.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove
- Activity Location

County: Benton, MS; Calhoun, MS; Carroll, MS; Chickasaw, MS; Clay, MS; Grenada, MS; Lafayette, MS; Marshall, MS; Montgomery, MS; Panola, MS; Pontotoc, MS; Quitman, MS; Tallahatchie, MS; Tate, MS; Union, MS; Webster, MS

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: 2030 T-38C MTR Low-Altitude Operations (IR-091)

- Activity Description:

2030: Starting in 2030, remove 108 T-38C low-altitude operations in IR-091.

- Activity Start Date

Start Month:1Start Year:2030

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.082358 |
| SO _x | -0.117497 |
| NO _x | -0.210835 |
| СО | -3.403014 |
| PM 10 | -0.124085 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.004392 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -355.1 |
| | |

| - Activity Emissions | [Flight Operation | s (includes Trim | Test & APU) part]: |
|----------------------|-------------------|------------------|--------------------|
|----------------------|-------------------|------------------|--------------------|

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | -0.082358 | PM 2.5 | -0.004392 |
| SO _x | -0.117497 | Pb | 0.000000 |
| NO _x | -0.210835 | NH ₃ | 0.000000 |
| СО | -3.403014 | CO ₂ e | -355.1 |
| PM 10 | -0.124085 | | |

19.2 Aircraft & Engines

19.2.1 Aircraft & Engines Assumptions

| - Aircraft & Engine | |
|--------------------------|-----------|
| Aircraft Designation: | T-38C |
| Engine Model: | J85-GE-5R |
| Primary Function: | Trainer |

Aircraft has After burn:YesNumber of Engines:2

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

19.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|--------------|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

19.3 Flight Operations

19.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|-----|
| Number of Aircraft: | 17 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 108 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 27.48 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

| - Trim Test | |
|----------------------|----|
| Idle (mins): | 12 |
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

19.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)NE: Number of EnginesLTO: Number of Landing and Take-off Cycles (for all aircraft)2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_{IN}} + AEM_{IDLE_{OUT}} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs)

AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

19.4 Auxiliary Power Unit (APU)

19.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer |
|---------------|----------------|---------|-------------|--------------|
| per Aircraft | Hours for Each | Source? | | |
| | LTO | | | |

19.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel VOC Flow | SO _x | NO _x | СО | PM 10 | PM 2.5 | CO ₂ e |
|-------------|------------------|-----------------|-----------------|----|-------|--------|-------------------|
|-------------|------------------|-----------------|-----------------|----|-------|--------|-------------------|

19.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

20. Aircraft

20.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location

County: Blount, AL; Cullman, AL; Franklin, AL; Jefferson, AL; Lawrence, AL; Marion, AL; Pickens, AL; Tuscaloosa, AL; Walker, AL; Winston, AL; Itawamba, MS; Monroe, MS

Regulatory Area(s): Birmingham, AL; NOT IN A REGULATORY AREA; Birmingham, AL

- Activity Title: 2030 T-38C MTR Low-Altitude Operations (VR-1014)

- Activity Description:

2030: Starting in 2030, remove 186 T-38C low-altitude operations in VR-1014.

- Activity Start Date Start Month: 1 Start Year: 2030

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.196602 |
| SO _x | -0.280485 |
| NO _x | -0.503300 |
| CO | -8.123575 |
| PM 10 | -0.296213 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.010485 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -847.7 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Polluta |
|-----------------|----------------------------------|-------------------|
| VOC | -0.196602 | PM 2.5 |
| SO _x | -0.280485 | Pb |
| NO _x | -0.503300 | NH ₃ |
| CO | -8.123575 | CO ₂ e |
| PM 10 | -0.296213 | |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.010485 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -847.7 |
| | |

20.2 Aircraft & Engines

20.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

| T-38C |
|-----------|
| J85-GE-5R |
| Trainer |
| Yes |
| 2 |
| |

- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

20.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|--------------|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

20.3 Flight Operations

20.3.1 Flight Operations Assumptions

⁻ Flight Operations

Number of Aircraft:

| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 186 |
|---|-----|
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 38.09 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |
| razionale in francj (minis). | 0 |

- Trim Test Idle (mins): 12 Approach (mins): 27 Intermediate (mins): 9 Military (mins): 9 AfterBurn (mins): 3

20.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE IN} + AEM_{IDLE OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines TGO: Number of Touch-and-Go Cycles (for all aircraft) 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

20.4 Auxiliary Power Unit (APU)

20.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| | (| | | |
|---------------|----------------|---------|-------------|--------------|
| Number of APU | Operation | Exempt | Designation | Manufacturer |
| per Aircraft | Hours for Each | Source? | | |
| _ | LTO | | | |

20.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designat | tion | Fuel Flow | VOC | SOx | NOx | CO | PM 10 | PM 2.5 | CO ₂ e |
|----------|------|--------------|-----|-----|-----|----|-------|--------|-------------------|
| | | FIOW | | | | | | | |

20.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

21. Aircraft

21.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Remove

- Activity Location
 - County: Autauga, AL; Bibb, AL; Chilton, AL; Choctaw, AL; Clarke, AL; Clay, AL; Coosa, AL; Dallas, AL; Elmore, AL; Greene, AL; Hale, AL; Marengo, AL; Perry, AL; Pickens, AL; Shelby, AL; St. Clair, AL; Talladega, AL; Tallapoosa, AL; Tuscaloosa, AL; Wilcox, AL; Kemper, MS; Lowndes, MS; Noxubee, MS

Regulatory Area(s): Birmingham, AL; NOT IN A REGULATORY AREA

- Activity Title: 2030 T-38C MTR Low-Altitude Operations (VR-1031)

- Activity Description:

2030: Starting in 2030, remove 78 T-38C low-altitude operations in VR-1031.

