STATEMENT OF LEGAL AND FACTUAL BASIS

Aerojet Rocketdyne, Inc.
(a subsidiary of L3Harris Technologies)
Orange County, Virginia
Permit No. NRO40743

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9VAC5 Chapter 80, Aerojet Rocketdyne, Inc. has applied for a Title V Operating Permit for its Orange County facility. The Department has reviewed the application and has prepared a draft Title V Operating Permit.

Permit Writer: _____ Date: _____

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Air Permit Manager: _____ Date: _____

Justin A. Wilkinson

FACILITY INFORMATION

Permittee
Aerojet Rocketdyne, Inc.
(a subsidiary of L3Harris Technologies)
7499 Pine Stake Road
Culpeper, Virginia 22701

Facility
Aerojet Rocketdyne, Inc.
Orange County Facility
7499 Pine Stake Road
Culpeper (Orange County), Virginia 22701

County-Plant Identification Number: 51-137-00022

FACILITY DESCRIPTION

NAICS Codes: 336415 (Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing) and 332999 (All Other Miscellaneous Fabricated Metal Product Manufacturing) - Manufacture, research and development (R&D), and testing of rocket motors and associated components, including propellants and propellant ingredients.

Aerojet Rocketdyne, Inc. (Aerojet), formerly Atlantic Research Corporation (ARC) and Aerojet Corporation, owns and operates the Orange County facility. The company was acquired by L3Harris Technologies on July 28, 2023. The facility manufactures solid rocket motors, missile systems, and similar products, as well as their associated propellants, for the United States Department of Defense (DOD). The propellants, also known as "energetic materials", are utilized in the on-site production operations, and also commercially distributed as finished products. Aerojet Rocketdyne also performs R&D activities for the aforementioned products. Aerojet Rocketdyne's manufacturing and R&D activities include the static test firing of rocket motors and other components. Their scrap propellants and other waste energetic materials were previously destroyed on site by open burning at their Thermal Treatment Facility (TTF) [EU-01(B)], however, that permitted operation was permanently shut down on January 31, 2020, with waste propellants now transported off site for disposal.

The facility is a Title V major source for hazardous air pollutants (HAPs). The facility's potential-to-emit exceeds 10 tons per year for an individual HAP and more than 25 tons per year of any combination of HAPs. It was a major source of PM-10 emissions, but no longer is with the permanent shutdown of the TTF, as PM-10 emissions potential to emit was reduced from nearly 120 tons per year to 4 tons per year. This source is located in an area presently classified as an attainment area for all pollutants and is a PSD minor source. The facility currently operates under a minor new source review (mNSR) permit that was issued on March 13, 2024 (copy

enclosed as Attachment A, referred to as the 3/13/24 mNSR permit). The most recent Title V Permit was issued on March 7, 2012, with a significant modification issued on January 24, 2017.

This Title V renewal application was received on September 7, 2016 (CEDS application 22). The source then submitted another application, dated April 26, 2019 (CEDS application 26), to address changes in their operation that were part of DEQ minor new source review permit issued December 21, 2018, but not reflected in the 2016 Title V renewal application. They paid the fee for the significant modification request. Because of the backlog in Title V permitting, their renewal application and modification were postponed. Since then, Aerojet Rocketdyne has submitted updated Title V application forms on August 23, 2023, and May 9, 2024, after further facility changes that were issued minor new source review permits. DEQ is now processing their Title V renewal permit based on the updated applications and incorporating the 2019 significant modification request. The Title V application was deemed technically complete on April 29, 2025, after receipt of revised application pages with minor clarifications and corrections. The facility will continue to operate under the application shield until the renewal permit is issued.

Aerojet Rocketdyne, Inc., is subject to the following federal applicable requirements:

- National Emission Standards for Aerospace Manufacturing and Rework Facilities (40 CFR Part 63, Subpart GG), hereinafter referred to as the Aerospace MACT (Maximum Achievable Control Technology Standards). EPA revised the Aerospace MACT that became effective on October 3, 2016 (removing the exemption for "specialty coatings"). Those changes are not reflected in the facility 3/13/24 mNSR permit, but are being incorporated in the Title V permit renewal.

- MACT Subpart DDDDD for propane-fired steam generating units.

- MACT Subpart ZZZZ for an existing fire pump and three small emergency generators.

- New Source Performance Standards (NSPS) Subpart IIII for four small diesel generators.

- NSPS Subpart JJJJ for three small propane-fired generators.

COMPLIANCE STATUS

A full compliance evaluation of this facility, including a site visit, was most recently conducted on January 14, 2025. All reports and other data required by permit conditions or regulations, which are submitted to DEQ, have been evaluated for compliance. Based on these compliance evaluations, the facility has not been found to be in violation of any state or federal applicable requirements at this time.

EMISSION UNITS

Please refer to the Emission Units table in the Title V permit on pages 5 through 9, for the listing of emission units.

EMISSIONS INVENTORY

Emissions from the facility in 2024 are summarized in the following tables.

2024 Criteria Pollutant and Greenhouse Gas Emissions in Tons/Year

Emissions	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	NO_X	Lead	CO_2e
Total	1.33	1.48	0.01	2.34	2.34	2.22	0.03	None Reported

2024 Facility Hazardous Air Pollutant (HAP) Emissions

Pollutant	2024 Hazardous Air Pollutant Emission in Tons/Yr
Chlorine (Cl)	0.025
Chromium Compounds (Cr)	0.002
Hydrogen Chloride (HCl)	0.457
Hydrogen Fluoride (HF)	0.001
Methylene Chloride	0.15
Total HAP Emissions	0.635

FUEL BURNING EQUIPMENT REQUIREMENTS – Rocket Test Facility [EU-01(A)]

Three propane-fired pieces of equipment are operated at the rocket testing facility [EU-01(A)]. There is a custom-built air pre-heater and steam generating unit for the Air Facility, which is operated in conjunction with Test Bays #2, #2.5 and #3, rated at 6.86 million Btu/hr. There are also two steam generating units at the OATS facility, Test Bay #5, each rated at 8.45 million Btu/hr. The Air Facility unit is not subject to MACT Subpart DDDDD (Boiler MACT), as it is not a boiler and does not meet the definition of process heater since it is not an enclosed device and the combustion gases come into direct contact with the air stream being heated. However, the OATS units meet the definition of boiler and therefore are subject to the MACT. The Title V permit conditions are mostly comprised of requirements of MACT Subpart DDDDD for the OATS steam generating units. Only the propane throughput limit and associated fuel recordkeeping from the mNSR permit applies also to the Air Facility steam generating unit, as stated in Condition 2.

Corresponding Conditions in Title V Permit taken from 3/13/24 mNSR Permit are listed below[1]:

Title V Permit Condition	1	3
mNSR Permit Condition	16	28.f.

Citations

The following citations from the Virginia Administrative Codes identify the underlying authorities to implement the specific requirements determined to be applicable in the March 13, 2024 mNSR permit:

9VAC5-50-50: *New and Modified Stationary Sources, Special Provisions, Notification, records and reporting.*
9VAC5-50-260: *New and Modified Stationary Sources, Emission Standards, Standards of Performance for Stationary Sources (Rule 5-4), Standard for stationary sources.*
9VAC5-60-300: *Emission Standards for Toxic Pollutants from New and Modified Sources (Rule 6-5), Applicability and designation of affected facility.*
9VAC5-80-1180: *Permits for New and Modified Stationary Sources, Standards and conditions for granting permits.*
9VAC5-220-30: *Variance for Rocket Motor Test Operations at Aerojet Rocketdyne, Inc. Orange County Facility, Applicability of standard for visible emissions and standards for particulate matter.*

[1] Table includes mNSR permit conditions applicable to the process area equipment in the Rocket Test Facility [EU-01(A)], as detailed below.

Limitations

The following condition is taken from the 3/13/24 mNSR permit:

Title V permit Condition 1 restates mNSR permit throughput limit for propane of 447,500 gallons/year, including the steam generating unit for the Air Facility, which is exempt from the Boiler MACT. The condition had been requested by the permittee to limit emissions from the operation of propane burners for the "OATS" and "Air Facility" units that are typically exempt from mNSR permitting.

Monitoring and Recordkeeping

The monitoring and recordkeeping requirements in Condition 28 of the mNSR permit and MACT Subpart DDDDD have been incorporated into the Title V permit and meet Part 70 requirements.

Condition 2 requires a biennial tune-up and provides a summary of the procedures, as specified in MACT Subpart DDDDD. The biennial tune-ups are required, as stated in 40 CFR 63.7500 (e) and 40 CFR 63.7540 (a) (11). (Since the initial tune-up required by MACT had been completed earlier, it was not restated in the permit and neither was the Notification of Compliance Status that was due to DEQ and EPA within 60 days of the initial tune-up.)

Condition 3 is recordkeeping on propane throughput, tune-ups completed and copy of reports in Condition 4.

With the exception of Condition 3.a. which applies to all propane-fired steam generating units, Conditions 2 and 3 apply just to the "OATS" Test Bay #5, steam generating units, as taken from the Boiler MACT.

General Title V retention of records is 5 years. Some of the records required of the applicable MACT have 2-year retention timeframes. For the purpose of Title V, all records relevant to this permit and facility must be maintained for 5 years.

Testing

The permit does not require source tests. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard. In addition, there are no testing requirements for gas-fired (propane) units in the Boiler MACT. The visible emission standard (Rule 5-1) does not apply since rocket test firing is exempt from it based on a variance in the state implementation plan (SIP) approved and incorporated in Chapter 220 of the state Regulations (as also stated in the next section on Rocket Test Firing).

Reporting

The Title V permit includes semi-annual compliance reporting, excess emission reporting, and the occurrence of any malfunctions or permit deviations. In addition to these reporting requirements, the following are also required by the Title V permit to comply with the Boiler MACT (Subpart DDDDD).

Condition 4 is MACT Subpart DDDDD requirement for a Compliance Report to be submitted biennially on tune-ups (no later than January 31). Copies are to be sent to DEQ with electronic copy sent to EPA using their CEDRI program online.

Process Equipment Requirements – Rocket Test Facility [EU-01(A)]

The rocket test facility [EU-01(A)] consists of seven test bays (#1, #2, #2.5, #3, #4, #5, and #6). Test Bays #1, #2, #3 and #6, each rated at 2000 lbs/hr of solid propellant, are used for "full-scale flight motors". Test Bays #2.5 and #4 are used for "sub-scale non-flight" motors, each rated at 50 lbs/hr. The "Air Facility" is a specialized test stand used in conjunction with Test Bays #2, #2.5 and #3 to test fire "air-breathing" rocket motors that rely on forced air combustion rather than an oxidizer in the propellant formulation. Propane is burned as supplemental fuel in a custom-built steam generating unit, as needed during certain Air Facility tests (the 6.86 MMBtu/hr propane unit referenced in the Fuel Burning Equipment section above). Test Bay #5 (OATS) is rated at 100 lb/hr of solid propellant and uses steam to simulate operating conditions at flight altitude. Only the two steam generators associated with the "OATS" Test Bay #5 are subject to MACT Subpart DDDDD (with associated conditions listed in the previous Fuel Buring Equipment Requirements section).

The operation of the rocket test facility (RTF) is limited in accordance with their latest mNSR permit issued on 3/13/24. The mNSR permit emission limits reflect state Best Available Control Technology (BACT) requirements and the state toxics rule (state enforceable only program). There are no federal rules, NSPS, NESHAPs or MACTs, applicable to the rocket testing operation (other than for the propane-fired steam generators at the "OATS" Test Bay #5).

Corresponding Conditions in Title V Permit taken from 3/13/24 mNSR Permit are listed below:

Title V permit Condition	5	6	7	8	9	10
mNSR permit Condition	14	15	22	23	28	29

The original facility owner, Atlantic Research Corporation, was granted a variance in 2002 from the state visible emission standards for the rocket test firing, as incorporated into the Virginia Regulations, Chapter 220 (9VAC5 Chapter 220, *Variance for Rocket Motor Test Operations at Aerojet Rocketdyne, Inc. Orange County Facility*). The variance was later transferred to the current owner, Aerojet Rocketdyne. Accordingly, there is no visible emission limit that applies

to the Rocket Test Facility [EU-01(A)]. The variance includes a particulate emission limit of 714 lbs/hr, also included in mNSR permit Condition 23, which is based on emission factors obtained from specialized models. Compliance with PM, PM-10 and PM-2.5 NAAQS has been demonstrated using the Open Burn/Open Detonation (OB/OD) model, as approved by DEQ.

Citations

The following citations from the Virginia Administrative Codes identify the underlying authorities to implement the specific requirements determined to be applicable in the mNSR permit:

9VAC5-80-1180: *Permits for New and Modified Stationary Sources, Standards and conditions for granting permits.*
9VAC5-50-50: *New and Modified Stationary Sources, Special Provisions, Notification, records and reporting.*
9VAC5-50-90: *New and Modified Stationary Sources, Standards of Performance for Visible Emissions and Fugitive Dust/Emissions (Rule 5-1), Standards for fugitive dust/emissions.*
9VAC5-50-20E: *New and Modified Stationary Sources, Special Provisions, Compliance.*
9VAC5-50-260: *New and Modified Stationary Sources, Emission Standards, Standards of Performance for Stationary Sources (Rule 5-4), Standard for stationary sources.*
9VAC5-60-300: *Emission Standards for Toxic Pollutants from New and Modified Sources (Rule 6-5), Applicability and designation of affected facility.*
9VAC5-220-30: *Variance for Rocket Motor Test Operations at Aerojet Rocketdyne, Inc. Orange County Facility, Applicability of standard for visible emissions and standards for particulate matter.*

Limitations

The following applicable operational and emission limitations are taken from Conditions 14, 15, 22 and 23 of their latest minor NSR (mNSR) permit dated March 13, 2024. These limitations were set to meet the state BACT requirements, as well as the state toxics rule for new and modified sources, Rule 6-5, 9 VAC 5-60-300 (state enforceable only program).

The mNSR permit includes conditions based on limits approved for the variance that exempts the RTF from opacity limits without exceeding the NAAQS for PM. The RTF limit of 2000 pounds per event was used in the OB/OD model to show PM emissions in compliance with the NAAQS.

The following Title V permit conditions are taken from the underlying 3/13/24 mNSR permit:

Condition 5 limits the quantity of propellant fired per event or any 24-hour period to no more than 2000 pounds, except as specified in Condition 6. Also, the annual quantity of solid propellants fired at the rocket test facility (RTF) shall not exceed 5.3 tons per year.

Condition 6 limits the quantity of worst-case lead-based propellant fired at the RTF to no more than 700 pound per event or any 24-hour period.

Condition 7 are pollutant emission limits for the RTF, from mNSR condition 22.

Condition 8 limits particulate matter (PM & PM10) emissions from the operation of the rocket test facility to 714 lbs/hr. The limit is stated in the variance to the SIP as given in the State Regulations 9 VAC Chapter 220, Variance for Rocket Motor Test Operation at ARC Orange County Facility.

Also, the visible emission standard (9 VAC 5-50-80) is not applicable to the RTF. On October 21, 2002, the Department issued a variance (9 VAC 5-220) from the opacity standard for the test facility. The variance was subsequently transferred from ARC to Aerojet upon the change of ownership of the Orange County facility in 2003, with name change in 2013, to Aerojet Rocketdyne, Inc., as updated in the Regulations 9 VAC 5-220, amended on January 9, 2019.

Monitoring and Recordkeeping

Except as related to biennial tune-up of propane-fired steam generators, which is stated in Condition 3 under the Fuel Burning Equipment section above, monitoring requirements for the Rocket Test Facility [EU-01(A)] are comprised of extensive recordkeeping. The recordkeeping requirements in Condition 28 of the mNSR permit have been incorporated and meet Part 70 requirements. General Title V permit records retention is 5 years. The permit includes requirements for maintaining records of all monitoring and testing required by the permit. These records include the following:

Condition 9 requires recordkeeping to demonstrate compliance with the permit limitations for the RTF [EU-01(A)].

The permittee will record the time, date, and quantity (specified in pounds) of propellant fired per testing event at the RTF [EU-01(A)] to demonstrate compliance with the event and daily limits of propellant fired at the source. For compliance demonstration with the annual solid propellant limit fired at the RTF, monthly and consecutive twelve-month sums of the solid propellant fired will be calculated and recorded. Additionally, the permittee will maintain records of the monthly and consecutive twelve-month quantities of liquefied propane used as supplemental fuel at the RTF to demonstrate compliance with the annual propane limit.

Criteria and hazardous air pollutant limit violations should not occur from the quantity of propellant authorized by the permit and the use of emission factors agreed upon by the DEQ. Based on the various types of propellants currently manufactured (as well as additional solid rocket propellants considered for future operations), the emissions of various chemicals per pound of propellant burned are estimated by using an existing Aerojet (formerly ARC) program, Equilibrium Thermochemistry Computer Code (EQTCH), which calculates chemical equilibria

in complex systems and determines chemical product composition, heat generation and the amount of gases and solids evolved. The EQTCH model is derived from the Naval Weapons Center Propellant Evaluation Program (PEP), which is well validated as an accurate and reliable method for predicting combustion product emissions.

To demonstrate compliance with the emission limits, the permittee will derive emission factors and use them in conjunction with the recorded quantities of propellant combusted to calculate hourly and/or annual emissions rates for HAPs and annual emission rates for all pollutants listed in Condition 7. The use of a propellant that does not conform to the parameters of the thermochemical modeling may necessitate an amendment to the permit.

Opacity monitoring at the RTF is not required for compliance with the visible emission standard (9 VAC 5-50-80) since the DEQ has issued an opacity variance for the test facility.

Testing

There are no testing requirements applicable to the RTF.

Reporting

The Title V permit includes semi-annual compliance reporting, excess emission reporting, and the occurrence of any malfunctions or permit deviations, but there are no emission unit specific reporting requirements for the RTF [EU-01(A)].

Condition 10 restates mNSR permit condition 29, on new equipment construction and startup notifications. It requires initial notification on the construction and start-up of the new Test Bay #6 at RTF [EU-01(A)].

Process Equipment Requirements – Facility-Wide Surface Coating and Adhesive Application Operations [EU-02]

The permit requirements for surface coating and adhesive application operations [EU-02] are based on MACT Subpart GG (Aerospace MACT) and state BACT.

Corresponding Conditions in Title V Permit taken from 3/13/24 mNSR Permit are listed below:

Title V permit Condition	12	14	15	17	18	19	20	21	22	24	28	75
mNSR permit Condition	2	3	4	17	21	26	6	7	11	28	29	5

Citations

The following citations from the Virginia Administrative Codes identify the underlying authorities to implement the specific requirements determined to be applicable in the mNSR permit:

9VAC5-50-50: *New and Modified Stationary Sources, Special Provisions, Notification, records and reporting.*
9VAC5-50-260: *New and Modified Stationary Sources, Emission Standards, Standards of Performance for Stationary Sources (Rule 5-4), Standard for stationary sources.*
9VAC5-60-300: *Emission Standards for Toxic Pollutants from New and Modified Sources (Rule 6-5), Applicability and designation of affected facility.*
9VAC5-80-1180: *Permits for New and Modified Stationary Sources, Standards and conditions for granting permits.*

Limitations

The following applicable operational and emission limitations are taken from 3/13/24 mNSR Permit Conditions 2 - 7, 11, 17, 21 and 26. Conditions 2, 5 and 6 were revised from last permit since the latest MACT Subpart GG (Aerospace MACT) no longer excludes specialty coatings.

Condition 11 requires coatings (i.e., adhesives, adhesive primers, other primers and topcoats) that comply with the standards for primer, top-coat and specialty coating (added in revised MACT) application operations in 40 CFR 63.745. Also, the "super" paint and coatings formulation developed by the source is limited for use in non-Aerospace-related operations.

Condition 12 requires volatile organic compound (VOC) and VOC-hazardous air pollutant (HAP) emissions to be controlled by the handling and transfer of primers, topcoat and specialty coatings (added from revised Aerospace MACT) to or from containers, tanks, vats, vessels, and piping systems in such a manner that minimizes spills. (modified Condition 2 of 3/13/24 mNSR Permit and 40 CFR 63.745(b)).

Condition 13 requires paint spray equipment to be of type listed in 63.745(f). High volume low pressure (HVLP) sprayers are used, except in Building 5, due to type of surface coatings applied.

Condition 14 requires dry particulate filter system to control particulate emissions as 63.744(b).

Condition 15 requires filter manufacturer rating of at least 95% particulate control efficiency.

Condition 16 states that the spray cleaning operations shall be conducted in accordance with the Aerospace MACT requirements by employing one of the techniques specified in 40 CFR 63.744(c)(2) through (c)(4) for non-atomized cleaning, disassembled gun cleaning and/or atomizing cleaning, respectively. Spray gun cleaning operations using cleaning solvent solutions that contain HAPs and VOCs below the de minimis levels specified in 40 CFR 63.741(f) are exempt from these requirements.

Condition 17 limits the material throughput in the surface coating and adhesive application operations to the values listed below, calculated monthly as the sum of each consecutive twelve-month period:

a.	surface coatings	4,500 pounds/year
b.	adhesives	9,000 pounds/year
c.	miscellaneous coatings	2,500 pounds/year

Condition 18 limits VOC emissions to no more than 8.0 tons per year calculated as the sum of each consecutive twelve-month period.

Condition 19 limits visible emissions from the exhaust of the three spray booths to not exceed 5% opacity, as determined by EPA Method 9, except during startup, shutdown and malfunction, as allowed by 9 VAC 5-50-20 A.4.

Facility-wide Condition 75 (same as mNSR permit condition 5) requires fugitive VOC emissions control by following certain work practices that minimize emissions.

Monitoring and Recordkeeping

The monitoring and recordkeeping requirements in Conditions 6, 7, 11, and 28 of the mNSR permit have been incorporated and meet Part 70 requirements (and revised MACT Subpart GG). General Title V retention of records is 5 years. Some of the records required of the applicable MACT are annual or do not specify retention timeframes. For the purpose of Title V, all records relevant to this permit and facility must be maintained for 5 years. The permit includes requirements for maintaining records of all monitoring and testing required by the permit as follows:

Condition 20 requires each paint spray booth to have a differential pressure gage for continuous readings to ensure within manufacturer recommended range, properly maintained and operated. To provide a detailed periodic monitoring condition, the likely range of pressure drop values was added, at between 0 and 1 inch of water column, as indicator of proper fabric filter operation.

Condition 21 requires minimum daily observations and log of each filter pressure gage readings.

Condition 22 requires weekly visible emission inspections of the exhausts for the spray paint booths to ensure no excess visible emissions with a log kept and corrective action taken if needed or else visible emission evaluation to show compliance.

In accordance with Condition 23, the permittee shall comply with the applicable Aerospace MACT requirements for monitoring (40 CFR 63.751 (a) and (c)) and recordkeeping (40 CFR 63.752 (a), (c) and (d)), without its previous exemption for specialty coatings.

There is no monitoring requirement in the Aerospace MACT for three of the methods specified in 40 CFR 63.744(c) for spray gun cleaning used at the site (non-atomized cleaning, disassembled gun cleaning and/or atomizing cleaning). However, the facility has requested permit flexibility to allow later use of enclosed cleaning that is subject to monitoring as stated in 40 CFR 63.751(a). There is no visible emissions monitoring required since none is expected from the cleaning operation.

Condition 24 requires the permittee to record on a monthly basis surface coating usage to demonstrate compliance with the annual throughput limitations. Surface coatings now include specialty coatings as well as primers and topcoats. The permittee will maintain a Safety Data Sheet (SDS) for each surface coating, adhesive, other coating and solvent. Records shall be kept on filters rated efficiency, monitoring device logs, visible emission inspections and maintenance conducted. Also, the permittee will maintain their "super" paint, adhesive and miscellaneous coating formulations for any non-Aerospace related applications.

Compliance Assurance Monitoring (CAM) (40 CFR Part 64) does not apply because the surface coating operations do not use a control device to meet an emissions standard. (Although they use filters on the spray booths, there are no PM emission limits. There is a VOC emissions limit, but they do not use a control device to meet that limit.)

Testing

Based on the present plant configuration, the permit does not require source tests. However, should the facility add any new non-exempt coatings, the permittee shall comply with the applicable Aerospace MACT requirements for test methods and procedures under 40 CFR 63.750 (as stated in Condition 25). Specifically, EPA Reference Method 24 of 40 CFR Part 60, Appendix A has been specified in the permit (Condition 25) if testing is performed on the surface coatings to determine their VOC content.

Condition 26 was added in case of abnormal visible emissions, as stated in Condition 22, which requires a visible emission evaluation (VEE) to be conducted in accordance with 40 CFR Part 60, Appendix A, Method 9.

The DEQ and the EPA have the authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting

The permittee must submit facility wide semi-annual monitoring reports and an annual compliance certification report, as stated in Condition 27 of the Title V permit (also in 40 CFR 63.753(b) and (c)).

Title V permit condition 27 reiterates the requirements of 40 CFR 63.753(c), which specifies the submission of semiannual reports (every six months) starting from the date of the notification of compliance status that contain the information specified in 40 CFR 63.753(c) for any primer, topcoat and (with the revised MACT) specialty coating application operations. In accordance with the Aerospace MACT, the semi-annual reports shall be submitted by May 1 and November 1 of every year for the respective reporting periods of September 1 through February 28 (29) and March 1 through August 31.

In addition, per Condition 27 and the Aerospace MACT, the permittee will monitor and record any time when a non-compliant spray gun cleaning method is used. The permittee must report on any operation of the spray paint booths with filter pressure drop (or other monitored parameter) outside limit(s) specified by the filter or booth manufacturer or in locally prepared operating procedure. In their annual report the permittee must also list the number of such occurrences.

Condition 28 requires initial notifications regarding the third spray paint booth (as taken from mNSR permit condition 29).

Process Equipment Requirements – Facility-Wide Hand-Wipe and Other Cleaning Operations [EU-03]

The hand-wipe and other cleaning operations are subject to Aerospace MACT standards (40 CFR 63, Subpart GG), mostly regarding solvent content of cleaners and housekeeping measures. The standards are given in 40 CFR 63.744, recordkeeping in 40 CFR 63.752(b) and reporting in 40 CFR 63.753(b). The underlying 3/13/24 mNSR permit does not include the MACT requirements that are being added in the Title V permit. The added conditions 33 and 35 are general requirements of Aerospace MACT on recordkeeping and testing.

Corresponding Conditions in Title V Permit taken from 3/13/24 mNSR Permit are listed below:

Title V permit Condition	30	31	32	34	75
mNSR permit Condition	1	13	21	28	5

Citations

The following citations from the Virginia Administrative Codes identify the underlying authorities to implement the specific requirements determined to be applicable in the NSR permit:

9VAC5-50-50: *New and Modified Stationary Sources, Special Provisions, Notification, records and reporting.*

9VAC5-50-260: *New and Modified Stationary Sources, Emission Standards, Standards of Performance for Stationary Sources (Rule 5-4), Standard for stationary sources.*
9VAC5-60-300: *Emission Standards for Toxic Pollutants from New and Modified Sources (Rule 6-5), Applicability and designation of affected facility.*
9VAC5-80-1180: *Permits for New and Modified Stationary Sources, Standards and conditions for granting permits.*

Limitations

The following applicable process and operational limitations are from Conditions 1, 5, 13, 21, and 28 of the 3/13/24 mNSR Permit. These limitations were set in the current permit for the purpose of satisfying the applicable Aerospace MACT requirements as well as state BACT requirements. For conditions in the proposed Title V permit that contain requirements based solely on the Aerospace MACT, it is specified that such conditions are only applicable to solvent hand-wipe cleaning operations conducted in the manufacture or rework of aerospace vehicles or components, as defined by 40 CFR 63.742. The following are the Title V permit conditions:

Condition 29 states that the solvent hand-wipe cleaning operations shall meet the criteria of *exempt cleaning operations* as defined under 40 CFR 63.744 (e) or comply with the hand-wipe cleaning requirements of 40 CFR 63.744 (b). Aerojet has certified that its current hand-wipe cleaning operations (cleaning and surface activation prior to adhesive bonding under 40 CFR 63.744(e)(3)) are considered *exempt cleaning operations* per the Aerospace MACT.

Condition 30 reiterates the requirements of 40 CFR 63.744(a), which require specific handling and disposal techniques to minimize VOC emissions to the greatest extent.

Condition 31 limits the solvent consumption for the hand-wipe cleaning operations to not exceed 12.2 tons per year, calculated monthly as the sum of the previous consecutive twelve months.

Condition 32 limits VOC emissions to no more than 11.3 tons per year calculated as the sum of each consecutive twelve-month period (as some non-VOC solvents may be used).

Condition 33 requires the permittee to conduct spray gun cleaning using one of the methods specified in Aerospace MACT under 40 CFR.63.744(c), except if solvent HAP and VOC contents are below specified de minimis levels. If enclosed spray gun cleaning system is used, the system shall be closed during cleaning except when inserting or removing a spray gun, also monthly inspections to be conducted for any leaks to be repaired within 15 days.

Also, Facility-wide Condition 75 requires fugitive VOC emissions control by work management practices that minimize emissions (same as given in mNSR permit condition 5).

The visible emission standard (9 VAC 5-50-80) is not applicable to the hand-wipe cleaning operations since these activities should not result in visible emissions. The solvents are manually

applied to various parts using wiping cloths and cotton swabs. The components are then allowed to air-dry. In addition, it should also be noted that the standards in Subpart GG do not include opacity standards.

Monitoring and Recordkeeping

The monitoring and recordkeeping requirements in Condition 28 of the mNSR Permit have been incorporated and meet Part 70 requirements. General Title V retention of records is 5 years. Additionally, specific recordkeeping requirements under the Aerospace MACT are provided. It should be noted that there are no monitoring requirements for hand-wipe cleaning specified in the Aerospace MACT.

Aerojet's current hand-wipe cleaning operations (cleaning and surface activation prior to adhesive bonding under 40 CFR 63.744(e)(3)) are considered *exempt cleaning operations* per the Aerospace MACT. Should the facility add any non-exempt hand-wipe cleaning activities in the future, Aerojet will be required to comply with all applicable control and other requirements under the Aerospace MACT. Monitoring is not required unless an enclosed spray gun cleaner is added, as specified in 40 CFR 63.751(a), with records required under 40 CFR 63.752(b)(5).

The Aerospace MACT does not specify recordkeeping requirements for the housekeeping measures under 40 CFR 63.744(a). Compliance with these requirements will be determined from inspections of the facility instituting and carrying out the housekeeping measures. Furthermore, it was not the intent of the Aerospace MACT to require a startup, shutdown and malfunction plan (SSMP) for cleaning. The SSMPs required under the General Provisions (40 CFR 63, Subpart A) are only effective where excess emissions may occur. However, under 40 CFR 63.752, and stated in Condition 35, the following information shall be recorded for each cleaning solvent used for the exempt hand-wipe cleaning operations that does not conform to the vapor pressure or composition requirements of 40 CFR 63.744(b):

(1) The identity and amount (in gallons) of each cleaning solvent used each month at each operation; and

(2) A list of the processes set forth in 40 CFR 63.744(e) to which the cleaning operation applies.

Also stated in Condition 34.a., the permittee shall maintain a Safety Data Sheet (SDS) for all cleaning solvents used in hand-wipe operations. The permittee will monitor and record on a monthly basis the solvent consumption for the hand-wipe cleaning operations, and calculate monthly and annual VOC emissions to demonstrate compliance with the annual solvent consumption limit and VOC emission limitation. It should be noted that not all the solvents (or specific components of the solvents) used are regulated as VOCs (e.g., 1,1,1-trichloroethane).

As stated in Condition 34.b., should the facility engage in solvent hand-wipe cleaning operations that are not considered *exempt cleaning operations* under 40 CFR 63.744(e), (as allowed under

the mNSR Permit and the Aerospace MACT), then the permittee shall comply with the applicable Aerospace MACT requirements for recordkeeping (40 CFR 63.752).

Condition 35 requires permittee to comply with Aerospace MACT recordkeeping requirements but also subject to monitoring requirements in 40 CFR 63.751(a) if enclosed spray gun cleaners are used.

Testing

Based on the present plant configuration (i.e., having *exempt cleaning operations*), the Aerospace MACT and the permit do not require source emission tests. Because the cleaning takes place throughout the facility, any reference method testing would prove futile in determining compliance with the annual VOC emission standard.

To determine whether each cleaning solvent used for the exempt hand-wipe cleaning operations does or does not conform (for purposes of reporting only) to the vapor pressure or composition requirements of 40 CFR 63.744(b), the test methods and procedures under 40 CFR 63.750 (a) and (b) shall be used (as stated in Condition 36). Composition determination is accomplished by using data supplied by the manufacturer of the cleaning solvent. The data shall identify all components of the cleaning solvent. Vapor pressure for single-component hand-wipe cleaning solvents shall be determined using MSDS or other manufacturer's data, standard engineering reference texts, or other equivalent methods. Composite vapor pressure of a blended hand-wipe solvent shall be determined under 40 CFR 63.750(b)(2).

Should the facility engage in solvent hand-wipe cleaning operations that are not considered *exempt cleaning operations* under 40 CFR 63.744(e), (as allowed under the MNSR permit and the Aerospace MACT), the permittee shall use the test methods and procedures of 40 CFR 63.750 for solvent composition determination and vapor pressure determination, as stated in Condition 36.

Reporting

The Title V permit includes semi-annual compliance reporting, excess emission reporting, and the occurrence of any malfunctions or permit deviations.

The permittee must submit facility wide semi-annual reports and annual compliance certification reports to the EPA and DEQ, as stated in Condition 37 of the Title V permit. In addition, notification is required if the facility engages in solvent hand-wipe cleaning operations that are not considered *exempt cleaning operations* as specified in 40 CFR 63.744(e).

Whether the facility's hand-wipe cleaning operations are exempt or not, Condition 37 of the Title V permit repeats 40 CFR 63.753(b)(1), which specifies semi-annual report submittal every six months from the date of the notification of compliance status that identify the following, as applicable:

a. Any instance where a noncompliant cleaning solvent is used for a non-exempt hand-wipe cleaning operation;

b. A list of any new cleaning solvents used for hand-wipe cleaning in the previous 6 months and, as appropriate, their composite vapor pressure or notification that they comply with the composition requirements specified in 40 CFR 63.744(b)(1) and;

c. Any instance where a noncompliant spray gun cleaning method is used;

d. Any instance where a leaking enclosed spray gun cleaner remains unrepaired and in use for more than 15 days; and

e. A statement that the hand-wipe cleaning operations have been in compliance for the semi-annual period, if the operations have been in compliance for the semi-annual period.

In accordance with the Aerospace MACT, the semi-annual reports shall be submitted by May 1 and November 1 of every year for the respective reporting periods of September 1 through February 28 (29) and March 1 through August 31.

Process Equipment Requirements – Explosives Drying Operations [EU-04A/B/C]

The explosives drying operations is only subject to the state Best Available Control Technology (BACT) requirements of the 3/13/2024 mNSR permit. Conditions 12, 21, 28, and 29 of the 3/13/2024 mNSR permit are incorporated in the Title V permit. A general stack testing condition was added in the previous Title V permit, in case VOC emissions testing is required by DEQ or EPA.

Corresponding Conditions in Title V Permit taken from 3/13/24 mNSR Permit are listed below:

Title V permit Condition	38	39	40	42
mNSR permit Condition	12	21	28	29

Citations

The following citations from the Virginia Administrative Codes identify the underlying authorities to implement the specific requirements determined to be applicable in the NSR permit:

9VAC5-50-50: *New and Modified Stationary Sources, Special Provisions, Notification, records and reporting.*

9VAC5-50-260: *New and Modified Stationary Sources, Emission Standards, Standards of Performance for Stationary Sources (Rule 5-4), Standard for stationary sources.*
9VAC5-60-300: *Emission Standards for Toxic Pollutants from New and Modified Sources (Rule 6-5), Applicability and designation of affected facility.*
9VAC5-80-1180: *Permits for New and Modified Stationary Sources, Standards and conditions for granting permits.*

Limitations

The following applicable process and operational limitations are from Conditions 12 and 21 of the 3/13/24 mNSR Permit. These limitations were set in the mNSR permit for the purpose of satisfying state BACT requirements and restated in Conditions 38 and 39 of the Title V permit.

Condition 38 limits the amount of explosives dried to no more than 89 tons per year.

Condition 39 limits VOC emissions from explosives drying to no more than 5.6 tons per year.

The visible emission standard (9 VAC 5-50-80) is not applicable to the explosives drying operation since this process will not result in visible emissions. The solvent-wet energetic materials are dried in a steam-heated rotary vacuum dryer. The vacuum pump exhaust is routed through a condenser unit before being vented to the atmosphere.

Monitoring and Recordkeeping

There is no monitoring required for compliance since the electric dryers evaporate water and solvent content, typically isopropyl alcohol (IPA), at 5.6 tons/yr VOC emissions. (The rotary dryer is equipped with a condenser but the source is not claiming any VOC emissions control.) No visible emissions are expected.

The recordkeeping requirements in Condition 28 of the MNSR permit have been incorporated and meet Part 70 requirements. General Title V retention of records is 5 years. For the purpose of Title V, all records relevant to this permit and facility must be maintained for 5 years.

As stated in Title V permit Condition 40, monthly records of the quantity of explosives dried will be required to ensure that the annual limit is not exceeded. To help ensure that the annual VOC emissions limit is not exceeded, the permittee will be required to maintain a SDS for each explosive. The permittee will monitor the annual VOC emissions by calculating and recording on a monthly basis, the VOC emissions due to evaporation of the isopropyl alcohol.

Testing

The permit does not require source tests. EPA Reference Methods 25 and 25A have been included in the permit, Condition 41, as acceptable test methods if testing is performed. The

Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard. However, since there is only an annual emission limit for this process, stack testing results would have to be combined with other information (i.e., percent isopropyl alcohol and monthly process data on explosives) in order to determine compliance with the permit emission limit.

Reporting

The Title V permit includes semi-annual compliance reporting, excess emission reporting, and the occurrence of any malfunctions or permit deviations, but there is no emission unit specific reporting for explosives drying. However, initial notifications are required in Condition 42 for the construction and startup of the new RDX dryer [EU-04C].

Process Equipment Requirements – Solvent Cleaning Machines [EU-05A/B]

The two solvent cleaning machines are only subject to conditions 5, 18, 21, and 28 of the 3/13/24 mNSR permit. There are no federal requirements, NSPS or NESHAP applicable. Previously, the facility was subject to MACT Subpart T for halogenated solvent cleaning but they discontinued use of halogenated solvent 1,1,1 trichloroethane in 2011. The degreasers now primarily use n-propyl bromide (NPB), which is a VOC but on June 16, 2020, was added to the EPA list of hazardous air pollutants (HAPs). Other alternative solvents for the degreasers include Vertrel 423 (HCFC-123), Vertrel XF (HFC-4310MEE), Leksol FX (NPB and 1,2-butylene oxide), and Hypersolv (1-butanol, 1,2-butylene oxide, dimethoxymethane and NPB).

Corresponding Conditions in Title V Permit taken from 3/13/24 mNSR Permit are listed below:

Title V permit Condition	43	44	45	75
mNSR permit Condition	18	21	28	5

Citations

The following citations from the Virginia Administrative Codes identify the underlying authorities to implement the specific requirements determined to be applicable in the NSR permit:

9VAC5-50-50: *New and Modified Stationary Sources, Special Provisions, Notification, records and reporting.*
9VAC5-50-260: *New and Modified Stationary Sources, Emission Standards, Standards of Performance for Stationary Sources (Rule 5-4), Standard for stationary sources.*
9VAC5-60-300: *Emission Standards for Toxic Pollutants from New and Modified Sources (Rule 6-5), Applicability and designation of affected facility.*

9VAC5-80-1180: *Permits for New and Modified Stationary Sources, Standards and conditions for granting permits.*

Limitations

The following applicable process and operational limitations are from Conditions 5, 18, and 21 of 3/13/2024 mNSR Permit, which are restated as Condition 43, 44, and Facility-wide Condition 75 of the Title V permit. These limitations were set in the mNSR permit for the purpose of satisfying state BACT requirements.

Condition 43 limits the amount of solvent processed in the solvent cleaning machines to not exceed 2.5 tons per year (which includes newly designated EPA HAP n-propyl bromide (NPB)).

Condition 44 limits the VOC emissions from solvent cleaning to no more than 2.5 tons per year.

Facility-wide Condition 75 requires fugitive VOC emissions control by following work practices that minimize emissions.

The visible emission standard (9 VAC 5-50-80) is not applicable to the solvent cleaning machines since the equipment operation will not result in visible emissions.

Monitoring and Recordkeeping

There is no monitoring required for compliance since there is no pollution control device and the VOC/HAP emissions are calculated from throughput records with no visible emissions expected.

The recordkeeping requirements in Condition 28 of the 3/13/24 mNSR Permit have been incorporated and meet Part 70 requirements. For the purpose of Title V, all records relevant to this permit and facility must be maintained for 5 years. The corresponding Title V Condition 45 requires the following (as the source is aware NPB use is now considered both HAP and VOC):

a. Monthly records of the quantity of solvents processed in the solvent cleaning machines that show permit limits are not exceeded;

b. Safety Data Sheet (SDS) or similar for each solvent used in the machines that shows its VOC content.

c. Monthly and annual VOC emission calculations for the solvent cleaning machines.

d. Scheduled and unscheduled maintenance and operator training.

Testing

The permit does not require source tests.

Reporting

The Title V permit includes semi-annual compliance reporting, excess emission reporting, and the occurrence of any malfunctions or permit deviations, but there is no emission unit specific reporting for the cold solvent cleaning machines [EU-05A/B].

Process Equipment Requirements – Sparging & Drying Operations [EU-06]

The sparging and drying operation refers to removal of solvents added to propellants or other materials that act as stabilizers during its transportation and storage or processing. The sparging operation removes solvents by stripping with nitrogen gas and the drying operation utilizes small, electric drying ovens to remove certain solvents. The sparging and drying operations are only subject to conditions 5, 19, 21, 28, 29 and 39 of the 3/13/24 mNSR permit. However, condition 39 of the 3/13/24 mNSR permit is excluded from the Title V permit, since its basis is the state toxics rule (9 VAC 5-60-300), which is not part of the SIP and therefore not federally enforceable. There are no federal requirements, NSPS, NESHAP or MACT and no existing source rules applicable to the operation.

Corresponding Conditions in Title V Permit taken from 3/13/24 mNSR Permit are listed below:

Title V permit Condition	46	47	48	49	75	-
mNSR permit Condition	19	21	28	29	5	39

Citations

The following citations from the Virginia Administrative Codes identify the underlying authorities to implement the specific requirements determined to be applicable in the mNSR permit:

9VAC5-50-50: *New and Modified Stationary Sources, Special Provisions, Notification, records and reporting.*
9VAC5-80-1180: *Permits for New and Modified Stationary Sources, Standards and conditions for granting permits.*

Limitations

The following applicable process and operational limitations are from Conditions 5, 19, 21, 28, 29, and 39 of the 3/13/24 mNSR Permit. These limitations were set in the mNSR Permit for the purpose of satisfying state BACT requirements. They are restated in Title V permit Conditions 46 - 49, and Facility-wide Condition 75.

Condition 46 limits the amount of solvent processed in the sparging and drying operations to no more than 6.3 tons per year.

Condition 47 limits the VOC emissions from the sparging and drying operations to no more than 3.3 tons per year (as some of the solvents processed are HAPs but not VOC or exempt VOC).

Facility-wide Condition 75 requires fugitive VOC emissions control by following work practices that minimize emissions.

Again, Condition 39 of 3/13/24 mNSR Permit is not being added in the Title V permit at source request. The condition is considered "State Only Enforceable" since its requirements reference the state toxics rule in 9 VAC 5-60-300 (which is not part of the SIP and therefore not federally enforceable). It allows use of existing HAPs (hexane, methylene chloride, and toluene) and establishes requirements for using alternative HAP solvents in the sparging and drying operation if they meet the state toxics rule and do not make it subject to any federal standards.

The visible emission standard (9 VAC 5-50-80) is not applicable to the sparging and drying operations since this process will not result in visible emissions. The solvent-wet energetic materials ("lacquers") and metal powders are prepared for use by stripping the solvent with nitrogen gas or drying the materials in an oven.

Monitoring and Recordkeeping

There is no monitoring required for compliance since there is no pollution control device and the VOC/HAP emissions are calculated from throughput records with no visible emissions expected.

The recordkeeping requirements in Condition 28 of the mNSR permit have been incorporated and meet Part 70 requirements. The recordkeeping requirements meet the general Title V record retention of 5 years. Condition 48 of the Title V permit requires the following:

a. Monthly records of the quantity of solvent sparged and dried to ensure that the annual VOC emission limit is not exceeded.

b. An SDS is required for each solvent materials used.

c. Monthly and annual VOC emission calculations from the sparging and drying of various solvents.

The permittee will keep appropriate records of any alternative HAP solvent used in the sparging and drying operations.

There is no monitoring required for compliance with the visible emission standard (9 VAC 5-50-80) since the sparging and drying operations will not result in visible emissions.

Testing

The permit does not require source tests (as emissions are based on solvent material balance).

Reporting

The Title V permit includes semi-annual compliance reporting, excess emission reporting, and the occurrence of any malfunctions or permit deviations, but there is no emission unit specific reporting for explosives drying. However, initial notifications are required in Title V permit Condition 49 for the construction and startup of the new explosives sparging operation [EU-06].

Process Equipment Requirements – PM-Emitting Process Equipment [EU-07A/B through EU-11]

The PM-emitting processes are subject to conditions 8-10, 24, 25, 28, and 29 of the 3/13/24 mNSR permit. The Title V permit has updated Conditions 53 - 54 (mNSR permit conditions 9 - 10), also added Conditions 55 - 57 on monitoring, corrective action procedures and recordkeeping. There are no federal requirements, NSPS, NESHAP or MACT applicable.

The PM-emitting equipment consists of the following sources:

a. Oxidizer grinders [EU-07] (for particle size reduction of solid oxidizers);
b. Grit blast machines [EU-08] (to prepare rocket motor case surfaces for coatings);
c. Propellant machining operations [EU-09] (lathes, mills and saw for propellant materials);
d. Insulation machining operations [EU-10]; (lathes for insulated components); and
e. Phenolic and rubber parts machining operations [EU-11] (lathes for such components).

Corresponding Conditions in Title V Permit taken from 3/13/24 mNSR Permit are listed below:

Title V permit Condition	50	51	52	53	54	57	58
mNSR permit Condition	8	24	25	9	10	28	29

Citations

The following citations from the Virginia Administrative Codes identify the underlying authorities to implement the specific requirements determined to be applicable in the mNSR permit:

9VAC5-50-20 C: *New and Modified Stationary Sources, Special Provisions, Compliance*
9VAC5-50-50: *New and Modified Stationary Sources, Special Provisions, Notification, records and reporting.*

9VAC5-50-260: *New and Modified Stationary Sources, Emission Standards, Standards of Performance for Stationary Sources (Rule 5-4), Standard for stationary sources.*

9VAC5-80-1180: *Permits for New and Modified Stationary Sources, Standards and conditions for granting permits.*

Limitations

The following applicable process and operational limitation is from Condition 8 of the 3/13/24 mNSR Permit. The limitation was set for the purpose of satisfying state BACT requirements and are restated in Title V permit condition 50.

Condition 50 requires operation of an appropriate dust collection system on each of the aforementioned sources (with the exception of the propellant cut-back saw [EU-09]. Each system must have a control efficiency of 95% or greater. Particulate emissions from the cut-back saw and two of the cut-back machines that are vented outside, which are associated with the propellant machining operations [EU-09], are controlled using wet suppression ("wet box"). The two new cut-back machines are uncontrolled since processing soft propellants with no emissions.

Conditions 51 and 52 set particulate emission limits for the new oxidizer grinders [EU-07B] and grit blasting machines [EU-08C].

Monitoring and Recordkeeping

The monitoring and recordkeeping requirements in Conditions 9 and 10 of the 3/13/24 mNSR Permit have been incorporated and meet Part 70 requirements. They are restated in the Title V permit as Conditions 53 and 54 for control device monitoring but the requirements have been expanded.

General Title V retention of records is 5 years. For the purpose of Title V, all records relevant to this permit and facility must be maintained for 5 years.

Condition 53 requires each dust control system that vents to the atmosphere (with the exception of the propellant cut-back saw [EU-09]) to be equipped with a monitoring device. Condition 53.a. requires continuous measurement of the differential pressure change across each fabric filter control device. Condition 53.b. was added for periodic monitoring based on the vacuum pressure gage readings of each "wet box" scrubber (with the exception of the cut-back saw that has a "wet box" but no vacuum gage). Each monitoring device shall be installed, maintained, calibrated, and operated in accordance with approved procedures that are based on manufacturer recommendations. Each monitoring device shall be provided with adequate access for inspection and shall be in operation when the emission unit is operating.

Condition 54 requires the control monitoring devices (used to continuously measure differential pressure change across each particulate filter, and vacuum pressure readings for each "wet box")

to be observed by the permittee with a frequency of not less than once per day when the emission unit is in operation. The permittee shall keep a log of the observations. Condition 54.a. was added to provide the normal range of pressure gage readings for the fabric filters and Condition 54.b. was added as the normal range of vacuum pressure readings for the "wet box" scrubbers. The monitoring details in Condition 53 and the ranges in Condition 54 are added to meet Title V guidelines for having monitoring devices that provide practical means of indicating compliance.

Condition 55 was added for the propellant cut-back saw [EU-09] that does not have a vacuum gage on its "wet box" scrubber. The saw and control device are monitored by following written operating procedures with a log of observations kept on any problems or maintenance performed.

Condition 56 was added to require corrective action procedures to be followed if monitoring indicates operation are out of parameter ranges given in Condition 54 or exceptions are noted during operation of the cut-back saw in Condition 55. Then, the permittee must perform diagnostics, maintenance and adjustments to the process and/or control device to correct the problem and keep a log of the actions taken. If the monitoring exceedance persists, DEQ shall be notified and the operation shut down or curtailed until it can be operated in compliance again.

Condition 57 lists the recordkeeping requirements for the process equipment [EU-07A/B through EU-11], including emissions calculations, log of monitoring devices observations and any corrective actions taken if monitors indicate out of parameter range, as stated in Condition 51-56.

CAM (40 CFR 64) does not apply to the machining operations [EU-09, EU-10 and EU-11] because there is no permit emission limit specified. For the grinders [EU-07A/B] and grit blasting machines [EU-08A/B/C], the pre-control device PM_{10} (and $PM_{2.5}$) emissions are below major source levels and so again CAM does not apply. (See Attachment for emissions summary).

Testing

The permit does not require any source tests.

Reporting

The Title V permit includes semi-annual compliance reporting, excess emission reporting, and the occurrence of any malfunctions or permit deviations. There is no emission unit specific reporting for the PM-Emitting Process equipment, but in case of monitoring exceedances, the permittee shall notify the DEQ and shut down or curtail operations, as stated in Condition 56, to comply with permit limits. The monitoring exceedance shall be included in the semi-annual compliance report, as stated in General Conditions 84 and 86.

In addition, there are initial notifications required in Condition 58 for the construction and startup of two new oxidizer grinders [EU-07B] to be submitted to DEQ.

Process Equipment Requirements – Motor Case Lining Operations [EU-13A/B]

The motor case lining operation [EU-13A] uses an applicator machine to line the interiors of motor cases with a coating that is cured in an oven. The liner material consists of solid compounds and non-volatile liquids that are hand applied by brushes or non-spray equipment, which is exempt from Aerospace MACT. The new lining operation [EU-13B] uses a spray nozzle, which is subject to Aerospace MACT, but exempt from the applicator types listed in 40 CFR 63.745(f)(1) since it is mounted on a traveling wand or extension, as exempted in 40 CFR 63.745(f)(3)(i). The coatings are subject to the standards in 40 CFR 63.745, unless exempted in case of low-volume coatings use under 40 CFR 63.741(g), or by use of averaging provisions described in 40 CFR 63.743(d).

Also, solvents are used to thin the liner materials during preparation and occasional cleaning. The current solvent used is methylene chloride ($MeCl_2$), which is a HAP but not VOC. However, in April 2024, EPA announced a ban on most use of methylene chloride within two years and the applicant is working on reformulation that will comply with the requirements of 40 CFR 63.745(c). Alternatively, the permittee may use VOC-based, non-HAP solvents such as isopropyl alcohol (IPA) or methyl ethyl ketone (MEK). The VOC emissions from the motor case lining operation [E-13A/B], including solvents, is limited to 4.3 tons per year.

The motor case lining operations are only subject to conditions 2, 20, 21, 28, and 29 of the 3/13/24 mNSR permit. Aerospace MACT (Subpart GG) is the federal requirement applicable only to the new lining operation [EU-13B]. The current Title V permit included a stack testing condition. However, that is being streamlined out since the VOC (or HAP) emissions are determined from material balance on their consumption, whether $MeCl_2$ or IPA or MEK.

Corresponding Conditions in Title V Permit taken from 3/13/24 mNSR Permit are listed below:

Title V permit Condition	59	60	62	66	69
mNSR permit Condition	20	21	2	28	29

Citations

The following citations from the Virginia Administrative Codes identify the underlying authorities to implement the specific requirements determined to be applicable in the NSR permit:

9VAC5-50-50: *New and Modified Stationary Sources, Special Provisions, Notification, records and reporting.*
9VAC5-50-260: *New and Modified Stationary Sources, Emission Standards, Standards of Performance for Stationary Sources (Rule 5-4), Standard for stationary sources.*

9VAC5-80-1180: *Permits for New and Modified Stationary Sources, Standards and conditions for granting permits.*

Limitations

The following process and emission limitations for the motor case lining operation [EU-13A/B] are taken from Condition 2, 20 and 21 of the 3/13/24 mNSR Permit that are restated in the Title V permit as Conditions 59, 60 and 62. The other conditions are added to incorporate Aerospace MACT requirements that apply to the new motor case lining operation [EU-13B].

Condition 59 limits the amount of solvent throughput for motor case lining operations [EU-13A/B] to no more than 4.3 tons per year.

Condition 60 limits the VOC emissions from the motor case lining operations [EU-13A/B] to no more than 4.3 tons per year.

Condition 61 provides for exception under 40 CFR 63.74(g) on low-volume throughput for the new motor case lining operation [EU-13B], or otherwise must meet the special coating standards in 40 CFR 63.745(c), or averaging provision allowed under 40 CFR 63.745(d), or else control equipment must be installed in accordance with 40 CFR 63.745(d).

Condition 62 also requires minimizing emissions of VOC and VOC-HAP by the careful handling and transfer of coatings to and from tanks, vats vessels and piping to avoid leaks and spills (which is also similar to Facility-wide Condition 75).

Condition 63 allows use of sprayer with extension for new motor case lining operation [EU-13B], which would be exempt from the MACT standard according to 40 CFR 63.745(f)(3)(i). Otherwise, the coatings shall be brushed on or using other non-spray application methods, unless a permit is obtained to use non-exempt spray equipment.

Condition 64 references Aerospace MACT requirements for spray gun cleaning activities [EU-13B] given in 40 CFR 63.744(c), unless exempt using cleaning solvent solutions that contain HAP and VOC below the de minimis levels specified in 40 CFR 63.741(f).

Monitoring and Recordkeeping

The monitoring and recordkeeping requirements in Condition 28 of the mNSR permit have been incorporated and meet Part 70 requirements. The recordkeeping requirements meet the general Title V record retention of 5 years. Condition 66 of the Title V permit repeats the requirements but adds item b., in case source claims low-volume coatings exemption under 40 CFR 63.741(g).

a. Monthly records of the quantity of solvent used in the motor case lining operation [EU-13A/B] to ensure that the annual VOC emission limit is not exceeded.

b. Annual throughput of coatings used in the motor case lining operation [EU-13B], in order to determine whether requirements of 40 CFR 63.745 do not apply based on low-volume coatings use, as specified in 40 CFR 63.741(g). Annual totals shall be calculated monthly as the sum of each consecutive twelve-month period;

c. SDS is required for each solvent materials used.

d. Monthly and annual VOC emission calculations from the motor case lining operation.

The permittee will keep appropriate records of any alternative HAP solvent used in the motor case lining operation (as can be determined from the records on solvent throughputs and SDS to meet Condition 66.a. and c).

Condition 65 references Aerospace MACT requirements for monitoring in 40 CFR 63.751 and recordkeeping in 40 CFR 63.752 for the sprayer-applied motor case lining operation [EU-13B]. Monitoring is only referenced if an enclosed spray gun cleaner is added at the site. Otherwise, there is no monitoring required for compliance, including visible emission standard (9 VAC 5-50-80), since the lining operation will exhaust inside the building and not directly vented out.

Testing

Based on the present plant configuration, the permit does not require source tests. However, should the facility add any new non-exempt coatings, the permittee shall comply with the applicable Aerospace MACT requirements for test methods and procedures under 40 CFR 63.750 (as stated in Condition 67). Specifically, EPA Reference Method 24 of 40 CFR Part 60, Appendix A has been specified in the permit (Condition 67) if testing is performed on the surface coatings to determine their VOC content.

The DEQ and the EPA have the authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting

The Title V permit includes semi-annual compliance reporting, excess emission reporting, and reporting of the occurrence of any malfunctions or permit deviations.

The permittee must submit facility wide semi-annual monitoring, as stated in Condition 68 of the Title V permit but only for the new motor case lining operation [EU-13B] since it is subject to MACT Subpart GG (reference 40 CFR 63.753(a) and (c)).

Title V permit condition 68 reiterates the requirements of 40 CFR 63.753(c), which specifies the submission of semiannual reports occurring every six months from the date of the notification of compliance status that contains the information specified in 40 CFR 63.753(c) for any primer, topcoat and specialty coating application operations. In accordance with the Aerospace MACT,

the semi-annual reports shall be submitted by May 1 and November 1 of every year for the respective reporting periods of September 1 through February 28 (29) and March 1 through August 31.

In addition, per Condition 68.d. and the Aerospace MACT, the permittee will monitor and record any time when a non-compliant spray gun cleaning method is used. The permittee must report on any operation that does not comply with the standards in the Aerospace MACT, including coatings and (spray gun) cleaning methods. In the semi-annual report the permittee must list all such occurrences or submit a statement from a certified official that the operation was in compliance.

The following mNSR permit condition is added for new construction and startup notification. Condition 69 requires initial notification on the construction, and start-up of the new motor case lining operation in Building 301 [EU-13B], as taken from mNSR permit condition 29.

Process Equipment Requirements – Emergency Engines [EU-14A through EU-14K]

The permit requirements are from 40 CFR 63 (MACT) Subpart ZZZZ, and 40 CFR 60 (NSPS) Subparts IIII and JJJJ, which Virginia has not taken delegation from EPA, except for major sources subject to Title V permitting. Therefore, the requirements are being added in the Title V permit but in tabular format (instead of separate conditions).

The first table (under Condition 70) summarizes requirements for older emergency diesel engines [EU-14A through D] in accordance with MACT Subpart ZZZZ with columns on Limitations; Monitoring & Compliance; Testing; and Notification, Reporting, Recordkeeping. The second table (under Condition 71) summarizes requirements for emergency diesel engines [EU-14E, F, G and K], which are subject to NSPS Subpart IIII, with similar column headings (except the second column uses NSPS wording Emission "Standards" instead of "Limitations"). The third table (under Condition 72) similarly summarizes the requirements for emergency propane-fired engine generators [EU-14H, I and J] in accordance with NSPS Subpart JJJJ.

Limitations

The limitations and emission standards for the emergency engine generators and fire pump are listed in table format under Condition 70 – 72, as described below:

The facility operates one fire pump and three emergency diesel engine generators, manufactured before 2006 [EU-14A, B, C and D], which are affected sources under 40 CFR 63.6540 and so subject to MACT Subpart ZZZZ, as existing stationary RICE (Reciprocating Internal Combustion Engines). The column heading Emission and Operating Limitation in Condition 70 references MACT Subpart ZZZZ, specifically 40 CFR 63.6602 (Table 2c), which requires inspection and maintenance schedule for the engines. Then, 40 CFR 63.6604(b) requires use of ultra low sulfur diesel fuel with maximum 15 ppm sulfur content.

There are also four diesel engine-driven emergency generators [EU-14E, F, G and K] that were manufactured after 2006, and therefore subject to NSPS Subpart IIII. The operating and emission limitations for the newer emergency diesel engine generators, as subject to NSPS Subpart IIII, Their operating and emission limitations are listed in table format under Condition 71 with column heading Emission Standard, Fuel Requirements. The table references 40 CFR 60.4205(b) for applicable engine emission limits. It also references 40 CFR 60.4206 for proper operation and maintenance over the life of the engines. The use of ultra low sulfur diesel is also required in 40 CFR 60.4207(b) with maximum 15 ppm sulfur content.

Finally, there are three propane gas-fired emergency engine generator sets [EU-14H, I and J], manufactured in 2021 (or after 2006), which are subject to NSPS Subpart JJJJ. The operating and emission limitations for the emergency propane-fired engine generators, as subject to NSPS Subpart JJJJ, are listed in a table under Condition 72, with column heading Emission Standards. The table references section 60.4233(d) for emission standards for one engine [EU-14H] with reference to section 60.4233(a) for standards applicable to two other engines [EU-14I and J]. Also, section 60.4234 requires proper operation and maintenance over the life of the engines.

Monitoring

The monitoring requirements are given in the table columns marked Monitoring & Compliance in Conditions 70 – 72, as the following:

The older emergency diesel engine generators [EI-14A through D] are subject to MACT Subpart ZZZZ, specifically 40 CFR 63.6605, 63.6625(e) & (f), as given in Condition 70 table. Each engine shall be equipped with non-resettable hour meter, operated and maintained according to manufacturer specifications or own plan as approved by DEQ. The engines shall be used for emergency purposes, except limited non-emergency use not to exceed 100 hours per year.

The newer emergency diesel engine generators [EI-14E, F, G and K] are subject to NSPS Subpart IIII, specifically 40 CFR 60.4211(a) and (c), as given in Condition 71 table. It requires purchase of engines certified to meet EPA standards. They must be installed, operated and maintained according to manufacturer specifications. Section 60.42099A) requires each engine be equipped with non-resettable hour meter. The engines shall be used for emergency purposes, except limited non-emergency use not to exceed 100 hours per year.

The emergency propane-fired engine generators [EI-14H, I and J] are subject to NSPS Subpart JJJJ, specifically 40 CFR 60.4237 (c), as given in Condition 72 table. Each engine must have a non-resettable hour meter. Section 60.4243(a), (b), and (d) requires purchase of EPA certified engine that must be installed and operated according to manufacturer specifications. The engines shall be used for emergency purposes, except limited non-emergency use not to exceed 100 hours per year.

The diesel engine generators are subject to visible emission observations for compliance with the opacity standards in 9VAC5-40-80 or 9VAC5-50-80, as stated in Title V permit Facility-wide condition 74. The propane (spark-ignition) engines are excluded, as propane-fired engines are not expected to produce visible emissions. The monitoring details are given in Condition 73. The observations shall be made once per year if the engine is operated less than 250 hours per year. If operated longer, then the observations shall be made once every 250 hours of operation. If visible emissions are noted, corrective action shall be taken to resolve any excess emissions. Otherwise, a visible emission evaluation (VEE) shall be conducted using EPA Reference Method 9 to show compliance with the facility-wide 20% opacity standard. The permittee shall maintain a log of the observations, any corrective action taken or VEE conducted.

Testing

Testing is not required for engines subject to MACT Subpart ZZZZ or NSPS Subparts IIII and JJJJ. However, DEQ may require opacity testing if visible emissions are observed that may exceed the general 20% opacity standard given in Virginia Regulations 9VAC5-40-80 and 9VAC5-50-80 (as also stated in Facility-wide Condition 74).

Recordkeeping and Reporting

The recordkeeping and reporting requirements are given in the table columns title Notification, Reporting, Recordkeeping as the following:

The older emergency diesel engine generators [EI-14A through D] are subject to MACT Subpart ZZZZ, specifically 40 CFR 63.6655(e) & (f) that requires keeping records of maintenance conducted, also records on all emergency and non-emergency operations. Then, sections 63.6640(b) and 63.6650(d) require annual compliance report on any deviations from emission or operating limits also given in Table 2c and 6, with an electronic copy sent to CEDRI at EPA.

The newer emergency diesel engine generators [EI-14E, F, G and K] are subject to NSPS Subpart IIII, specifically 40 CFR 60.4214(b) requires emergency engines that do not meet the standards of non-emergency engines with records of emergency and non-emergency operations. Section 60.4212(d) requires an annual report be submitted only if non-emergency use for another entity, as stated in 60.4211(f)(3)(i), with electronic copy sent to CEDRI at EPA.

The emergency propane-fired engine generators [EI-14H, I and J] are subject to NSPS Subpart JJJJ, specifically 40 CFR 60.4245 (a) includes requirements to keep records of manufacturer certification, notifications sent and maintenance conducted for each engine. If the emergency engine over 25 hp does not meet the emission standard for non-emergency engine, then records must be kept on emergency and non-emergency use as stated in 40 CFR 60.4245 (b). Therefore, only the 30 hp generator [EU-14H] could be subject to it. However, no annual report is required (not shown in table) for any engine less than 100 hp, which excludes all three smaller generators.

There is also a recordkeeping requirement as part of Condition 73, as the source must keep a log of visible emissions observations on each engine to be conducted once a year or every 250 hours, and include any corrective actions taken or visible emissions evaluation (VEE) conducted.

Process Equipment Requirements – Facility Wide Conditions

Citations

The following citations from the Virginia Administrative Codes identify the underlying authorities to implement the specific requirements determined to be applicable in the mNSR permit (or taken from the Virginia Regulations for the Control and Abatement of Air Pollution):

9VAC5-50-20 F: *New and Modified Stationary Sources, Special Provisions, Compliance.*
9VAC5-50-80: *New and Modified Stationary Sources, Standards of Performance for Visible Emissions and Fugitive Dust/Emissions (Rule 5-1), Standards for visible emissions.*
9VAC5-50-30 F&G: *New and Modified Stationary Sources, Special Provisions, Performance testing.*
9VAC5-220-30 A: *Variance for Rocket Motor Test Operations at Aerojet Rocketdyne, Inc. Orange County Facility, Applicability of standard for visible emissions and standards for particulate matter.*

Limitations

Condition 74, limits facility visible emissions to standard 20% opacity, except for one six minute period of up to 30% opacity, as given in 9VAC-5-80-80. The exception is for rocket test facility [EU-01], which has a SIP approved exemption (9VAC5-220-30). Also, emission units with more stringent requirements specified, such as paint booths, must meet a lower (5%) opacity limit.

Condition 75 is taken from Condition 5 of 3/13/24 mNSR Permit, which requires the facility to minimize volatile organic compound emissions by avoiding solvent material spills, discarding in sewer or evaporation beyond that consistent with air pollution control practices.

Monitoring, Recordkeeping and Reporting

There are no monitoring, recordkeeping or reporting requirements for Facility-wide conditions listed, as they are given under the specific emission units in earlier sections. The Facility-wide conditions are a restatement of the regulations on opacity and minimizing VOC emissions that apply to all sources. They are provided as default requirements for any emission unit that does not have a specific or more stringent emission limit.

Testing

Conditions 76 and 77 are general requirements for facility to be constructed to allow for testing using appropriate EPA test methods at appropriate locations, to be conducted upon DEQ request.

STREAMLINED REQUIREMENTS

The following conditions in the underlying mNSR permit of March 13, 2024, have been streamlined out:

- Condition 27 of 3/13/24 mNSR permit on DEQ mailing address was removed since given for information purposes and incorporated in the Title V permit Reporting condition 5.

- Parts of condition 29 of 3/13/24 mNSR permit on Initial Notifications may be removed if the required notification is submitted by the permittee before the Title V permit is issued.

- Condition 39 of 3/13/24 mNSR permit on Sparging & Drying Operations [EU-06] is streamlined out as a "state only enforceable" condition that is not federally enforceable, since it is based on the state toxics rule (9VAC 5-60-300), which is not part of the SIP.

INSIGNIFICANT EMISSIONS UNITS

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting shall be required for these emission units in accordance with 9VAC5-80-110.

Insignificant emission units include the following:

Emission Unit No.	Emission Unit Description	Citation[1] (9VAC_)	Pollutant(s) Emitted (9VAC5-80-720 B.)	Rated Capacity (9VAC5-80-720 C.)
IS-01	Nitramines, explosives and oxidizer grinding operations (vented internally)	5-80-720 B	PM_{10}	500 lbs/hr of explosives and oxidizers
IS-02	Inert ingredient preparation and screening operations (vented internally)	5-80-720 B	PM_{10}	500 lbs/hr of propellant ingredients
IS-03	Propellant mixing, casting and curing operations	5-80-720 B.1 and B.2	PM_{10} and VOCs	4,500 lbs/batch of propellant
IS-04	Propellant machining operations (vented internally)	5-80-720 B.1	PM_{10}	250 lbs/hr of propellant

Emission Unit No.	Emission Unit Description	Citation[1] (9VAC_)	Pollutant(s) Emitted (9VAC5-80-720 B.)	Rated Capacity (9VAC5-80-720 C.)
IS-06	Liner mixing and spraying operations	5-80-720 B.2 and B.5	VOCs and HAPs	75 lbs/hr of liner materials
IS-07	Motor case X-ray units (Linatron machines and CT Scanner)	5-80-720 B.2 and B.5	VOCs and HAPs	1 lb/hr of x-ray chemicals
IS-A-01	Gasoline AST	5-80-720 B.2	VOCs	1,000 gallons
IS-A-02	Diesel fuel AST	5-80-720 B.2	VOCs	1,000 gallons
IS-A-03	Fuel Oil Storage Tank	5-80-720 B.2	VOCs	300 gallons
IS-A-04	Ethylene glycol storage tanks	5-80-720 B.2	VOCs	Various tank capacities (150 to 1,000 gallons)
IS-08	Air Facility (ancillary equipment only – propane, TEB and silane tanks)	5-80-720 B.2	VOCs	Various tank capacities (8 pounds to 1,000 gallons)
IS-09	R&D-related propellant combustion testing equipment	5-80-720 B.1, B.2 and B.5	PM, VOCs and HAPs	20 lbs/hr of R&D propellants
IS-10	Adiprene mixing operations	5-80-720 B.2 and B.5	VOCs and HAPs	1 gal/hr of adhesive mixture
IS-11	Composites operations	5-80-720 B.2 and B.5	VOCs and HAPs	1 gal/hr of composite materials
IS-12	Foam blowing operations	5-80-720 B.2 and B.5	VOCs and HAPs	1 gal/hr of polyurethane foam materials
IS-13	Grit Blast Machine (vented internally)	5-80-720 B.1	PM_{10}	50 lbs/hr of blasting media
IS-14	Propellant extruding operations	5-80-720 B.2	VOCs	50 lbs/hr of propellant
IS-15	Phenolic and rubber parts molding operations	5-80-720 B.1 and B.2	PM and VOCs	100 lbs/hr of phenolic resins and rubber molding compounds
IS-16	Insulation bake-out oven (Lindberg unit or equivalent)	5-80-720 B.2 and B.5	VOCs and HAPs	100 lbs/hr of insulation materials
IS-17	Miscellaneous curing ovens and autoclaves	5-80-720 B.2 and B.5	VOCs and HAPs	100 lbs/hr per unit of metal and plastic components per unit
IS-18	Propellant R&D activities	5-80-720 B.2 and B.5	VOCs and HAPs	1 gal/hr of solvent
IS-19	Magnaflux machines (or equivalent)	5-80-720 B.2	VOCs	1.0 gal/hr of dye penetrant per unit

Emission Unit No.	Emission Unit Description	Citation[1] (9VAC_)	Pollutant(s) Emitted (9VAC5-80-720 B.)	Rated Capacity (9VAC5-80-720 C.)
IS-20	Miscellaneous vacuum ovens and autoclaves	5-80-720 B.2 and B.5	VOCs and HAPs	100 lbs/hr of process materials per oven
IS-22	Motor case soak-out operations	5-80-720 B.2 and B.5	VOCs and HAPs	10 gal/hr of solvent
IS-23	Metalworking operations (vented internally)	5-80-720 B.1	PM_{10}	500 lbs/hr of metal stock
IS-24	Scramjet rocket engine testing (using ethylene gas)	5-80-720 B.3	CO	35 lbs of ethylene gas per test
IS-25	Propane fired inert verification oven	5-80-720 B.1	NO_2	0.5 MMBtu/hr
IS-26	Propane tank	5-80-720 B.2	VOCs	1,000 gallons
IS-27	Ramjet rocket engine testing (using JP-10)	5-80-720 B.1, B.2 and B.3	PM_{10}, VOCs, SO_2, NO_2, CO	60 gal/hr and 1,000 gal/yr of rocket fuel
IS-28	Parts washer units for general maintenance	5-80-720 B.2	VOCs	one 20-gallon and one 35-gallon
IS-29	C4 Rocket motor testing w/asbestos impregnated rubber insulation	5-80-720 B.1 and B.5	PM_{10}, HAPs	0.5 lb/unit of insulation, 12 rocket motors per year
IS-30	Ramjet rocket engine testing (using JP-7)	5-80-720 B.1, B.2 and B.3	PM_{10}, VOCs, SO_2, NO_2, CO	60 gal/hr and 1,000 gal/yr of rocket fuel
IS-31	Ramjet and scramjet rocket engine testing (Using hydrogen gas)	5-80-720 B.3	CO	200 lb/hr and 2,000 lb/yr of hydrogen gas
IS-32	Long-Range rocket motors with turbojet engines (using JP-4)	5-80-720 B.1, B.2 and B.3	PM_{10}, VOCs, SO_2, NO_2, CO	60 gal/hr and 1,000 gal/yr of rocket fuel
IS-33	Rocket motor tests (using HAN)	5-80-720 B.1	NO_2	5 lbs/hr and 300 lbs/yr of HAN
IS-34	Ingredient preparation booth for R&D propellant formulations	5-80-720 B.1, B.4 and B.5	PM_{10}, Lead, HAPs	10 lb/hr and 1,000 lb/yr of ingredients
IS-35	Nitramines, explosives and oxidizer grinding operations (vented to the atmosphere)	5-80-720 B.1	PM_{10}	20 lb/hr of energetic materials
IS-36	Ramjet rocket engine tests (using methane and hydrogen gas mixtures)	5-80-720 B.1, B.2, B.3	CO, NO_2	5 gal/hr and 40 gal/yr of methane and hydrogen gas

Emission Unit No.	Emission Unit Description	Citation[1] (9VAC_)	Pollutant(s) Emitted (9VAC5-80-720 B.)	Rated Capacity (9VAC5-80-720 C.)
IS-37	Liquified propane storage tank (pressurized)	5-80-720 B.1 and B.2	VOCs	30,000 gallons
IS-38	Ramjet/Scramjet rocket engine tests (using RJ-10, DMCO, and JP-10 Blend)*	5-80-720 B.1, B.2, B.3	CO, NO_2, PM_{10}, SO_2, VOCs	50 gal/hr and 1,500 gal/yr of rocket fuel
IS-39	Electric drum evaporator	5-80-720 B.1	PM_{10}	1.67 gal/hr of waste photographic solutions
IS-A-05	Diesel fuel storage tank	5-80-720 B.2	VOCs	5 gallons
IS-A-06 (EU-14B)	Diesel fuel storage tank	5-80-720 B.2	VOCs	500 gallons
IS-A-07 (EU-14C)	Diesel fuel storage tank	5-80-720 B.2	VOCs	100 gallons
IS-A-08 (EUD-14G)	Diesel fuel storage tank	5-80-720 B.2	VOCs	100 gallons
IS-A-09 (EU-14D)	Diesel fuel storage tank	5-80-720 B.2	VOCs	500 gallons
IS-A-10 (EUD-14E)	Diesel fuel storage tank	5-80-720 B.2	VOCs	100 gallons
IS-A-11	Diesel fuel storage tank	5-80-720 B.2	VOCs	100 gallons
IS-A-12 (EUD-14F)	Diesel fuel storage tank	5-80-720 B.2	VOCs	1,000 gallons
IS-A-13 (EUD-14K)	Diesel fuel storage tank	5-80-720 B.2	VOCs	255 gallons

[1]The citation criteria for insignificant activities are as follows:
9VAC5-80-720 A - Listed Insignificant Activity, Not Included in Permit Application
9VAC5-80-720 B - Insignificant due to emission levels
9VAC5-80-720 C - Insignificant due to size or production rate

* Based on the letter dated August 8, 2025, the facility reported the utilization of RJ-10, DMCO, and JP-10 Blend at the Rocket Test Facility. These alternative rocket fuels/propellants are authorized by condition 1 of the permit.

COMPLIANCE PLAN

No compliance plan is necessary for inclusion in this Title V Operating Permit renewal.

PERMIT SHIELD AND INAPPLICABLE REQUIREMENTS

Condition 79 lists the regulations which are not applicable to this facility and a reason for the inapplicability as of the date of this Title V permit:

Citation	Title of Citation	Description of Applicability
9VAC5-80-360 through 9VAC5-80-705	Acid Rain Provisions	Not applicable facility-wide
40 CFR Part 60, Subpart Kb	NSPS for VOC Liquid Storage Tanks (built between 7/23/84 and 10/4/23)	Not applicable to any tanks currently on-site
40 CFR Part 60, Subpart Kc	NSPS for VOC Liquid Storage Tanks (built after 10/4/23)	Not applicable to any tanks currently on-site
40 CFR Part 61, Subpart D	NESHAP for Beryllium Rocket Motor Firing	Not applicable facility-wide
40 CFR Part 63, Subpart PPPPP	NESHAP for Engine Test Cells/Stands	Not applicable facility-wide
40 CFR Part 63, Subpart T	NESHAP for Halogenated Solvent Cleaning	Does not apply to facility hand-wipe cleaning [EU-03] or solvent cleaning machine [EU-05] since use of halogenated solvent in the machines was discontinued in 2011.
40 CFR Part 63, 63.6(e)	Startup, Shutdown and Malfunction (SSM) Plan	Not required for spray paint booths [EU-02] as long as dry particulate filter system are operated in accordance with manufacturer's instructions.
40 CFR Part 63, Subpart MMMM, 63.3881(c)(10)-(11)	NESHAP for Surface Coating of Miscellaneous Metal Parts and Products	Not applicable to metal surface coatings that meet applicability for aerospace manufacturing and rework
40 CFR Part 63, Subpart HHHHHH, 63.11169	NESHAP: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources	Not applicable since facility is a Major HAP source (not area source)
40 CFR Part 63, Subpart XXXXXX, 63.11514	NESHAP Area Source Standards for Nine Metal Fabrication and Finishing Source Categories	Not applicable since facility is a Major HAP source (not area source)
9VAC5-50-80	Standard for Visible Emissions	Does not apply to emission units EU-01(A) based on Variance given in 9VAC5-220-30; and does not apply to EU-03 through EU-06 and EU-13 because they do not generate visible emissions.

9 VAC 5-80-360 to 5-80-705: *Acid Rain Source Provisions* - Aerojet does not own or operate any equipment which is subject to the acid rain provisions contained in Title IV of the federal CAAA.

40 CFR Part 60, Subpart Kb: *Standards of Performance for Volatile Organic Liquid Storage Vessels (including for Petroleum Liquid Storage Vessels) for which Construction, Reconstruction, or Modification Commenced After July 23, 1984* - NSPS Subpart Kb does not apply to tanks with design capacity of less than 75 cubic meters (19,811 gallons). Currently, Aerojet operates one gasoline storage tank (1,000 gallon storage capacity) one diesel fuel storage tank (1,000 gallon storage capacity) and one fuel oil storage tank (300 gallon storage capacity).

(It should be noted that EPA has modified Subpart Kb to be applicable for tanks constructed, reconstructed or modified between July 23, 1984, and October 4, 2023, with new Subpart Kc applicable after October 4, 2023. However, the facility tanks sizes would be exempt under Subpart Kc also. If larger tanks are added later, they must be evaluated under Subpart Kc. Also, the 30,000 gallon pressurized propane tank is exempt under both Subparts Kb and Kc.)

40 CFR Part 61, Subpart D: *National Emission Standard for Beryllium Rocket Motor Firing* - This standard applies to rocket motor test sites for which static firing of a beryllium rocket motor and/or the disposal of beryllium propellant is conducted. The rocket motors manufactured and tested at Aerojet's Orange County facility do not contain beryllium. Also, no waste propellant thermally treated at the Orange County facility contains beryllium.

40 CFR Part 63, Subpart T: *National Emission Standards for Halogenated Solvent Cleaning* - Does not apply to hand-wipe cleaning activities (EU-03), such as using a rag containing a named halogenated solvent (i.e., methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, or chloroform) or a spray cleaner containing a named halogenated solvent. Previously, Subpart T was applicable to the solvent cleaning machines [EU-05] at the Orange County facility for the use of 1,1,1-trichloroethane, which was discontinued in 2011.

40 CFR Part 63, Subpart PPPPP: *NESHAP for Engine Test Cells/Stands* - Does not apply to existing, new or reconstructed test cells/stands used for testing rocket engines.

40 CFR Part 63, §63.6(e) and other requirements in Subpart A pertaining to: *Startup, Shutdown, and Malfunction (SSM) Plans*. Per 40 CFR Part 63, Subpart GG, §63.743(b), an SSM Plan is not required for the spray paint booths [EU-02] since the dry particulate filter system is operated in accordance with manufacturer’s instructions.

40 CFR Part 63, Subpart GG: *Aerospace MACT Requirements for Hand-Wipe Cleaning Operations* - Per §63.744(e), hand-wipe cleaning activities performed prior to adhesive bonding are exempt from the NESHAP control requirements.

Inapplicable state regulations on existing stationary sources (rules under 9VAC Chapter 40) were also considered, as following:

- Article 24 - Emission Standards for Solvent Metal Cleaning Operations Using Non-Halogenated Solvents (Rule 4-24), and
- Article 34 - Solvent Metal Cleaning Operations Using Non-Halogenated Solvents (Rule 4-34): Since the facility is not located in a VOC or NOx Control Area (as defined by 9VAC5-20-206), it is not subject to the two Virginia rules, which may appear to apply to the source category.

In addition, the facility is not subject to the following existing stationary source categories (under 9VAC Chapter 40) because it is not located in the Northern Virginia VOC Control Area (9VAC5-20-206):

- Article 47 - Emission Standards for Solvent Metal Cleaning Operations in the Northern Virginia Volatile Organic Compound Emissions Control Area (Rule 4-24).
- Article 58 - Emission Standards for Miscellaneous Industrial Adhesive Application Processes in the Northern Virginia Volatile Organic Compound Emissions Control Area, 8-hour Ozone Standard (Rule 4-58).
- Article 59 - Emission Standards for Miscellaneous Metal Parts and Products Coating Application Systems in the Northern Virginia Volatile Organic Compound Emissions Control Area, 8-hour Ozone Standard (Rule 4-59).

GENERAL CONDITIONS

The permit contains general conditions required by 40 CFR Part 70 and 9VAC5-80-110 that apply to all Federal-operating permitted sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions.

Comments on General Conditions

Federal Enforceability

Article 1 (9VAC5-80-110 N) states that all terms and conditions in the Title V permit are enforceable by the administrator and citizens under the federal Clean Air Act, except those that have been designated as only state-enforceable.

Permit Expiration

This condition refers to the DEQ taking action on a permit application. The authority to take action on permit application(s) has been delegated to the Regions as allowed by §2.2-604 and §10.1-1185 of the Code of Virginia, and the "Department of Environmental Quality Agency Policy Statement No. 2-09".

This general condition cite(s) the Article(s) that follow(s):

Article 1 (9VAC5-80-50 et seq.), Part II of 9VAC5 Chapter 80. Federal Operating Permits for Stationary Sources]

This general condition cites the sections that follow:
9VAC5-80-80. Application
9VAC5-80-140. Permit Shield
9VAC5-80-150. Action on Permit Applications

Failure / Malfunction Reporting

Section 9VAC5-20-180 requires malfunction and excess emission reporting within four hours of discovery. Section 9VAC5-20-180 is from the general regulations. All affected facilities are subject to section 9VAC5-20-180 including Title V facilities. A facility may make a single report that meets the requirements of 9VAC5-20-180. The report must be made within four daytime business hours of discovery of the malfunction.

Permit Modification

This general condition cites the sections that follow:

9VAC5-80-50. Applicability, Federal Operating Permit for Stationary Sources
9VAC5-80-190. Changes to Permits
9VAC5-80-260. Enforcement
9VAC5-80-1100. Applicability, Permits For New and Modified Stationary Sources
9VAC5-80-1605. Applicability, Permits For Major Stationary Sources and Modifications Located in Prevention of Significant Deterioration Areas
9VAC5-80-2000. Applicability, Permits for Major Stationary Sources and Major Modifications Locating in Nonattainment Areas

Asbestos Requirements

The Virginia Department of Labor and Industry under Section 40.1-51.20 of the Code of Virginia also holds authority to enforce 40 CFR 61 Subpart M, National Emission Standards for Asbestos.

This general condition contains a citation from the Code of Federal Regulations that follows:
40 CFR 61.145, NESHAP Subpart M. National Emissions Standards for Asbestos as it applies to demolition and renovation.
40 CFR 61.148, NESHAP Subpart M. National Emissions Standards for Asbestos as it applies to insulating materials.

40 CFR 61.150, NESHAP Subpart M. National Emissions Standards for Asbestos as it applies to waste disposal.

This general condition cites the regulatory sections that follow:
9VAC5-60-70. Designated Emissions Standards
9VAC5-80-110. Permit Content

STATE-ONLY ENFORCEABLE REQUIREMENTS

There are no state-only enforceable conditions in the permit. Condition 39 of the minor new source review permit, dated March 13, 2024, is a state-only applicable condition on toxic pollutant emissions from the sparging and drying operations [EU-06]. However, the source has chosen for the state condition not to be added in the Title V permit, which is acceptable to DEQ.

FUTURE APPLICABLE REQUIREMENTS

No new NSPS are believed to be potentially applicable to Aerojet Rocketdyne. The latest NSPS Subpart Kc for volatile organic liquid vessels do not apply to the source, which has older tanks at less than 20,000-gallon capacity. If larger tanks are added, they will be evaluated accordingly.

No new NESHAPs for Source Categories (MACT) are believed to be potentially applicable to Aerojet. The proposed permit incorporates a 2015 change to MACT Subpart GG that removed the exclusion of "specialty coatings" in surface coating operations [EU-02]. In 2020, NPB was designated as a HAP, as referenced in conditions for solvent cleaning machines [EU-05]. The company will determine the applicability of a particular MACT Standard to its operations at the time when the regulation is promulgated. If subject, then Aerojet will comply with all applicable requirements of the scheduled NESHAPs for Source Categories upon their effective dates.

CONFIDENTIAL INFORMATION

The permittee did not submit a request for confidentiality. Therefore, all portions of the Title V permit application are suitable for public review.

PUBLIC PARTICIPATION

The proposed permit will be placed on public notice from September 11, 2025 to October 14, 2025. The notice will be published in the Orange County Review newspaper on September 11, 2025.

ATTACHMENTS

Emissions Summary for PM-Emitting Process Equipment [EU-07A/B through EU-11]

ATTACHMENT

Emissions Summary for PM-Emitting Process Equipment [EU-07A/B through EU-11]
(Copied from source application dated November 6, 2023)

Aerojet Rocketdyne, Inc. - Orange County Facility
Application for MNSR Permit Modification
Emissions Summary - Sources of Particulate Emissions (EU-07A/B Through EU-11)

EU No.	Unit Name	Rated Capacity (lb/hr)	Material Loss Rate (%)	Control Efficiency (%)	PM10 Emissions (Uncontrolled)		PM10 Emissions (Controlled)	
					lb/hr	tpy	lb/hr	tpy
EU-07A	Oxidizer Grinders (A)	250	0.50	95	1.25	5.48	0.07	0.28
EU-07B	Oxidizer Grinders (B)	1,600	0.50	95	8.00	35.04	0.40	1.76
EU-08A	Grit Blast Machines (C)	200	1.30	99	2.60	11.39	0.03	0.12
EU-08B	Grit Blaster (C)	255	1.30	99	3.32	14.52	0.04	0.15
EU-08C	Grit Blast Machines (D)	1,200	1.30	99	15.60	68.33	0.16	0.69
EU-09	Propellant Machining (E)	50	0.50	95	0.25	1.10	0.02	0.06
EU-09	Propellant Cut-Back Saw	150	0.50	95	0.75	3.29	0.04	0.17
EU-09	Propellant Cut-Back Machine #1	150	0.50	95	0.75	3.29	0.04	0.17
EU-09	Propellant Cut-Back Machine #2 (F)	150	0.50	95	0.75	3.29	0.04	0.17

Aerojet Rocketdyne, Inc. - Orange County Facility
Application for MNSR Permit Modification
Emissions Summary - Sources of Particulate Emissions (EU-07A/B Through EU-11)

EU No.	Unit Name	Rated Capacity (lb/hr)	Material Loss Rate (%)	Control Efficiency (%)	PM10 Emissions (Uncontrolled)		PM10 Emissions (Controlled)	
					lb/hr	tpy	lb/hr	tpy
EU-10	Insulation Machining (G)	25	0.50	95	0.13	0.55	<0.01	0.03
	New Insulation Machining (H)	25	0.50	95	0.13	0.55	<0.01	0.03
EU-11	Phenolic and Rubber Parts Machining (I)	100	0.50	95	0.50	2.19	0.03	0.11
	New Phenolic and Rubber Machining (J)	100	0.50	95	0.50	2.19	0.03	0.11

PM10 = Particulate Emissions
lb = Pound(s)
lb/hr = Pounds Per Hour
tpy = Tons Per Year

(A). Total capacity of existing grinders is 500 lb/hr. All four oxidizer grinders are currently vented indoors. Two units may be vented outside in the future.
(B). Two new oxidizer grinders will be installed for OSD Title III project. Units may be vented to the atmosphere.
(C). Existing grit blast machines. Total capacity is 455 lb/hr. One grit blast machine is vented inside the production building.

(E). Total capacity is 100 lb/hr. All of the propellant lathes are currently vented inside the buildings. One unit may be vented outside in the future.
(F). New propellant cut-back machines will be installed as part of OSD project. Units will be vented inside the production buildings.
(G). Existing insulation machining operations.
(H). New insulation machining equipment will be installed as part of OSD project. Units may be vented to atmosphere.
(I). Existing phenolic and rubber parts machining operations.
(J). New pehnolic and rubber parts machining equipment will be installed as part of OSD project. Units may be vented to atmosphere.