- Activity Start Date

Start Month:1Start Year:2030

- Activity End Date

| Indefinite: | Yes |
|-------------|-----|
| End Month: | N/A |
| End Year: | N/A |

- Activity Emissions:

| Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|
| VOC | -0.069589 |
| SO _x | -0.099280 |
| NO _x | -0.178147 |
| CO | -2.875404 |
| PM 10 | -0.104847 |

| Pollutant | Emissions Per Year (TONs) |
|-------------------|----------------------------------|
| PM 2.5 | -0.003711 |
| Pb | 0.000000 |
| NH ₃ | 0.000000 |
| CO ₂ e | -300.1 |
| | |

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

| Pollutant | Emissions Per Year (TONs) | Pollutant | Emissions Per Year (TONs) |
|-----------------|----------------------------------|-------------------|----------------------------------|
| VOC | -0.069589 | PM 2.5 | -0.003711 |
| SO _x | -0.099280 | Pb | 0.000000 |
| NO _x | -0.178147 | NH ₃ | 0.000000 |
| CO | -2.875404 | CO ₂ e | -300.1 |
| PM 10 | -0.104847 | | |

21.2 Aircraft & Engines

21.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
 Aircraft Designation: T-38C
 Engine Model: J85-GE-5R
 Primary Function: Trainer
 Aircraft has After burn: Yes
 Number of Engines: 2
- Aircraft & Engine Surrogate Is Aircraft & Engine a Surrogate? No Original Aircraft Name: Original Engine Name:

21.2.2 Aircraft & Engines Emission Factor(s)

| | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|--------------|------------------|-------|------|-----------------|--------|-------|--------|-------------------|
| Idle | 520.00 | 16.80 | 1.07 | 1.08 | 177.45 | 4.70 | 4.02 | 3234 |
| Approach | 854.00 | 7.84 | 1.07 | 0.84 | 106.29 | 2.80 | 1.85 | 3234 |
| Intermediate | 1030.00 | 2.78 | 1.07 | 0.70 | 65.07 | 1.79 | 0.69 | 3234 |
| Military | 2220.00 | 0.75 | 1.07 | 1.92 | 30.99 | 1.13 | 0.04 | 3234 |
| After Burn | 7695.00 | 6.97 | 1.07 | 6.23 | 53.43 | 0.25 | 0.09 | 3234 |

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

21.3 Flight Operations

21.3.1 Flight Operations Assumptions

| - Flight Operations | |
|---|----|
| Number of Aircraft: | 17 |
| Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: | 78 |
| Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: | 0 |
| Number of Annual Trim Test(s) per Aircraft: | 0 |

- Default Settings Used: No

| - Flight Operations TIMs (Time In Mode) | |
|---|-------|
| Taxi/Idle Out [Idle] (mins): | 0 |
| Takeoff [Military] (mins): | 32.15 |
| Takeoff [After Burn] (mins): | 0 |
| Climb Out [Intermediate] (mins): | 0 |
| Approach [Approach] (mins): | 0 |
| Taxi/Idle In [Idle] (mins): | 0 |

- Trim Test

| Idle (mins): | 12 |
|----------------------|----|
| Approach (mins): | 27 |
| Intermediate (mins): | 9 |
| Military (mins): | 9 |
| AfterBurn (mins): | 3 |

21.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

 $AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs) AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs) AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

 $AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs) AEM_{APPROACH}: Aircraft Emissions for Approach Mode (TONs) AEM_{CLIMBOUT}: Aircraft Emissions for Climb-Out Mode (TONs) AEM_{TAKEOFF}: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

AEPS_{POL}: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines

NA: Number of Aircraft NTT: Number of Trim Test 2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

 $AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs) AEPS_{IDLE}: Aircraft Emissions for Idle Power Setting (TONs) AEPS_{APPROACH}: Aircraft Emissions for Approach Power Setting (TONs) AEPS_{INTERMEDIATE}: Aircraft Emissions for Intermediate Power Setting (TONs) AEPS_{MILITARY}: Aircraft Emissions for Military Power Setting (TONs) AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

21.4 Auxiliary Power Unit (APU)

21.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

| Number of APU | Operation | Exempt | Designation | Manufacturer | | | |
|---------------|----------------|---------|-------------|--------------|--|--|--|
| per Aircraft | Hours for Each | Source? | | | | | |
| | LTO | | | | | | |

21.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

| Designation | Fuel Flow | VOC | SOx | NO _x | CO | PM 10 | PM 2.5 | CO ₂ e |
|-------------|--------------|-----|-----|-----------------|----|-------|--------|-------------------|
|-------------|--------------|-----|-----|-----------------|----|-------|--------|-------------------|

21.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

 $APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons