

National Aeronautics and Space Administration
Goddard Space Flight Center
Greenbelt, MD 20771



Reply to Attn of: 250

December 18, 2018

Ms. Shannon Heafey, Title V Coordinator
Maryland Department of the Environment
Air Quality Permits Program
1800 Washington Boulevard,
Baltimore, MD 21230

Dear Ms. Heafey:

Enclosed please find two paper copies and one electronic copy on CD of our Part 70 Permit Application for Renewal for NASA's Goddard Space Flight Center (GSFC). In addition, GSFC requests a permit shield per Code of Maryland Regulations 26.11.03.23.

We look forward to your review and comments. If you have any questions, please call Ms. Kathleen Moxley at (301) 286-0717.

Sincerely,

A handwritten signature in dark ink, appearing to read "K. Finch".

Kimberly Finch, P.E.
Chief, Medical and Environmental Management Division

Enclosure

MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Boulevard • Suite 720 • Baltimore, Maryland 21230-1720

410-537-3000 • 800-633-6101 • <http://www.mde.maryland.gov>

Air and Radiation Administration • Air Quality Permits Program

**Budget Reconciliation and Financing Act of 2003
(Commonly referred as Maryland House Bill 935)**

On July 1, 2003, House Bill 935, Chapter 203 amended § 1-203 of the Environment Article, Annotated Code of Maryland, as follows:

Section 1-203(b).

(1) A license or permit is considered renewed for purposes of this subsection if the license or permit is issued by a unit of State government to a person for the period immediately following a period for which the person previously possessed the same or a substantially similar license.

(2) Before any license or permit may be renewed under this article, **the issuing authority shall verify through the office of the Comptroller (emphasis added)** that the applicant has paid all undisputed taxes and the unemployment insurance contributions payable to the Comptroller or the Secretary of Labor, Licensing, and Regulation or that the applicant has provided for payment in a manner satisfactory to the unit responsible for collection.

In order for the Maryland Department of the Environment (MDE) to verify this compliance, we would need you to provide the following information before we can process or issue your renewal license, permit, or certification:

Current MDE License/Permit No.: 24-033-00675

Name of Licensee or Permit Holder: NASA Goddard Space Flight Center

Address: 8800 Greenbelt Road, Greenbelt, MD 20771

Contact Name: Kimberly Finch, P.E. **Title:** Chief, Medical & Envir. Mgt. Division

Contact Telephone Number: (301) 286-4230

Privacy Act Notice: This Notice is provided pursuant to the Federal Privacy Act of 1974, 5 U.S.C. § 552a. Disclosure of your Social Security or Federal Tax Identification on this form is mandatory pursuant to the provisions of § 1-203 (2003) of Environment Article, Annotated Code of Maryland, which requires MDE to verify that an applicant for a permit or license has paid all undisputed taxes and unemployment insurance. Social Security and Federal Tax Identification Nos. will not be used for any purposes other than those described in this Notice.

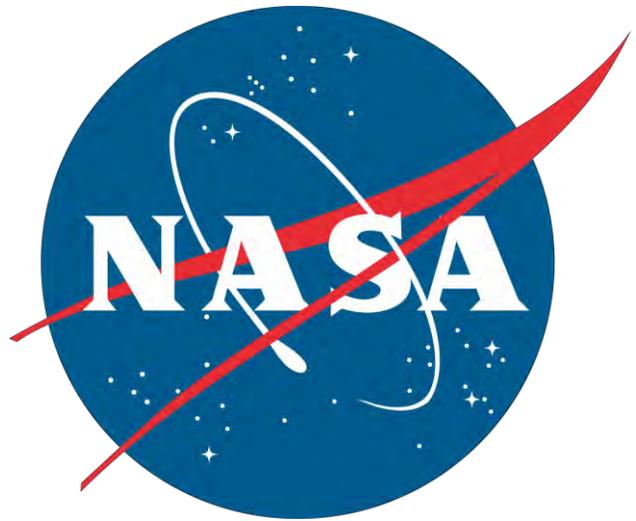
Federal Employer Identification Number (FEIN): 84-1024566

Certification: I certify that the above information is true and correct to the best of my knowledge.

KAF 12/18/2018
Signature Date

Complete and return this form to the above address. If you have any questions, please contact our office at (410) 537-3225.

PART 70 PERMIT RENEWAL APPLICATION



National Aeronautics and Space Administration

Goddard Space Flight Center

Greenbelt, Maryland

December 2018

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INTRODUCTION

The National Aeronautics and Space Administration - Goddard Space Flight Center (NASA-GSFC) facility is located in Greenbelt in Prince George's County, Maryland. NASA-GSFC's vision is to revolutionize knowledge of the Earth and the universe through scientific discovery from space to enhance life on earth. Figure 1 illustrates the facility layout of NASA-GSFC.

This Part 70 Permit Renewal Application is being submitted to renew NASA-GSFC's Title V Permit. The current Title V Permit No. 24-033-00675 will expire on December 31, 2019.

PROCESS DESCRIPTION

Work activities at this facility include research, fabrication of equipment, and satellite tracking by the ground control station. Research activities are conducted in space and earth science disciplines and include the development and testing of instruments, propulsion systems, spacecraft and satellite antennas, and laboratory measurements. Fabrication activities include clean rooms, machine shops, electronic shops, plating shop, and acid etch facility. The satellite tracking system includes radar, telemetry, and optical devices.

EMISSION SOURCE SUMMARY

Table 1 provides a summary of the proposed changes to emissions sources in the current Title V permit. Table 2 provides a summary of added permitted sources to be incorporated into the Title V permit.

TABLE 1. Summary of Proposed Changes to Emission Sources

E.U. No.	MDE Reg. No.	Description	Summary of Requested Changes
EU24-1	5-0808	Nebraska natural gas/landfill gas/No. 2 fuel oil-fired boiler rated at 49.5 MMBtu/hr	No changes.
EU24-2	5-0809	Nebraska natural gas/landfill gas/No. 2 fuel oil-fired boiler rated at 49.5 MMBtu/hr	No changes.
EU24-3	5-0810	Nebraska natural gas/ No. 2 fuel oil-fired boiler rated at 49.5 MMBtu/hr	No changes.
EU24-4	5-0811	Nebraska natural gas/landfill gas/No. 2 fuel oil-fired boiler rated 49.5 MMBtu/hr	No changes.
EU24-5	5-0812	Nebraska natural gas/ No. 2 fuel oil-fired boiler rated at 49.5 MMBtu/hr	No changes.
EU35-1	5-1531	1.5 MMBtu/hr Natural gas boiler	No changes.
EU35-2	5-1532	1.5 MMBtu/hr Natural gas boiler	No changes.
EU97-1	5-0846	1.118 MMBtu/hr Natural gas boiler	No changes.
EU302-1	5-0831	1.7 MMBtu/hr Natural gas boiler	No changes.

TABLE 1. Summary of Proposed Changes to Emission Sources

E.U. No.	MDE Reg. No.	Description	Summary of Requested Changes
EU302-3	5-1533	1.44 MMBtu/hr Natural gas boiler	No changes.
EU7-2	9-1045	500 kW Emergency generator	No changes.
EU10-3	9-1047	500 kW Emergency generator	No changes.
EU24C-1	9-1054	1,000 kW Emergency generator	No changes.
EU24C-2	9-1055	1,000 kW Emergency generator	No changes.
EU24C-3	9-1056	1,000 kW Emergency generator	No changes.
EU24C-4	9-1057	1,000 kW Emergency generator	No changes.
EU24C-6	9-1366	1,000 kW Emergency generator	No changes.
EU24C-8	9-1058	1,000 kW Emergency generator	No changes.
EU31-1	9-1049	1,450 kW Emergency generator	No changes.
EU31-2	9-1050	1,450 kW Emergency generator	No changes.
EU31-3	9-1051	1,450 kW Emergency generator	No changes.
EU31-4	9-1052	1,450 kW Emergency generator	No changes.
EU31-5	9-1053	1,450 kW Emergency generator	No changes.
EU29-1	9-1422	1,000 kW Emergency generator	No changes.
EU7-3	9-1433	500 kW Emergency generator	No changes.
EU4-2	6-1101	Paint Booth #1 with electric drying	No changes.
EU4-3	6-1101	Paint Booth #2	No changes.
EU4-6	6-1101	Curing oven	No changes.
EU5A-3	6-1323	Paint Booth #3	No changes.
EU5-2	6-0852	Process Line A	No changes.
EU5-4	6-0854	Process Line N	No changes.
EU5-6	6-0862	Process Line B & E	No changes.
EU27-2	9-1168	5,000 gallon E85 aboveground storage tank	No changes.
EU27-3	9-1331	Two 5,000 gallon gasoline aboveground storage tanks.	No changes.
EU30-1	6-0903	Chemical vapor deposition	No changes.
EU30-2	6-0903	Ion implantation process	No changes.
EU30-3	6-0903	Dry chemistry process	No changes.
EU30-4	6-0903	Oxidation process	No changes.
EU30-5	6-0903	Blasting process	No changes.
EU30-6	6-0903	Thin films processes	No changes.
EU30-7	6-0903	Wet chemistry processes	No changes.
EU30-8	6-0903	Photolithography process	No changes.
EU92-1	8-0186	Char-broiler	No changes.
EU92-2	8-0187	Char-broiler	No changes.
EU92-3	8-0188	Char-broiler	No changes.
EU92-4	8-0189	Char-broiler	No changes.
EU7-4	6-1459	Ultrasonic vapor degreaser	No changes.

Table 2. Summary of New Emission Sources

E.U. No.	MDE Reg. No.	Description	Summary
EU28-1	9-1535	563 kW Emergency generator	Generator permitted September 2018.

COMPLIANCE ASSURANCE MONITORING (CAM) PLAN APPLICABILITY

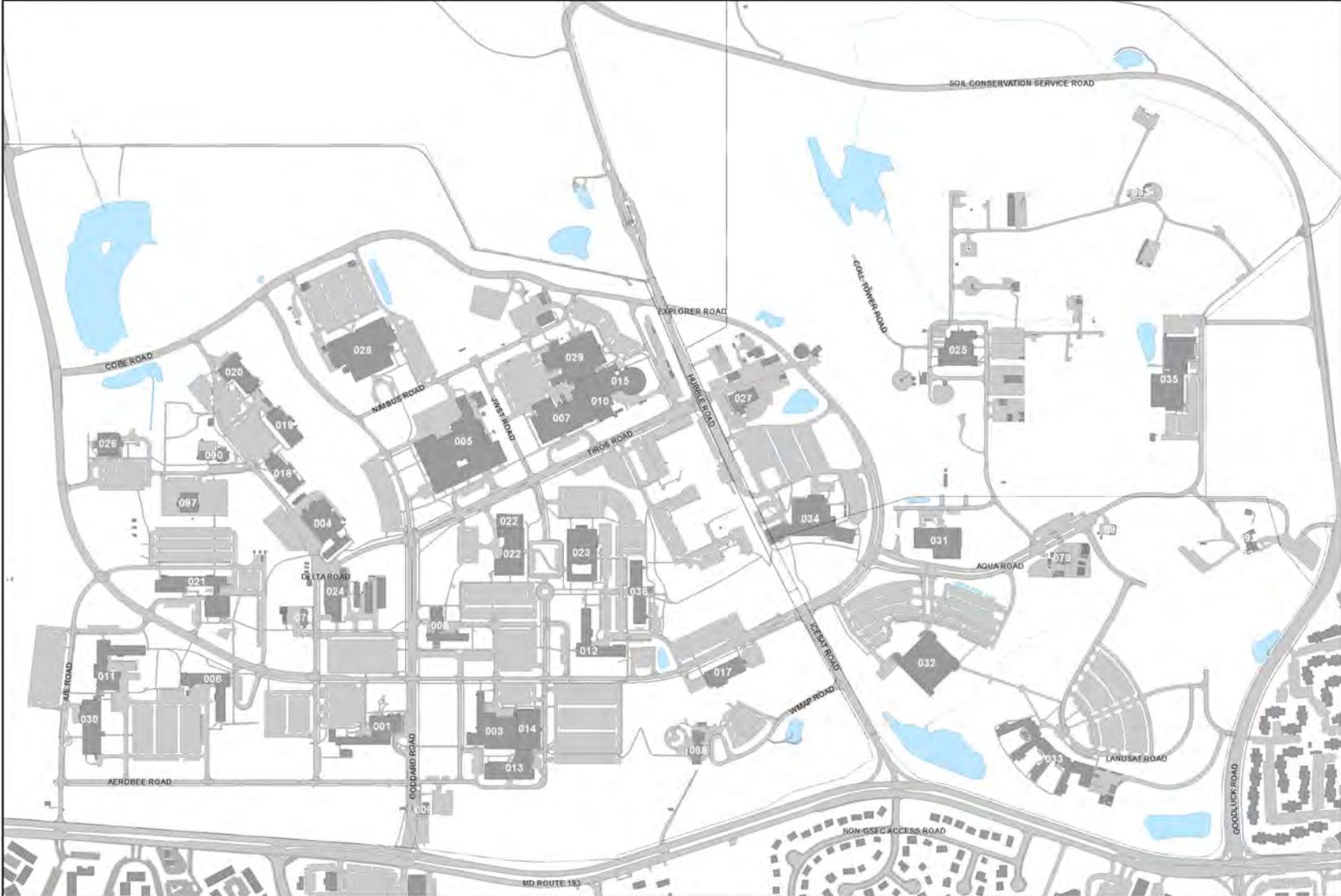
A CAM Plan has not been provided, as there are no emissions sources for which the potential emissions of any pollutant is above the major source threshold (i.e., 25 TPY for VOCs and total HAPs and 10 TPY for any individual HAP). Both VOC and HAP emissions rates are below major source thresholds at GSFC; therefore, CAM does not apply.

**PART 70 PERMIT RENEWAL
APPLICATION**

**GODDARD SPACE FLIGHT CENTER
GREENBELT, MARYLAND**

FIGURES

Figure 1 – Facility Map



GSFC MAIN SITE
 NASA GODDARD SPACE FLIGHT CENTER
 MARCH 2018

LEGEND:

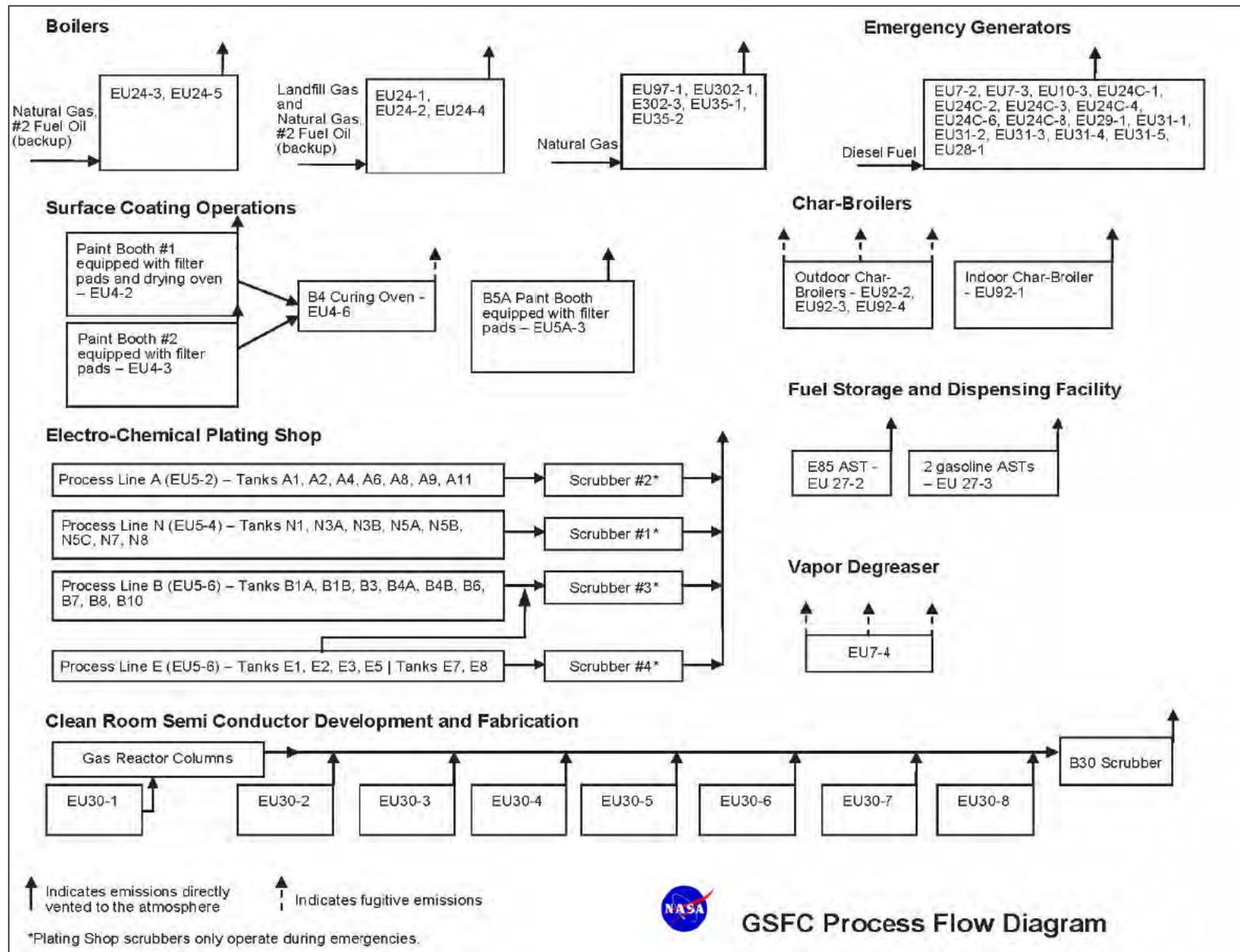
- IMPERVIOUS SURFACES
- BUILDING
- GSFC PROPERTY
- NATURAL WATERBODY
- STREAMS

SCALE:

0 195 390 780 FEET



Figure 2 – Process Flow Diagram



GSFC Process Flow Diagram

**PART 70 PERMIT RENEWAL
APPLICATION**

**GODDARD SPACE FLIGHT CENTER
GREENBELT, MARYLAND**

APPLICATION FORMS

PART 70 PERMIT APPLICATION FOR RENEWAL
 AIR AND RADIATION ADMINISTRATION

Facilities required to obtain a Part 70 permit under COMAR 26.11.03.01 must complete and return this form. Applications are incomplete unless all applicable information required by COMAR 26.11.03.03 and 26.11.03.13 is supplied. Failure to supply additional information required by the Department to enable it to act on the application may result in loss of the application shield and denial of this application.

Owner and Operator:

Name of Owner or Operator: NASA Goddard Space Flight Center		
Street Address: 8800 Greenbelt Road, Mail Code 250		
City: Greenbelt	State: MD	Zip Code: 20771
Telephone Number (301) 286-4230	Fax Number (301) 286-1644	

Facility Information:

Name of Facility: NASA Goddard Space Flight Center		
Street Address: 8800 Greenbelt Road		
City: Greenbelt	State: MD	Zip Code: 20771
Plant Manager: Kimberly Finch	Telephone Number: (301) 286-4230	Fax Number: (301) 286-1644
24-Hour Emergency Telephone Number for Air Pollution Matters: (301) 286-9111		

List, on a separate page, the names and telephone numbers of other facility owners and persons with titles.



SECTION 1. CERTIFICATION STATEMENTS

1. Compliance Status with Applicable Enhanced Monitoring and Compliance Certification Requirements

The emissions units identified in this application are in compliance with applicable enhanced monitoring and compliance certification requirements.

2. Certification of Current Compliance with All Applicable Federally Enforceable Requirements

Except for the requirements identified in Section 7 of this application, for which compliance is not achieved, I hereby certify, based on information and belief formed after reasonable inquiry, that the facility is currently in compliance with all applicable federally enforceable requirements and agree that the facility will continue to comply with those requirements during the permit term.

You must complete a Section 7 form for each non-complying emissions unit.

3. Statement of Compliance with Respect to All New Applicable Requirements Effective During the Permit Term

I hereby state, based on information and belief formed after reasonable inquiry, that the facility agrees to meet, in a timely manner, all applicable federally enforceable requirements that become effective during the permit term, unless a more detailed schedule is expressly required by the applicable requirement.

4. Risk Management Plan Compliance

I hereby certify that, based on information and belief formed after reasonable inquiry, that a Risk Management Plan as required under §112(r) of the Clean Air Act:

has been submitted;

will be submitted at a future date; or

does not need to be submitted.



SECTION 2. FACILITY DESCRIPTION SUMMARY

1. Major Activities of Facility

Briefly describe the major activities, including the applicable SIC Code(s) and end product(s).

The National Aeronautics and Space Administration - Goddard Space Flight Center (NASA-GSFC) facility is located in Greenbelt in Prince George's County, Maryland. NASA-GSFC's vision is to revolutionize knowledge of the Earth and the universe through scientific discovery from space to enhance life on earth. GSFC is one of NASA's most comprehensive laboratory facilities. Work activities at this facility include research, fabrication of equipment, and satellite tracking by the ground control station. Research activities are conducted in space and earth science disciplines and include the development and testing of instruments, propulsion systems, spacecraft and satellite antennas and laboratory measurements. Fabrication activities include clean rooms, machine shops, electronic shops, plating shop, and acid etch facility. The satellite tracking system includes radar, telemetry, and optical devices. The primary SIC for this facility is 9661. The primary NAICS code for this facility is 927110.

2. Facility-Wide Emissions

A. This facility is required to obtain a Part 70 Operating Permit because it is:
Check appropriate box:

- Actual Major
- Potential Major
- Solid Waste Incineration Unit Requiring Permit Under § 129(e) of CAA

B. List the actual facility-wide emissions below:

PM10 1 NOx 17 VOC 2 SOx 1 CO 21 HAPs <1

*From CY2017 Emission and Greenhouse Gas Certification Report

3. Include With the Application:

Flow Diagrams showing all emissions units, emission points, and control devices;
Emissions Certification Report (copy of the most recent submitted to the Department.)



MARYLAND DEPARTMENT OF THE ENVIRONMENT

SECTION 3A-2. EMISSIONS UNIT DESCRIPTIONS

<p>1. Emissions Unit No.: EU24-2</p> <p>1a. Date of installation (month/year): 11/1995</p>	<p>2. MDE Registration No.:(if applicable)</p> <p>5-0809</p>												
<p>3. Detailed description of the emissions unit, including all emission point(s) and the assigned number(s):</p> <p>EU24-2 (boiler #2) is a Nebraska landfill gas/natural gas/No. 2 oil-fired boiler, rated at 49.5 MMBtu per hour and equipped with a low NOx burner.</p> <p>EU24-2 is permitted to burn:</p> <ul style="list-style-type: none"> - Landfill gas; - Natural gas; and - No.2 fuel oil during periods of gas curtailment. <p>The primary purpose of this unit is to provide steam to heat the campus.</p> <p>Emissions from emission unit EU24-2 are vented through emission point EP24-2.</p> <p>This unit is located in Building 24.</p>													
<p>4. Federally Enforceable Limit on the Operating Schedule for this Emissions Unit: Not Applicable</p> <p>General Reference: _____</p> <p>Continuous Processes: _____ hours/day _____ days/year</p> <p>Batch Processes: _____ hours/batch _____ batches/day</p> <p>_____ days/year</p>													
<p>5. Fuel Consumption: Emission Certification CY2017</p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Type(s) of Fuel</th> <th style="text-align: center;">% Sulfur</th> <th style="text-align: right;">Annual Usage (specify units)</th> </tr> </thead> <tbody> <tr> <td>1. No. 2 Fuel Oil</td> <td style="text-align: center;">maximum 0.3</td> <td style="text-align: right;">0 gallons</td> </tr> <tr> <td>2. Natural Gas</td> <td></td> <td style="text-align: right;">59,572,682 scf</td> </tr> <tr> <td>3. Landfill Gas</td> <td style="text-align: center;">less than 0.01% (lab analysis on LFG)</td> <td style="text-align: right;">180,456,000 scf</td> </tr> </tbody> </table>		Type(s) of Fuel	% Sulfur	Annual Usage (specify units)	1. No. 2 Fuel Oil	maximum 0.3	0 gallons	2. Natural Gas		59,572,682 scf	3. Landfill Gas	less than 0.01% (lab analysis on LFG)	180,456,000 scf
Type(s) of Fuel	% Sulfur	Annual Usage (specify units)											
1. No. 2 Fuel Oil	maximum 0.3	0 gallons											
2. Natural Gas		59,572,682 scf											
3. Landfill Gas	less than 0.01% (lab analysis on LFG)	180,456,000 scf											
<p>6. Emissions in Tons: Emission Certification CY2017</p> <p>A. Actual Major: <u>N/A</u> Potential Major: <u>N/A</u> (note: before control device)</p> <p>B. Actual Emissions: NOx <u>4.23</u> SOx <u>0.07</u> VOC <u>0.41</u> PM10 <u>0.14</u> HAPs _____</p>													



MARYLAND DEPARTMENT OF THE ENVIRONMENT

SECTION 3A-3. EMISSIONS UNIT DESCRIPTIONS

1. Emissions Unit No.: EU24-3 1a. Date of installation (month/year): 11/1995	2. MDE Registration No.:(if applicable) 5-0810												
3. Detailed description of the emissions unit, including all emission point(s) and the assigned number(s): EU24-3 (boiler #3) is a Nebraska natural gas/No. 2 oil-fired boiler, rated at 49.5 MMBtu per hour and equipped with a low NOx burner. EU24-3 is permitted to burn: - Natural gas, and - No.2 fuel oil during periods of gas curtailment. The primary purpose of this unit is to provide steam to heat the campus. Emissions from emission unit EU24-3 are vented through emission point EP24-3. This unit is located in Building 24.													
4. Federally Enforceable Limit on the Operating Schedule for this Emissions Unit: Not Applicable General Reference: _____ Continuous Processes: _____ hours/day _____ days/year Batch Processes: _____ hours/batch _____ batches/day _____ days/year													
5. Fuel Consumption: Emission Certification CY2017 <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Type(s) of Fuel</th> <th style="text-align: center;">% Sulfur</th> <th style="text-align: right;">Annual Usage (specify units)</th> </tr> </thead> <tbody> <tr> <td>1. No. 2 Fuel Oil</td> <td style="text-align: center;">maximum 0.3</td> <td style="text-align: right;">566 gal</td> </tr> <tr> <td>2. Natural Gas</td> <td></td> <td style="text-align: right;">15,682,028 scf</td> </tr> <tr> <td>3. _____</td> <td></td> <td></td> </tr> </tbody> </table>		Type(s) of Fuel	% Sulfur	Annual Usage (specify units)	1. No. 2 Fuel Oil	maximum 0.3	566 gal	2. Natural Gas		15,682,028 scf	3. _____		
Type(s) of Fuel	% Sulfur	Annual Usage (specify units)											
1. No. 2 Fuel Oil	maximum 0.3	566 gal											
2. Natural Gas		15,682,028 scf											
3. _____													
6. Emissions in Tons: Emission Certification CY2017 A. Actual Major: <u>N/A</u> Potential Major: <u>N/A</u> (note: before control device) B. Actual Emissions: NOx <u>0.71</u> SOx <u>0.02</u> VOC <u>0.04</u> PM10 <u>0.02</u> HAPs _____													



MARYLAND DEPARTMENT OF THE ENVIRONMENT

SECTION 3A-4. EMISSIONS UNIT DESCRIPTIONS

<p>1. Emissions Unit No.: EU24-4</p> <p>1a. Date of installation (month/year): 11/1995</p>	<p>2. MDE Registration No.:(if applicable)</p> <p>5-0811</p>												
<p>3. Detailed description of the emissions unit, including all emission point(s) and the assigned number(s):</p> <p>EU24-4 (boiler #4) is a Nebraska landfill gas/natural gas/No. 2 oil-fired boiler, rated at 49.5 MMBtu per hour and equipped with a low NOx burner.</p> <p>EU24-4 is permitted to burn:</p> <ul style="list-style-type: none"> - Landfill gas; - Natural gas; and - No.2 fuel oil during periods of gas curtailment. <p>The primary purpose of this unit is to provide steam to heat the campus.</p> <p>Emissions from emission unit EU24-4 are vented through emission point EP24-4.</p> <p>This unit is located in Building 24.</p>													
<p>4. Federally Enforceable Limit on the Operating Schedule for this Emissions Unit: Not Applicable</p> <p>General Reference: _____</p> <p>Continuous Processes: _____ hours/day _____ days/year</p> <p>Batch Processes: _____ hours/batch _____ batches/day</p> <p>_____ days/year</p>													
<p>5. Fuel Consumption: Emission Certification CY2017</p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Type(s) of Fuel</th> <th style="text-align: center;">% Sulfur</th> <th style="text-align: right;">Annual Usage (specify units)</th> </tr> </thead> <tbody> <tr> <td>1. No. 2 Fuel Oil</td> <td style="text-align: center;">maximum 0.3</td> <td style="text-align: right;">12 gallons</td> </tr> <tr> <td>2. Natural Gas</td> <td></td> <td style="text-align: right;">53,275,723 scf</td> </tr> <tr> <td>3. Landfill Gas</td> <td style="text-align: center;">less than 0.01% (lab analysis on LFG)</td> <td style="text-align: right;">228,632,000 scf</td> </tr> </tbody> </table>		Type(s) of Fuel	% Sulfur	Annual Usage (specify units)	1. No. 2 Fuel Oil	maximum 0.3	12 gallons	2. Natural Gas		53,275,723 scf	3. Landfill Gas	less than 0.01% (lab analysis on LFG)	228,632,000 scf
Type(s) of Fuel	% Sulfur	Annual Usage (specify units)											
1. No. 2 Fuel Oil	maximum 0.3	12 gallons											
2. Natural Gas		53,275,723 scf											
3. Landfill Gas	less than 0.01% (lab analysis on LFG)	228,632,000 scf											
<p>6. Emissions in Tons: Emission Certification CY2017</p> <p>A. Actual Major: <u>N/A</u> Potential Major: <u>N/A</u> (note: before control device)</p> <p>B. Actual Emissions: NOx <u>4.71</u> SOx <u>0.08</u> VOC <u>0.45</u> PM10 <u>0.16</u> HAPs _____</p>													



MARYLAND DEPARTMENT OF THE ENVIRONMENT

SECTION 3A-5. EMISSIONS UNIT DESCRIPTIONS

1. Emissions Unit No.: EU24-5 1a. Date of installation (month/year): 11/1995	2. MDE Registration No.:(if applicable) 5-0812												
3. Detailed description of the emissions unit, including all emission point(s) and the assigned number(s): EU24-5 (boiler #5) is a Nebraska natural gas/No. 2 oil-fired boiler, rated at 49.5 MMBtu per hour and equipped with a low NOx burner. EU24-5 is permitted to burn: - Natural gas, and - No.2 fuel oil during periods of gas curtailment. The primary purpose of this unit is to provide steam to heat the campus. Emissions from emission unit EU24-5 are vented through emission point EP24-5. This unit is located in Building 24.													
4. Federally Enforceable Limit on the Operating Schedule for this Emissions Unit: Not Applicable General Reference: _____ Continuous Processes: _____ hours/day _____ days/year Batch Processes: _____ hours/batch _____ batches/day _____ days/year													
5. Fuel Consumption: Emission Certification CY2017 <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Type(s) of Fuel</th> <th style="text-align: left;">% Sulfur</th> <th style="text-align: left;">Annual Usage (specify units)</th> </tr> </thead> <tbody> <tr> <td>1. No. 2 Fuel Oil</td> <td>maximum 0.3</td> <td>0 gallons</td> </tr> <tr> <td>2. Natural Gas</td> <td></td> <td>27,096,178 scf</td> </tr> <tr> <td>3. _____</td> <td></td> <td></td> </tr> </tbody> </table>		Type(s) of Fuel	% Sulfur	Annual Usage (specify units)	1. No. 2 Fuel Oil	maximum 0.3	0 gallons	2. Natural Gas		27,096,178 scf	3. _____		
Type(s) of Fuel	% Sulfur	Annual Usage (specify units)											
1. No. 2 Fuel Oil	maximum 0.3	0 gallons											
2. Natural Gas		27,096,178 scf											
3. _____													
6. Emissions in Tons: Emission Certification CY2017 A. Actual Major: <u>N/A</u> Potential Major: <u>N/A</u> (note: before control device) B. Actual Emissions: NOx <u>1.22</u> SOx <u>0.01</u> VOC <u>0.07</u> PM10 <u>0.03</u> HAPs _____													



MARYLAND DEPARTMENT OF THE ENVIRONMENT

SECTION 3A-11. EMISSIONS UNIT DESCRIPTIONS

1. Emissions Unit No.: EU7-2 1a. Date of installation (month/year): 1999	2. MDE Registration No.:(if applicable) 9-1045												
3. Detailed description of the emissions unit, including all emission point(s) and the assigned number(s): <u>EU7-2 is a 500 kW portable emergency generator, firing No. 2 fuel oil. Emissions</u> <u>from emission unit EU7-2 are vented through emission point EP7-2.</u> <hr/> <hr/>													
4. Federally Enforceable Limit on the Operating Schedule for this Emissions Unit: General Reference: <u>40 CFR 63.6640(f)</u> Continuous Processes: _____ hours/day _____ days/year Batch Processes: _____ hours/batch _____ batches/day _____ days/year <=100 hours/year for non-emergency purposes.													
5. Fuel Consumption: Emission Certification CY2017 <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Type(s) of Fuel</th> <th style="text-align: left;">% Sulfur</th> <th style="text-align: left;">Annual Usage (specify units)</th> </tr> </thead> <tbody> <tr> <td>1. <u>Fuel Oil</u></td> <td><u>maximum 0.3</u></td> <td><u>67.1 gallons</u></td> </tr> <tr> <td>2. _____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>3. _____</td> <td>_____</td> <td>_____</td> </tr> </tbody> </table>		Type(s) of Fuel	% Sulfur	Annual Usage (specify units)	1. <u>Fuel Oil</u>	<u>maximum 0.3</u>	<u>67.1 gallons</u>	2. _____	_____	_____	3. _____	_____	_____
Type(s) of Fuel	% Sulfur	Annual Usage (specify units)											
1. <u>Fuel Oil</u>	<u>maximum 0.3</u>	<u>67.1 gallons</u>											
2. _____	_____	_____											
3. _____	_____	_____											
6. Emissions in Tons: Emission Certification CY2017 A. Actual Major: <u>N/A</u> Potential Major: <u>N/A</u> (note: before control device) B. Actual Emissions: NOx <u>0.02</u> SOx <u><0.01</u> VOC <u><0.01</u> PM10 <u><0.01</u> HAPs _____													



SECTION 3A-12. EMISSIONS UNIT DESCRIPTIONS

1. Emissions Unit No.: EU10-3 1a. Date of installation (month/year): 1999	2. MDE Registration No.:(if applicable) 9-1047												
3. Detailed description of the emissions unit, including all emission point(s) and the assigned number(s): <u>EU10-3 is a portable emergency 500 kW generator, firing No. 2 fuel oil.</u> Emissions from emission unit EU10-3 are vented through emission point EP10-3. <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>													
4. Federally Enforceable Limit on the Operating Schedule for this Emissions Unit: General Reference: <u>40 CFR 63.6640 (f)</u> Continuous Processes: _____ hours/day _____ days/year Batch Processes: _____ hours/batch _____ batches/day _____ days/year <=100 hours/year for non-emergency purposes.													
5. Fuel Consumption: Emission Certification CY2017 <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Type(s) of Fuel</th> <th style="text-align: left;">% Sulfur</th> <th style="text-align: left;">Annual Usage (specify units)</th> </tr> </thead> <tbody> <tr> <td>1. <u>Fuel Oil</u></td> <td><u>maximum 0.3</u></td> <td><u>67.1 gallons</u></td> </tr> <tr> <td>2. _____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>3. _____</td> <td>_____</td> <td>_____</td> </tr> </tbody> </table>		Type(s) of Fuel	% Sulfur	Annual Usage (specify units)	1. <u>Fuel Oil</u>	<u>maximum 0.3</u>	<u>67.1 gallons</u>	2. _____	_____	_____	3. _____	_____	_____
Type(s) of Fuel	% Sulfur	Annual Usage (specify units)											
1. <u>Fuel Oil</u>	<u>maximum 0.3</u>	<u>67.1 gallons</u>											
2. _____	_____	_____											
3. _____	_____	_____											
6. Emissions in Tons: Emission Certification CY2017 A. Actual Major: <u>N/A</u> Potential Major: <u>N/A</u> (note: before control device) B. Actual Emissions: NOx <u>0.02</u> SOx <u><0.01</u> VOC <u><0.01</u> PM10 <u><0.01</u> HAPs _____													



SECTION 3A-18. EMISSIONS UNIT DESCRIPTIONS

1. Emissions Unit No.: EU24C-8 1a. Date of installation (month/year): 10/1996	2. MDE Registration No.:(if applicable) 9-1058												
3. Detailed description of the emissions unit, including all emission point(s) and the assigned number(s): EU24C-8 is a Caterpillar emergency generator rated at 1000 kW, firing No. 2 fuel oil. This unit is located in Building 24C. Emissions from emission unit EU24C-8 are vented through emission point EP24C-8.													
4. Federally Enforceable Limit on the Operating Schedule for this Emissions Unit: General Reference: 40 CFR 63.6640 (f) Continuous Processes: _____ hours/day _____ days/year Batch Processes: _____ hours/batch _____ batches/day _____ days/year <=100 hours/year for non-emergency purposes.													
5. Fuel Consumption: Emission Certification CY2017 <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Type(s) of Fuel</th> <th style="text-align: left;">% Sulfur</th> <th style="text-align: left;">Annual Usage (specify units)</th> </tr> </thead> <tbody> <tr> <td>1. No. 2 Fuel Oil</td> <td>maximum 0.3</td> <td>469.4 gallons</td> </tr> <tr> <td>2. _____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>3. _____</td> <td>_____</td> <td>_____</td> </tr> </tbody> </table>		Type(s) of Fuel	% Sulfur	Annual Usage (specify units)	1. No. 2 Fuel Oil	maximum 0.3	469.4 gallons	2. _____	_____	_____	3. _____	_____	_____
Type(s) of Fuel	% Sulfur	Annual Usage (specify units)											
1. No. 2 Fuel Oil	maximum 0.3	469.4 gallons											
2. _____	_____	_____											
3. _____	_____	_____											
6. Emissions in Tons: Emission Certification CY2017 A. Actual Major: <u>N/A</u> Potential Major: <u>N/A</u> (note: before control device) B. Actual Emissions: NOx <u>0.11</u> SOx <u>0.01</u> VOC <u><0.01</u> PM10 <u><0.01</u> HAPs _____													



MARYLAND DEPARTMENT OF THE ENVIRONMENT

SECTION 3A-19. EMISSIONS UNIT DESCRIPTIONS

1. Emissions Unit No.: EU31-1 1a. Date of installation (month/year): 10/1996	2. MDE Registration No.:(if applicable) 9-1049												
3. Detailed description of the emissions unit, including all emission point(s) and the assigned number(s): <u>EU31-1 is a Caterpillar emergency generator rated at 1450 kW, firing No. 2 fuel</u> <u>oil. This unit is located in Building 31. Emissions from emission unit EU31-1 are</u> <u>vented through emission point EP31-1.</u> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>													
4. Federally Enforceable Limit on the Operating Schedule for this Emissions Unit: General Reference: <u>40 CFR 63.6640 (f)</u> Continuous Processes: _____ hours/day _____ days/year Batch Processes: _____ hours/batch _____ batches/day _____ days/year <=100 hours/year for non-emergency purposes.													
5. Fuel Consumption: Emission Certification CY2017 <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Type(s) of Fuel</th> <th style="text-align: left;">% Sulfur</th> <th style="text-align: left;">Annual Usage (specify units)</th> </tr> </thead> <tbody> <tr> <td>1. <u>No. 2 Fuel Oil</u></td> <td><u>maximum 0.3</u></td> <td><u>1,458.3 gallons</u></td> </tr> <tr> <td>2. _____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>3. _____</td> <td>_____</td> <td>_____</td> </tr> </tbody> </table>		Type(s) of Fuel	% Sulfur	Annual Usage (specify units)	1. <u>No. 2 Fuel Oil</u>	<u>maximum 0.3</u>	<u>1,458.3 gallons</u>	2. _____	_____	_____	3. _____	_____	_____
Type(s) of Fuel	% Sulfur	Annual Usage (specify units)											
1. <u>No. 2 Fuel Oil</u>	<u>maximum 0.3</u>	<u>1,458.3 gallons</u>											
2. _____	_____	_____											
3. _____	_____	_____											
6. Emissions in Tons: Emission Certification CY2017 A. Actual Major: <u>N/A</u> Potential Major: <u>N/A</u> (note: before control device) B. Actual Emissions: NOx <u>0.35</u> SOx <u>0.04</u> VOC <u>0.01</u> PM10 <u><0.01</u> HAPs _____													



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SECTION 3A-20. EMISSIONS UNIT DESCRIPTIONS

1. Emissions Unit No.: EU31-2 1a. Date of installation (month/year): 10/1996	2. MDE Registration No.:(if applicable) 9-1050												
3. Detailed description of the emissions unit, including all emission point(s) and the assigned number(s): <u>EU31-2 is a Caterpillar emergency generator rated at 1450 kW, firing No. 2 fuel</u> <u>oil. This emission unit is located in Building 31. Emissions from emission unit</u> <u>EU31-2 are vented through emission point EP31-2.</u> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>													
4. Federally Enforceable Limit on the Operating Schedule for this Emissions Unit: General Reference: <u>40 CFR 63.6640(f)</u> Continuous Processes: _____ hours/day _____ days/year Batch Processes: _____ hours/batch _____ batches/day _____ days/year <=100 hours/year for non-emergency purposes.													
5. Fuel Consumption: Emission Certification CY2017 <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Type(s) of Fuel</th> <th style="text-align: left;">% Sulfur</th> <th style="text-align: left;">Annual Usage (specify units)</th> </tr> </thead> <tbody> <tr> <td>1. No. 2 Fuel Oil</td> <td>maximum 0.3</td> <td>1,458.3 gallons</td> </tr> <tr> <td>2. _____</td> <td></td> <td></td> </tr> <tr> <td>3. _____</td> <td></td> <td></td> </tr> </tbody> </table>		Type(s) of Fuel	% Sulfur	Annual Usage (specify units)	1. No. 2 Fuel Oil	maximum 0.3	1,458.3 gallons	2. _____			3. _____		
Type(s) of Fuel	% Sulfur	Annual Usage (specify units)											
1. No. 2 Fuel Oil	maximum 0.3	1,458.3 gallons											
2. _____													
3. _____													
6. Emissions in Tons: Emission Certification CY2017 A. Actual Major: <u>N/A</u> Potential Major: <u>N/A</u> (note: before control device) B. Actual Emissions: NOx <u>0.35</u> SOx <u>0.04</u> VOC <u>0.01</u> PM10 <u><0.01</u> HAPs _____													



SECTION 3A-24. EMISSIONS UNIT DESCRIPTIONS

1. Emissions Unit No.: EU29-1 1a. Date of installation (month/year): 01/2013	2. MDE Registration No.:(if applicable) 9-1422												
3. Detailed description of the emissions unit, including all emission point(s) and the assigned number(s): EU29-1 is a 1,000 kW emergency generator, firing No. 2 fuel oil. This unit is located outside of Building 29. Emissions from emission unit EU29-1 are vented through emission point EP29-1.													
4. Federally Enforceable Limit on the Operating Schedule for this Emissions Unit: General Reference: 40 CFR 60.4211(f) Continuous Processes: _____ hours/day _____ days/year Batch Processes: _____ hours/batch _____ batches/day _____ days/year <=100 hours/year for other purposes, see Section 3B													
5. Fuel Consumption: Emission Certification CY2017 <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Type(s) of Fuel</th> <th style="text-align: left;">% Sulfur</th> <th style="text-align: left;">Annual Usage (specify units)</th> </tr> </thead> <tbody> <tr> <td>1. No. 2 Fuel Oil</td> <td>maximum 15 ppm</td> <td>165.6 gallons</td> </tr> <tr> <td>2. _____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>3. _____</td> <td>_____</td> <td>_____</td> </tr> </tbody> </table>		Type(s) of Fuel	% Sulfur	Annual Usage (specify units)	1. No. 2 Fuel Oil	maximum 15 ppm	165.6 gallons	2. _____	_____	_____	3. _____	_____	_____
Type(s) of Fuel	% Sulfur	Annual Usage (specify units)											
1. No. 2 Fuel Oil	maximum 15 ppm	165.6 gallons											
2. _____	_____	_____											
3. _____	_____	_____											
6. Emissions in Tons: Emission Certification CY2017 A. Actual Major: N/A Potential Major: N/A (note: before control device) B. Actual Emissions: NOx 0.02 SOx <0.01 VOC <0.01 PM10 <0.01 HAPs _____													



SECTION 3A-26. EMISSIONS UNIT DESCRIPTIONS

1. Emissions Unit No.: EU28-1 1a. Date of installation (month/year): 9/2018	2. MDE Registration No.:(if applicable) 9-1535												
3. Detailed description of the emissions unit, including all emission point(s) and the assigned number(s): EU28-1 is a 510 kW emergency generator, firing No. 2 fuel oil. The emergency generator is located outside of Building 28. EU28-1 is vented through emission point EP28-1.													
4. Federally Enforceable Limit on the Operating Schedule for this Emissions Unit: Not Applicable General Reference: 40 CFR 60.4211(f)													
Continuous Processes: _____ hours/day _____ days/year Batch Processes: _____ hours/batch _____ batches/day _____ days/year <=100 hours/year for other purposes, see Section 3B													
5. Fuel Consumption: Actual emissions are not yet available for this unit.													
<table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 40%;">Type(s) of Fuel</th> <th style="text-align: left; width: 30%;">% Sulfur</th> <th style="text-align: left; width: 30%;">Annual Usage (specify units)</th> </tr> </thead> <tbody> <tr> <td>1. No. 2 Fuel Oil</td> <td>maximum 15 ppm</td> <td>NA</td> </tr> <tr> <td>2. _____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>3. _____</td> <td>_____</td> <td>_____</td> </tr> </tbody> </table>		Type(s) of Fuel	% Sulfur	Annual Usage (specify units)	1. No. 2 Fuel Oil	maximum 15 ppm	NA	2. _____	_____	_____	3. _____	_____	_____
Type(s) of Fuel	% Sulfur	Annual Usage (specify units)											
1. No. 2 Fuel Oil	maximum 15 ppm	NA											
2. _____	_____	_____											
3. _____	_____	_____											
6. Emissions in Tons: Actual emissions are not yet available for this unit.													
A. Actual Major: <u>N/A</u> Potential Major: <u>N/A</u> (note: before control device)													
B. Actual Emissions: NOx _____ SOx _____ VOC _____ PM10 _____ HAPs _____													



MARYLAND DEPARTMENT OF THE ENVIRONMENT

SECTION 3A-27. EMISSIONS UNIT DESCRIPTIONS

<p>1. Emissions Unit No.: EU4-2 and EU4-6</p> <p>1a. Date of installation (month/year): 01/1984 01/1991 (oven)</p>	<p>2. MDE Registration No.:(if applicable)</p> <p>6-1011</p>												
<p>3. Detailed description of the emissions unit, including all emission point(s) and the assigned number(s):</p> <p><u>This is a surface coating operation, which coats instruments and structural members for spacecraft. There are two paint booths and an electric curing oven located in Room 195, Building 4. Coatings are mixed under the fume hoods and used in Paint booth #1 (EU4-2) and Paint booth #2 (EU4-3). Paint booth #2 uses mostly silicone-based paints. For some parts, coatings are dried in curing oven (EU4-6). NASA-GSFC can use non-complaint coatings. Emissions from EU4-2, EU4-3, and EU4-6 are vented through emission point EP4-2, EP4-3, and EP4-6, respectively. Emissions from surface coating are less than 20 pounds per day; therefore, GSFC is not subject to COMAR 26.11.19.13-1 and can use non-compliant coatings.</u></p>													
<p>4. Federally Enforceable Limit on the Operating Schedule for this Emissions Unit: Not Applicable</p> <p>General Reference: _____</p> <p>Continuous Processes: _____ hours/day _____ days/year</p> <p>Batch Processes: _____ hours/batch _____ batches/day</p> <p>_____ days/year</p>													
<p>5. Fuel Consumption: Not Applicable</p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:40%;">Type(s) of Fuel</th> <th style="width:20%;">% Sulfur</th> <th style="width:40%;">Annual Usage (specify units)</th> </tr> </thead> <tbody> <tr> <td>1. _____</td> <td></td> <td></td> </tr> <tr> <td>2. _____</td> <td></td> <td></td> </tr> <tr> <td>3. _____</td> <td></td> <td></td> </tr> </tbody> </table>		Type(s) of Fuel	% Sulfur	Annual Usage (specify units)	1. _____			2. _____			3. _____		
Type(s) of Fuel	% Sulfur	Annual Usage (specify units)											
1. _____													
2. _____													
3. _____													
<p>6. Emissions in Tons: Emission Certification CY2017</p> <p>A. Actual Major: <u>N/A</u> Potential Major: <u>N/A</u> (note: before control device)</p> <p>B. Actual Emissions: NOx _____ SOx _____ VOC <u>0.02</u>*PM10 _____ HAPs <u><0.01</u>*</p> <p align="center">*Total emissions for Building 4 (EU4-2, EU4-3 and EU4-6)</p>													



MARYLAND DEPARTMENT OF THE ENVIRONMENT

SECTION 3A-37. EMISSIONS UNIT DESCRIPTIONS

1. Emissions Unit No.: EU5-6 Continued 1a. Date of installation (month/year): 7/1994	2. MDE Registration No.:(if applicable) 6-0862												
3. Detailed description of the emissions unit, including all emission point(s) and the assigned number(s): Tank B-3 - 120-gallon capacity aluminum zincate tank. The tank contains Fidelity 3116 Zincate (25%) and sodium hydroxide (7.5%). <hr/> Tank B-4A -60-gallon capacity nitric acid/ammonium bifluoride tank. The tank contains nitric acid (75%) and ammonium bifluoride (25%). <hr/> Tank B-4B-60-gallon capacity nitric acid dip tank. The tank contains nitric acid (50% by volume). <hr/> Tank B-6 - 112-gallon Woods Nickel strike tank. The tank contains hydrochloric acid (16 oz/gal) and nickel chloride (32 oz/gal). <hr/> Tank B-7 - 112-gallon black nickel tank. The tank contains nickel sulfate (10 oz/ gal), nickel ammonium sulfate (6 oz/gal), zinc sulfate (5 oz/gal) and sodium thiocyanate (2 oz/gal).													
4. Federally Enforceable Limit on the Operating Schedule for this Emissions Unit: Not Applicable General Reference: _____ Continuous Processes: _____ hours/day _____ days/year Batch Processes: _____ hours/batch _____ batches/day _____ days/year													
5. Fuel Consumption: Not Applicable <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:40%;">Type(s) of Fuel</th> <th style="width:20%;">% Sulfur</th> <th style="width:40%;">Annual Usage (specify units)</th> </tr> </thead> <tbody> <tr> <td>1. _____</td> <td></td> <td></td> </tr> <tr> <td>2. _____</td> <td></td> <td></td> </tr> <tr> <td>3. _____</td> <td></td> <td></td> </tr> </tbody> </table>		Type(s) of Fuel	% Sulfur	Annual Usage (specify units)	1. _____			2. _____			3. _____		
Type(s) of Fuel	% Sulfur	Annual Usage (specify units)											
1. _____													
2. _____													
3. _____													
6. Emissions in Tons: See previous page A. Actual Major: _____ Potential Major: _____ (note: before control device) B. Actual Emissions: NOx _____ SOx _____ VOC _____ PM10 _____ HAPs _____													



MARYLAND DEPARTMENT OF THE ENVIRONMENT

SECTION 3A-44. EMISSIONS UNIT DESCRIPTIONS

1. Emissions Unit No.: EU30-3 1a. Date of installation (month/year): 11/1997	2. MDE Registration No.:(if applicable) 6-0903												
3. Detailed description of the emissions unit, including all emission point(s) and the assigned number(s): <u>EU30-3 is located in the Clean Room of Building 30. This unit is a Dry Chemistry</u> <u>process. EU30-3 is part of the electron device development process. CF4, CHF3,</u> <u>SF6, C4F8, Polytech 907 (Matheson Gas - NO and CF4), BCI3, CI2, HF, Ar, and O2 are</u> <u>used to form a plasma in a dry etching. The gas is excited by radio energy</u> <u>frequency, and the resulting plasma is used to etch the wafer and strip off</u> <u>photoresist (the process varies). Freon 14 or Freon 116 can also be used for dry</u> <u>etching. A wet scrubber (CE30-1) controls emissions from this process.</u> 													
4. Federally Enforceable Limit on the Operating Schedule for this Emissions Unit: Not Applicable General Reference: _____ Continuous Processes: _____ hours/day _____ days/year Batch Processes: _____ hours/batch _____ batches/day _____ days/year													
5. Fuel Consumption: Not Applicable <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:40%;">Type(s) of Fuel</th> <th style="width:20%;">% Sulfur</th> <th style="width:40%;">Annual Usage (specify units)</th> </tr> </thead> <tbody> <tr> <td>1. _____</td> <td></td> <td></td> </tr> <tr> <td>2. _____</td> <td></td> <td></td> </tr> <tr> <td>3. _____</td> <td></td> <td></td> </tr> </tbody> </table>		Type(s) of Fuel	% Sulfur	Annual Usage (specify units)	1. _____			2. _____			3. _____		
Type(s) of Fuel	% Sulfur	Annual Usage (specify units)											
1. _____													
2. _____													
3. _____													
6. Emissions in Tons: Emission Certification CY2017 A. Actual Major: <u>N/A</u> Potential Major: <u>N/A</u> (note: before control device) B. Actual Emissions: NOx _____ SOx _____ VOC * _____ PM10 * _____ HAPs * _____ <p align="center">*Emissions included in EU30-1.</p>													



MARYLAND DEPARTMENT OF THE ENVIRONMENT

SECTION 3B-1.

CITATION TO AND DESCRIPTION OF APPLICABLE
FEDERALLY ENFORCEABLE REQUIREMENTS

Emissions Unit No.: EU24-1 thru EU24-5 General Reference: COMAR 26.11.09.05A(2) and (3):
40 CFR 60, Subpart Dc §60.43c
COMAR 26.11.09.07A(2)(b)
40 CFR 60, Subpart Dc §60.42c
COMAR 26.11.09.08E

Briefly describe the Emission Standard/Limit or Operational Limitation:

COMAR 26.11.09.05A(2) and (3) - Fuel Burning Equipment.

(2) "In Areas III and IV, a person may not cause or permit the discharge of emissions from any fuel burning equipment, other than water in an uncombined form, which is visible to human observers."

(3) Exceptions. "Section A(1) and (2) of this regulation do not apply to emissions during load changes, soot blowing, start-up, or adjustments or occasional cleaning of control equipment if: (a) The visible emissions are not greater than 40 percent opacity; and (b) The visible emissions do not occur for more than 6 consecutive minutes in any sixty minute period."

40 CFR 60, Subpart Dc §60.43c - NSPS for Small Industrial- Commercial-Institutional Steam Generating Units with a heat input capacity less than 100 million Btu/hour but greater than 10 million Btu/hour for which construction began after June 9, 1989.

(c) GSFC "shall not cause to be discharged into the atmosphere from that affected facility any gases that exhibit greater than 20 percent opacity (6-minute average), except for one 6- minute period per hour of not more than 27 percent opacity. "

(d) "The PM and opacity standards under this section apply at all times, except during periods of startup, shutdown, or malfunction."

Note: Compliance with the "No Visible Emission" requirements of COMAR 26.11.09.05A(4) will be used to show compliance with this NSPS standard.

COMAR 26.11.09.07A(2)(b) - Sulfur Content Limitation for Fuel.

GSFC shall "not burn, sell, or make available for sale any fuel with a sulfur content by weight in excess of or which otherwise exceeds the following limitations: Distillate fuel oils, 0.3 percent."

40 CFR 60, Subpart Dc §60.42c - NSPS for Small Industrial- Commercial-Institutional Steam Generating Units with a heat input capacity less than 100 million Btu/hour but greater than 10 million Btu/hour for which construction began after June 9, 1989.

(d) GSFC shall not cause to be discharged into the atmosphere from that affected facility any gases that contain SO₂ in excess of 215 ng/J (0.50 lb/million Btu) heat input; or, as an alternative, GSFC shall not combust oil in the affected facility that contains greater than 0.5 weight percent sulfur.

(i) "The SO₂ emission limits, fuel oil sulfur limits, and percent reduction requirements under this section apply at all times, including periods of startup, shutdown, and malfunction."



COMAR 26.11.09.08E - Requirements for Fuel-Burning Equipment with a Rated Heat Input Capacity of 100 Million Btu Per Hour or Less.

1. Submit to the Department an identification of each affected installation, the rated heat input capacity of each installation, and the type of fuel burned in each;
2. Perform a combustion analysis for each installation at least once each year and optimize combustion based on the analysis;
3. Maintain the results of the combustion analysis at the site for at least 2 years and make this data available to the Department and USEPA upon request;
4. Once every 3 years, require each operator of the installation to attend operator training programs on combustion optimization that are sponsored by the Department, the US EPA, or equipment vendors; and
5. Prepare and maintain a record of training program attendance for each operator at the site and make these records available to the Department upon request.

MDE PTC 033-5-0808 thru 5-0912 (April 27, 2005)

1. Each boiler is subject to a NOx emission limit of 0.1 pounds per MMBtu for a 24-hour average when burning natural gas.
2. The total 12-month rolling heat input consumed by the five boilers shall not exceed 750,000 MMBtu.
3. The combined average NOx emissions from all five boilers shall not exceed 0.1 pounds per MMBtu based on a calendar monthly average when burning a combination of any of the following fuels: natural gas, No. 2 fuel oil, and/or landfill gas.
4. The combined average SOx emissions for the five boilers is limited to less than 40 tons per year for a 12-month rolling average when burning a combination of any of the following fuels: natural gas, No. 2 fuel oil, and /or landfill gas.

Compliance Demonstration:

Check appropriate reports required to be submitted:

- Quarterly Monitoring Report: _____
- Annual Compliance Certification: April 1st
- Semi-Annual Monitoring Report: January 30th, July 30th

Methods used to demonstrate compliance:

Monitoring: Reference:

COMAR 26.11.03.06C, 40 CFR 60, Subpart Dc §60.46c, COMAR 26.11.09.08E(2)

Describe:

GSFC shall properly operate and maintain the boilers in a manner to prevent visible emissions; and verify that there are no visible emissions when burning No. 2 fuel oil. GSFC shall perform a visual observation of stack emissions for a 6-minute period once for each 168 hours that the boiler burns oil or at a minimum of once per year. GSFC does not need to operate on No.2 fuel oil solely for the purpose of conducting the test. GSFC shall perform the following, if visible emissions are observed:

1. Inspect combustion control system and boiler operations;
2. Perform all necessary adjustments and/or repairs to the boiler within 48 hours, so that visible emissions are eliminated;



3. Document in writing the results of the inspections, adjustments and/or repairs to the boiler; and
4. After 48 hours, if the required adjustments and/or repairs had not eliminated the visible emissions, perform Method 9 observations once daily for 18 minutes until corrective actions have eliminated the visible emissions.

40 CFR 60, Subpart Dc §60.46c - Emission monitoring for sulfur dioxide

(e) "The monitoring requirements of paragraphs (a) and (d) of this section shall not apply to affected facilities subject to § 60.42c(h) (1), (2), or (3) where the owner or operator of the affected facility seeks to demonstrate compliance with the SO₂ standards based on fuel supplier certification, as described under § 60.48c(f) (1), (2), or (3), as applicable."

Note: The monitoring requirements under NSPS Subpart Dc will be used to demonstrate compliance with COMAR 26.11.09.07A and NSPS sulfur in fuel standard.

COMAR 26.11.09.08E(2)

GSFC shall optimize combustion based on the combustion analysis.

MDE PTC 033-5-0808 thru 5-0912 (April 27, 2005)

1. Measure the NO_x content of the flue gases from each boiler when burning natural gas, or landfill gas for a 3 to 5-minute period every 168 hours of operation;
2. For any month that distillate fuel is burned in a boiler, measure the NO_x content of the flue gases from that boiler when burning distillate fuel for a 3 to 5-minute period every 168 hours of operation;
3. Monthly calculate the heat input to the boilers at the end of each month for the prior rolling 12-month period;
4. Monthly calculate the average NO_x emission rate using all measurements taken from all five boilers for each calendar month;
5. Calculate the total annual SO_x emissions from all five boilers on a 12- month rolling basis; and
6. Use an analyzer that is properly calibrated and maintained in accordance with the vendor specification for all measurements. The analyzer shall be the type approved by the Department.

Testing: Reference:

40 CFR 60, Subpart Dc §60.44c, COMAR 26.11 .09.08E(2)], COMAR 26.11.03.06C

Describe:

40 CFR 60, Subpart Dc §60.44c

Compliance and performance test methods and procedures for sulfur dioxide (h) "For affected facilities subject to § 60.42c(h)(1), (2), or (3) where the owner or operator seeks to demonstrate compliance with the SO₂ standards based on fuel supplier certification, the performance test shall consist of the certification, the certification from the fuel supplier, as described under § 60.48c(f)(1), (2), or (3), as applicable."

COMAR 26.11.09.08E(2)

GSFC shall perform a combustion analysis for each installation at least once each year.

COMAR 26.11.03.06C

GSFC shall conduct a stack test of NO_x, SO_x, and PM on one of the boiler capable of burning all three fuels as specified by the Department. GSFC does not need to operate on No.2 fuel oil solely for the purpose of conducting this test.



Record Keeping: Reference:

COMAR 26.11.03.06C(5)(g), COMAR 26.11.03.06C, 40 CFR 60, Subpart Dc §60.48c, COMAR 26.11.09.08E(5)

Describe:

COMAR 26.11.03.06C(5)(g)

All records will be maintained for a period of at least 5 years and be made available to the Department upon request.

COMAR 26.11.03.06C

1. GSFC shall maintain an operations manual and preventative maintenance plan and records of maintenance performed that relates to combustion performance.
2. GSFC shall maintain records of the maintenance performed on the boiler that relate to preventing visible emissions.
3. GSFC shall maintain a log of visible emission observations performed.

CFR 60, Subpart Dc §60.48c - Reporting and record keeping requirements

(e) "The owner or operator of each affected facility subject to the SO_x emission limits, fuel oil sulfur limits, or percent reduction requirements under §60.43c shall keep records and submit reports as required under paragraph (d) of this section, including the following information, as applicable.

(11) If fuel supplier certification is used to demonstrate compliance, records of fuel supplier certification is used to demonstrate compliance, records of fuel supplier certification as described under paragraph (f)(1), (2), or (3) of this section, as applicable. In addition to records of fuel supplier certifications, the report shall include a certified statement signed by the owner or operator of the affected facility that the records of fuel supplier certifications submitted represent all of the fuel combusted during the reporting period.

(f) Fuel supplier certification shall include the following information:

(1) For distillate oil:

(i) The name of the oil supplier;

(ii) A statement from the oil supplier that the oil complies with the specifications under the definition of distillate oil in § 60.41c; and

(iii) The sulfur content of maximum sulfur content in the oil."

Note: The record keeping requirements under NSPS Subpart Dc will be used to demonstrate compliance with COMAR 26.11.09.07A and NSPS sulfur in fuel standard.

COMAR 26.11.09.08E(5)

GSFC shall maintain on site records of:

- (1) The results of the annual combustion analysis; and
- (2) Training program attendance for each operator.



MDE PTC 033-5-0808 thru 5-0912 (April 27, 2005)

GSFC shall maintain records of:

1. NOx content of the flue gases from each boiler when burning natural gas or landfill gas for a 3 to 5-minute period every 168 hours of operation.
2. The calculated total rolling 12-month heat input to the five boilers.
3. The average NOx emission rate from all five boilers on a calendar monthly basis.
4. The total annual SOx emissions from all five boilers on a 12-month rolling basis.

Reporting: Reference:

COMAR 26.11.01.07, COMAR 26.11.03.06C(7), 40 CFR 60, Subpart Dc §60.48c, COMAR 26.11.09.08E

Describe:

GSFC shall report incidents of visible emissions in accordance with COMAR 26.11.01.07 and COMAR 26.11.03.06C(7).

40 CFR 60, Subpart Dc §60.48c - Reporting and recordkeeping requirements

(g)(1) GSFC shall report and maintain records of the amounts of each fuel combusted during each day.

(j) "The reporting period for the reports required under this subpart is each six-month period. All reports shall be submitted to the Administrator (The Department) and shall be postmarked by the 30th day following the end of the reporting period."

(e)(11) The report shall include a certified statement signed by GSFC that the records of fuel supplier certifications submitted represent all of the fuel oil combusted during the reporting period.

Note: The reporting requirements under NSPS Subpart Dc will be used to demonstrate compliance with COMAR 26.11.09.07A and NSPS sulfur in fuel standard.

COMAR 26.11.09.08E

GSFC shall submit:

1. The results of combustion analysis to the department and the EPA upon request.
2. A record of training program attendance for each operator to the Department upon request.

MDE PTC 033-5-0808 thru 5-0912 (April 27, 2005)

GSFC shall report as part of the Annual Emission Certification the following:

1. The calculated total rolling 12-month heat input to the five boilers.
2. The average NOx emission rate from all five boilers for each calendar month.
3. The total annual SOx emissions from all five boilers on a 12-month rolling basis.

GSFC shall report to the Department if there is an exceedance of the flue gas NOx limit within seven days. Within 30 days, GSFC shall submit a root cause analysis and preventative action plan for the exceedance.

Frequency of submittal of the compliance demonstration: Annual, Semi-Annual



SECTION 3B. MARYLAND DEPARTMENT OF THE ENVIRONMENT

SECTION 3B-2.

CITATION TO AND DESCRIPTION OF APPLICABLE
FEDERALLY ENFORCEABLE REQUIREMENT

Emissions Unit No.: EU35-1, EU35-2, EU 97-1,
EU 302-1, EU 302-3.

General Reference: COMAR 26.11.09.05A,
COMAR 26.11.09.08F, COMAR 26.11.02.09A

Briefly describe the Emission Standard/Limit or Operational Limitation:

COMAR 26.11.09.05A(2) and (3) - Fuel Burning Equipment.

(1) "In Areas III and IV, a person may not cause or permit the discharge of emissions from any fuel burning equipment, other than water in an uncombined form, which is visible to human observers."

(2) Exceptions. "Section A(1) and (2) of this regulation do not apply to emissions during load changes, soot blowing, start-up, or adjustments or occasional cleaning of control equipment if:

(a) The visible emissions are not greater than 40 percent opacity; and

(b) The visible emissions do not occur for more than 6 consecutive minutes in any sixty-minute period."

COMAR 26.11.09.08F - Requirements for Space Heaters.

(1) "A person who owns or operates a space heater shall:

(a) Submit to the Department a list of each affected installation on the premises and the types of fuel used in each installation;

(b) Develop an operating and maintenance plan to minimize NOx emissions based on the recommendations of equipment vendors and other information including the source's operating and maintenance experience;

(c) Implement the operating and maintenance plan at the premises for review upon request by the Department;

(d) Require installation operators to attend in-State operator training programs once every 3 years on combustion optimization that are sponsored by the Department, the EPA, or equipment vendors; and

(e) Prepare and maintain a record of training program attendance for each operator at the site and make these records available to the Department upon request."

COMAR 26.11.02.09A(6)

GSFC shall burn only natural gas, unless approval is obtained from the Department.

Permit Shield Request: Yes.

Compliance Demonstration:

Check appropriate reports required to be submitted:

Quarterly Monitoring Report: _____

Annual Compliance Certification: April 1st

Semi-Annual Monitoring Report: January 30th, July 30th



Methods used to demonstrate compliance:

Monitoring: Reference: COMAR 26.11.03.06C & COMAR 26.11.09.08F(1)(b)

Describe:

COMAR 26.11.03.06C

GSFC shall properly operate and maintain the boiler in a manner to prevent visible emissions.

COMAR 26.11.09.08F(1)(b)]

GSFC shall maintain an operating and maintenance plan to minimize NOx emissions based on the recommendations of equipment vendors and other information including the source's operating and maintenance experience.

Testing: Reference: None Describe: None

Record Keeping: COMAR 26.11.03.06C(5)(g), COMAR 26.11.03.06C, COMAR 26.11.09.08F(1)(c), COMAR 26.11.09.08F(1)(e), COMAR 26.11.09.08G(1)(e), COMAR 26.11.09.08K(3)

Describe:

COMAR 26.11.03.06C(5)(g)

All records will be maintained for a period of at least 5 years and be made available to the Department upon request.

COMAR 26.11.09.08F(1)(c)

GSFC shall maintain the records of the maintenance performed based on the recommendations of equipment vendors and other information including the source's operating and maintenance experience.

COMAR 26.11.09.08F(1)(e)

GSFC shall prepare and maintain a record of training program attendance for each operator at the site and make these records available to the Department upon request.

COMAR 26.11.09.08G(1)(e)]

GSFC shall retain records of training program attendance for each operator for at least 5 years.

COMAR 26.11.09.08K(3)

Maintain records of fuel usage that demonstrates that each boiler meets the definition of space heater.

COMAR 26.11 .03.06C

GSFC shall maintain an operations manual and preventative maintenance plan and records of the maintenance performed based on the recommendations of equipment vendors and other information including the source's operating and maintenance experience.

GSFC shall maintain a record of combined gas usage by the boilers based on meter readings and use this data to estimate fuel usage for each boiler.

Reporting: Reference: COMAR 26.11.09.08F(1)(e)

Describe:

COMAR 26.11.09.08F(1)(e)

GSFC shall submit a record of training program attendance for each operator to the Department upon request.

Frequency of submittal of the compliance demonstration: Annual, Semi-Annual



MARYLAND DEPARTMENT OF THE ENVIRONMENT

SECTION 3B-3.

CITATION TO AND DESCRIPTION OF APPLICABLE
FEDERALLY ENFORCEABLE REQUIREMENT

Emissions Unit No.: EU7-2, EU10-3, EU24C-1 to 4; EU24C-6; EU24C-8, EU31-1 to 5, EU29-1, EU7-3, and EU28-1

General Reference:

COMAR 26.11.09.05E(2,3, & 4), COMAR 26.11.09.07A(2)(b), COMAR 26.11.09.08G(1), 40 CFR 863.6585(f)(3)

Briefly describe the Emission Standard/Limit or Operational Limitation:

COMAR 26.11.09.05E(2,3, & 4) - Stationary Internal Combustion Engine Powered Equipment

(2) Emissions During Idle Mode - "A person may not cause or permit the discharge of emissions from any engine, operating at idle, greater than 10 percent opacity."

(3) Emissions During Operating Mode - "A person may not cause or permit the discharge of emissions from any engine, operating at other than idle conditions, greater than 40 percent opacity."

(4) "Exceptions:

(a) Section E(2) does not apply for a period of 2 consecutive minutes after a period of idling of 15 consecutive minutes for the purpose of clearing the exhaust system.

(c) Section E(2) does not apply to emissions resulting directly from cold engine start-up and warm-up for a maximum period of 30 minutes for engines that are idled continuously when not in service; or for a maximum period of 15 minutes for all other engines.

(d) Section E(2) and (3) does not apply when maintenance, repair, or testing is being performed by qualified mechanics."

COMAR 26.11.09.07A(2)(b) - Sulfur Content Limitation for Fuel

GSFC shall "not burn, sell, or make available for sale any fuel with a sulfur content by weight in excess of or which otherwise exceeds the following limitations: Distillate fuel oils, 0.3 percent."

COMAR 26.11.09.08G(1) -Requirements for Fuel-Burning Equipment with a Capacity Factor of 15 percent or less.

(1) "A person who owns or operates fuel-burning equipment with a capacity factor (as defined in 40 CFR Part 72.2) of 15 percent or less shall:

(a) Provide certification of the capacity factor of the equipment to the Department in writing;

(b) For fuel-burning equipment that operates more than 500 hours during a calendar year, perform a combustion analysis and optimize combustion at least once annually;

(c) Maintain the results of the combustion analysis and any stack tests at the site for at least 2 years and make these results available to the Department and the EPA upon request;

(d) Require each operator of an installation to attend operator training programs at least once every 3 years, on combustion optimization that are sponsored by the Department, the EPA, or equipment vendors; and

(e) Maintain a record of training program attendance for each operator at the site and make these records available to the Department upon request."



Operational Limitation: None

Permit Shield Request: Yes.

Compliance Demonstration:

Check appropriate reports required to be submitted:

- Quarterly Monitoring Report: _____
- Annual Compliance Certification: April 1st
- Semi-Annual Monitoring Report: January 30th, July 30th

Methods used to demonstrate compliance:

Monitoring: Reference: COMAR 26.11.03.06C

Describe:

COMAR 26.11.03.06C

GSFC shall perform preventive maintenance to optimize combustion performance.

GSFC shall obtain a certification from the fuel supplier indicating that the fuel oil is in compliance with the limitation on the sulfur content of the fuel oil or obtain sulfur in fuel analyses of oil that is representative of the oil burned.

GSFC shall calculate the capacity factor of each unit within 30 days after the end of each month.

Testing: Reference: COMAR 26.11.09.08G(1)(b)

Describe:

COMAR 26.11.09.08G(1)(b)

GSFC shall perform a combustion analysis and optimize combustion at least once annually when the fuel-burning equipment operates for more than 500 hours in a calendar year.

Record Keeping: Reference: COMAR 26.11.03.06C(5)(g), COMAR 26.11.03.06C, COMAR 26.11.09.07C, COMAR 26.11.09.08G(1)(c), COMAR 26.11.09.08G(1)(e)

Describe:

COMAR 26.11.03.06C(5)(g)

All records will be maintained for a period of at least 5 years and be made available to the Department upon request.



COMAR 26.11.03.06C

GSFC shall:

1. Maintain an operation manual and prevention maintenance plan; and
2. Maintain a record of the maintenance performed that relates to combustion performance.
3. Retain records of the calculated capacity factors.

COMAR 26.11.09.07C

GSFC shall maintain records of fuel supplier's certification or sulfur in fuel analyses and shall make records available to the Department upon request.

COMAR 26.11.09.08G(1)

GSFC shall:

1. Maintain the results of the combustion analysis performed when the hours of operation exceed 500 hours. [Reference: COMAR 26.11.09.08G(1)(c)]
2. Retain records of training program attendance for each operator. [Reference: COMAR 26.11.09.08G(1)(e)]

COMAR 26.11.03.06

GSFC shall maintain for at least five years, an operating log for each generator, listing dates, hours of operation, and reason for generator operation (i.e. maintenance, operational testing, power outage, etc.)

Reporting: Reference: COMAR 26.11.09.07C, COMAR 26.11.09.08G(1)(e), COMAR 26.11.09.08G(1)(a) & COMAR 26.11.03.06C

Describe:

COMAR 26.11.09.07C

GSFC shall report fuel supplier certification or a copy of the sulfur in fuel analyses to the Department upon request.

COMAR 26.11.09.08G(1)(e)

GSFC shall submit a record of the training program attendance for each operator to the Department upon request.

COMAR 26.11.09.08G(1)(a) & COMAR 26.11.03.06C

GSFC shall provide certification of the capacity factor of the equipment to the Department in writing as part of the annual Emissions Certification Report.

COMAR 26.11.03.06C

GSFC shall submit a record of the total generator operating hours in writing as part of the annual Emission Certification Report.

Frequency of submittal of the compliance demonstration: Annual, Semi-Annual



MARYLAND DEPARTMENT OF THE ENVIRONMENT

SECTION 3B-4.

CITATION TO AND DESCRIPTION OF APPLICABLE
FEDERALLY ENFORCEABLE REQUIREMENTS

Emissions Unit No.: EU24C-6, EU29-1, EU28-1

General Reference: COMAR 26.11.03.06C, 40 CFR §60.4205(b), 40 CFR §60.4202(a)(2), 40 CFR §60.4207(b), 40 CFR §60.4211(a), (c)&(f), 40 CFR §60.4209(a), 40 CFR §60.4206, 40 CFR §60.4214(b)

Briefly describe the Emission Standard/Limit or Operational Limitation:

40 CFR §60.4205(b), §60.4202(a)(2), §89.113(a)

GSFC must not exceed the following opacity emission standards [§89.113(a)]:

- (1) 20 percent during the acceleration mode;
- (2) 15 percent during the lugging mode; and
- (3) 50 percent during the peaks in either the acceleration or lugging modes.

40 CFR Part §60.4207(b), §80.510(b)

Emergency diesel generators must combust diesel fuel meeting the requirements of 40 CFR §80.510(b):

- (1)(i) sulfur content: 15 ppm maximum.
- (2)(i) a minimum cetane index of 40, or (ii) a maximum aromatic content of 35 volume percent.

40 CFR §60.4205(b), §60.4202(a)(2), §89.112(a)

GSFC must not exceed the following exhaust emission standards [§89.112(a), Table 1]:

- NMHC + NOx: 6.4 grams per kilowatt hour;
- PM: 0.2 grams per kilowatt hour;
- CO: 3.5 grams per kilowatt hour.

40 CFR §60.4209(a)

GSFC must install and operate a non-resettable hourly time meter on each engine.

40 CFR §60.4206

GSFC must operate and maintain the engines in a manner that achieves the emission standards of the entire life of the engine.

40 CFR §60.4211(a)

- (1) GSFC must operate and maintain the engines and control devices according to the manufacturer's emission related written instruction.
- (2) GSFC may change only those emission related settings that are approved by the manufacturer.



40 CFR §60.4211(f)

GFC must operate the emergency engines as follows:

(1) There is no time limit on the use of emergency stationary ICE in emergency situations.

(2) You may operate your emergency stationary ICE for any combination of the purposes specified in paragraphs (f)(2)(i) through (iii) of this section for a maximum of 100 hours per calendar year.

(i) Emergency stationary ICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that federal, state, or local standards require maintenance and testing of emergency ICE beyond 100 hours per calendar year.

Permit Shield Request: Yes.

Compliance Demonstration:

Check appropriate reports required to be submitted:

- Quarterly Monitoring Report: _____
- Annual Compliance Certification: April 1st
- Semi-Annual Monitoring Report: January 30th, July 30th



Methods used to demonstrate compliance:

Monitoring: Reference: 40 CFR §60.4211(c)

Describe:

40 CFR §60.4211(c)

GSFC must comply by purchasing an engine certified to the emission standards in § 60.4204(b), or §60.4205(b) or (c), as applicable, for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's emission-related specifications, except as permitted in paragraph (g) of this section.

Testing: Reference: None

Record Keeping: Reference: COMAR 26.11.03.06C

Describe:

COMAR 26.11.03.06C

GSFC shall maintain for at least five years and make available to the Department upon request records of:

1. Each fuel delivery from the fuel supplier a fuel supplier certification consisting of the name of the oil supplier, the date of delivery, the amount of fuel delivered, and a statement from the fuel supplier that the diesel fuel oil complies with the specifications of 40 CFR §80.510(b).
2. Certifications of compliance or manufacturer engine test data required by 40 CFR §60.4211.
3. An operating log for each generator, listing the dates, hours of operation, and reason for generator operation (i.e. maintenance, operational testing, power outage, etc.).

Reporting: Reference: 40 CFR §60.4214(b)

Describe:

40 CFR §60.4214(b)

If the stationary CI internal combustion engine is an emergency stationary internal combustion engine, the owner or operator is not required to submit an initial notification. Starting with the model years in table 5 to this subpart, if the emergency engine does not meet the standards applicable to non-emergency engines in the applicable model year, the owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The owner must record the time of operation of the engine and the reason the engine was in operation during that time.



40 CFR §60.4214(d)

In years in which the generator is contractually obligated to be available for more than 15 hours per year for the purposes of emergency demand response or for periods where there is a deviation of voltage or frequency of 5 percent or greater below standard voltage or frequency, or for non-emergency situations to supply power as part of a financial arrangement with another entity, the Permittee must submit an annual report according to the following requirements:

(1) The report must contain the following information:

(i) Company name and address where the engine is located.

(ii) Date of the report and beginning and ending dates of the reporting period.

(iii) Engine site rating and model year.

(iv) Latitude and longitude of the engine in decimal degrees reported to the fifth decimal place.

(v) Hours operated for the purposes of emergency demand response and for periods where there is a deviation of voltage or frequency of 5 percent or greater below standard voltage or frequency, including the date, start time, and end time for engine operation for this use.

(vi) Number of hours the engine is contractually obligated to be available for the purposes of emergency demand response and for periods where there is a deviation of voltage or frequency of 5 percent or greater below standard voltage or frequency.

(vii) Hours spent for operation for the purposes specified in §60.4211(f)(3)(i), including the date, start time, and end time for engine operation for the purposes specified in §60.4211(f)(3)(i). The report must also identify the entity that dispatched the engine and the situation that necessitated the dispatch of the engine.

(2) The first annual report must cover the calendar year 2015 and must be submitted no later than March 31, 2016. Subsequent annual reports for each calendar year must be submitted no later than March 31 of the following calendar year.

(3) The annual report must be submitted electronically using the subpart specific reporting form in the Compliance and Emissions Data Reporting Interface (CEDRI) that is accessed through EPA's Central Data Exchange (CDX) (www.epa.gov/cdx). However, if the reporting form specific to this subpart is not available in CEDRI at the time that the report is due, the written report must be submitted to the Administrator at the appropriate address listed in 40 CFR §60.4.

Frequency of submittal of the compliance demonstration: Annual, Semi-Annual



MARYLAND DEPARTMENT OF THE ENVIRONMENT

SECTION 3B-5.

CITATION TO AND DESCRIPTION OF APPLICABLE
FEDERALLY ENFORCEABLE REQUIREMENTS

Emissions Unit No.: EU4-2, EU4-3, EU4-6, EU5A-3 General Reference: COMAR 26.11.06.02C, COMAR 26.11.06.02A, COMAR 26.11.06.03B(2)(a), COMAR 26.11.19.13-1, COMAR 26.11.19.13-1C, COMAR 26.11.02.19C & D

Briefly describe the Emission Standard/Limit or Operational Limitation:

COMAR 26.11.06.02C - Visible Emission Standards Areas III & IV

(2) "In Areas III and IV a person may not cause or permit the discharge of emissions from any installation or building, other than water in an uncombined form, which is visible to human observers."

COMAR 26.11.06.02A - Visible Emissions General Exceptions

(2) Exceptions. "The visible emissions standards in §C of this regulation do not apply to emissions during start-up and process modification or adjustments, or occasional cleaning of control equipment, if:

(a) The visible emissions are not greater than 40 percent opacity; and

(b) The visible emissions do not occur for more than 6 consecutive minutes in any sixty-minute period."

COMAR 26.11.06.03B(2) - Particulate Emissions Limitation in Areas III and IV

(a) "A person may not cause or permit to be discharged into the outdoor atmosphere from any other installation, particulate matter in excess of 0.03 gr/SCFD."

COMAR 26.11.19.13-1 Aerospace Coating Operations

(1) "This regulation applies to an aerospace coating operation at a premises where the total actual VOC emissions from all aerospace coating operations is 20 pounds or more per day.

(2) The standard established in Sec. §C(2) of this regulation does not apply to tooling and touch-up and repair operations.

(3) A person subject to the standards in Sec. §C(2) of this regulation may comply with those standards by using an air pollution control device.

COMAR 26.11.19.13-1C – General Requirements for Aerospace Coating Operations

(1) "Except as provided in §C(3) of this regulation, a person who owns or operates an aerospace coating operation subject to this regulation may not cause or permit the discharge of VOC into the atmosphere unless the standards in §C(2) of this regulation are met."

(2) Aerospace Coating Operation Standards – see COMAR 26.11.19.13-1C(2) for maximum allowable VOC coating standards.

(3) "A person subject to this regulation may exceed the specialty coating standards in §C(2)(b) of this regulation if the total VOC emissions from all specialty coatings that exceed the standard in §C(2)(b) of this regulation do not exceed 20 pounds on any day.



(4) A person who owns or operates an aerospace coating operation subject to this regulation shall comply with the primer and topcoat applications operations, chemical milling maskant operations, and the test methods and coating averaging procedures specified in 40 CFR §§63.745(a)—(e), 63.747(a)—(e), and 63.750 as applicable, which are incorporated by reference.”

(5) Cleanup Requirements. A person who owns or operates an aerospace coating operation shall:

(a) Store all waste materials containing VOC, including cloth or paper, in closed containers;

(b) Maintain lids on surface preparation and cleanup materials when not in use; and

(c) Use enclosed containers or VOC recycling equipment to clean spray gun equipment.

Permit Shield Request: Yes.

Compliance Demonstration:

Check appropriate reports required to be submitted:

Quarterly Monitoring Report: _____

Annual Compliance Certification: April 1st

Semi-Annual Monitoring Report: January 30th, July 30th

Methods used to demonstrate compliance:

Monitoring: Reference: COMAR 26.11.03.06C

Describe:

COMAR 26.11.03.06C

GSFC shall conduct an annual one-minute visual observation of the spray booth exhaust. The visual observation must be conducted while the spray booth is in operation. If visible emissions are observed during any visual observation, GSFC must increase the schedule of exhaust observation to a monthly basis and maintain that schedule until no visible emissions are observed in six consecutive monthly visual observations. If visible emissions are observed during any observation, GSFC must inspect the spray booth for cause of visible emissions and perform necessary adjustments or repairs within 24-hours or prior to operating the spray booth. If visible emissions have not been eliminated, GSFC shall perform daily 18-minute visual observation for opacity in accordance with EPA Reference Method 9 when operating the spray booth.

GSFC shall maintain a preventative maintenance plan for the spray booth system that describes the maintenance activity and time schedule for completing each activity. GSFC shall perform maintenance activities within the timeframes established in the plan and shall maintain a log with records of the dates that maintenance was performed.

Testing: Reference: None Describe: None



Record Keeping: Reference: COMAR 26.11.03.06C(5)(g), COMAR 26.11.03.06C.

Describe:

COMAR 26.11.03.06C(5)(g)

All records will be maintained for a period of at least 5 years and be made available to the Department upon request.

COMAR 26.11.03.06C

GSFC shall maintain:

- A log of visible emission observations performed.
- Records of maintenance activities designed to minimize air emissions.
- A copy of MSDS/VOC data sheet for each coating used and retain records of monthly inspections of work practices on site for at least five years and make these records available to the Department upon request.

COMAR 26.11.19.13-1C(6) – Aerospace Coating Operations – Recordkeeping

(a) GSFC shall maintain the following records:

- (i) A description and the volume of each coating used; and
- (ii) The total weight and VOC content of each coating used on a monthly basis.

(b) Records to be retained for not less than 3 years and be made available to the Department upon request.

PTC 033-6-1323 (August 2, 2006)

GSFC shall maintain records of the following information:

Quantity of materials used in the paint spray booth and the hours of operation of the booth;

Material usage for the surface coating operation onsite.

Reporting: Reference: COMAR 26.11.02.19C & D

Describe:

GSFC shall report incidents of visible emissions in accordance with COMAR 26.11.01.07 and COMAR 26.11.03.06C(7).

COMAR 26.11.02.19C & D

GSFC shall report material usage and VOC content of coatings in the annual Emission Certification Report.

Frequency of submittal of the compliance demonstration: Annual, Semi-Annual



MARYLAND DEPARTMENT OF THE ENVIRONMENT

SECTION 3B-6.

CITATION TO AND DESCRIPTION OF APPLICABLE
FEDERALLY ENFORCEABLE REQUIREMENTS

Emissions Unit No.: EU5-2 thru EU5-6 General Reference: COMAR 26.11.06.02A&C
COMAR 26.11.06.03B(2)(a), COMAR 26.11.03.06C,
COMAR 26.11.01.07

Briefly describe the Emission Standard/Limit or Operational Limitation:

COMAR 26.11.06.02C - Visible Emission Standards Areas III & IV

(2) "In Areas III and IV a person may not cause or permit the discharge of emissions from any installation or building, other than water in an uncombined form, which is visible to human observers."

COMAR 26.11.06.02A - Visible Emissions General Exceptions

(2) Exceptions. "The visible emissions standards in §C of this regulation do not apply to emissions during start-up and process modification or adjustments, or occasional cleaning of control equipment, if:

(a) The visible emissions are not greater than 40 percent opacity; and

(b) The visible emissions do not occur for more than 6 consecutive minutes in any sixty-minute period."

COMAR 26.11.06.03B(2) - Particulate Emissions Limitation in Areas III and IV

(a) "A person may not cause or permit to be discharged into the outdoor atmosphere from any other installation, particulate matter in excess of 0.03 gr/SCFD."

PTC 16-6-0855

Prior to engaging in chromium electroplating or chromium anodizing, the source shall submit for approval a demonstration of compliance with 40 CFR 63, Subpart N, National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks.

Permit Shield Request: Yes.

Compliance Demonstration:

Check appropriate reports required to be submitted:

- Quarterly Monitoring Report: _____
- Annual Compliance Certification: April 1st
- Semi-Annual Monitoring Report: January 30th, July 30th



Methods used to demonstrate compliance:

Monitoring: Reference: COMAR 26.11.03.06C

Describe:

COMAR 26.11.03.06C

GSFC shall conduct an annual one-minute visual observation of the exhaust. The visual observation must be conducted while the plating line is in operation. If visible emissions are observed during any visual observation, GSFC must perform monthly observations of the exhaust and maintain that schedule until no visible emissions are observed in six consecutive monthly visual observations. If visible emissions are observed during any observation, GSFC must inspect the plating line for the cause of visible emissions and perform necessary adjustments or repairs within 24-hours or prior to operating the plating line.

GSFC shall maintain a preventative maintenance plan for the plating shop that describes the maintenance activity designed to minimize air emissions and time schedule for completing each activity. GSFC shall perform maintenance activities within the timeframes established in the plan and shall maintain a log with records of the dates that maintenance was performed.

Testing: Reference: None Describe: None

Record Keeping: Reference: COMAR 26.11.03.06C(5)(g), COMAR 26.11.03.06C.

Describe:

COMAR 26.11.03.06C(5)(g)

All records will be maintained for a period of at least 5 years and be made available to the Department upon request.

COMAR 26.11.03.06C

GSFC shall maintain:

A log of visible emission observations performed.

Records of maintenance activities designed to minimize air emissions.

Reporting: Reference: COMAR 26.11.01.07 and COMAR 26.11.03.06C(7)

Describe:

COMAR 26.11.01.07 and COMAR 26.11.03.06C(7)

GSFC shall report incidents of visible emissions in accordance with COMAR 26.11.01.07 and COMAR 26.11.03.06C(7).

PTC 166-0855N

GSFC shall submit for approval, a demonstration of compliance with 40 CFR Part 63, Subpart N, National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks, prior to engaging in chromium electroplating or chromium anodizing activities.

Frequency of submittal of the compliance demonstration: **Annual, Semi-Annual**



MARYLAND DEPARTMENT OF THE ENVIRONMENT

SECTION 3B-7.

CITATION TO AND DESCRIPTION OF APPLICABLE
FEDERALLY ENFORCEABLE REQUIREMENTS

Emissions Unit No.: EU27-2 & EU27-3 General Reference: COMAR 26.11.13.04C
COMAR 26.11.13.04D

Briefly describe the Emission Standard/Limit or Operational Limitation:

COMAR 26.11.13.04C - Small Storage Tanks - Stage I Recovery

"An owner or operator of a gasoline tank truck or an owner or operator of a stationary storage tank subject to this regulation may not cause or permit gasoline to be loaded into a stationary tank unless the loading system is equipped with a vapor balance line that is properly installed, maintained and used."

COMAR 26.11.13.04D - Small Storage Tanks - General Standards

"A person may not cause or permit gasoline or VOC having a total vapor pressure greater than 1.5 psia or greater be loaded into any tank truck, railroad tank car, or other contrivance unless:

- (1) Loading connections on the vapor lines are equipped with fittings that have no leaks and that automatically and immediately close upon disconnection to prevent release of gasoline or VOC from these fittings; and
- (2) The equipment is maintained and operated in a manner to prevent avoidable liquid leaks during loading or unloading operations."

Permit Shield Request: Yes.

Compliance Demonstration:

Check appropriate reports required to be submitted:

- Quarterly Monitoring Report: _____
- Annual Compliance Certification: April 1st
- Semi-Annual Monitoring Report: January 30th, July 30th

Methods used to demonstrate compliance:

Monitoring: Reference: COMAR 26.11.03.06C

Describe:

COMAR 26.11.03.06C

GSFC shall monitor a fuel drop to verify that the Stage 1 vapor balance system is used at least once for every 10 fuel deliveries that are received. In addition, at least once for every 10 fuel deliveries during a delivery, GSFC shall monitor a fuel drop for liquid spills and check the hose fittings and connections for leaks and proper operation. If leaks are detected, corrective action shall be as follows:

- 1. Take immediate action to repair all observed VOC leaks that can be repaired with 48 hours; and
- 2. Repair all other leaking components not later than 15 days after the leak is discovered. If a replacement part is needed, the part shall be ordered within 3 days after discovery of the leak, and the leak shall be repaired within 48 hours after receiving the part.



Testing: Reference: None Describe: None

Record Keeping: Reference: COMAR 26.11.03.06C(5)(g), COMAR 26.11.03.06C.

Describe:

COMAR 26.11.03.06C(5)(g)

All records will be maintained for a period of at least 5 years and be made available to the Department upon request.

COMAR 26.11.24.07D - Requirements for Gasoline Dispensing Facilities Exempted by Regulation .02C of this chapter

GSFC shall create and maintain records on gasoline throughput and tank sizes and make the records available to the Department upon request.

Reporting: Reference: None Describe: None

Frequency of submittal of the compliance demonstration: Annual. Semi-Annual



MARYLAND DEPARTMENT OF THE ENVIRONMENT

SECTION 3B-8.

CITATION TO AND DESCRIPTION OF APPLICABLE
FEDERALLY ENFORCEABLE REQUIREMENTS

Emissions Unit No.: EU30-1 thru 8

General Reference: COMAR 26.11.06.02C, COMAR
26.11.06.02A, COMAR 26.11.06.03B(2)(a), COMAR
26.11.06.06B(1)(b), MDE PTC 16-6-0903 N, COMAR
26.11.03.06C

Briefly describe the Emission Standard/Limit or Operational Limitation:

COMAR 26.11.06.02C - Visible Emission Standards Areas III & IV

(2) "In Areas III and IV a person may not cause or permit the discharge of emissions from any installation or building, other than water in an uncombined form, which is visible to human observers."

COMAR 26.11.06.02A - Visible Emissions General Exceptions

(2) Exceptions. "The visible emissions standards in §C of this regulation do not apply to emissions during start-up and process modification or adjustments, or occasional cleaning of control equipment, if:

(a) The visible emissions are not greater than 40 percent opacity; and

(b) The visible emissions do not occur for more than 6 consecutive minutes in any sixty-minute period."

COMAR 26.11.06.03B(2) - Particulate Emissions Limitation in Areas III and IV

(a) "A person may not cause or permit to be discharged into the outdoor atmosphere from any other installation, particulate matter in excess of 0.03 gr/SCFD."

COMAR 26.11.06.06B(1)(b) - Control of VOC in Areas III and IV

"A person may not cause or permit the discharge of VOC from any installation constructed on or after May 12, 1972, in excess of 20 pounds per day unless the discharge is reduced by 85 percent or more overall."

MDE PTC 16-6-0903 (August 26, 1997)

The emissions from the Clean Room operation shall be controlled by a wet scrubber. The wet scrubber shall be operated in accordance with the specifications contained in the application and operating procedures that were specified in the application by the equipment vendors.

Permit Shield Request: Yes.

Compliance Demonstration:

Check appropriate reports required to be submitted:

- Quarterly Monitoring Report: _____
- Annual Compliance Certification: April 1st
- Semi-Annual Monitoring Report: January 30th, July 30th



Methods used to demonstrate compliance:

Monitoring: Reference: COMAR 26.11.03.06C

Describe:

COMAR 26.11.03.06C

GSFC shall conduct an annual one-minute visual observation of the scrubber exhaust. The visual observation must be conducted while the clean room processes and scrubber are in operation. If visible emissions are observed during any visual observation, GSFC must increase the frequency of the observation of the scrubber exhaust to a monthly basis and maintain that schedule until no visible emissions are observed in six consecutive monthly visual observations. If visible emissions are observed during any observation, GSFC must inspect the scrubber and clean room operations for cause of visible emissions and perform necessary adjustments or repairs within 24-hours or prior to operating the clean room processes. If visible emissions have not been eliminated, GSFC shall perform daily 18-minute visual observation for opacity in accordance with EPA Reference Method 9 when operating the clean room operations.

GSFC shall maintain a preventative maintenance plan for the scrubber that describes the maintenance activity and time schedule for completing each activity. GSFC shall perform maintenance activities within the timeframes established in the plan and shall maintain a log with records of the dates that maintenance was performed.

The operator shall check MSDS and material usage to ensure that the total VOC emissions do not exceed 20 lbs per day. The MSDS shall contain VOC data that is based on EPA Method 24 testing or equivalent.

Testing: Reference: None Describe: None

Record Keeping: Reference: COMAR 26.11.03.06C(5)(g), COMAR 26.11.03.06C, and PTC 16-6-0903

Describe:

COMAR 26.11.03.06C(5)(g)

All records will be maintained for a period of at least 5 years and be made available to the Department upon request.

COMAR 26.11.03.06C

GSFC shall maintain records of visible emissions observations.

COMAR 26.11.03.06C and PTC 16-6-0903

GSFC shall maintain the following records:

1. Material usage;
2. The weight and HAP and VOC content of each material used totaled on a monthly basis;
3. A copy of MSDS/VOC data sheet for each material used; and
4. Preventative Maintenance log including records of monthly inspections of work practices.



Reporting: Reference: COMAR 26.11.03.06C(7)

Describe:

COMAR 2 COMAR 26.11.03.06C(7)

1. GSFC shall report incidents of visible emissions in accordance with COMAR 26.11.01.07 and COMAR 26.11.03.06C(7).
2. Records of material usage and calculated HAPs, TAP and VOC emissions shall be submitted to the Department as part of the Annual Emission Certification Report.
3. GSFC shall report material usage to the Department as part of the Annual Emission Certification Report.

Frequency of submittal of the compliance demonstration: Annual, Semi-Annual



MARYLAND DEPARTMENT OF THE ENVIRONMENT

SECTION 3B-9.

CITATION TO AND DESCRIPTION OF APPLICABLE
FEDERALLY ENFORCEABLE REQUIREMENTS

Emissions Unit No.: EU92-1 through 4

General Reference: COMAR 26.11.18.06B(2)

Briefly describe the Emission Standard/Limit or Operational Limitation:

COMAR 26.11.18.06B – Emissions from Certain Food Preparation Installations

(2) "A person who owns or operates a char-broiler or pit barbecue not subject to §B(1), of this regulation, may not cause or permit the discharge of emissions greater than 30 percent opacity."

Permit Shield Request: Yes.

Compliance Demonstration:

Check appropriate reports required to be submitted:

- Quarterly Monitoring Report: _____
- Annual Compliance Certification: April 1st
- Semi-Annual Monitoring Report: January 30th, July 30th

Methods used to demonstrate compliance:

Monitoring: Reference: None Describe: None

Testing: Reference: None Describe: None

Record Keeping: Reference: None Describe: None

Reporting: Reference: None Describe: None

Frequency of submittal of the compliance demonstration: Annual, Semi-Annual



MARYLAND DEPARTMENT OF THE ENVIRONMENT

SECTION 3B-10.

CITATION TO AND DESCRIPTION OF APPLICABLE
FEDERALLY ENFORCEABLE REQUIREMENTS

Emissions Unit No.: EU7-4

General Reference: COMAR 26.11.06.02C(2),
COMAR 26.11.03.14A , COMAR 26.11.19.09E,
COMAR 26.11.06.02C(2), 26.11.19.09E(2),
40 CFR §63.460

Briefly describe the Emission Standard/Limit or Operational Limitation:

COMAR 26.11.06.02C - Visible Emission Standards Areas III & IV

(2) "In Areas III and IV a person may not cause or permit the discharge of emissions from any installation or building, other than water in an uncombined form, which is visible to human observers."

COMAR 26.11.06.02A - Visible Emissions General Exceptions

(2) Exceptions. "The visible emissions standards in §C of this regulation do not apply to emissions during start-up and process modification or adjustments, or occasional cleaning of control equipment, if:

(a) The visible emissions are not greater than 40 percent opacity; and

(b) The visible emissions do not occur for more than 6 consecutive minutes in any sixty-minute period."

COMAR 26.11.19.09E - Requirements for Vapor Degreasing.

(1) "The ultrasonic vapor degreasers shall be equipped with one of the following control devices:

(a) A condenser; or

(b) An air pollution control device with an overall control efficiency of not less than 90 percent."

(2) "Vapor degreasing shall include separate enclosed chambers that allow draining of the parts being cleaned, capture of the vapors, or other procedures or methods to minimize evaporative losses of degreasing material."

40 CFR §63.460(a) – National Emissions Standards for Halogenated Solvent Cleaning Applicability

GSEFC shall not use any solvent as a cleaning and/or drying agent in the vapor degreasing system that contains any of the following halogenated Hazardous Air Pollutants (HAP), individually or in combination, in a total concentration greater than 5 percent by weight, unless approval from the Department is obtained: Methylene chloride, Perchloroethylene, Trichloroethylene, 1,1,1-trichloroethane, Carbon tetrachloride, or Chloroform.

Permit Shield Request: Yes.

Compliance Demonstration:

Check appropriate reports required to be submitted:

Quarterly Monitoring Report: _____

Annual Compliance Certification: April 1st

Semi-Annual Monitoring Report: January 30th, July 30th



Methods used to demonstrate compliance:

Monitoring: Reference: None Describe: None

Testing: Reference: None Describe: None

Record Keeping: Reference: COMAR 26.11.03.06C(5)(g), COMAR 26.11.03.06C

Describe:

COMAR 26.11.03.06C(5)(g)

All records will be maintained for a period of at least 5 years and be made available to the Department upon request.

COMAR 26.11.03.06C

GSFC shall maintain monthly records of the total VOC degreasing material used in each ultrasonic vapor degreaser.

GSFC shall keep records of the halogenated HAP solvent content for each solvent used.

Reporting: Reference: COMAR 26.11.03.06C(7)

Describe:

COMAR 2 COMAR 26.11.03.06C(7)

GSFC shall report incidents of visible emissions in accordance with COMAR 26.11.01.07 and COMAR 26.11.03.06C(7).

Frequency of submittal of the compliance demonstration: Annual, Semi-Annual



SECTION 4-1. CONTROL EQUIPMENT

1. <u>Associated Emissions Units No.</u> : EU4-2, 4-3 and 5A-3	2. <u>Emissions Point No.:</u> EP4-2, 4-3 and 5A-3
3. <u>Type and Description of Control Equipment</u> : Paint booths are equipped with filters in the booth interior to control particulate matter emissions from the coating processes.	
4. <u>Pollutants Controlled:</u>	Control Efficiency:
Particulate Matter	96%
5. <u>Capture Efficiency:</u> 99%	



SECTION 4.2. CONTROL EQUIPMENT

1. <u>Associated Emissions Units No.</u> : EU5-2	2. <u>Emissions Point No.:</u> EP5-2
3. <u>Type and Description of Control Equipment</u> :	
Scrubber #2 (Control Equipment No. CE5-2).	
4. <u>Pollutants Controlled:</u>	
	<u>Control Efficiency:</u>
Hydrofluoric Acid	<32%
Hydrochloric Acid	<73%
Nickel Compounds	<73%
Chromium Compounds	<63%
Nitric Acid	<5%
Sulfuric Acid	<86%
Barium Compounds	<57%
Zinc Compounds	<22%
5. <u>Capture Efficiency:</u> 99%	



SECTION 4.3. CONTROL EQUIPMENT

1. <u>Associated Emissions Units No.</u> : EU5-4	2. <u>Emissions Point No.:</u> EP5-4
3. <u>Type and Description of Control Equipment</u> :	
Scrubber #1 (Control Equipment No. CE5-3).	
4. <u>Pollutants Controlled:</u>	
	<u>Control Efficiency:</u>
Hydrofluoric Acid	<32%
Hydrochloric Acid	<73%
Nickel Compounds	<73%
Chromium Compounds	<63%
Nitric Acid	<5%
Sulfuric Acid	<86%
Barium Compounds	<57%
Zinc Compounds	<22%
5. <u>Capture Efficiency:</u> 99%	



SECTION 4.4. CONTROL EQUIPMENT

1. <u>Associated Emissions Units No.</u> : EU5-6 (B Tanks and E tanks E-1 to E-6)	2. <u>Emissions Point No.:</u> EP5-6
3. <u>Type and Description of Control Equipment</u> : Scrubber #3 (Control Equipment No. CE5-3). 	
4. <u>Pollutants Controlled:</u>	Control Efficiency:
Hydrofluoric Acid	<32%
Hydrochloric Acid	<73%
Nickel Compounds	<73%
Chromium Compounds	<63%
Nitric Acid	<5%
Sulfuric Acid	<86%
Barium Compounds	<57%
Zinc Compounds	<22%
5. <u>Capture Efficiency:</u> 99%	



SECTION 4-6. CONTROL EQUIPMENT

1. <u>Associated Emissions Units No.</u> : EU27-2	2. <u>Emissions Point No.:</u> EP27-2
3. <u>Type and Description of Control Equipment</u> :	
Stage I Vapor Recovery	
4. <u>Pollutants Controlled:</u>	<u>Control Efficiency:</u>
Benzene	90%
Cumene	90%
Ethylbenzene	90%
Hexane	90%
Methyl Tert-butyl Ether	90%
Toluene	90%
2,2,4-Trimethylpentane	90%
Xylenes	90%
5. <u>Capture Efficiency:</u> 90%	



SECTION 4-7. CONTROL EQUIPMENT

1. <u>Associated Emissions Units No.</u> : EU27-3	2. <u>Emissions Point No.:</u> EP27-3
3. <u>Type and Description of Control Equipment</u> :	
Stage I Vapor Recovery	
4. <u>Pollutants Controlled:</u>	<u>Control Efficiency:</u>
Benzene	90%
Cumene	90%
Ethylbenzene	90%
Hexane	90%
Methyl Tert-butyl Ether	90%
Toluene	90%
2,2,4-Trimethylpentane	90%
Xylenes	90%
5. <u>Capture Efficiency:</u> 90%	



SECTION 4-8. CONTROL EQUIPMENT

1. <u>Associated Emissions Units No.</u> : EU30-1 thru EU30-8	2. <u>Emissions Point No.:</u> EP30-1
3. <u>Type and Description of Control Equipment</u> : Scrubber (Control Equipment No. CE30-1)	
4. <u>Pollutants Controlled:</u> VOC	Control Efficiency: 90%
PM10	90%
Benzene	90%
Chromium Compounds	90%
Hydrogen Chloride	90%
Hydrogen Fluoride	90%
Methanol	90%
Phosphine	90%
Toluene, TCE & Xylenes	90%
5. <u>Capture Efficiency:</u> 99%	



SECTION 4-9. CONTROL EQUIPMENT

1. <u>Associated Emissions Units No.</u> : EU30-1	2. <u>Emissions Point No.:</u> EP30-1
3. <u>Type and Description of Control Equipment</u> :	
Gas Reactor Column #1 (Control Equipment No. CE30-2)	
4. <u>Pollutants Controlled:</u>	<u>Control Efficiency:</u>
Silane	90%
5. <u>Capture Efficiency:</u> 99%	



SECTION 4-10. CONTROL EQUIPMENT

1. <u>Associated Emissions Units No.</u> : EU30-1	2. <u>Emissions Point No.:</u> EP30-1
3. <u>Type and Description of Control Equipment</u> :	
Gas Reactor Column #2 (Control Equipment No. CE30-3)	
4. <u>Pollutants Controlled:</u>	<u>Control Efficiency:</u>
Silane	90%
5. <u>Capture Efficiency:</u> 99%	



SECTION 4-11. CONTROL EQUIPMENT

1. <u>Associated Emissions Units No.</u> : EU30-1	2. <u>Emissions Point No.:</u> EU30-1
3. <u>Type and Description of Control Equipment</u> :	
Gas Reactor Column #3 (Control Equipment No. CE30-4)	
4. <u>Pollutants Controlled:</u>	<u>Control Efficiency:</u>
Silane	90%
5. <u>Capture Efficiency:</u> 99%	



SECTION 4-12. CONTROL EQUIPMENT

1. <u>Associated Emissions Units No.</u> : EU7-4	2. <u>Emissions Point No.:</u> EP7-4
3. <u>Type and Description of Control Equipment</u> :	
Vapor degreaser is equipped with two cooling zones for emission control: primary cooling coil at 20 to 45 F and a secondary coil at 0 to -20 F. Also, the unit has a pneumatically activated power sliding cover to reduce processing emission losses.	
4. <u>Pollutants Controlled:</u>	<u>Control Efficiency:</u>
VOCs	45 - 75%
5. <u>Capture Efficiency:</u> N/A.	



SECTION 5. SUMMARY SHEET OF POTENTIAL EMISSIONS

List all applicable pollutants in tons per year (tpy) pertaining to this facility. The Emissions Unit No. should be consistent with numbers used in Section 3. Attach a copy of all calculations.

Pollutant	Per MDE's Part 70 Permit	Application for	Renewal Instructions,	Section
CAS Number	5 has not been provided	as GSFC is not:		
Emissions Unit #	1) claiming an exemption	based on an emissions level cutoff in a		
Emissions Unit #	standard that has been issued.			
Emissions Unit #	2) resolving a dispute over whether a particular requirement is			
Emissions Unit #	applicable or whether a source is major for a particular pollutant.			
Emissions Unit #				
Emissions Unit #				
Emissions Unit #				
Emissions Unit #				
Emissions Unit #				
Emissions Unit #				
Emissions Unit #				
Emissions Unit #				
Emissions Unit #				
Emissions Unit #				
Emissions Unit #				
Emissions Unit #				
Emissions Unit #				
Emissions Unit #				
Fugitive Emissions				
Total				



SECTION 6-1. EXPLANATION OF PROPOSED EXEMPTIONS FROM OTHERWISE APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS

Describe and cite the applicable requirements to be exempted. Complete this Section only if the facility is claiming exemptions from or the non-applicability of any federally enforceable requirements.

<p>1. Applicable Requirement: 40 CFR Part 63, Subpart JJJJJJ - NESHAP for Industrial, Commercial and Institutional Boilers Area Sources</p>
<p>2. Brief Description: 40 CFR Part 63, Subpart JJJJJJ applies to industrial, commercial and institutional boilers at area sources of HAPs.</p>
<p>3. Reasons for Proposed Exemption or Justification of Non-applicability: Per § 63.11195, 40 CFR Part 63, Subpart JJJJJJ does not apply to gas-fired boilers. GSFC's boilers meet the definition of gas-fired as they only operate on liquid fuel during periods of gas curtailment, gas supply interruption, startups, or periodic testing on liquid fuel.</p>



SECTION 6-2.

**EXPLANATION OF PROPOSED EXEMPTIONS FROM
OTHERWISE APPLICABLE FEDERALLY ENFORCEABLE
REQUIREMENTS**

Describe and cite the applicable requirements to be exempted. Complete this Section only if the facility is claiming exemptions from or the non-applicability of any federally enforceable requirements.

1. Applicable Requirement:

40 CFR Part 63, Subpart ZZZZ - NESHAP for Stationary Reciprocating Internal Combustion Engines.

2. Brief Description:

Subpart ZZZZ establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions.

3. Reasons for Proposed Exemption or Justification of Non-applicability:

40 CFR 63, Subpart ZZZZ is not applicable to existing (defined as units constructed prior to June 12, 2006) emergency generators (EUs 7-2, 7-3, 10-3, 24C-1, 24C-2, 24C-3, 24C-4, 24C-8, 31-1, 31-2, 31-3, 31-4, and 31-5) as NASA centers are classified as "Institutional" and therefore existing generators are exempt from the requirements of 40 CFR Part 63, Subpart ZZZZ. Emergency generators constructed or reconstructed after June 12, 2006 (EUs 24C-6, 29-1 and 28-1) are subject to Subpart ZZZZ.



SECTION 6-3.

**EXPLANATION OF PROPOSED EXEMPTIONS FROM
OTHERWISE APPLICABLE FEDERALLY ENFORCEABLE
REQUIREMENTS**

Describe and cite the applicable requirements to be exempted. Complete this Section only if the facility is claiming exemptions from or the non-applicability of any federally enforceable requirements.

1. Applicable Requirement:

40 CFR Part 60, Subpart IIII - NSPS for Stationary Compression Ignition Internal Combustion Engines.

2. Brief Description:

Subpart IIII establishes emission and operating limitations for hazardous air pollutants (HAP) emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions.

3. Reasons for Proposed Exemption or Justification of Non-applicability:

40 CFR 60, Subpart IIII is not applicable to existing emergency generators (EUs 7-2, 7-3, 10-3, 24C-1, 24C-2, 24C-3, 24C-4, 24C-8, 31-1, 31-2, 31-3, 31-4, and 31-5) as the engine construction commenced before July 11, 2005. Emergency generators constructed or reconstructed after June 12, 2005 (EUs 24C-6, 29-1 and 28-1) are subject to Subpart IIII.



SECTION 6-4.

**EXPLANATION OF PROPOSED EXEMPTIONS FROM
OTHERWISE APPLICABLE FEDERALLY ENFORCEABLE
REQUIREMENTS**

Describe and cite the applicable requirements to be exempted. Complete this Section only if the facility is claiming exemptions from or the non-applicability of any federally enforceable requirements.

<p>1. Applicable Requirement: COMAR 26.11.06.02 - General Emission Standards, Prohibitions, and Restrictions - Visible Emissions</p>
<p>2. Brief Description: COMAR 26.11.06.02 establishes visible emission standards.</p>
<p>3. Reasons for Proposed Exemption or Justification of Non-applicability: COMAR 26.11.06.02A(1)(i) specifies that the visible emission standards of COMAR 26.11.06.02C do not apply to "emissions from food preparation installations subject to COMAR 26.11.18.06."</p>



SECTION 7. COMPLIANCE SCHEDULE FOR NONCOMPLYING EMISSIONS UNITS

1. Emissions Unit # N/A	Anticipated Compliance Date
Applicable Federally Enforceable Requirement being Violated: N/A	

2. Description of Plan to Achieve Compliance: N/A

Certified Progress Reports for sources in noncompliance shall be submitted at least quarterly to the Department.



STATE-ONLY ENFORCEABLE REQUIREMENTS

Facility Information:

Name of Facility:	County Prince George's National Aeronautics and Space Administration's Goddard Space Flight Center
Premises Number:	0675
Street Address:	Mail Code 250
24-hour Emergency Telephone Number for Air Pollution Matters:	(301) 286-9111
Type of Equipment (List Significant Units):	Boilers, Generators, Degreaser, Surface Coating, Electroplating, Tanks, Semi-Conductors, Charbroilers



**CITATION TO AND DESCRIPTION OF APPLICABLE STATE-
ONLY ENFORCEABLE REQUIREMENTS**

Registration No.: Not Applicable

Emissions Unit No.: Facility Wide **General Reference:** 26.11.06.08 & 09

Briefly describe the requirement and the emissions limit (if applicable):

Prohibits the discharge of emissions beyond the property line in such a manner
that a nuisance or air pollution is created.

Methods used to demonstrate compliance:

Maintaining permit compliance and operational equipment in good working order.



**CITATION TO AND DESCRIPTION OF APPLICABLE STATE-
ONLY ENFORCEABLE REQUIREMENTS**

Registration No.: Not Applicable

Emissions Unit No.: Facility Wide **General Reference:** 26.11.15.05

Briefly describe the requirement and the emissions limit (if applicable):

Requires that the Permittee implement "Best Available Control Technology for
Toxics" (T - BACT) to control emissions of toxic air pollutants.

Methods used to demonstrate compliance:

GSFC shall submit certification of compliance with COMAR 26.11.15 in the Annual
Emission Certification Report.



**CITATION TO AND DESCRIPTION OF APPLICABLE STATE-
ONLY ENFORCEABLE REQUIREMENTS**

Registration No.: Not Applicable

Emissions Unit No.: Facility Wide **General Reference:** 26.11.15.06

Briefly describe the requirement and the emissions limit (if applicable):

Prohibits the discharge of toxic air pollutants to the extent that such
emissions will unreasonably endanger human health.

Methods used to demonstrate compliance:

Maintaining permit compliance and operational equipment in good working order.



**CITATION TO AND DESCRIPTION OF APPLICABLE STATE-
ONLY ENFORCEABLE REQUIREMENTS**

Registration No.: Not Applicable

Emissions Unit No.: Facility Wide **General Reference:** 26.11.15 & 16

Briefly describe the requirement and the emissions limit (if applicable):

GSFC shall submit to the Department, by April 1 of each year, a written certification of the results of an analysis of emissions of toxic air pollutants from the facility during the previous calendar year. The analysis shall include either: a statement that previously submitted compliance demonstrations for emissions of toxic air pollutants remain valid; or a revised compliance demonstration, developed in accordance with requirements included under COMAR 26.11.15 & 16, that accounts for changes in operations, analytical methods, emissions determinations, or other factors that have invalidated previous demonstrations.

Methods used to demonstrate compliance:

Emissions Certification Report is submitted by April 1 each year.



**CITATION TO AND DESCRIPTION OF APPLICABLE STATE-
ONLY ENFORCEABLE REQUIREMENTS**

Registration No.: EU5-2 thru 6

MDE Reg No. 6-0852,
6-0853, 6-0854, 6-0855,

Emissions Unit No.: Electroplating Process **General Reference:** 6-0862

Briefly describe the requirement and the emissions limit (if applicable):

For the electroplating process to comply with T-BACT, the source shall:

- i. Use floating plastic balls to cover the liquid surface on tanks A1, A2, A4, and A11 as a fume suppressant.
- ii. Keep tanks B1A, B1B, B3, B4A, B4B, E1, E2, E3, N3B, N5A, N5B, N5C, and N8 covered when not in operation.
- iii. Keep tanks E7 and E8 covered at all times.

Methods used to demonstrate compliance:

Operational procedures specify the requirements listed above.



**CITATION TO AND DESCRIPTION OF APPLICABLE STATE-
ONLY ENFORCEABLE REQUIREMENTS**

Registration No.: 8-0186 to 8-1089

Emissions Unit No.: EU 92-1 to 92-4 **General Reference:** 26.11.18.06(B) (2)

Briefly describe the requirement and the emissions limit (if applicable):

A person who constructs, owns, or operates a char-broiler or pit barbecue
that is greater than five (5) square feet and is located within 300 feet
from the property line of any habitable dwelling may not cause or permit the
discharge of emissions greater than 30 percent opacity.

Methods used to demonstrate compliance:

Past operation of units has demonstrated compliance with COMAR 26.11.18.06 B(2)
without use of control device.



**MARYLAND DEPARTMENT OF THE ENVIRONMENT
AIR AND RADIATION ADMINISTRATION
RENEWAL TITLE V APPLICATION INSIGNIFICANT ACTIVITIES LIST**

III. Check-off List of Emissions Units and Activities Exempt from the Part 70 Permit Application

Insignificant Activities

Place a check mark beside each type of emissions unit or activity that is located at the facility. Where noted, please indicate the number of that type of emissions unit or activity located at the facility.

- (1) No. 4 Fuel burning equipment using gaseous fuels or no. 1 or no. 2 fuel oil, and having a heat input less than 1,000,000 Btu (1.06 gigajoules) per hour;
- (2) No. Fuel-burning equipment using solid fuel and having a heat input of less than 350,000 Btu (0.37 gigajoule) per hour;
- (3) No. 5 Stationary internal combustion engines with less than 500 brake horsepower (373 kilowatts) of power output
- (4) Space heaters utilizing direct heat transfer and used solely for comfort heat;
- (5) Water cooling towers and water cooling ponds unless used for evaporative cooling of water from barometric jets or barometric condensers, or used in conjunction with an installation requiring a permit to operate;
- (6) No. 7 Unheated VOC dispensing containers or unheated VOC rinsing containers of 60 gallons (227 liters) capacity or less;
- (7) Commercial bakery ovens with a rated heat input capacity of less than 2,000,000 Btu per hour;
- (8) Kilns used for firing ceramic ware, heated exclusively by natural gas, liquefied petroleum gas, electricity, or any combination of these;
- (9) Confection cookers where the products are edible and intended for human consumption;
- (10) Die casting machines;
- (11) Photographic process equipment used to reproduce an image upon sensitized material through the use of radiant energy;
- (12) Equipment for drilling, carving, cutting, routing, turning, sawing, planing, spindle sanding, or disc sanding of wood or wood products;

**MARYLAND DEPARTMENT OF THE ENVIRONMENT
AIR AND RADIATION ADMINISTRATION
RENEWAL TITLE V APPLICATION INSIGNIFICANT ACTIVITIES LIST**

- (13) √ Brazing, soldering, or welding equipment, and cutting torches related to manufacturing and construction activities that emit HAP metals and not directly related to plant maintenance, upkeep and repair or maintenance shop activities;
- (14) √ Equipment for washing or drying products fabricated from metal or glass, provided that no VOC is used in the process and that no oil or solid fuel is burned;
- (15) √ Containers, reservoirs, or tanks used exclusively for electrolytic plating work, or electrolytic polishing, or electrolytic stripping of brass, bronze, cadmium, copper, iron, lead, nickel, tin, zinc, and precious metals;
- (16) Containers, reservoirs, or tanks used exclusively for:
- (a) Dipping operations for applying coatings of natural or synthetic resins that contain no VOC;
 - (b) Dipping operations for coating objects with oils, waxes, or greases, and where no VOC is used;
 - (c) 2 Storage of butane, propane, or liquefied petroleum, or natural gas;
 - (d) No. 6 Storage of lubricating oils;
 - (e) No. 1 Unheated storage of VOC with an initial boiling point of 300 °F (
 - (f) No. 18 Storage of Numbers 1, 2, 4, 5, and 6 fuel oil and aviation jet engine fuel,
 - (g) No. Storage of motor vehicle gasoline and having individual tank capacities of 2,000 gallons (7.6 cubic meters) or less;
 - (h) No. The storage of VOC normally used as solvents, diluents, thinners, inks, colorants, paints, lacquers, enamels, varnishes, liquid resins, or other surface coatings and having individual capacities of 2,000 gallons (7.6 cubic meters) or less;
- (17) √ Gaseous fuel-fired or electrically heated furnaces for heat treating glass or metals, the use of which does not involve molten materials;
- (18) Crucible furnaces, pot furnaces, or induction furnaces, with individual capacities of 1,000 pounds (454 kilograms) or less each, in which no sweating or distilling is conducted, or any fluxing is conducted using chloride, fluoride,

**MARYLAND DEPARTMENT OF THE ENVIRONMENT
AIR AND RADIATION ADMINISTRATION
RENEWAL TITLE V APPLICATION INSIGNIFICANT ACTIVITIES LIST**

or ammonium compounds, and from which only the following metals are poured or in which only the following metals are held in a molten state:

- (a) ___ Aluminum or any alloy containing over 50 percent aluminum, if no gaseous chloride compounds, chlorine, aluminum chloride, or aluminum fluoride is used;
 - (b) ___ Magnesium or any alloy containing over 50 percent magnesium;
 - (c) ___ Lead or any alloy containing over 50 percent lead;
 - (d) ___ Tin or any alloy containing over 50 percent tin;
 - (e) ___ Zinc or any alloy containing over 50 percent zinc;
 - (f) ___ Copper;
 - (g) ___ Precious metals;
- (19) Charbroilers and pit barbecues as defined in COMAR 26.11.18.01 with a total cooking area of 5 square feet (0.46 square meter) or less;
- (20) First aid and emergency medical care provided at the facility, including related activities such as sterilization and medicine preparation used in support of a manufacturing or production process;
- (21) Certain recreational equipment and activities, such as fireplaces, barbecue pits and cookers, fireworks displays, and kerosene fuel use;
- (22) ___ Potable water treatment equipment, not including air stripping equipment;
- (23) ___ Firing and testing of military weapons and explosives;
- (24) ___ Emissions resulting from the use of explosives for blasting at quarrying operations and from the required disposal of boxes used to ship the explosive;
- (25) Comfort air conditioning subject to requirements of Title VI of the Clean Air Act;
- (26) ___ Grain, metal, or mineral extrusion presses;
- (27) ___ Breweries with an annual beer production less than 60,000 barrels;

VI .Application Completeness Checklist

The purpose of this part is to list the information required to achieve a Part 70 application shield.

Cover Page

- (√) Name and address of owner or operator, including telephone number.
- (√) Name and address of facility, including the plant manager's name and telephone number.
- (√) A 24-hour emergency telephone number for air pollution matters.

Section 1 CERTIFICATION STATEMENTS

- (√) The certification statement completed and signed by a responsible official.

Section 2 FACILITY DESCRIPTION SUMMARY

- (√) A brief description of each of the source's process(es), including all applicable SIC codes and end products.
- (√) Flow diagrams indicating all emissions units, emission points, and control devices.
- (√) A plot plan of the entire facility.
- (√) Emission Certification Report.
- (√) General Emissions Information.

Section 3 EMISSIONS UNIT DESCRIPTIONS – This section must be completed for each emissions unit.

Part A

- (√) Emissions unit number.
- (√) Detailed description of unit, including all emission points.
- (√) Federally enforceable limit(s) on the operating schedule.

- (√) Fuel consumption information for any emissions unit that consumes fuel including the type of fuel, percent sulfur, and annual usage of fuel.

Part B

- (√) A citation and description of each federally enforceable requirement, including all emission standards, for each emissions unit.
- (√) A statement of compliance demonstration techniques for each requirement, including a description of monitoring, record keeping, reporting requirements, and test methods.
- (√) The frequency of submittal of the compliance demonstration during the permit term.

Part C

- (√) Emissions unit number.
- (√) Permit to construct number.
- (√) Emissions point number(s).
- (√) Date(s) the permit to construct was issued.
- (√) Condition number(s) as indicated on the permit to construct.
- (√) Description of the permit condition(s) and the reason(s) why they are believed to be obsolete, extraneous, or insignificant.

Part D

- (√) Description of all alternate operating scenarios that apply to an emissions unit.
- (√) Number assigned to each scenario.
- (√) Emissions unit number.
- (√) Description of the operating parameters for the emissions unit and other information which describes the how the operation of the unit will change under the different scenario.

Part E

- (√) A citation and description of each federally enforceable requirement triggered by an operating scenario, including all emission standards, for each emissions unit.
- (√) As an attachment, the date and results of the most recent compliance demonstration for each emission standard and/or emissions certification report with relevant supporting documentation.
- (√) A statement of compliance demonstration techniques for each requirement, including a description of monitoring, record keeping, reporting requirements, and test methods.
- (√) The frequency of submittal of the compliance demonstration during the permit term.

Section 4 CONTROL EQUIPMENT

- (√) The type of each piece of air pollution control equipment
- (√) The capture and control efficiencies of the control equipment.

Section 5 SUMMARY SHEET OF POTENTIAL EMISSIONS

- (n/a) Quantity of potential emissions for criteria pollutants and HAPs emitted in tons per year for each emissions unit.
- (n/a) Fugitive emission estimations for the entire facility for criteria pollutants and HAPs emitted in tons per year.
- (n/a) Basis for all emission calculations.

Section 6 AN EXPLANATION OF PROPOSED EXEMPTIONS FROM OTHERWISE APPLICABLE FEDERALLY ENFORCEABLE REQUIREMENTS

- (√) An explanation of the proposed exemption.

Section 7 COMPLIANCE SCHEDULE FOR NONCOMPLYING EMISSIONS UNITS

- (n/a) Identification of emissions unit(s) not in compliance, including the requirement being violated and the effective compliance date.
- () Detailed description of methods to be used to achieve compliance.
- () A schedule of remedial measures, including an enforceable sequence of actions with milestones.

Attachment

- (√) Checklist of Insignificant Activities
- (n/a) CAM Plan (If Applicable)

**PART 70 PERMIT RENEWAL
APPLICATION**

**GODDARD SPACE FLIGHT CENTER
GREENBELT, MARYLAND**

APPENDIX A

2017 Emission and Greenhouse Gas Certification Report

National Aeronautics and Space Administration
Goddard Space Flight Center
Greenbelt, MD 20771



March 28, 2018

Reply to Attn of: 250

Ms. Laramie Daniel
Maryland Department of the Environment
Air and Radiation Administration
1800 Washington Boulevard, Suite 715
Baltimore, MD 21230-1720

Dear Ms. Daniel:

Enclosed please find two copies of the 2017 Annual Emission Certification Report for NASA's Goddard Space Flight Center (GSFC). The Report contains the total amount of emissions of each criteria pollutant, toxic air pollutant (TAP), and greenhouse gas (GHG); the total of all regulated pollutants; and an explanation of the methods used to quantify emissions (including significant assumptions made). The Report also includes the primary particulate matter (PM) (PM₁₀ and PM_{2.5}), filterable PM (PM₁₀ and PM_{2.5}), and condensable PM (PM₁₀ and PM_{2.5}) as requested. Also contained in the report are the amounts, types, and analyses of fuels used; identification and description of air pollution control equipment and compliance monitoring equipment. This report is submitted in compliance with Section IV of the Part 70 Operating Permit Number 24-033-00675.

As a part of the 2017 Annual Emissions Certification, MDE has requested that Title V facilities report emissions of Hazardous Air Pollutants (HAPs) from all registered pieces of equipment including fuel burning sources. GSFC is exempt from emissions reporting required by the Industrial Boiler Maximum Achievable Control Technology (MACT) rule because this rule does not establish emissions limits for gas boilers (including boilers burning liquid fuel during periods of gas curtailment and periodic testing). In addition, on April 26, 2010, NASA received an email from Mr. Richard Duffy, Acting Division Director of Compliance Assessment and Media Programs Division at USEPA. Mr. Duffy determined that all NASA Centers and facilities are to be classified as "Institutional" facilities and, therefore, are exempt from the requirements of 40 CFR Part 63, Section 63.6585(f)(3). The response was coordinated with the USEPA's Office of General Counsel and the Office of Air Quality Planning and Standards. Therefore, GSFC is not required to submit HAP emissions from its registered fuel burning units.

If you have any questions or comments concerning this matter, please call Ms. Kathleen Moxley at (301) 286-0717.

Sincerely,

A handwritten signature in black ink that reads "Theodore J. Meyer".

Theodore J. Meyer
Acting Chief, Medical and Environmental Management Division

Enclosure



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Goddard Space Flight Center
Medical and Environmental Management Division, Code 250
Greenbelt, Maryland 20771

2017 Emissions Certification Report

Prepared By:



209 Business Park Drive, Suite 200
Virginia Beach, VA 23462
Phone: 757-498-0100

Enclosure

PREFACE

DDC 4C developed this NASA's Goddard Space Flight Center (GSFC) 2017 Emissions Certification Report for the GSFC's Medical and Environmental Management Division, Code 250, under Contract Number NNG16AZ05C.

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1. Discussion of the Certification and Emissions Calculations

This 2017 Emissions Certification Report for NASA's Goddard Space Flight Center (GSFC) is prepared in compliance with policies of the Maryland Department of the Environment (MDE) and satisfies the requirements of COMAR 26.11.01.05-1 and COMAR 26.11.02.19D requiring GSFC to certify the actual emissions of regulated air pollutants from permitted and registered air pollution sources. The required certification forms are included in Section 5 of this report.

MDE requires that emissions of criteria pollutants, toxic air pollutants (TAPs), and greenhouse gases (GHGs) be quantified. Standard calculation methods are used to determine emissions including stack testing, mass balance calculations, emission factor calculations from AP-42 (5th edition including current supplements), and factors based on the maximum emissions allowed by regulation. In accordance with instructions from MDE, annual emissions estimates for each emission unit are rounded to the nearest ton and daily emissions are rounded to the nearest pound.

GSFC maintains a program for managing hazardous materials that include but are not limited to TAPs and Hazardous Air Pollutants (HAPs). The hazardous materials program tracks data with the software tool called the Hazardous Materials Management System (HMMS). It provides a reliable system of tracking storage and usage of hazardous materials through the duration of a product's life cycle. HMMS calculates the usage and storage of all chemicals at the constituent level and reports the unit of measure in pounds, regardless of the chemical phase (i.e., liquid, solid, gas). This level of tracking allows for the chemicals to be accurately reported at the constituent level rather than estimating for chemicals that are components or trace additives of other products.

As a part of the 2017 Annual Emissions Certification, MDE has requested that Title V facilities report emissions of HAPs from all registered equipment including fuel burning sources. GSFC is exempt from emissions reporting required by the Industrial Boiler Maximum-Achievable Control Technology (MACT) Rule because this rule does not establish emissions limits for gas boilers (including boilers burning liquid fuel during periods of gas curtailment and periodic testing). In addition, GSFC is classified as an institutional facility and, therefore, is exempt from the requirements of 40 CFR Part 63 related to generators, Section 63.6585(f)(3). Therefore, GSFC is not required to submit HAP emissions from its registered fuel burning units.

The Ozone Season is from May 1st through September 30th. There were 153 actual operating days during the Ozone Season in 2017.

GSFC is required to confirm compliance with Maryland's Air Toxic Regulations. GSFC continues to comply with Maryland's Air Toxic Regulations (COMAR 26.11.15).

2. Source Specific Emissions Calculations and Title V Reporting Requirements

Records substantiating the numbers used in the calculations including, but not limited to, production logs, purchase orders, fuel usage records, fuel bills, and safety data sheets (SDS) are maintained onsite and are available to MDE upon request.

2.1 Building 24 Boilers

2.1.1 Building 24 Boilers Descriptions

EU24-1, EU24-2 and EU24-4: Three Nebraska natural gas/landfill gas/No.2 fuel oil fired boilers each rated at 49.5 MMBtu/hr and each equipped with low NO_x burners. Landfill gas and natural gas are the primary fuel sources; No.2 fuel oil is only burned during periods of curtailment. ARMA Registration Nos. 033-0675-5-0808, 5-0809, and 5-0811.

EU24-3 and EU24-5: Two Nebraska natural gas/No.2 fuel oil fired boilers each rated at 49.5 MMBtu/hr and each equipped with low NO_x burners. Natural gas is the primary fuel source; No.2 fuel oil is only burned during periods of curtailment. ARMA Registration Nos. 033-0675-5-0810 and 5-0812.

2.1.2 Building 24 Boilers Fuel Use

The fuel usage per boiler is calculated using data from the boiler computation sheets of the Central Heating/Refrigeration Plant Monthly Reports. The fuel constituents are evaluated on a usage per type per boiler basis.

Boiler Registration No.	Natural Gas (ft³)	Landfill Gas (ft³)	Fuel Oil (gals)
5-0808 (Boiler 1)	44,133,404	150,529,000	80
5-0809 (Boiler 2)	59,572,682	180,456,000	0
5-0810 (Boiler 3)	15,682,028	0	566
5-0811 (Boiler 4)	53,275,723	228,632,000	12
5-0812 (Boiler 5)	27,096,178	0	0
Annual Total	199,760,015	559,617,000	658
Ozone Season Total	58,040,008	196,285,000	0

Note:

Ozone Season Total constitutes fuel use between the months of May and September and is a portion of the 2017 Annual Total.

2.1.3 Building 24 Boilers Emissions Summary

All actual emissions of criteria pollutants from the GSFC Building 24 boilers are located on Forms 2 and 3 in Section 5 of this report.

2.1.3.1 Emissions Factors Used to Calculate Actual Criteria Pollutant Emissions of All Building 24 Boilers When Burning Fuel Gas

Boiler No.	NO _x LFG (lbs/MMBtu)	NO _x NG (lbs/MMBtu)	SO _x (lbs/10 ⁶ ft ³)	CO NG (lbs/10 ⁶ ft ³)	CO LFG (lbs/10 ⁶ ft ³)	VOC NG (lbs/10 ⁶ ft ³)	VOC LFG (lbs/10 ⁶ ft ³)
5-0808 (Boiler 1)	0.0548	0.0576	0.6	84	41.18	5.5	2.7
5-0809 (Boiler 2)	0.0548	0.0576	0.6	84	41.18	5.5	2.7
5-0810 (Boiler 3)	NA	0.0881	0.6	84	41.18	5.5	2.7
5-0811 (Boiler 4)	0.0548	0.0576	0.6	84	41.18	5.5	2.7
5-0812 (Boiler 5)	NA	0.0881	0.6	84	41.18	5.5	2.7

Notes:

NO_x emissions factors are from a December 2012 stack test.

LFG = landfill gas, NG = natural gas.

All other emission factors are from AP-42, Tables 1.4-1 and 1.4-2.

Landfill gas CO and VOC emission factors were calculated by multiplying the natural gas emission factors by the ratio of the landfill gas and natural gas heating values. Natural gas emission factors are based on a heating value of 1,020 Btu/ft³. Landfill gas heating value is 500 Btu/ft³.

2.1.3.2 Emissions Factors Used to Calculate Actual Criteria Pollutant Emissions of All Building 24 Boilers When Burning Fuel Oil

Boiler No.	SO _x (lbs/10 ³ gals)	CO (lbs/10 ³ gals)	VOC (lbs/10 ³ gals)	NO _x (lbs/MMBtu)
5-0808 (Boiler 1)	142S	5.0	0.252	0.0917
5-0809 (Boiler 2)	142S	5.0	0.252	0.0917
5-0810 (Boiler 3)	142S	5.0	0.252	0.1514
5-0811 (Boiler 4)	142S	5.0	0.252	0.0917
5-0812 (Boiler 5)	142S	5.0	0.252	0.1514

Notes:

NO_x emissions factors are from a December 2012 stack test.

All other emission factors are from AP-42, Tables 1.3-1 and 1.3-3.

S = Sulfur content of fuel oil in percent (regulatory limit - 0.3%)

2.1.3.3 PM Emissions Factors Used to Calculate Actual Criteria Pollutant Emissions of All Building 24 Boilers When Burning Fuel Oil or Fuel Gas

Boiler Fuel	Condensable PM (lbs/10 ⁶ ft ³)	Filterable PM (lbs/10 ⁶ ft ³)	Filterable PM _{2.5} (lbs/10 ⁶ ft ³)	Filterable PM ₁₀ (lbs/10 ⁶ ft ³)
Natural Gas	5.7	1.9	NA	NA
Landfill Gas	2.8	0.9	NA	NA
Boiler Fuel	Condensable PM (lbs/10 ³ gals)	Filterable PM (lbs/10 ³ gals)	Filterable PM _{2.5} (lbs/10 ³ gals)	Filterable PM ₁₀ (lbs/10 ³ gals)
Fuel Oil	1.3	2.0	0.25	1.0

Notes:

Natural gas emissions factors are from AP-42, Tables 1.4-2.

Fuel oil emissions factors are from AP-42, Tables 1.3-1, 1.3-2, and 1.3-6.

Landfill gas PM emission factors were calculated by multiplying the natural gas emission factors by the ratio of the landfill gas and natural gas heating values. Natural gas emission factors are based on a heating value of 1,020 Btu/ft³. Landfill gas heating value is 500 Btu/ft³.

2.1.3.4 Emissions Calculation Formulas and Examples for Building 24 Boilers

All examples use data from 5-0809 (Boiler 2)

Annual NO_x Emissions Formula:

$$\left(\left(\left(\text{Natural Gas (ft}^3\text{)} \times \text{Heat Factor} \left(\frac{\text{BTU}}{\text{ft}^3} \right) \times \text{Emissions Factor} \left(\frac{\text{lbs}}{10^6 \text{BTU}} \right) \right) + \left(\text{Fuel Oil (gals)} \times \text{Heat Factor} \left(\frac{\text{BTU}}{\text{gals}} \right) \times \text{Emissions Factor} \left(\frac{\text{lbs}}{10^6 \text{BTU}} \right) \right) + \left(\text{Landfill Gas (ft}^3\text{)} \times \text{Heat Factor} \left(\frac{\text{BTU}}{\text{ft}^3} \right) \times \text{Emissions Factor} \left(\frac{\text{lbs}}{10^6 \text{BTU}} \right) \right) \right) \right) \times \frac{1 \text{ ton}}{2,000 \text{ lbs}} = \left(\frac{\text{tons}}{\text{year}} \right) \text{NO}_x \text{ per boiler}$$

Boiler 2 Annual NO_x Emissions Example:

$$\left(\left(\left(59,572,682 \text{ (ft}^3\text{)} \times 1025 \left(\frac{\text{BTU}}{\text{ft}^3} \right) \times 0.0576 \left(\frac{\text{lbs}}{10^6 \text{BTU}} \right) \right) + \left(0 \text{ (gals)} \times 140,000 \left(\frac{\text{BTU}}{\text{gals}} \right) \times 0.0917 \left(\frac{\text{lbs}}{10^6 \text{BTU}} \right) \right) + \left(180,456,000 \text{ (ft}^3\text{)} \times 500 \left(\frac{\text{BTU}}{\text{ft}^3} \right) \times 0.0548 \left(\frac{\text{lbs}}{10^6 \text{BTU}} \right) \right) \right) \right) \times \frac{1 \text{ ton}}{2,000 \text{ lbs}} = 4.23 \left(\frac{\text{tons}}{\text{year}} \right) \text{NO}_x$$

Ozone Season (May 1 - September 30) SO_x Emissions Formula:

$$\left(\left(\left(\text{Natural Gas (ft}^3\text{)} \times \text{Emissions Factor} \left(\frac{\text{lbs}}{10^6 \text{ (ft}^3\text{)}} \right) \right) + \left(\text{Fuel Oil (gals)} \times \text{Emissions Factor} \left(\frac{\text{lbs}}{10^3 \text{ gals}} \right) \right) + \left(\text{Landfill Gas (ft}^3\text{)} \times \text{Emissions Factor} \left(\frac{\text{lbs}}{10^6 \text{ (ft}^3\text{)}} \right) \right) \right) \right) = \text{lbs SO}_x \text{ per 2017 Ozone Season}$$

Boiler 2 Ozone Season (May 1 - September 30) SO_x Emissions Example:

$$\left(\left(\left(15,568,951 \text{ (ft}^3\text{)} \times 0.6 \left(\frac{\text{lbs}}{10^6 \text{ (ft}^3\text{)}} \right) \right) + \left(0 \text{ (gals)} \times 142 \times 0.30 \left(\frac{\text{lbs}}{10^3 \text{ gals}} \right) \right) + \left(47,581,000 \text{ (ft}^3\text{)} \times 0.6 \left(\frac{\text{lbs}}{10^6 \text{ (ft}^3\text{)}} \right) \right) \right) \right) = 37.9 \text{ lbs SO}_x \text{ per 2017 Ozone Season}$$

Annual PM Condensable Natural Gas Emissions Formula:

$$\left(\left(\left(\text{Natural Gas (ft}^3\text{)} \times \text{Emissions Factor} \left(\frac{\text{lbs}}{10^6 \text{ (ft}^3\text{)}} \right) \right) \right) \right) = \left(\frac{\text{lbs}}{\text{year}} \right) \text{PM Condensable}$$

Boiler 2 Annual PM Condensable Natural Gas Emissions Example:

$$\left(\left(\left(59,572,682 \text{ (ft}^3\text{)} \times 5.7 \left(\frac{\text{lbs}}{10^6 \text{ (ft}^3\text{)}} \right) \right) \right) \right) = 339.6 \left(\frac{\text{lbs}}{\text{year}} \right) \text{PM Condensable}$$

2.1.4 Building 24 Boilers Title V Reporting Requirements

The Permittee shall report as part of the Annual Emissions Certification the following:

1. The calculated total rolling 12-month heat input to the five boilers.
2. The average NO_x emission rate from all 5 boilers on calendar monthly basis.
3. The average SO_x emissions from all 5 boilers on a 12-month rolling basis.

2.1.4.1 Building 24 Boilers Monthly Heat Input and Rolling Sum

Date	Natural Gas		Landfill Gas		Fuel Oil		Monthly Heat Input (MMBtu)	Rolling 12-Month Sum (MMBtu)
	Volume (ft ³)	Heat (MMBtu)	Volume (ft ³)	Heat (MMBtu)	Volume (gals)	Heat (MMBtu)		
Jan-17	23,890,001	24,487	61,371,000	30,686	520	73	55,246	496,116
Feb-17	20,840,001	21,361	50,526,000	25,263	0	0	46,624	436,109
Mar-17	28,459,999	29,171	47,158,000	23,579	0	0	52,750	496,002
Apr-17	11,280,005	11,562	54,963,000	27,482	0	0	39,044	491,606
May-17	10,430,000	10,691	52,707,000	26,354	0	0	37,044	491,701
Jun-17	18,560,002	19,024	22,936,000	11,468	0	0	30,492	492,120
Jul-17	9,890,004	10,137	39,454,000	19,727	0	0	29,864	492,548
Aug-17	10,250,005	10,506	39,361,000	19,681	0	0	30,187	491,841
Sep-17	8,909,997	9,133	41,827,000	20,914	0	0	30,046	491,964
Oct-17	11,679,999	11,972	44,829,000	22,415	0	0	34,386	488,961
Nov-17	19,489,999	19,977	47,840,000	23,920	0	0	43,897	485,598
Dec-17	26,080,003	26,732	56,645,000	28,323	138	19	55,074	484,655

Notes:

Natural gas heat value is 1,025 Btu/ft³.

Landfill gas heat value is 500 Btu/ft³.

No. 2 fuel oil heat value is 140,000 Btu/gal.

2.1.4.2 Building 24 Boilers Average Monthly NO_x Emission rate and SO_x Rolling Sum Emissions

Date	NO _x Emission Rate (lbs/MMBtu)	SO _x Rolling Sum (tons)
Jan-17	0.04	0.69
Feb-17	0.04	0.24
Mar-17	0.05	0.24
Apr-17	0.03	0.27
May-17	0.03	0.27
Jun-17	0.04	0.27
Jul-17	0.04	0.27
Aug-17	0.03	0.27
Sep-17	0.04	0.26
Oct-17	0.04	0.25
Nov-17	0.05	0.24
Dec-17	0.05	0.24

Notes:

NO_x emissions factors are from a December 2012 stack test.

SO_x emission factors are from AP-42, Tables 1.3-1 and 1.4-2.

2.2 Emergency Generators

2.2.1 Emergency Generators Descriptions

EU7-2: One emergency generator rated at 500 kW and firing No.2 fuel oil. ARMA Registration No. 033-0675-9-1045.

EU10-3: One emergency generator rated at 500 kW and firing No.2 fuel oil. ARMA

Registration No. 033-0675-9-1047.

EU24C-1, EU24C-2, EU24C-3, EU24C-4 and EU24C-8: Five Caterpillar emergency generators each rated at 1,000 kW and firing No.2 fuel oil. ARMA Registration Nos. 033-0675-9-1054 through 9-1058.

EU24C-6: One MTU Detroit Diesel emergency generator rated at 1,000 kW firing No.2 fuel oil. ARMA Registration No. 033-0675-9-1366.

EU31-1 through EU31-5: Five Caterpillar emergency generators each rated at 1,450 kW and firing No.2 fuel oil. ARMA Registration Nos. 033-0675-9-1049 through 9-1053.

EU29-1: One emergency generator rated at 1,000 kW firing No.2 fuel oil. ARMA Registration No. 033-0675-9-1422.

EU7-3: One emergency generator rated at 500 kW firing No.2 fuel oil. ARMA Registration No. 033-0675-9-1433.

2.2.2 Emergency Generators Fuel Use

2.2.2.1 EU-2 (ARMA Reg. No. 9-1045) Fuel Used

67.1 gallons of fuel was used during 2017.

33.5 gallons of fuel was used during the 2017 Ozone Season.

2.2.2.2 EU10-3 (ARMA Reg. No. 9-1047) Fuel Used

67.1 gallons of fuel was used during 2017.

33.5 gallons of fuel was used during the 2017 Ozone Season.

2.2.2.3 EU24C-1, EU24C-2, EU24C-3, EU24C-4, and EU24C-8 (ARMA Reg. No. 9-1054 to 1058) Fuel Used

Generator Registration No.	9-1054	9-1055	9-1056	9-1057	9-1058
Annual Total (gals)	670.5	670.5	469.4	603.5	469.4
Ozone Season (gals)	469.4	469.4	268.2	469.4	268.2

2.2.2.4 EU24C-6 (ARMA Reg. No. 9-1366) Fuel Used

670.5 gallons of fuel was used during 2017.

469.4 gallons of fuel was used during the 2017 Ozone Season.

The total fuel use for the six generators in Building 24C for calendar year 2017 was 3,553.7 gallons. The total fuel used during the 2017 Ozone Season was 2,413.8 gallons.

2.2.2.5 EU31-1 to 5 (ARMA Reg. No. 9-1049 to 1053) Fuel Used

Generator Registration No.	9-1049	9-1050	9-1051	9-1052	9-1053
Annual Total (gals)	1,458.3	1,458.3	1,458.3	1,069.4	1,555.6
Ozone Season (gals)	875.0	875.0	875.0	777.8	972.2

The total fuel use for the five generators in Building 31 for calendar year 2017 was 7,000.0 gallons. The total fuel used during the 2017 Ozone Season was 4,375.0 gallons.

2.2.2.6 EU29-1 (ARMA Reg. No. 9-1422) Fuel Used

165.6 gallons of fuel was used during 2017.

71.7 gallons of fuel was used during the 2017 Ozone Season.

2.2.2.7 EU7-3 (ARMA Reg. No. 9-1433) Fuel Used

771.1 gallons of fuel was used during 2017.

368.8 gallons of fuel was used during the 2017 Ozone Season.

2.2.2.8 Fuel Used Calculation for all Emergency Generators

Annual Fuel Used Calculation Formula for All Generators

$$\text{Hrs of operation} \times \text{kW} \times \frac{1.341 \text{ hp-hr}}{\text{kW-hr}} \times \frac{7,000 \text{ Btu}}{\text{hp-hr}} \times \frac{\text{gal}}{140,000 \text{ BTU}} = \text{Gallons of Fuel Used}$$

Example Calculation six 1,000 kW Building 24C Generators (53 total operating hours during 2017):

$$53 \text{ Hrs of operation} \times 1,000 \text{ kW} \times \frac{1.341 \text{ hp-hr}}{\text{kW-hr}} \times \frac{7,000 \text{ Btu}}{\text{hp-hr}} \times \frac{\text{gal}}{140,000 \text{ BTU}} = 3,354 \text{ Gallons of Fuel Used}$$

Note: 7,000 Btu/hp-hr is the brake specific fuel consumption conversion factor used in AP-42 Table 3.4-1.

2.2.3 Emergency Generators Emissions Summary

All actual emissions of regulated air pollutants from GSFC Generators are located on Forms 2 and 3 in Section 5 of this report.

2.2.3.1 Emissions Factors Used to Calculate Actual Criteria Pollutant Emissions

Emissions factors used to calculate the actual criteria pollutant emissions of the emergency generators, when burning fuel oil, are as follows:

Generator	NO _x (lbs/hp-hr)	SO _x (lbs/hp-hr)	CO (lbs/hp-hr)	VOC (lbs/hp-hr)
EU24C-6 and EU29-1	0.009464	0.00809S	0.000768	0.000161
All Other Generators	0.024	0.00809S	0.0055	0.000642

Notes:

Emission factors are from AP-42, Table 3.4-1 and manufacturer guarantees for EU24C-6 and EU29-1.

S = Sulfur content of fuel oil in percent (regulatory limit = 0.0015% for EU24C-6 (ARMA Reg. No. 9-1366) and EU29-1 (ARMA Reg. No. 9-1422) and 0.3% for all the other generators).

2.2.3.2 PM Emissions Factors Used to Calculate Actual Criteria Pollutant Emissions

The emissions factors used to calculate the PM emissions of all the emergency generators, when burning fuel oil, are the following:

Generator	Total PM Condensable (lbs/MMBtu)	Total PM Filterable (lbs/MMBtu)	Filterable PM < 1 (lbs/MMBtu)	Filterable PM < 3 (lbs/MMBtu)	Filterable PM < 10 (lbs/MMBtu)
All Generators	0.0077	0.062	0.0478	0.0479	0.0496

Note:

Emission factors are from AP-42, Table 3.4-2.

2.2.3.3 Emissions Calculations, Formulas, and Examples for All Emergency Generators

Annual NO_x Emissions Calculations Formula:

$$\left(\text{factor} \left(\frac{\text{lbs}}{\text{hp-hr}} \right) \times \frac{\text{hp-hr}}{7,000 \text{ Btu}} \times \frac{140,000 \text{ Btu}}{\text{gal}} \times \frac{\text{gal}}{\text{yr}} \times \frac{\text{ton}}{2,000 \text{ lbs}} \right) = \frac{\text{tons}}{\text{yr}} \text{ NO}_x \text{ per generator}$$

Example Annual NO_x Emissions Calculation for EU31-1 Generator:

$$\left(0.024 \left(\frac{\text{lbs}}{\text{hp-hr}} \right) \times \frac{\text{hp-hr}}{7,000 \text{ Btu}} \times \frac{140,000 \text{ Btu}}{\text{gal}} \times 1,458.3 \frac{\text{gal}}{\text{yr}} \times \frac{\text{ton}}{2,000 \text{ lbs}} \right) = 0.35 \frac{\text{tons}}{\text{yr}} \text{ NO}_x$$

Annual SO_x Emissions Calculations Formula:

$$\left(\text{factor} \left(\frac{\text{lbs}}{\text{hp-hr}} \right) \times \frac{\text{hp-hr}}{7,000 \text{ Btu}} \times \frac{140,000 \text{ BTU}}{\text{gal}} \times \frac{\text{gal}}{\text{yr}} \times \frac{\text{ton}}{2,000 \text{ lbs}} \right) = \frac{\text{tons}}{\text{yr}} \text{ SO}_x \text{ per generator}$$

Example Annual SO_x Emissions Calculations for EU31-1 Generator:

$$\left(0.00809 * 0.3 \left(\frac{\text{lbs}}{\text{hp-hr}} \right) \times \frac{\text{hp-hr}}{7,000 \text{ Btu}} \times \frac{140,000 \text{ Btu}}{\text{gal}} \times 1,458.3 \frac{\text{gal}}{\text{yr}} \times \frac{\text{ton}}{2,000 \text{ lbs}} \right) = 0.04 \frac{\text{tons}}{\text{yr}} \text{ SO}_x$$

Annual PM₁₀ Filterable Emissions Calculations Formula:

$$\left(\text{annual fuel used(gals)} \times \frac{140,000 \text{ Btu}}{\text{gal}} \times \text{Emissions Factor} \left(\frac{\text{lbs}}{10^6 \text{ Btu}} \right) \right) = \frac{\text{lbs}}{\text{yr}} \text{ PM}_{10} \text{ Filterable}$$

Annual PM₁₀ Filterable Emissions Calculations Example (EU31-1):

$$\left(1458.3(\text{gals}) \times \frac{140,000 \text{ Btu}}{\text{gal}} \times 0.0496 \left(\frac{\text{lbs}}{10^6 \text{ Btu}} \right) \right) = 10.13 \frac{\text{lbs}}{\text{yr}} \text{ PM}_{10} \text{ Filterable}$$

2.2.4 Emergency Generators Title V Reporting Requirements

The Permittee shall submit a record of the total generator operating hours in writing as part of the annual Emissions Certification Report. See table below.

The Permittee shall provide certification of the capacity factor of the equipment to the Department in writing as part of the annual Emissions Certification Report. See table below.

2.2.4.1 Operating Hours for all Generators

Date	EU7-2	EU10-3	EU24C-1	EU24C-2	EU24C-3	EU24C-4	EU24C-6	EU24C-8
Jan-17	0	0	0	0	0	0	0	0
Feb-17	0	0	0	0	0	0	0	0
Mar-17	0.5	0.5	0	0	0	0	0	0
Apr-17	0	0	1	1	1	1	1	1
May-17	0	0	0	0	0	0	0	0
Jun-17	0.5	0.5	4	4	1	4	4	1
Jul-17	0	0	2	2	2	2	2	2
Aug-17	0	0	1	1	1	1	1	1
Sep-17	0.5	0.5	0	0	0	0	0	0
Oct-17	0	0	0	0	0	0	0	0
Nov-17	0	0	1	1	1	1	1	1
Dec-17	0.5	0.5	1	1	1	0	1	1
Total	2	2	10	10	7	9	10	7

2.2.4.1 Cont'd Operating Hours for all Generators

Date	EU31-1	EU31-2	EU31-3	EU31-4	EU31-5	EU29-1	EU7-3
Jan-17	0	0	0	0	0	0	1
Feb-17	2	2	2	2	2	0	2
Mar-17	0	0	0	0	0	0.7	1
Apr-17	1	1	1	1	1	0	2
May-17	0	0	0	0	0	0	3
Jun-17	4	4	4	4	4	0.73	2
Jul-17	2	2	2	2	2	0	2
Aug-17	1	1	1	1	1	0	2
Sep-17	2	2	2	1	3	0.34	2
Oct-17	0	0	0	0	0	0	3
Nov-17	3	3	3	0	3	0	2
Dec-17	0	0	0	0	0	0.7	1
Total	15	15	15	11	16	2.47	23

2.2.4.2 Capacity Factors for all Generators

Date	EU7-2	EU10-3	EU24C-1	EU24C-2	EU24C-3	EU24C-4	EU24C-6	EU24C-8
Jan-17	0	0	0	0	0	0	0	0
Feb-17	0	0	0	0	0	0	0	0
Mar-17	0	0	0	0	0	0	0	0
Apr-17	0	0	0	0	0	0	0	0
May-17	0	0	0	0	0	0	0	0
Jun-17	0	0	0	0	0	0	0	0
Jul-17	0	0	0	0	0	0	0	0
Aug-17	0	0	0	0	0	0	0	0
Sep-17	0	0	0	0	0	0	0	0
Oct-17	0	0	0	0	0	0	0	0
Nov-17	0	0	0	0	0	0	0	0
Dec-17	0	0	0	0	0	0	0	0

2.2.4.2 Cont'd Capacity Factors for all Generators

Date	EU31-1	EU31-2	EU31-3	EU31-4	EU31-5	EU29-1	EU7-3
Jan-17	0	0	0	0	0	0	0
Feb-17	0	0	0	0	0	0	0
Mar-17	0	0	0	0	0	0	0
Apr-17	0	0	0	0	0	0	0
May-17	0	0	0	0	0	0	0
Jun-17	0	0	0	0	0	0	0
Jul-17	0	0	0	0	0	0	0
Aug-17	0	0	0	0	0	0	0
Sep-17	0	0	0	0	0	0	0
Oct-17	0	0	0	0	0	0	0
Nov-17	0	0	0	0	0	0	0
Dec-17	0	0	0	0	0	0	0

2.2.4.2.1 Monthly Capacity Factor Calculation formula

$$\text{Capacity Factor} = \frac{\text{Heat Input (MMBtu)}}{\text{Max Heat Input (MMBtu)}}$$

Heat input (MMBtu)

$$= \text{Operating Hours} * \text{Power output (kW)} * 7,000 \left(\frac{\text{Btu}}{\text{hp} - \text{hr}} \right) * 1.341 \left(\frac{\text{hp} - \text{hr}}{\text{kW} - \text{hr}} \right) * \frac{\text{MMBtu}}{1,000,000 \text{ Btu}}$$

Example heat input calculation for EU31-1 Generator in February:

$$\text{Heat input (MMBtu)} = 2 \text{ (hr)} * 1,450 \text{ (kW)} * 7,000 \left(\frac{\text{Btu}}{\text{hp} - \text{hr}} \right) * 1.341 \left(\frac{\text{hp} - \text{hr}}{\text{kW} - \text{hr}} \right) * \frac{\text{MMBtu}}{1,000,000 \text{ Btu}} = 27.22$$

Max Heat input (MMBtu)

$$= \text{Max Capacity (hrs)} * \text{Power output (kW)} * 7,000 \left(\frac{\text{Btu}}{\text{hp} - \text{hr}} \right) * 1.341 \left(\frac{\text{hp} - \text{hr}}{\text{kW} - \text{hr}} \right) * \frac{\text{MMBtu}}{1,000,000 \text{ Btu}}$$

Example maximum heat input calculation for EU31-1 Generator in February:

$$\text{Max Heat input (MMBtu)} = 744 \text{ (hr)} * 1,450 \text{ (kW)} * 7,000 \left(\frac{\text{Btu}}{\text{hp} - \text{hr}} \right) * 1.341 \left(\frac{\text{hp} - \text{hr}}{\text{kW} - \text{hr}} \right) * \frac{\text{MMBtu}}{1,000,000 \text{ Btu}} = 9,146.69$$

Example capacity factor calculation for EU31-1 Generator in February:

$$\text{Capacity Factor} = \frac{27.22 \text{ MMBtu}}{9,146.69 \text{ MMBtu}} = 0.003$$

2.3 Small Space Heating Boilers Fired by Natural Gas

2.3.1 Small Space Heating Boilers Descriptions

EU97-1: One Lochinvar, natural gas-fired boiler rated at 1.118 MMBtu/hr. ARMA Registration No. 033-0675-5-0846.

EU302-1: One natural gas-fired boiler rated at 1.7 MMBtu/hr. ARMA Registration No. 033-0675-5-0831.

EU302-3: One natural gas-fired boiler rated at 1.44 MMBtu/hr. ARMA Registration No. 033-0675-5-1533.

EU35-1: One Lochinvar, natural gas-fired space heating boiler rated at 1.5 MMBtu/hr. ARMA Registration No. 033-0675-5-1531.

EU35-2: One Lochinvar, natural gas-fired space heating boiler rated at 1.5 MMBtu/hr. ARMA Registration No. 033-0675-5-1532.

2.3.2 Fuel Use for One Boiler in Building 97 (ARMA Registration Number 5-0846)

2,164,201 cubic feet of natural gas were used during calendar year 2017.

726,803 cubic feet of natural gas were used during the 2017 Ozone Season.

2.3.3 Fuel Use for Boilers in Building 302 (ARMA Registration Numbers 5-0831 and 5-1533)

3,933,800 cubic feet of natural gas were used during calendar year 2017 for the two boilers.

1,410,350 cubic feet of natural gas were used during the 2017 Ozone Season.

2.3.4 Fuel Use for Boilers in Building 35 (ARMA Registration Numbers 5-1531 and 5-1532)

2,438,200 cubic feet of natural gas were used during calendar year 2017 for the two boilers.

676,500 cubic feet of natural gas were used during the 2017 Ozone Season.

2.3.5 Small Space Heating Boilers Emissions Summary

All actual emissions of criteria pollutants from the GSFC small natural gas-fired boilers are located on Forms 2 and 3 in Section 5 of this report.

2.3.5.1 Gas Emissions Factors Used to Calculate Actual Criteria Pollutant Emissions

Emissions factors used to calculate the actual criteria pollutant emissions of the small natural gas-fired boilers are as follows:

Small Natural Gas Boilers	NO _x (lbs/10 ⁶ ft ³)	SO _x (lbs/10 ⁶ ft ³)	CO (lbs/10 ⁶ ft ³)	VOC (lbs/10 ⁶ ft ³)	Total PM (lbs/10 ⁶ ft ³)	Condensable PM (lbs/10 ⁶ ft ³)	Filterable PM (lbs/10 ⁶ ft ³)
	100	0.6	84	5.5	7.6	5.7	1.9

Note:

Emission factors are from AP-42, Tables 1.4-1, and 1.4-2.

2.4 Surface Coating Operations

2.4.1 Surface Coating Operations Descriptions

EU4-2: Paint booth #1 with electric drying oven. ARMA Registration No. 033-0675-6-1101.

EU4-3: Paint booth #2. ARMA Registration No. 033-0675-6-1101.

EU4-6: Curing oven. ARMA Registration No. 033-0675-6-1101.

EU5A-3: Paint Booth #3. ARMA Registration No. 033-0675-6-1323.

2.4.2 Surface Coating Operation Emissions Summary

2.4.2.1 Building 4 Surface Coating Operation (ARMA Reg. No. 6-1101)

Emissions were calculated using annual usage logs. Annual VOC emissions calculate to 39.56 lbs, 0.15 lbs/day, and 0.04 lbs/hour. VOC emissions rates were calculated assuming operations of 4 hours per day and 260 days per year.

Annual:

$$\text{Material Used} \left(\frac{\text{gal}}{\text{yr}} \right) \times \text{VOC content} \left(\frac{\text{lbs}}{\text{gal}} \right) = \text{Annual VOCs Emitted} \left(\frac{\text{lbs}}{\text{yr}} \right)$$

Daily:

$$\text{Annual VOCs emitted } \left(\frac{\text{lbs}}{\text{yr}} \right) \times \frac{\text{yr}}{260 \text{ days}} = \text{Daily VOCs Emitted } \left(\frac{\text{lbs}}{\text{day}} \right)$$

Hourly:

$$\text{Daily VOCs emitted } \left(\frac{\text{lbs}}{\text{day}} \right) \times \frac{\text{day}}{4 \text{ hrs}} = \text{Hourly VOC Emitted } \left(\frac{\text{lbs}}{\text{hr}} \right)$$

2.4.2.2 Building 5A Surface Coating Operation (ARMA Reg. No. 6-1323)

Similar to Building 4 surface coating operation, emissions were calculated using annual usage logs. Annual VOC emissions calculate to 9.33 lbs, 0.04 lbs/day, and 0.01 lbs/hour. VOC emissions rates were calculated assuming operations of 4 hours per day and 260 days per year.

2.4.3 Surface Coating Operations Title V Reporting Requirements

The permittee shall report material usage and VOC content of coatings in the annual Emissions Certification Report. See tables below.

2.4.3.1 Building 4 Surface Coating Operation (ARMA Reg. No. 6-1101)

Material Name	VOC Content (lbs/gal)	Annual Material Used (gals)	Annual VOC Emitted (lbs)
Aeroglaze 9958	7.42	2.14	15.85
Aeroglaze Z306	5.78	0.30	1.72
Aeroglaze Z307	6.01	0.37	2.21
Chemglaze 9924	6.66	0.75	4.97
Chemglaze 9951	7.43	0.15	1.11
Chemglaze A382	4.44	0.03	0.14
Hexane	5.50	0.27	1.46
Isopropanol	6.56	1.05	6.92
Xylene	7.17	0.72	5.18
Total Annual VOC emissions			39.56

2.4.3.2 Building 5A Surface Coating Operation (ARMA Reg. No. 6-1323)

Material Name	VOC Content (lbs/gal)	Annual Material Used (gals)	Annual VOC Emitted (lbs)
BR 127 Corrosion Inhibiting Primer	6.6	1.41	9.33
Total Annual VOC emissions			9.33

2.5 Electro-Chemical Plating Shop

2.5.1 Electro-Chemical Plating Shop Descriptions

EU5-2: Process Line A equipped with a scrubber. Tanks A-1, A-2, A-4, A-6, A-8, A-9 and A-11. ARMA Registration No. 033-0675-6-0852.

EU5-4: Process Line N equipped with a scrubber. Tanks N-1, N-3A, N-3B, N-5A, N-5B, N-5C, N-7, and N-8. ARMA Registration No. 033-0675-6-0854.

EU5-6: Process Lines B and E equipped with a scrubber. Tanks B-1A, B-1B, B-3, B-4A, B-4B, B-6, B-7, B-8, B-10, E-1, E-2, E-3, E-5, E-7, and E-8. ARMA Registration No. 033-0675-6-0862.

2.5.2 Emissions Summary for the Electro-Chemical Plating Shop

The Electro-Chemical Plating Shop emissions units in Building 5 emitted small quantities of chemicals in the form of PM totaling 757.34 lbs which amounts to 0.38 tons, 2.91 lbs/day and 0.36 lbs/hr in 2017. These PM emissions were conservatively estimated using usage records from HMMS. PM emissions rates were calculated assuming operations of 8 hours per day and 260 days per year.

All material used is assumed to be emitted into the atmosphere as PM.

$$757.34 \frac{\text{lbs all chemicals}}{\text{yr}} \times \frac{\text{yr}}{260 \text{ days}} = 2.91 \frac{\text{lbs}}{\text{day}} \text{ PM}$$

$$2.91 \frac{\text{lbs PM}}{\text{day}} \times \frac{\text{day}}{8 \text{ hrs}} = 0.36 \frac{\text{lbs}}{\text{hr}} \text{ PM}$$

2.6 Clean Room Semiconductor Development and Fabrication

2.6.1 Clean Room Semiconductor Development and Fabrication Descriptions

EU30-1: Chemical Vapor Deposition process followed by three gas reactor columns and scrubber. ARMA Reg. No. 033-0675-6-0903.

EU30-2: Ion Implantation process equipped with a scrubber. ARMA Reg. No. 033-0675-6-0903.

EU30-3: Dry chemistry process equipped with a scrubber. ARMA Reg. No. 033-0675-6-0903.

EU30-4: Oxidation process equipped with a scrubber. ARMA Reg. No. 033-0675-6-0903.

EU30-5: Blasting process equipped with a scrubber. ARMA Reg. No. 033-0675-6-0903.

EU30-6: Two thin film units equipped with a scrubber. ARMA Reg. No. 033-0675-6-0903.

EU30-7: Four wet chemistry processes equipped with a scrubber. ARMA Reg. No. 033-0675-6-0903.

EU30-8: Four photolithography processes equipped with a scrubber. ARMA Reg. No. 033-0675-6-0903.

2.6.2 Clean Room Semiconductor Development and Fabrication Emissions Summary

2.6.2.1 VOC Emissions of the Clean Room Semiconductor Development and Fabrication (ARMA Reg. No. 6-0903)

Emissions were calculated using annual usage logs. Annual VOC emissions calculate to 91.07 lbs, 0.35 lbs/day, and 0.09 lbs/hour. VOC emissions rates were calculated assuming operations of 4 hours per day and 260 days per year, using the below formulas:

Annual:

$$\text{Material Used} \left(\frac{\text{gal}}{\text{yr}} \right) \times \text{VOC content} \left(\frac{\text{lbs}}{\text{gal}} \right) \times 0.10 \text{ (90\% scrubber efficiency)}$$
$$= \text{Annual VOCs Emitted} \left(\frac{\text{lbs}}{\text{yr}} \right)$$

Daily:

$$\text{Annual VOCs emitted} \left(\frac{\text{lbs}}{\text{yr}} \right) \times \frac{\text{yr}}{260 \text{ days}} = \text{Daily VOCs Emitted} \left(\frac{\text{lbs}}{\text{day}} \right)$$

Hourly:

$$\text{Daily VOCs emitted} \left(\frac{\text{lbs}}{\text{day}} \right) \times \frac{\text{day}}{4 \text{ hrs}} = \text{Hourly VOC Emitted} \left(\frac{\text{lbs}}{\text{hr}} \right)$$

2.6.2.2 PM Emissions of the Clean Room Semiconductor Development and Fabrication (ARMA Reg. No. 6-0903)

The following calculation, utilizing the maximum stack gas flow rates of the five exhausts, was used to determine the maximum estimated PM emissions from the Clean Room Semiconductor Development and Fabrication.

Wet Scrubber (Exhaust #20 and #21):

$$0.03 \frac{\text{gr}}{\text{cu. ft.}} \times 11,400 \frac{\text{cu. ft.}}{\text{min}} \times \frac{\text{lb}}{7,000 \text{ gr}} \times \frac{60 \text{ min}}{\text{hr}} = 2.93 \frac{\text{lbs}}{\text{hr}} \times \frac{4 \text{ hr}}{\text{day}} = 11.73 \frac{\text{lbs of PM}}{\text{day}}$$

Exhaust #8:

$$0.03 \frac{\text{gr}}{\text{cu. ft.}} \times 490 \frac{\text{cu. ft.}}{\text{min}} \times \frac{\text{lb}}{7,000 \text{ gr}} \times \frac{60 \text{ min}}{\text{hr}} = 0.13 \frac{\text{lbs}}{\text{hr}} \times \frac{4 \text{ hr}}{\text{day}} = 0.50 \frac{\text{lbs of PM}}{\text{day}}$$

Exhaust #25:

$$0.03 \frac{\text{gr}}{\text{cu. ft.}} \times 2,107 \frac{\text{cu. ft.}}{\text{min}} \times \frac{\text{lb}}{7,000 \text{ gr}} \times \frac{60 \text{ min}}{\text{hr}} = 0.54 \frac{\text{lbs}}{\text{hr}} \times \frac{4 \text{ hr}}{\text{day}} = 2.17 \frac{\text{lbs of PM}}{\text{day}}$$

Exhaust #27:

$$0.03 \frac{\text{gr}}{\text{cu. ft.}} \times 540 \frac{\text{cu. ft.}}{\text{min}} \times \frac{\text{lb}}{7,000 \text{ gr}} \times \frac{60 \text{ min}}{\text{hr}} = 0.14 \frac{\text{lbs}}{\text{hr}} \times \frac{4 \text{ hr}}{\text{day}} = 0.56 \frac{\text{lbs of PM}}{\text{day}}$$

$$\text{Total PM Emission Rate: } 11.73 + 0.50 + 2.17 + 0.56 = 14.95 \frac{\text{lbs}}{\text{day}} \text{ of PM.}$$

2.6.3 Clean Room Semiconductor Development and Fabrication Title V Reporting Requirements

Records of material usage and calculated HAP, TAP and VOC emissions shall be submitted to the department as part of the annual Emissions Certification Report. See Table below for material usage and calculated VOC emissions. See Section 3.3.3 for calculated HAP and TAP emissions.

2.6.3.1 VOC Emissions of the Clean Room Semiconductor Development and Fabrication (ARMA Reg. No. 6-0903)

Material Name	VOC Content (lbs/gal)	Annual Material Used (gals)	Annual VOC Emitted (lbs)
1165 Remover	8.59	8.00	6.88
2-Propanol	6.59	57.80	38.09
Acetic Acid	8.75	6.74	5.90
Ethanol	6.59	4.23	2.79
Ethylene Glycol	9.28	4.00	3.71
Hexamethyldisilazane	6.42	2.11	1.36
Methanol	6.67	44.65	29.78
MF 312 Developer	0.41	34.00	1.39
Resist Remover RR41	9.14	1.06	0.97
SU-8 Developer	0.25	1.06	0.03
Toluene	0.86	2.11	0.18
XHRiC-16	0.25	0.26	0.01
Total Annual VOC Emissions			91.07

2.7 Char-broilers

2.7.1 Char-broilers Descriptions

EU92-1 to EU92-4: Four charbroilers. ARMA Reg. No. 033-0675-8-0186 to 8-0189.

2.7.2 Char-broilers Emissions Summary

The following uncontrolled emission factors for the cooking of meat were obtained from the South Coast Air Quality Management District (SCAQMD) in California and are based on source test results of similar units:

$$PM_{10} = 7.42 \text{ lb-}PM_{10}/10^3 \text{ lb-Meat Cooked (Uncontrolled)}$$

$$VOC = 2.27 \text{ lb-VOC}/10^3 \text{ lb-Meat Cooked (Uncontrolled)}$$

2.7.2.1 VOC Emissions of Four Char-broilers at Building 92 (ARMA Reg. No. 8-0186 to 8-0189)

These units were used infrequently in 2017. Therefore, the 1996 construction permit application numbers were used to conservatively estimate the 2017 VOC emissions. Based on the 1996 permit, these char-broilers operate for 60 days a year and are used to char-broil 100 lbs of meat per day, which is more than the actual usage in 2017.

$$\left(100 \frac{\text{lbs meat}}{\text{day}} \times \frac{60 \text{ days}}{\text{yr}} \times \frac{2.27 \text{ lbs VOC}}{10^3 \text{ lb - meat cooked}} \right) \times 4 \text{ Charbroilers} = 54.48 \frac{\text{lbs VOC}}{\text{yr}}$$

2.7.2.2 PM Emissions of Four Char-broilers at Building 92 (ARMA Reg. No.8-0186 to 8-0189)

$$\left(100 \frac{\text{lbs meat}}{\text{day}} \times \frac{60 \text{ days}}{\text{yr}} \times \frac{7.42 \text{ lbs } PM_{10}}{10^3 \text{ lb - meat cooked}} \right) \times 4 \text{ Charbroilers} = 178.08 \frac{\text{lbs } PM_{10}}{\text{yr}}$$

2.8 Vapor Degreaser

2.8.1 Vapor Degreaser Description

EU7-4: One ultrasonic vapor degreaser with a solvent capacity of 9.2 gallons equipped with 2 cooling coils and a power sliding door. ARMA Registration No. 033-0675-6-1459.

2.8.2 Vapor Degreaser Emissions Summary

This equipment did not operate during the calendar year 2017. Therefore, there are no criteria pollutant emissions to report.

2.9 Fuel Storage and Dispensing Facility

2.9.1 Fuel Storage and Dispensing Facility Descriptions

EU27-2: One 5,000 gallon AST storing E85 which is a gasoline/ethanol mixture. The tank is equipped with a Stage I vapor recovery system. ARMA Registration No. 033-0675-9-1168.

EU27-3: Two 5,000 gallon ASTs each storing gasoline and each equipped with a Stage I vapor recovery system. ARMA Registration No. 033-0675-9-1331.

2.9.2 Fuel Storage and Dispensing Facility VOC Emission Factors Used

	Emissions factor (lbs/gal)	Source
Spillage	0.0007	AP 42 Table 5.2-7
Stage II Losses	0.011	AP 42 Table 5.2-7
Uncontrolled Working Losses	NA	Tanks 4.09D
AST Breathing and Empty Losses	NA	Tanks 4.09D

2.9.3 Fuel Storage and Dispensing Facility VOC Emissions Calculation Method Used

Spillage and Stage II losses VOC emissions were calculated by multiplying the volume of fuel pumped by the Spillage and Stage II Losses emissions factors for each tank. The working losses and breathing and emptying (B&E) losses VOC emissions were calculated using the TANKS 4.09D model.

2.9.4 Fuel Storage and Dispensing Facility VOC Emissions Summary

2.9.4.1 5,000-Gallon Aboveground E-85 Storage Tank (ARMA Reg. No. 9-1168)

According to usage logs, the total fuel delivered for the 5,000-gallon AST storing E-85 fuel was 17,123 gallons and the total fuel pumped was 18,732 gallons in 2017. The components and total annual VOC emissions are calculated as follows.

Annual Spillage VOC Emissions Calculation Example for the E-85 AST:

$$18,732 \text{ gals pumped} \times \text{Emissions Factor } (0.0007 \frac{\text{lbs}}{\text{gal}}) = 13.11 \frac{\text{lbs}}{\text{yr}} \text{ VOC}$$

Annual Stage II Losses (pumping vehicles) VOC Emissions Calculation Example for the E-85 AST:

$$18,732 \text{ gals pumped} \times \text{Emissions Factor } (0.011 \frac{\text{lbs}}{\text{gal}}) = 206.05 \frac{\text{lbs}}{\text{yr}} \text{ VOC}$$

Annual Working and B&E Losses from E-85 AST:

$$121.63 \frac{\text{lbs}}{\text{year}} \text{ (from Tanks 4.09D)} \times 0.1 \text{ (90\% Stage I Vapor Recovery Removal Efficiency)} = 12.16 \frac{\text{lbs}}{\text{yr}}$$

Total Annual VOC Emissions from the E-85 AST:

$$\text{Annual Spillage} \frac{\text{lbs}}{\text{yr}} + \text{Annual Stage II} \frac{\text{lbs}}{\text{yr}} + \text{Annual B\&E Losses} \frac{\text{lbs}}{\text{yr}} + \text{Annual Working Losses} \frac{\text{lbs}}{\text{yr}} = \text{Total Annual VOC Emissions} \frac{\text{lbs}}{\text{yr}} \times \frac{\text{ton}}{2,000 \text{ lbs}} = \frac{\text{tons}}{\text{year}} \text{ VOC}$$

$$13.11 \frac{\text{lbs}}{\text{yr}} + 206.05 \frac{\text{lbs}}{\text{yr}} + 12.16 \frac{\text{lbs}}{\text{yr}} = 231.32 \frac{\text{lbs}}{\text{yr}} \times \frac{\text{ton}}{2,000 \text{ lbs}} = 0.12 \frac{\text{tons}}{\text{year}} \text{ VOC}$$

2.9.4.2 Two 5,000-Gallon Aboveground Gasoline Storage Tank (ARMA Reg. No. 9-1331)

According to usage logs, the total fuel delivered for the two 5,000-gallon ASTs storing gasoline was 58,515 gallons and the total fuel pumped was 58,890 gallons in 2017. Similar to E27-2 VOC emissions calculations above, EU27-3 component and total VOC emissions are:

$$41.22 \frac{\text{lbs}}{\text{yr}} + 647.79 \frac{\text{lbs}}{\text{yr}} + 2 \times 1634.62 \times 0.1 \frac{\text{lbs}}{\text{yr}} = 1015.93 \frac{\text{lbs}}{\text{yr}} \times \frac{\text{ton}}{2,000 \text{ lbs}} = 0.51 \frac{\text{tons}}{\text{year}} \text{ VOC}$$

3. Toxic Air Pollutant and Hazardous Air Pollutant Emissions

3.1 Introduction

GSFC emitted equal to or more than the reporting threshold for six TAPs in 2017. HMMS was used to calculate the emissions of TAPs and HAPs for the Electro-Chemical Plating Shop, Clean Room Semiconductor Development and Fabrication, and Surface Coating Operations.

GSFC used the plantwide reporting threshold limits from the MDE website link below to determine what TAP emissions were required to be reported:

http://www.mde.state.md.us/programs/Air/AirQualityCompliance/Documents/www.mde.state.md.us/assets/document/air/Air_toxics_list.pdf.

3.2 Emissions Summary

As a part of the 2017 Annual Emissions Certification, MDE has requested that Title V facilities report emissions of TAPs and HAPs from all registered equipment including fuel burning sources. GSFC is exempt from emissions reporting required by the Industrial Boiler MACT Rule because this rule does not establish emissions limits for gas boilers (including boilers burning liquid fuel during periods of gas curtailment and periodic testing). In addition, GSFC is classified as an institutional facility and, therefore, is exempt from the requirements of 40 CFR Part 63 related to generators, Section 63.6585(f)(3). Therefore, GSFC is not required to submit HAP emissions from its registered fuel burning units. The 2017 TAP and HAP emissions from all other permitted sources are contained in Forms 4 and 5 in Section 5 of this report.

3.3 Source Specific TAP and HAP Emissions

The following formulae were used to calculate total annual TAP and HAP emissions (tons/yr), hourly emissions (lbs/hr), and daily emissions (lbs/day):

Annual TAP Emissions:

$$\text{Total Annual Usage} \left(\frac{\text{lbs}}{\text{yr}} \right) \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = \text{Total Annual Emissions} \left(\frac{\text{tons}}{\text{yr}} \right)$$

Hourly TAP Emissions:

$$\text{Total Annual Usage} \left(\frac{\text{lbs}}{\text{yr}} \right) \times \frac{1 \text{ yr}}{\text{operating days}} \times \frac{1 \text{ day}}{\text{operating hours}} = \text{Hourly Emissions} \left(\frac{\text{lbs}}{\text{hr}} \right)$$

Daily TAP Emissions:

$$\text{Total Annual Usage} \left(\frac{\text{lbs}}{\text{yr}} \right) \times \frac{1 \text{ yr}}{\text{operating days}} = \text{Daily} \left(\frac{\text{lbs}}{\text{day}} \right)$$

3.3.1 Surface Coating Operation (ARMA Reg. No. 6-1101 and 6-1323)

3.3.1.1 Building 4, Rm 195 Surface Coating Operation (ARMA Reg. No. 6-1101)

TAP and HAP emissions were calculated using data from HMMS and an operating schedule of 260 days/year and 4 hours/day. 4,4-methylene diphenyl diisocyanate was the only reportable TAP and/or HAP from the Building 4 Surface Coating Operation in calendar year 2017. The

emissions amounted to 0.0001 tons/yr and 0.0002 lbs/hr. The reportable thresholds are 0.001 tons/yr and 0.0001 lbs/hr, respectively. The 4,4-methylenediphenyl diisocyanate reportable emissions are located on Forms 4 and 5 of Section 5 of this report.

3.3.1.2 Building 5A Surface Coating Operation (MDE Reg. No. 6-1323)

TAP and HAP emissions were calculated using data from HMMS and an operating schedule of 260 days/yr and 4 hrs/day. Antimony trioxide was the only reportable TAP and/or HAP from the Building 5A Surface Coating Operation in calendar year 2017. The emissions amounted to 0.0012 tons/yr and 0.0023 lbs/hr. The reportable thresholds are 0.01 tons/yr and 0.001 lbs/hr, respectively. The antimony trioxide reportable emissions are located on Forms 4 and 5 of Section 5 of this report..

3.3.2 Electro-Chemical Plating Shop, Building 5 (ARMA Reg. Nos. 6-0852, 6-0854, and 6-0862)

TAP and HAP emissions were calculated using data from HMMS and an operating schedule of 260 days/year and 8 hours/day. There were no reportable TAPs and/or HAPs from the Electro-Chemical Plating Shop in calendar year 2017.

3.3.3 Clean Room Semiconductor Development and Fabrication (ARMA Reg. No. 6-0903)

TAP and HAP emissions were calculated using data from HMMS and an operating schedule of 260 days/year and 4 hours/day. 4,4-methylenediphenyl diisocyanate, catechol, and hydrogen fluoride were the only reportable TAPs and/or HAPs from the Clean Room Semiconductor Development and Fabrication in calendar year 2017. The 4,4-methylenediphenyl diisocyanate, catechol, and hydrogen fluoride reportable emissions are located on Forms 4 and 5 of Section 5 of this report.

3.3.3.1 Reportable TAP Emissions from the Clean Room Semiconductor Development and Fabrication

Chemical	Emissions		Reporting Threshold	
	tons/yr	lbs/hr	tons/yr	lbs/hr
4,4-Methylenediphenyl Diisocyanate	0.0004	0.0008	0.001	0.0001
Catechol	0.0744	0.1431	1	0.1
Hydrogen Fluoride	0.0197	0.0379	0.1	0.01

3.3.4 Char-broilers (ARMA Reg. No. 8-0186 to 8-0189)

TAP and HAP emissions were calculated using maximum allowable operating days specified in the 1996 Permit to Construct, which is 60 days. Both benzene and formaldehyde are reportable from the Building 92 char-broilers in calendar year 2017. All actual reportable emissions of TAPs and HAPs from the char-broilers are located on Forms 4 and 5 in Section 5 of this report.

3.3.4.1 Reportable TAP Emissions from the Char-broilers

Chemical	Emissions		Reporting Threshold	
	tons/yr	lbs/hr	tons/yr	lbs/hr
Benzene	0.0667	0.0500	0.1	0.01
Formaldehyde	0.0560	0.0420	0.01	0.001

3.3.5 Vapor Degreaser (ARMA Reg. No. 6-1459)

This equipment did not operate during calendar year 2017. Therefore, there are no HAP and TAP emissions to report.

3.3.6 Fuel Storage and Dispensing Facility (ARMA Reg. No. 9-1168 and 9-1331)

3.3.6.1 One 5,000-Gallon Aboveground E-85 Storage Tank (ARMA Reg. No. 9-1168)

TAP and HAP emissions were calculated using usage logs and an operating schedule of 365 days/year and 24 hours/day. There were no reportable TAPs and/or HAPs from the E-85 AST in calendar year 2017.

3.3.6.2 Two 5,000-Gallon Aboveground Gasoline Storage Tank (ARMA Reg. No. 9-1331)

TAP and HAP emissions were calculated using usage log and an operating schedule of 365 days/year and 24 hours/day. There were no reportable TAPs and/or HAPs from the gasoline ASTs in calendar year 2017.

3.3.7 Insignificant Activities

Electric epoxy curing oven in Building 5A. ARMA Reg. No. 033-0675-6-0901.

Fume Hood in Building 5A. ARMA Reg. No. 033-0675-6-60924.

Wafer coating operations. ARMA Reg. No. 033-0675-6-0902.

Paint booth Building 4. ARMA Reg. No. 033-0675-6-1047.

Buffing Machine with Dust Collector in Building 5. ARMA Reg. No. 033-0675-9-0923.

Soldering Operation in Building 35. ARMA Reg. No. 033-0675-6-9-0925.

4. Greenhouse Gas Emissions

4.1 Introduction

The GHG emissions inventory for GSFC was performed using the AP-42 emissions factors and methodology. The direct GHG emissions for all registered pieces of fuel burning equipment were estimated by multiplying the volume of fuel used by the GHG emission factor for each fuel type.

4.2 Fuel Use

Emissions Unit	Reg. No.	Fuel	Fuel Use
Building #24 Boiler #1	MDE 5-0808	Natural Gas	44,133,404
Building #24 Boiler #2	MDE 5-0809	Natural Gas	59,572,682
Building #24 Boiler #3	MDE 5-0810	Natural Gas	15,682,028
Building #24 Boiler #4	MDE 5-0811	Natural Gas	53,275,723
Building #24 Boiler #5	MDE 5-0812	Natural Gas	27,096,178
Building #24 Boiler #1	MDE 5-0808	Landfill Gas	150,529,000
Building #24 Boiler #2	MDE 5-0809	Landfill Gas	180,456,000
Building #24 Boiler #3	MDE 5-0810	Landfill Gas	0
Building #24 Boiler #4	MDE 5-0811	Landfill Gas	228,632,000
Building #24 Boiler #5	MDE 5-0812	Landfill Gas	0
Building #24 Boiler #1	MDE 5-0808	#2 Fuel Oil	80
Building #24 Boiler #2	MDE 5-0809	#2 Fuel Oil	0
Building #24 Boiler #3	MDE 5-0810	#2 Fuel Oil	566
Building #24 Boiler #4	MDE 5-0811	#2 Fuel Oil	12
Building #24 Boiler #5	MDE 5-0812	#2 Fuel Oil	0
Building 24C Generator #1 (1000 KW)	MDE 9-1054	#2 Fuel Oil	671
Building 24C Generator #2 (1000 KW)	MDE 9-1055	#2 Fuel Oil	671
Building 24C Generator #3 (1000 KW)	MDE 9-1056	#2 Fuel Oil	469
Building 24C Generator #4 (1000 KW)	MDE 9-1057	#2 Fuel Oil	603
Building 24C Generator #8 (1000 KW)	MDE 9-1058	#2 Fuel Oil	469
Building 24C Generator #6 (1000 KW)	MDE 9-1366	#2 Fuel Oil	671
Building 31 Generator #1 (1450 KW)	MDE 9-1049	#2 Fuel Oil	1,458
Building 31 Generator #2 (1450 KW)	MDE 9-1050	#2 Fuel Oil	1,458
Building 31 Generator #3 (1450 KW)	MDE 9-1051	#2 Fuel Oil	1,458
Building 31 Generator #4 (1450 KW)	MDE 9-1052	#2 Fuel Oil	1,069
Building 31 Generator #5 (1450 KW)	MDE 9-1053	#2 Fuel Oil	1,556
Building 302 Boiler #1	MDE 5-0831	Natural Gas	2,129,764
Building 302 Boiler #3	MDE 5-1533	Natural Gas	1,804,036
Building 97 Boiler #1	MDE 5-0846	Natural Gas	2,164,201
Building 35 Boiler #1	MDE 5-1531	Natural Gas	1,219,100
Building 35 Boiler #2	MDE 5-1532	Natural Gas	1,219,100
Building 7 Generator #1 (500 KW)	MDE 9-1045	#2 Fuel Oil	67
Building 7 Generator #2 (500 KW)	MDE 9-1047	#2 Fuel Oil	67
Building 10 Generator #1 (500 KW)	MDE 9-1433	#2 Fuel Oil	771
Building 29 Generator #1 (1000 KW)	MDE 9-1422	#2 Fuel Oil	166

Note: Natural and Landfill Gas units are measured in ft³ and #2 Fuel Oil is measured in gallons.

4.3 Source Specific Emissions

4.3.1 Emissions Factors Used to Calculate all GSFC Boilers and Generators GHG Emissions

Fuel	CO ₂ (lbs/10 ⁶ ft ³)	CH ₄ (lbs/10 ⁶ ft ³)	N ₂ O (lbs/10 ⁶ ft ³)
Natural Gas	120,000	2.3	0.64
Landfill Gas	58,824	1.1	0.31
Fuel	CO ₂ (lbs/10 ³ gal)	CH ₄ (lbs/10 ³ gal)	N ₂ O (lbs/10 ³ gal)
#2 Fuel Oil	22,300	0.216	0.26

Notes:

Natural gas GHG emission factors are from AP-42, Tables 1.4-2.

#2 fuel oil GHG emission factors are from AP-42, Tables 1.3-3, 1.3-8, and 1.3-12.

Landfill gas GHG emission factors were calculated by multiplying the natural gas emission factors by the ratio of the landfill gas and natural gas heating values. Natural gas emission factors are based on a heating value of 1,020 Btu/ft³. Landfill gas heating value is 500 Btu/ft³.

4.3.2 GHG Emissions Calculation Examples

Building 24 Boiler 1 Landfill Gas CH₄ GHG Emissions Example:

$$\left(150,529,000(ft^3) \times \frac{1.1 lbs}{10^6 ft^3}\right) \times \frac{1 ton}{2000 lbs} = 0.09 \left(\frac{tons}{year}\right) CH_4$$

Building 31 Generator #2 (1,450 KW) Annual #2 Fuel Oil CO₂ GHG Emissions Example:

$$\left(1,458 (gals) \times \frac{22,300 lbs}{10^3 gals}\right) \times \frac{1 ton}{2000 lbs} = 16.26 \left(\frac{tons}{year}\right) CO_2$$

4.3.3 GHG Emissions for all GSFC Boilers and Generators

All GHG emissions for all GSFC boilers and generators are located on Form 6 in Section 5 of this report.

4.4 De Minimus Operations

De minimus operations are defined as operations that are so small that they are of minimal importance. Existing GHG guidance provides two de minimus levels: Department of Energy (DOE) and California Climate Action Registry (CCAR). DOE 1605b GHG Inventory uses 3% of total emissions and CCAR GHG Protocol program uses 5% of total emissions.

4.4.1 Char-broilers

Given the relatively small quantities of bio-based wood charcoal fuel involved, this minimal usage of charcoal over the course of the reporting year is considered well below the 3% or 5% de minimus levels under DOE 1605b GHG Inventory and CCAR GHG Protocol programs, respectively.

5. MDE Emissions Certification Forms

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5.1 Form 1 General Facility Information

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5.2 Form 2 Criteria Air Pollutants

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Company: GSFC Pollutant: CO Calendar Year: 2017

Registration No./ Equipment Description	SCC Number	Actual Emissions		Operating Schedule (Actual)		TOSD lbs/dy	Operating Schedule		Estimation Method			
		Tons/yr	lbs/dy	Hrs/dy	Start		End	Hrs/dy		Start	End	
1650808 Landfill Gas 49.5 MMBTU/HR BOILER#1 BLDG 24	10300602	3	45	9	12:00 AM	11:59 PM	3	139	4	12:00 AM	11:59 PM	C1
1650808 Natural Gas 49.5 MMBTU/HR BOILER#1 BLDG 24	10300602	2	59	4	12:00 AM	11:59 PM	1	63	2	12:00 AM	11:59 PM	C1
1650808 Fuel Oil 49.5 MMBTU/HR BOILER#1 BLDG 24	10300602	0	0	0	12:00 AM	11:59 PM	0	0	0	12:00 AM	11:59 PM	C1
1650809 Landfill Gas 49.5 MMBTU/HR BOILER#2 BLDG 24	10300602	4	47	10	12:00 AM	11:59 PM	3	157	3	12:00 AM	11:59 PM	C1
1650809 Natural Gas 49.5 MMBTU/HR BOILER#2 BLDG 24	10300602	3	61	5	12:00 AM	11:59 PM	2	82	2	12:00 AM	11:59 PM	C1
1650809 Fuel Oil 49.5 MMBTU/HR BOILER#2 BLDG 24	10300602	0	0	0	12:00 AM	11:59 PM	0	0	0	12:00 AM	11:59 PM	C1
1650810 Natural Gas 49.5 MMBTU/HR BOILER#3 BLDG 24	10300602	1	40	2	12:00 AM	11:59 PM	1	33	1	12:00 AM	11:59 PM	C1
1650810 Fuel Oil 49.5 MMBTU/HR BOILER#3 BLDG 24	10300602	0	3	0	12:00 AM	11:59 PM	0	0	0	12:00 AM	11:59 PM	C1
1650811 Landfill Gas 49.5 MMBTU/HR BOILER#4 BLDG 24	10300602	5	46	13	12:00 AM	11:59 PM	4	203	7	12:00 AM	11:59 PM	C1
1650811 Natural Gas 49.5 MMBTU/HR BOILER#4 BLDG 24	10300602	2	70	4	12:00 AM	11:59 PM	1	64	2	12:00 AM	11:59 PM	C1
1650811 Fuel Oil 49.5 MMBTU/HR BOILER#4 BLDG 24	10300602	0	0	0	12:00 AM	11:59 PM	0	0	0	12:00 AM	11:59 PM	C1
1650812 Natural Gas 49.5 MMBTU/HR BOILER#5 BLDG 24	10300602	1	41	4	12:00 AM	11:59 PM	1	56	1	12:00 AM	11:59 PM	C1
1650812 Fuel Oil 49.5 MMBTU/HR BOILER#5 BLDG 24	10300602	0	0	0	12:00 AM	11:59 PM	0	0	0	12:00 AM	11:59 PM	C1
1691054 1000 KW GENERATOR IN BLDG 24C	20300101	0	74	0	12:00 AM	11:59 PM	0	0	0	12:00 AM	11:59 PM	C3
1691055 1000 KW GENERATOR IN BLDG 24C	20300101	0	74	0	12:00 AM	11:59 PM	0	0	0	12:00 AM	11:59 PM	C3
1691056 1000 KW GENERATOR IN BLDG 24C	20300101	0	52	0	12:00 AM	11:59 PM	0	0	0	12:00 AM	11:59 PM	C3
1691057 1000 KW GENERATOR IN BLDG 24C	20300101	0	66	0	12:00 AM	11:59 PM	0	0	0	12:00 AM	11:59 PM	C3
1691058 1000 KW GENERATOR IN BLDG 24C	20300101	0	52	0	12:00 AM	11:59 PM	0	0	0	12:00 AM	11:59 PM	C3
1691366 1000 KW GENERATOR IN BLDG 24C	20300101	0	10	0	12:00 AM	11:59 PM	0	0	0	12:00 AM	11:59 PM	C3
SUBTOTAL(I)		20	740									

s - Stack Emissions

f - Fugitive Emissions

Daily emissions (lbs/dy) are lbs/operating day of the source. The displayed numbers above are rounded to the nearest whole number. For instance, 0.6 (which displays as 1) plus 0.6 (which displays as 1) equals 1.2 (which will display 1) as the SUBTOTAL. Also, 0.4 (which displays as 0) plus 0.4 (which displays as 0) equals 0.8 (which will display 1) as the SUBTOTAL.

TOSD - Typical Ozone Season Day means a typical day of that period of the year during which conditions for photochemical conditions are most favorable, which is generally during sustained periods of direct sunlight and warm temperatures (April - September). This section needs to be completed only for VOC and NOx sources.

Emissions Estimation Method

C1 - User Calculated based on source test or other measurement

C3 - User calculated based on AP-42

Registration No./ Equipment Description	SCC Number	Actual Emissions		Operating Schedule (Actual)		Operating Schedule		TOSD lbs/dy	Dys/yr	Estimation Method
		Tons/yr	lbs/dy	Hrs/dy	Start	End	Hrs/dy			
1691049 1450 KW GENERATOR IN BLDG 31	20300101	0	160	0	12:00 AM	11:59 PM	0	0	1	C3
1691050 1450 KW GENERATOR IN BLDG 31	20300101	0	160	0	12:00 AM	11:59 PM	0	0	1	C3
1691051 1450 KW GENERATOR IN BLDG 31	20300101	0	160	0	12:00 AM	11:59 PM	0	0	1	C3
1691052 1450 KW GENERATOR IN BLDG 31	20300101	0	118	0	12:00 AM	11:59 PM	0	0	0	C3
1691053 1450 KW GENERATOR IN BLDG 31	20300101	0	171	0	12:00 AM	11:59 PM	0	0	1	C3
1691045 500 KW GENERATOR BLDG 7	20300101	0	7	0	12:00 AM	11:59 PM	0	0	0	C3
1691433 500 KW GENERATOR BLDG 7	20300101	0	85	0	12:00 AM	11:59 PM	0	0	1	C3
1691047 500 KW GENERATOR BLDG 10	20300101	0	7	0	12:00 AM	11:59 PM	0	0	0	C3
1691422 1000 KW GENERATOR BLDG 29	20300101	0	1	0	12:00 AM	11:59 PM	0	0	0	C3
1650831 1.72 MMBTU/HR BOILER IN BLDG 302	10300603	0	0	24	12:00 AM	11:59 PM	7	365	7	C3
1651533 1.44 MMBTU/HR BOILER IN BLDG 302	10300603	0	0	24	12:00 AM	11:59 PM	7	365	7	C3
1650846 1.118 MMBTU/HR BOILER IN BLDG 97	10300603	0	0	24	12:00 AM	11:59 PM	7	365	7	C3
1651531 1.5 MMBTU/HR BOILER IN BLDG 35	10300603	0	0	0	12:00 AM	11:59 PM	7	365	7	C3
1651532 1.5 MMBTU/HR BOILER IN BLDG 35	10300603	0	0	0	12:00 AM	11:59 PM	7	365	7	C3
TOTAL		1	872	21						

s - Stack Emissions

f - Fugitive Emissions

Daily emissions (lbs/dy) are lbs/operating day of the source

The displayed numbers above are rounded to the nearest whole number. For instance, 0.6 (which displays as 1) plus 0.6 (which displays as 1) equals 1.2 (which will display 1) as the SUBTOTAL. Also, 0.4 (which displays as 0) plus 0.4 (which displays as 0) equals 0.8 (which will display 1) as the SUBTOTAL.

TOSD - Typical Ozone Season Day means a typical day of that period of the year during which conditions for photochemical conditions are most favorable, which is generally during sustained periods of direct sunlight and warm temperatures (April - September). This section needs to be completed only for VOC and NOx sources.

Emissions Estimation Method

C1 - User Calculated based on source test or other measurement

C3 - User calculated based on AP-42

Company: GSFC SOX Pollutant: SOX Calendar Year: 2017

Registration No./ Equipment Description	SCC Number	Actual Emissions		Operating Schedule (Actual)		TOSD lbs/dy	Operating Schedule		Estimation Method	
		Tons/yr	lbs/dy	Hrs/dy	Dys/wk		Hrs/dy	Dys/yr		Start
1691049	20300101	0	71	0	0	0	0	12:00 AM	11:59 PM	C3
1450 KW GENERATOR IN BLDG 31		f								
1691050	20300101	0	71	0	0	0	0	12:00 AM	11:59 PM	C3
1450 KW GENERATOR IN BLDG 31		f								
1691051	20300101	0	71	0	0	0	0	12:00 AM	11:59 PM	C3
1450 KW GENERATOR IN BLDG 31		f								
1691052	20300101	0	52	0	0	0	0	12:00 AM	11:59 PM	C3
1450 KW GENERATOR IN BLDG 31		f								
1691053	20300101	0	76	0	0	0	0	12:00 AM	11:59 PM	C3
1450 KW GENERATOR IN BLDG 31		f								
1691045	20300101	0	3	0	0	0	0	12:00 AM	11:59 PM	C3
500 KW GENERATOR BLDG 7		f								
1691433	20300101	0	37	0	0	0	0	12:00 AM	11:59 PM	C3
500 KW GENERATOR BLDG 7		f								
1691047	20300101	0	3	0	0	0	0	12:00 AM	11:59 PM	C3
500 KW GENERATOR BLDG 10		f								
1691422	20300101	0	0	0	0	0	0	12:00 AM	11:59 PM	C3
1000 KW GENERATOR BLDG 29		f								
1650831	10300603	0	0	24	7	365	24	12:00 AM	11:59 PM	C3
1.72 MMBTU/HR BOILER IN BLDG 302		f								
1651533	10300603	0	0	24	7	365	24	12:00 AM	11:59 PM	C3
1.44 MMBTU/HR BOILER IN BLDG 302		f								
1650846	10300603	0	0	24	7	365	24	12:00 AM	11:59 PM	C3
1.118 MMBTU/HR BOILER IN BLDG 97		f								
1651531	10300603	0	0	24	7	365	24	12:00 AM	11:59 PM	C3
1.5 MMBTU/HR BOILER IN BLDG 35		f								
1651532	10300603	0	0	24	7	365	24	12:00 AM	11:59 PM	C3
1.5 MMBTU/HR BOILER IN BLDG 35		f								
SUBTOTAL(2)		0	384							
TOTAL		1	556							

s - Stack Emissions f - Fugitive Emissions Daily emissions (lbs/dy) are lbs/operating day of the source
 The displayed numbers above are rounded to the nearest whole number. For instance, 0.6 (which displays as 1) plus 0.6 (which displays as 1) equals 1.2 (which will display 1) as the SUBTOTAL.
 Also, 0.4 (which displays as 0) plus 0.4 (which displays as 0) equals 0.8 (which will display 1) as the SUBTOTAL.

TOSD - Typical Ozone Season Day means a typical day of that period of the year during which conditions for photochemical conditions are most favorable, which is generally during sustained periods of direct sunlight and warm temperatures (April - September). This section needs to be completed only for VOC and NOx sources.

Emissions Estimation Method
 C1 - User Calculated based on source test or other measurement
 C3 - User calculated based on AP-42

Company: GSFC Pollutant: SO_x Calendar Year: 2017

Registration No./ Equipment Description	SCC Number	Actual Emissions		Operating Schedule (Actual)		TOSD lbs/yr	Operating Schedule		Estimation Method	
		Tons/yr	lbs/dy	Hrs/dy	Dys/wk		Hrs/dy	Dys/yr		Start
1650808 Landfill Gas 49.5 MMBTU/HR BOILER#1 BLDG 24	10300602	0	1	9	3	139	4	12:00 AM	11:59 PM	C1
1650808 Natural Gas 49.5 MMBTU/HR BOILER#1 BLDG 24	10300602	0	0	4	1	63	2	12:00 AM	11:59 PM	C1
1650808 Fuel Oil 49.5 MMBTU/HR BOILER#1 BLDG 24	10300602	0	3	0	0	0	0	12:00 AM	11:59 PM	C1
1650809 Landfill Gas 49.5 MMBTU/HR BOILER#2 BLDG 24	10300602	0	1	10	3	157	3	12:00 AM	11:59 PM	C1
1650809 Natural Gas 49.5 MMBTU/HR BOILER#2 BLDG 24	10300602	0	0	5	2	82	2	12:00 AM	11:59 PM	C1
1650809 Fuel Oil 49.5 MMBTU/HR BOILER#2 BLDG 24	10300602	0	0	0	0	0	0	12:00 AM	11:59 PM	C1
1650810 Natural Gas 49.5 MMBTU/HR BOILER#3 BLDG 24	10300602	0	0	2	1	33	1	12:00 AM	11:59 PM	C1
1650810 Fuel Oil 49.5 MMBTU/HR BOILER#3 BLDG 24	10300602	0	24	0	0	0	0	12:00 AM	11:59 PM	C1
1650811 Landfill Gas 49.5 MMBTU/HR BOILER#4 BLDG 24	10300602	0	1	13	4	203	7	12:00 AM	11:59 PM	C1
1650811 Natural Gas 49.5 MMBTU/HR BOILER#4 BLDG 24	10300602	0	1	4	1	64	2	12:00 AM	11:59 PM	C1
1650811 Fuel Oil 49.5 MMBTU/HR BOILER#4 BLDG 24	10300602	0	1	0	0	0	0	12:00 AM	11:59 PM	C1
1691054 1000 KW GENERATOR IN BLDG 24C	20300101	0	33	0	0	0	0	12:00 AM	11:59 PM	C3
1691055 1000 KW GENERATOR IN BLDG 24C	20300101	0	33	0	0	0	0	12:00 AM	11:59 PM	C3
1691056 1000 KW GENERATOR IN BLDG 24C	20300101	0	23	0	0	0	0	12:00 AM	11:59 PM	C3
1691057 1000 KW GENERATOR IN BLDG 24C	20300101	0	29	0	0	0	0	12:00 AM	11:59 PM	C3
1691058 1000 KW GENERATOR IN BLDG 24C	20300101	0	23	0	0	0	0	12:00 AM	11:59 PM	C3
1691366 1000 KW GENERATOR IN BLDG 24C	20300101	0	0	0	0	0	0	12:00 AM	11:59 PM	C3
SUBTOTAL(1)		0	172							

s - Stack Emissions f - Fugitive Emissions Daily emissions (lbs/dy) are lbs/operating day of the source

The displayed numbers above are rounded to the nearest whole number. For instance, 0.6 (which displays as 1) plus 0.6 (which will display as 1) equals 1.2 (which will display 1) as the SUBTOTAL. Also, 0.4 (which displays as 0) plus 0.4 (which displays as 0) equals 0.8 (which will display 1) as the SUBTOTAL.

TOSD - Typical Ozone Season Day means a typical day of that period of the year during which conditions for photochemical conditions are most favorable, which is generally during sustained periods of direct sunlight and warm temperatures (April - September). This section needs to be completed only for VOC and NO_x sources.

Emissions Estimation Method
 C1 - User Calculated based on source test or other measurement
 C3 - User calculated based on AP-42

Company: GSFC Pollutant: NOx Calendar Year: 2017

Registration No./ Equipment Description	SCC Number	Actual Emissions		Operating Schedule (Actual)		TOSD lbs/dy	Operating Schedule		Estimation Method		
		Tons/yr	lbs/dy	Hrs/dy	Dys/wk		Dys/yr	Hrs/dy		Start	End
1691049	20300101	0	700	0	12:00 AM	3	0	12:00 AM	11:59 PM	C3	
1450 KW GENERATOR IN BLDG 31		f									
1691050	20300101	0	700	0	12:00 AM	3	0	12:00 AM	11:59 PM	C3	
1450 KW GENERATOR IN BLDG 31		f									
1691051	20300101	0	700	0	12:00 AM	3	0	12:00 AM	11:59 PM	C3	
1450 KW GENERATOR IN BLDG 31		f									
1691052	20300101	0	513	0	12:00 AM	2	0	12:00 AM	11:59 PM	C3	
1450 KW GENERATOR IN BLDG 31		f									
1691053	20300101	0	747	0	12:00 AM	3	0	12:00 AM	11:59 PM	C3	
1450 KW GENERATOR IN BLDG 31		f									
1691045	20300101	0	32	0	12:00 AM	0	0	12:00 AM	11:59 PM	C3	
500 KW GENERATOR BLDG 7		f									
1691433	20300101	0	370	0	12:00 AM	1	0	12:00 AM	11:59 PM	C3	
500 KW GENERATOR BLDG 7		f									
1691047	20300101	0	32	0	12:00 AM	0	0	12:00 AM	11:59 PM	C3	
500 KW GENERATOR BLDG 10		f									
1691422	20300101	0	31	0	12:00 AM	0	0	12:00 AM	11:59 PM	C3	
1000 KW GENERATOR BLDG 29		f									
1650831	10300603	0	1	24	12:00 AM	7	365	1	24	12:00 AM	11:59 PM
1.72 MMBTU/HR BOILER IN BLDG 302		f									
1651533	10300603	0	0	24	12:00 AM	7	365	0	24	12:00 AM	11:59 PM
1.44 MMBTU/HR BOILER IN BLDG 302		f									
1650846	10300603	0	1	24	12:00 AM	7	365	0	24	12:00 AM	11:59 PM
1.118 MMBTU/HR BOILER IN BLDG 97		f									
1651531	10300603	0	0	24	12:00 AM	7	365	0	24	12:00 AM	11:59 PM
1.5 MMBTU/HR BOILER IN BLDG 35		f									
1651532	10300603	0	0	24	12:00 AM	7	365	0	24	12:00 AM	11:59 PM
1.5 MMBTU/HR BOILER IN BLDG 35		f									
SUBTOTAL(2)		2	3828					17			
TOTAL		17	5665					296			

s - Stack Emissions

f - Fugitive Emissions

Daily emissions (lbs/dy) are lbs/operating day of the source

The displayed numbers above are rounded to the nearest whole number. For instance, 0.6 (which displays as 1) plus 0.6 (which displays as 1) equals 1.2 (which will display 1) as the SUBTOTAL. Also, 0.4 (which displays as 0) plus 0.4 (which displays as 0) equals 0.8 (which will display 1) as the SUBTOTAL.

TOSD - Typical Ozone Season Day means a typical day of that period of the year during which conditions for photochemical conditions are most favorable, which is generally during sustained periods of direct sunlight and warm temperatures (April - September). This section needs to be completed only for VOC and NOx sources.

Emissions Estimation Method

C1 - User Calculated based on source test or other measurement

C3 - User calculated based on AP-42

Company: GSFC Pollutant: NOx Calendar Year: 2017

Registration No./ Equipment Description	SCC Number	Actual Emissions		Operating Schedule (Actual)		TOSD lbs/dy	Dys/wk	Operating Schedule		Estimation Method		
		Tons/yr	lbs/dy	Hrs/dy	Start			End	Hrs/dy		Start	End
1650808 Landfill Gas 49.5 MMBTU/HR BOILER#1 BLDG 24	10300602	s	2	30	9	23	3	139	4	12:00 AM	11:59 PM	C1
1650808 Natural Gas 49.5 MMBTU/HR BOILER#1 BLDG 24	10300602	s	1	42	4	33	1	63	2	12:00 AM	11:59 PM	C1
1650808 Fuel Oil 49.5 MMBTU/HR BOILER#1 BLDG 24	10300602	f	0	1	0	0	0	0	0	12:00 AM	11:59 PM	C1
1650809 Landfill Gas 49.5 MMBTU/HR BOILER#2 BLDG 24	10300602	s	2	32	10	28	3	157	3	12:00 AM	11:59 PM	C1
1650809 Natural Gas 49.5 MMBTU/HR BOILER#2 BLDG 24	10300602	s	2	43	5	36	2	82	2	12:00 AM	11:59 PM	C1
1650809 Fuel Oil 49.5 MMBTU/HR BOILER#2 BLDG 24	10300602	f	0	0	0	0	0	0	0	12:00 AM	11:59 PM	C1
1650810 Natural Gas 49.5 MMBTU/HR BOILER#3 BLDG 24	10300602	s	1	43	2	41	1	33	1	12:00 AM	11:59 PM	C1
1650810 Fuel Oil 49.5 MMBTU/HR BOILER#3 BLDG 24	10300602	f	0	12	0	0	0	0	0	12:00 AM	11:59 PM	C1
1650811 Landfill Gas 49.5 MMBTU/HR BOILER#4 BLDG 24	10300602	s	3	31	13	27	4	203	7	12:00 AM	11:59 PM	C1
1650811 Natural Gas 49.5 MMBTU/HR BOILER#4 BLDG 24	10300602	s	2	50	4	46	1	64	2	12:00 AM	11:59 PM	C1
1650811 Fuel Oil 49.5 MMBTU/HR BOILER#4 BLDG 24	10300602	f	0	0	0	0	0	0	0	12:00 AM	11:59 PM	C1
1650812 Natural Gas 49.5 MMBTU/HR BOILER#5 BLDG 24	10300602	s	1	44	4	39	1	56	1	12:00 AM	11:59 PM	C1
1650812 Fuel Oil 49.5 MMBTU/HR BOILER#5 BLDG 24	10300602	f	0	0	0	0	0	0	0	12:00 AM	11:59 PM	C1
1691054 1000 KW GENERATOR IN BLDG 24C	20300101	s	0	322	0	1	0	0	0	12:00 AM	11:59 PM	C3
1691055 1000 KW GENERATOR IN BLDG 24C	20300101	s	0	322	0	1	0	0	0	12:00 AM	11:59 PM	C3
1691056 1000 KW GENERATOR IN BLDG 24C	20300101	s	0	225	0	1	0	0	0	12:00 AM	11:59 PM	C3
1691057 1000 KW GENERATOR IN BLDG 24C	20300101	s	0	290	0	1	0	0	0	12:00 AM	11:59 PM	C3
1691058 1000 KW GENERATOR IN BLDG 24C	20300101	s	0	225	0	1	0	0	0	12:00 AM	11:59 PM	C3
1691366 1000 KW GENERATOR IN BLDG 24C	20300101	s	0	127	0	0	0	0	0	12:00 AM	11:59 PM	C3
SUBTOTAL(1)		f	15	1836		280						

s - Stack Emissions f - Fugitive Emissions Daily emissions (lbs/dy) are lbs/operating day of the source

The displayed numbers above are rounded to the nearest whole number. For instance, 0.6 (which displays as 1) plus 0.6 (which will display 1) as the SUBTOTAL. Also, 0.4 (which displays as 0) plus 0.4 (which displays as 0) equals 0.8 (which will display 1) as the SUBTOTAL.

TOSD - Typical Ozone Season Day means a typical day of that period of the year during which conditions for photochemical conditions are most favorable, which is generally during sustained periods of direct sunlight and warm temperatures (April - September). This section needs to be completed only for VOC and NOx sources.

Emissions Estimation Method

C1 - User Calculated based on source test or other measurement

C3 - User calculated based on AP-42

Registration No/ Equipment Description	SCC Number	Actual Emissions		Operating Schedule (Actual)		TOSD		Operating Schedule		Estimation Method				
		Tons/yr	lbs/dy	Start	End	Dys/wk	Dys/yr	Hrs/dy	Hrs/yr					
1691049	20300101	s	0	19	0	12:00 AM	11:59 PM	0	1	0	0	12:00 AM	11:59 PM	C3
1450 KW GENERATOR IN BLDG 31														
1691050	20300101	s	0	19	0	12:00 AM	11:59 PM	0	1	0	0	12:00 AM	11:59 PM	C3
1450 KW GENERATOR IN BLDG 31														
1691051	20300101	s	0	19	0	12:00 AM	11:59 PM	0	1	0	0	12:00 AM	11:59 PM	C3
1450 KW GENERATOR IN BLDG 31														
1691052	20300101	s	0	14	0	12:00 AM	11:59 PM	0	0	0	0	12:00 AM	11:59 PM	C3
1450 KW GENERATOR IN BLDG 31														
1691053	20300101	s	0	20	0	12:00 AM	11:59 PM	0	1	0	0	12:00 AM	11:59 PM	C3
1450 KW GENERATOR IN BLDG 31														
1691045	20300101	s	0	1	0	12:00 AM	11:59 PM	0	0	0	0	12:00 AM	11:59 PM	C3
500 KW GENERATOR BLDG 7														
1691433	20300101	s	0	10	0	12:00 AM	11:59 PM	0	1	0	0	12:00 AM	11:59 PM	C3
500 KW GENERATOR BLDG 7														
1691047	20300101	s	0	1	0	12:00 AM	11:59 PM	0	0	0	0	12:00 AM	11:59 PM	C3
500 KW GENERATOR BLDG 10														
1691422	20300101	s	0	1	0	12:00 AM	11:59 PM	0	0	0	0	12:00 AM	11:59 PM	C3
1000 KW GENERATOR BLDG 29														
1650831	10300603	s	0	0	24	12:00 AM	11:59 PM	7	365	0	24	12:00 AM	11:59 PM	C3
1.72 MMBTU/HR BOILER IN BLDG 302														
1651533	10300603	s	0	0	24	12:00 AM	11:59 PM	7	365	0	24	12:00 AM	11:59 PM	C3
1.44 MMBTU/HR BOILER IN BLDG 302														
1650846	10300603	s	0	0	24	12:00 AM	11:59 PM	7	365	0	24	12:00 AM	11:59 PM	C3
1.118 MMBTU/HR BOILER IN BLDG 97														
1651531	10300603	s	0	0	24	12:00 AM	11:59 PM	7	365	0	24	12:00 AM	11:59 PM	C3
1.5 MMBTU/HR BOILER IN BLDG 35														
1651532	10300603	s	0	0	24	12:00 AM	11:59 PM	7	365	0	24	12:00 AM	11:59 PM	C3
1.5 MMBTU/HR BOILER IN BLDG 35														
1660903	31306599	s	0	0	4	8:00 AM	3:59 PM	5	260	0	4	8:00 AM	3:59 PM	C2
SEMI-CONDUCTOR OPERATION IN B50														
1661101	40200101	s	0	0	4	8:00 AM	3:59 PM	5	260	0	4	8:00 AM	3:59 PM	C2
SURFACE COATING IN BLDG 4, RM 195														
1661323	40200101	s	0	0	4	8:00 AM	3:59 PM	5	260	0	4	8:00 AM	3:59 PM	C2
SURFACE COATING IN BLDG 5A														
1691331	40200101	s	1	3	24	8:00 AM	3:59 PM	7	365	1	24	8:00 AM	3:59 PM	C2
GASOLINE DISPENSING AT BLDG 27														
1691168	40600603	s	0	1	24	8:00 AM	3:59 PM	7	365	0	24	8:00 AM	3:59 PM	C3
ESS DISPENSING AT BLDG 27														
1680186	30201311	s	0	0	10	8:00 AM	5:59 PM	5	60	0	10	8:00 AM	5:59 PM	C2
CHARBROILER AT BLDG 92														
1680187	30201311	s	0	0	10	8:00 AM	5:59 PM	5	60	0	10	8:00 AM	5:59 PM	C2
CHARBROILER AT BLDG 92														
1680188	30201311	s	0	0	10	8:00 AM	5:59 PM	5	60	0	10	8:00 AM	5:59 PM	C2
CHARBROILER AT BLDG 92														
1680189	30201311	s	0	0	10	8:00 AM	5:59 PM	5	60	0	10	8:00 AM	5:59 PM	C2
CHARBROILER AT BLDG 92														
TOTAL			1	107					4		27			
SUBTOTAL(2)			2	173					4		27			

s - Stack Emissions f - Fugitive Emissions Daily emissions (lbs/dy) are lbs/operating day of the source
 The displayed numbers above are rounded to the nearest whole number. For instance, 0.6 (which displays as 1) plus 0.6 (which displays as 1) equals 1.2 (which will display 1) as the SUBTOTAL.
 Also, 0.4 (which displays as 0) plus 0.4 (which displays as 0) equals 0.8 (which will display 1) as the SUBTOTAL.

TOSD - Typical Ozone Season Day means a typical day of that period of the year during which conditions for photochemical conditions are most favorable, which is generally during sustained periods of direct sunlight and warm temperatures (April - September). This section needs to be completed only for VOC and NOx sources.

Registration No./ Equipment Description	SCC Number	Actual Emissions		Operating Schedule (Actual)		Operating Schedule		TOSD lbs/dy	Dys/wk	Dys/yr	Estimation Method
		Tons/yr	lbs/dy	Start	End	Start	End				
1650808 Landfill Gas 49.5 MMBTU/HR BOILER#1 BLDG 24	10300602	0	3	9	12:00 AM	11:59 PM	4	2	139	2	C1
1650808 Landfill Gas 49.5 MMBTU/HR BOILER#1 BLDG 24	10300602	0	4	4	12:00 AM	11:59 PM	2	3	63	3	C1
1650808 Fuel Oil 49.5 MMBTU/HR BOILER#1 BLDG 24	10300602	0	0	0	12:00 AM	11:59 PM	0	0	0	0	C1
1650809 Landfill Gas 49.5 MMBTU/HR BOILER#2 BLDG 24	10300602	0	3	10	12:00 AM	11:59 PM	3	3	157	3	C1
1650809 Natural Gas 49.5 MMBTU/HR BOILER#2 BLDG 24	10300602	0	4	5	12:00 AM	11:59 PM	2	3	82	3	C1
1650809 Fuel Oil 49.5 MMBTU/HR BOILER#2 BLDG 24	10300602	0	0	0	12:00 AM	11:59 PM	0	0	0	0	C1
1650810 Fuel Oil 49.5 MMBTU/HR BOILER#2 BLDG 24	10300602	0	0	0	12:00 AM	11:59 PM	0	0	0	0	C1
1650810 Natural Gas 49.5 MMBTU/HR BOILER#3 BLDG 24	10300602	0	3	2	12:00 AM	11:59 PM	1	3	33	3	C1
1650811 Fuel Oil 49.5 MMBTU/HR BOILER#3 BLDG 24	10300602	0	0	0	12:00 AM	11:59 PM	0	0	0	0	C1
1650811 Landfill Gas 49.5 MMBTU/HR BOILER#4 BLDG 24	10300602	0	3	13	12:00 AM	11:59 PM	4	203	203	3	C1
1650811 Natural Gas 49.5 MMBTU/HR BOILER#4 BLDG 24	10300602	0	5	4	12:00 AM	11:59 PM	1	64	64	4	C1
1650811 Fuel Oil 49.5 MMBTU/HR BOILER#4 BLDG 24	10300602	0	0	0	12:00 AM	11:59 PM	0	0	0	0	C1
1650812 Natural Gas 49.5 MMBTU/HR BOILER#5 BLDG 24	10300602	0	3	4	12:00 AM	11:59 PM	1	56	56	2	C1
1650812 Fuel Oil 49.5 MMBTU/HR BOILER#5 BLDG 24	10300602	0	0	0	12:00 AM	11:59 PM	0	0	0	0	C1
1691054 1000 KW GENERATOR IN BLDG 24C	20300101	0	9	0	12:00 AM	11:59 PM	0	0	0	0	C3
1691055 1000 KW GENERATOR IN BLDG 24C	20300101	0	9	0	12:00 AM	11:59 PM	0	0	0	0	C3
1691056 1000 KW GENERATOR IN BLDG 24C	20300101	0	6	0	12:00 AM	11:59 PM	0	0	0	0	C3
1691057 1000 KW GENERATOR IN BLDG 24C	20300101	0	8	0	12:00 AM	11:59 PM	0	0	0	0	C3
1691058 1000 KW GENERATOR IN BLDG 24C	20300101	0	6	0	12:00 AM	11:59 PM	0	0	0	0	C3
1691366 1000 KW GENERATOR IN BLDG 24C	20300101	0	2	0	12:00 AM	11:59 PM	0	0	0	0	C3
SUBTOTAL()		1	66							23	

s - Stack Emissions

f - Fugitive Emissions Daily emissions (lbs/dy) are lbs/operating day of the source

The displayed numbers above are rounded to the nearest whole number. For instance, 0.6 (which displays as 1) plus 0.6 (which displays as 1) equals 1.2 (which will display 1) as the SUBTOTAL. Also, 0.4 (which displays as 0) plus 0.4 (which displays as 0) equals 0.8 (which will display 1) as the SUBTOTAL.

TOSD - Typical Ozone Season Day means a typical day of that period of the year during which conditions for photochemical conditions are most favorable, which is generally during sustained periods of direct sunlight and warm temperatures (April - September). This section needs to be completed only for VOC and NOx sources.

Emissions Estimation Method

C1 - User Calculated based on source test or other measurement

C3 - User calculated based on AP-42

5.3 Form 3 Criteria Air Pollutant: PM

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FORM 3: PM

Particulate Matter

Calendar Year: 2017

Facility Name: NASA Goddard Space Flight Center

Facility ID: 24-033-00675 **Pollutant:** PM

Equipment Description/ Registration No.	SCC Number	Fuel	PM - Filterable		PM10 - Filterable		PM2.5 -Filterable		PM Condensable		Operation Days/yr	Estimation Methods
			Tons/yr	Lbs/day	Tons/yr	Lbs/day	Tons/yr	Lbs/day	Tons/yr	Lbs/day		
1650808 Landfill Gas 49.5 MMBTU/HR BOILER#1 BLDG 24	10300602	Landfill Gas	s	0	1	0	1	0	3	0	139	C3
1650808 Natural Gas 49.5 MMBTU/HR BOILER#1 BLDG 24	10300602	Natural Gas	f	0	1	0	1	0	4	0	63	C3
1650808 Fuel Oil 49.5 MMBTU/HR BOILER#1 BLDG 24	10300602	Fuel Oil	f	0	0	0	0	0	0	0	0	C3
1650809 Landfill Gas 49.5 MMBTU/HR BOILER#2 BLDG 24	10300602	Landfill Gas	f	0	1	0	1	0	3	0	157	C3
1650809 Natural Gas 49.5 MMBTU/HR BOILER#2 BLDG 24	10300602	Natural Gas	s	0	1	0	1	0	4	0	82	C3
1650809 Fuel Oil 49.5 MMBTU/HR BOILER#2 BLDG 24	10300602	Fuel Oil	f	0	0	0	0	0	0	0	0	C3
1650810 Natural Gas 49.5 MMBTU/HR BOILER#3 BLDG 24	10300602	Natural Gas	s	0	1	0	1	0	3	0	33	C3
1650810 Fuel Oil 49.5 MMBTU/HR BOILER#3 BLDG 24	10300602	Fuel Oil	f	0	1	0	1	0	1	0	0	C3
1650811 Landfill Gas 49.5 MMBTU/HR BOILER#4 BLDG 24	10300602	Landfill Gas	f	0	1	0	1	0	3	0	203	C3
1650811 Natural Gas 49.5 MMBTU/HR BOILER#4 BLDG 24	10300602	Natural Gas	s	0	2	0	2	0	5	0	64	C3
SUBTOTAL(1)*				0	10	0	9	0	1	26		

S - Stack Emissions

* -The SUBTOTAL, above, may show a lower total because the specific equipment emissions numbers may have been rounded up. For instance, 0.6 (which shows as 1) plus 0.6 (which shows as 1) equals 1.2 (which will show 1) as the SUBTOTAL.

Fuel: Include emissions for each fuel used. If more than one fuel is used, calculate and list emissions separately for each fuel

- Emissions Estimation Method
- A1 - U.S. EPA Reference Method
 - A2-Other Particulate Sampling Train
 - A3-Liquid Absorption Technique
 - A4-Solid Absorption Technique
 - A5-Freezing Out Technique
 - A9-Other, Specify

- C1- User Calculated based on source test or other measurement
- C2- User Calculated based on material balance using engineering knowledge of the process
- C3- User Calculated based on AP-42
- C4- User Calculated by best guess/engineering judgement

- C5-User calculated based on State or local agency emission factor
- C6-New construction, not operational
- C7-Source closed, operation ceased
- C8-Computer calculated based on standard

F - Fugitive Emissions

Daily emissions (lbs/day) are lbs/operating day of the source

FORM 3: PM

Particulate Matter

Calendar Year: 2017

Facility Name: NASA Goddard Space Flight Center

Facility ID: 24-033-00675 Pollutant: PM

Equipment Description/ Registration No.	SCC Number	Fuel	PM - Filterable		PM 10 - Filterable		PM 2.5 - Filterable		PM Condensable		Operation Days/yr	Estimation Methods
			Tons/yr	Lbs/day	Tons/yr	Lbs/day	Tons/yr	Lbs/day	Tons/yr	Lbs/day		
1650811 Fuel Oil 49.5 MMBTU/HR BOILER#4 BLDG 24	10300602	Fuel Oil	0	0	0	0	0	0	0	0	0	C3
1650812 Natural Gas 49.5 MMBTU/HR BOILER#5 BLDG 24	10300602	Natural Gas	0	0	0	1	0	1	0	3	56	C3
1650812 Fuel Oil 49.5 MMBTU/HR BOILER#5 BLDG 24	10300602	Fuel Oil	0	0	0	0	0	0	0	0	0	C3
1691054 1000 KW GENERATOR IN BLDG 24C	20300101	Fuel Oil	0	6	0	5	0	4	0	1	0	C3
1691055 1000 KW GENERATOR IN BLDG 24C	20300101	Fuel Oil	0	6	0	5	0	4	0	1	0	C3
1691056 1000 KW GENERATOR IN BLDG 24C	20300101	Fuel Oil	0	4	0	3	0	3	0	1	0	C3
1691057 1000 KW GENERATOR IN BLDG 24C	20300101	Fuel Oil	0	5	0	4	0	4	0	1	0	C3
1691058 1000 KW GENERATOR IN BLDG 24C	20300101	Fuel Oil	0	4	0	3	0	3	0	1	0	C3
SUBTOTAL(2)*			0	25	0	21	0	20	0	6		

S - Stack Emissions

F - Fugitive Emissions

Daily emissions (lbs/day) are lbs/operating day of the source

* -The SUBTOTAL, above, may show a lower total because the specific equipment emissions numbers may have been rounded up.

For instance, 0.6 (which shows as 1) plus 0.6 (which shows as 1) equals 1.2 (which will show 1) as the SUBTOTAL.

Fuel: Include emissions for each fuel used. If more than one fuel is used, calculate and list emissions separately for each fuel

- Emissions Estimation Method
- A1 - U.S. EPA Reference Method
- A2-Other Particulate Sampling Train
- A3-Liquid Absorption Technique
- A4-Solid Absorption Technique
- A5-Freezing Out Technique
- A9-Other, Specify

- C1- User Calculated based on source test or other measurement
- C2- User Calculated based on material balance using engineering knowledge of the process
- C3- User Calculated based on AP-42
- C4- User Calculated by best guess/engineering

- C5-User calculated based on State or local agency emission factor
- C6-New construction, not operational
- C7-Source closed, operation ceased
- C8-Computer calculated based on standard

FORM 3: PM

Particulate Matter

Calendar Year: 2017

Pollutant: PM

Facility Name: NASA Goddard Space Flight Center

Facility ID: 24-033-00675

Pollutant: PM

Equipment Description/ Registration No.	SCC Number	Fuel	PM - Filterable		PM 10 - Filterable		PM 2.5 - Filterable		PM Condensable		Operation Days/yr	Estimation Methods
			Tons/yr	Lbs/day	Tons/yr	Lbs/day	Tons/yr	Lbs/day	Tons/yr	Lbs/day		
1691366	20300101	s	0	6	0	5	0	4	0	1	0	C3
1000 KW GENERATOR IN BLDG 24C		Fuel Oil	f									
1650831	10300603	Natural Gas	f	0	0	0	0	0	0	0	365	C3
1-72 MMBTU/HR BOILER IN BLDG 30:		Natural Gas	f									
1651533	10300603	Natural Gas	s	0	0	0	0	0	0	0	365	C3
1-44 MMBTU/HR BOILER IN BLDG 30:		Natural Gas	f									
1650846	10300603	Natural Gas	s	0	0	0	0	0	0	0	365	C3
1.118 MMBTU/HR BOILER IN BLDG 9:		Natural Gas	f									
1651531	10300603	Natural Gas	s	0	0	0	0	0	0	0	365	C3
1.5 MMBTU/HR BOILER IN BLDG 3:		Natural Gas	f									
1651532	10300603	Natural Gas	s	0	0	0	0	0	0	0	365	C3
1.5 MMBTU/HR BOILER IN BLDG 3:		Natural Gas	f									
1680186	30201311	Charcoal	s	0	0	1	0	0	0	0	60	C3
CHARBROILER AT BLDG 9:		Charcoal	f									
1680187	30201311	Charcoal	s	0	0	1	0	0	0	0	60	C3
CHARBROILER AT BLDG 9:		Charcoal	f									
1680188	30201311	Charcoal	s	0	0	1	0	0	0	0	60	C3
CHARBROILER AT BLDG 9:		Charcoal	f									
1680189	30201311	Charcoal	s	0	0	1	0	0	0	0	60	C3
CHARBROILER AT BLDG 9:		Charcoal	f									
SUBTOTAL(3)*				0	6	0	8	0	4	0	1	

S - Stack Emissions

F - Fugitive Emissions

Daily emissions (lbs/day) are lbs/operating day of the source

*-The SUBTOTAL, above, may show a lower total because the specific equipment emissions numbers may have been rounded up.

For instance, 0.6 (which shows as 1) plus 0.6 (which shows as 1) equals 1.2 (which will show 1) as the SUBTOTAL.

Fuel: include emissions for each fuel used. if more than one fuel is used, calculate and list emissions separately for each fuel

- Emissions Estimation Method
- A1 - U.S. EPA Reference Method
- A2-Other Particulate Sampling Train
- A3-Liquid Absorption Technique
- A4-Solid Absorption Technique
- A5-Freezing Out Technique
- A8-Other, Specify

- C1- User Calculated based on source test or other measurement
- C2- User Calculated based on material balance using engineering knowledge of the process
- C3- User Calculated based on AP-42
- C4- User Calculated by best guess/engineering

- C5-User calculated based on State or local agency emission factor
- C6-New construction, not operational
- C7-Source closed, operation ceased
- C8-Computer calculated based on standard

FORM 3: PM

Particulate Matter

Calendar Year: 2017

Facility Name: NASA Goddard Space Flight Center

Facility ID: 24-033-00675 Pollutant: PM

Equipment Description/ Registration No.	SCC Number	Fuel	PM - Filterable		PM 10 - Filterable		PM 2.5 - Filterable		PM Condensable		Operation Days/yr	Estimation Methods
			Tons/yr	Lbs/day	Tons/yr	Lbs/day	Tons/yr	Lbs/day	Tons/yr	Lbs/day		
1691049	20300101	Fuel	0	13	0	10	0	10	0	2	1	C3
1450 KW GENERATOR IN BLDG 31		Fuel Oil										
1691050	20300101	Fuel Oil	0	13	0	10	0	10	0	2	1	C3
1450 KW GENERATOR IN BLDG 31		Fuel Oil										
1691051	20300101	Fuel Oil	0	13	0	10	0	10	0	2	1	C3
1450 KW GENERATOR IN BLDG 31		Fuel Oil										
1691052	20300101	Fuel Oil	0	9	0	7	0	7	0	1	0	C3
1450 KW GENERATOR IN BLDG 31		Fuel Oil										
1691053	20300101	Fuel Oil	0	14	0	11	0	10	0	2	1	C3
1450 KW GENERATOR IN BLDG 31		Fuel Oil										
1691045	20300101	Fuel Oil	0	1	0	0	0	0	0	0	0	C3
500 KW GENERATOR BLDG 7		Fuel Oil										
1691433	20300101	Fuel Oil	0	7	0	5	0	5	0	1	1	C3
500 KW GENERATOR BLDG 7		Fuel Oil										
1691047	20300101	Fuel Oil	0	1	0	0	0	0	0	0	0	C3
500 KW GENERATOR BLDG 1C		Fuel Oil										
1691422	20300101	Fuel Oil	0	1	0	1	0	1	0	0	0	C3
1000 KW GENERATOR BLDG 25		Fuel Oil										
1660852	39999989	N/A	0	1	0	0	0	0	0	0	260	C3
PROCESS LINE A, BLDG 5		N/A										
1660854	39999989	N/A	0	1	0	0	0	0	0	0	260	C3
PROCESS LINE N, BLDG 5		N/A										
1660862	39999989	N/A	0	1	0	0	0	0	0	0	260	C3
PROCESS LINES B AND E, BLDG 5		N/A										
SUBTOTAL(4)*			0	73	0	56	0	54	0	9		

S - Stack Emissions

F - Fugitive Emissions

Daily emissions (lbs/day) are lbs/operating day of the source

* -The SUBTOTAL, above, may show a lower total because the specific equipment emissions numbers may have been rounded up.

For instance, 0.6 (which shows as 1) plus 0.6 (which shows as 1) equals 1.2 (which will show 1) as the SUBTOTAL.

Fuel: Include emissions for each fuel used. If more than one fuel is used, calculate and list emissions separately for each fuel

Emissions Estimation Method

- A1 - U.S. EPA Reference Method
- A2-Other Particulate Sampling Train
- A3-Liquid Absorption Technique
- A4-Solid Absorption Technique
- A5-Freezing Out Technique
- A9-Other, Specify
- C1- User Calculated based on source test or other measurement
- C2- User Calculated based on material balance using engineering knowledge of the process
- C3- User Calculated based on AP-42
- C4- User Calculated by best guess/engineering
- C5-User calculated based on State or local agency emission factor
- C6-New construction, not operational
- C7-Source closed, operation ceased
- C8-Computer calculated based on standard

5.4 Form 4 Toxic Air Pollutants

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FORM 4:

TOXIC AIR POLLUTANTS

Calendar Year: 2017

EMISSIONS CERTIFICATION REPORT

Facility Name: NASA Goddard Space Flight Center Facility ID: 24-033-00675 Pollutant: Antimony Trioxide *

Equipment Description/ Registration Number ¹	Actual Emissions			Control Device**	% Efficiency
	Tons/yr	Lbs/day	Lbs/hr		
Building 5A Surface Coating Operation (MDE -Reg. No. 6-1323)	0.0012	0.0092	0.0023		

TOTALS	0.0012	0.0092	0.0023		

* Please attach all calculations.
 * See Attachment 1 for the minimum reporting values.
****Control Device**
 S = Scrubber
 B = Baghouse
 ESP = Electrostatic Precipitator
 A = Afterburner
 C = Condenser
 AD = Adsorbtion
 O = Other

¹Emissions must be broken down by equipment registration number (ex. 9-0076, 9-0077)

FORM 4:

TOXIC AIR POLLUTANTS

Calendar Year: 2017

EMISSIONS CERTIFICATION REPORT

Facility Name: NASA Goddard Space Flight Center Facility ID: 24-033-00675 Pollutant: Benzene *

Equipment Description/ Registration Number ¹	Actual Emissions			Control Device**	% Efficiency
	Tons/yr	Lbs/day	Lbs/hr		
Building 92 Charbroilers (ARMA Reg. Nos. -8-0186 to-8-0189)-----	0.07	0.20	0.05		

TOTALS	0.07	0.20	0.05		

* Please attach all calculations.
 * See Attachment 1 for the minimum reporting values.
 **Control Device
 S = Scrubber
 B = Baghouse
 ESP = Electrostatic Precipitator
 A = Afterburner
 C = Condenser
 AD = Adsorbtion
 O = Other

¹Emissions must be broken down by equipment registration number (ex. 9-0076, 9-0077)

FORM 4:

TOXIC AIR POLLUTANTS

Calendar Year: 2017

EMISSIONS CERTIFICATION REPORT

Facility Name: NASA Goddard Space Flight Center Facility ID: 24-033-00675 Pollutant: Catechol *

Equipment Description/ Registration Number ¹	Actual Emissions			Control Device**	% Efficiency
	Tons/yr	Lbs/day	Lbs/hr		
Clean Room Semiconductor Development and Fabrication (ARMA Reg. No. 6-9903) -----	0.0744	0.5724	0.1431		

TOTALS	0.0744	0.5724	0.1431		

* Please attach all calculations.
 * See Attachment 1 for the minimum reporting values.
 **Control Device
 S = Scrubber
 B = Baghouse
 ESP = Electrostatic Precipitator
 A = Afterburner
 C = Condenser
 AD = Adsorbtion
 O = Other

¹Emissions must be broken down by equipment registration number (ex. 9-0076, 9-0077)

FORM 4:

TOXIC AIR POLLUTANTS

Calendar Year: 2017

EMISSIONS CERTIFICATION REPORT

Facility Name: NASA Goddard Space Flight Center Facility ID: 24-033-00675 Pollutant: Formaldehyde *

Equipment Description/ Registration Number ¹	Actual Emissions			Control Device**	% Efficiency
	Tons/yr	Lbs/day	Lbs/hr		
Building 92 Charbroilers (ARMA Reg. Nos. -8-0188 to-8-0189)-----	0.060	0.168	0.042		

TOTALS	0.060	0.168	0.042		

* Please attach all calculations.
 * See Attachment 1 for the minimum reporting values.
 **Control Device
 S = Scrubber
 B = Baghouse
 ESP = Electrostatic Precipitator
 A = Afterburner
 C = Condenser
 AD = Adsorbition
 O = Other

¹Emissions must be broken down by equipment registration number (ex. 9-0076, 9-0077)

FORM 4:

TOXIC AIR POLLUTANTS

Calendar Year: **2017**

EMISSIONS CERTIFICATION REPORT

Facility Name: **NASA Goddard Space Flight Center** Facility ID: **24-033-00675** Pollutant: **Hydrogen Fluoride** *

Equipment Description/ Registration Number ¹	Actual Emissions			Control Device**	% Efficiency
	Tons/yr	Lbs/day	Lbs/hr		
Clean Room Semiconductor Development and Fabrication (ARMA Reg. No. 6-0003)	0.0197	0.1516	0.0379		

TOTALS	0.0197	0.1516	0.0379		

* Please attach all calculations.
 * See Attachment 1 for the minimum reporting values.
 **Control Device
 S = Scrubber
 B = Baghouse
 ESP = Electrostatic Precipitator
 A = Afterburner
 C = Condenser
 AD = Adsorbtion
 O = Other

¹ Emissions must be broken down by equipment registration number (ex. 9-0076, 9-0077)

FORM 4:

TOXIC AIR POLLUTANTS

Calendar Year: 2017

EMISSIONS CERTIFICATION REPORT

Facility Name: NASA Goddard Space Flight Center Facility ID: 24-033-00675 Pollutant: 4,4-methylene diphen*¹

Equipment Description/ Registration Number ¹	Actual Emissions			Control Device**	% Efficiency
	Tons/yr	Lbs/day	Lbs/hr		
Building 4, Rm 195 Surface Coating Operation -(ARMA Reg.-No-6-4101) -----	0.0001	0.0008	0.0002		
Clean Room Semiconductor Development and Fabrication (ARMA Reg. No. 6-0903) ----- ⁺	0.0004	0.0032	0.0008		

TOTALS	0.0005	0.0040	0.0010		

* Please attach all calculations.
 * See Attachment 1 for the minimum reporting values.
****Control Device**
 S = Scrubber
 B = Baghouse
 ESP = Electrostatic Precipitator
 A = Afterburner
 C = Condenser
 AD = Adsorbtion
 O = Other

¹Emissions must be broken down by equipment registration number (ex. 9-0076, 9-0077)

5.5 Form 5 Billable Toxic Air Pollutants

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FORM 5:

BILLABLE TOXIC AIR POLLUTANTS

Calendar Year: **2017**

Emissions Certification Report

Facility Name: **NASA Goddard Space Flight Center** Facility ID#: **24-033-00675**

Chemical Name	CAS Number	Actual Emissions			Estimation Method
		Tons/year	Lbs/day	Lbs/hr	
carbon disulfide	75-15-0				
carbonyl sulfide	463-58-1				
chlorine	7782-50-5				
cyanide compounds	57-12-5				
hydrochloric acid	7647-01-0				
hydrogen fluoride	7664-39-3	0.0197	0.1516	0.0379	C2
methyl chloroform	71-55-6				
methylene chloride	75-09-2				
perchloroethylene	127-18-4				
phosphine	7803-51-2				
titanium tetrachloride	7550-45-0				
TOTALS		0.0197	0.1516	0.0379	

Emission Estimation Method

- A1-U.S. EPA Reference Method
- A2-Other Particulate Sampling Train
- A3-Liquid Absorption Technique
- A4-Solid Absorption Technique
- A5-Freezing Out Technique
- A9-Other, Specify

- C1-User calculated based on source test or other measurement
- C2-User calculated based on material balance using engineering knowledge of the process
- C3-User calculated based on AP-42
- C4-User calculated by engineering judgment
- C5-User calculated based on a State or local agency factor
- C6-New construction, not operational
- C7-Source closed, operation ceased
- C8-Computer calculated based on standards

This form is to include only the chemicals identified.

S-Stack Emissions F-Fugitive Emissions Daily emissions (lbs/day) are lbs/operating day of the source

PLEASE NOTE: Be sure to attach all data and calculations necessary to support the emissions figures shown above. Calculated using a 260 days per year operation.

5.6 Form 6 Greenhouse Gas Air Pollutants

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FORM 6: Greenhouse Gases

Calendar Year: 2017

**GREENHOUSE GAS AIR POLLUTANTS
EMISSIONS CERTIFICATION REPORT**

Facility Name: GSFC

Facility ID: 24-033-00675

Pollutant: CO₂

Equipment Description	MDE Number	Energy Type	Actual Emissions		
			Tons/yr	lbs/dy	lbs/hr
Building #24 Boiler #1	MDE 5-0808	Natural Gas	2,648	84,663	3,528
Building #24 Boiler #2	MDE 5-0809	Natural Gas	3,574	87,218	3,634
Building #24 Boiler #3	MDE 5-0810	Natural Gas	941	56,526	2,355
Building #24 Boiler #4	MDE 5-0811	Natural Gas	3,197	100,667	4,194
Building #24 Boiler #5	MDE 5-0812	Natural Gas	1,626	57,977	2,416
Building #24 Boiler #1	MDE 5-0808	Landfill Gas	4,427	63,689	2,654
Building #24 Boiler #2	MDE 5-0809	Landfill Gas	5,308	67,794	2,825
Building #24 Boiler #3	MDE 5-0810	Landfill Gas	0	0	0
Building #24 Boiler #4	MDE 5-0811	Landfill Gas	6,724	66,212	2,759
Building #24 Boiler #5	MDE 5-0812	Landfill Gas	0	0	0
Building #24 Boiler #1	MDE 5-0808	Diesel	1	1,784	6,308
Building #24 Boiler #2	MDE 5-0809	Diesel	0	0	0
Building #24 Boiler #3	MDE 5-0810	Diesel	6	12,622	6,308
Building #24 Boiler #4	MDE 5-0811	Diesel	0	268	6,308
Building #24 Boiler #5	MDE 5-0812	Diesel	0	0	0
Building 24C Generator #1 (1000 KW)	MDE 9-1054	Diesel	7	14,952	1,495
Building 24C Generator #2 (1000 KW)	MDE 9-1055	Diesel	7	14,952	1,495
Building 24C Generator #3 (1000 KW)	MDE 9-1056	Diesel	5	10,467	1,495
Building 24C Generator #4 (1000 KW)	MDE 9-1057	Diesel	7	13,457	1,495
Building 24C Generator #8 (1000 KW)	MDE 9-1058	Diesel	5	10,467	1,495
Building 24C Generator #6 (1000 KW)	MDE 9-1366	Diesel	7	14,952	1,495
Building 31 Generator #1 (1450 KW)	MDE 9-1049	Diesel	16	32,521	2,168
Building 31 Generator #2 (1450 KW)	MDE 9-1050	Diesel	16	32,521	2,168
Building 31 Generator #3 (1450 KW)	MDE 9-1051	Diesel	16	32,521	2,168
Building 31 Generator #4 (1450 KW)	MDE 9-1052	Diesel	12	23,849	2,168
Building 31 Generator #5 (1450 KW)	MDE 9-1053	Diesel	17	34,689	2,168
Building 302 Boiler #1	MDE 5-0831	Natural Gas	128	700	29
Building 302 Boiler #3	MDE 5-1533	Natural Gas	108	593	25
Building 35 Boiler #1	MDE 5-1531	Natural Gas	73	401	17
Building 35 Boiler #2	MDE 5-1532	Natural Gas	73	401	17
Building 97 Boiler #1	MDE 5-0846	Natural Gas	130	712	30
Building 7 Generator #1 (500 KW)	MDE 9-1045	Diesel	1	1,495	748
Building 7 Generator #2 (500 KW)	MDE 9-1433	Diesel	9	17,195	748
Building 10 Generator #1 (500 KW)	MDE 9-1047	Diesel	1	1,495	748
Building 29 Generator #1 (1000 kW)	MDE 9-1422	Diesel	2	3,693	1,495
TOTAL			29,094	861,452	66,954

Note:

The displayed numbers above are rounded to the nearest whole number. For instance, 0.6 (which displays as 1) plus 0.6 (which displays as 1) equals 1.2 (which will display 1) as the SUBTOTAL. Also, 0.4 (which displays as 0) plus 0.4 (which displays as 0) equals 0.8 (which will display 1) as the SUBTOTAL.

FORM 6: Greenhouse Gases

Calendar Year: 2017

**GREENHOUSE GAS AIR POLLUTANTS
EMISSIONS CERTIFICATION REPORT**

Facility Name: GSFC

Facility ID: 24-033-00675

Pollutant: N₂O

Equipment Description	MDE Number	Energy Type	Actual Emissions		
			Tons/yr	lbs/dy	lbs/hr
Building #24 Boiler #1	MDE 5-0808	Natural Gas	0	0	0
Building #24 Boiler #2	MDE 5-0809	Natural Gas	0	0	0
Building #24 Boiler #3	MDE 5-0810	Natural Gas	0	0	0
Building #24 Boiler #4	MDE 5-0811	Natural Gas	0	1	0
Building #24 Boiler #5	MDE 5-0812	Natural Gas	0	0	0
Building #24 Boiler #1	MDE 5-0808	Landfill Gas	0	0	0
Building #24 Boiler #2	MDE 5-0809	Landfill Gas	0	0	0
Building #24 Boiler #3	MDE 5-0810	Landfill Gas	0	0	0
Building #24 Boiler #4	MDE 5-0811	Landfill Gas	0	0	0
Building #24 Boiler #5	MDE 5-0812	Landfill Gas	0	0	0
Building #24 Boiler #1	MDE 5-0808	Diesel	0	0	0
Building #24 Boiler #2	MDE 5-0809	Diesel	0	0	0
Building #24 Boiler #3	MDE 5-0810	Diesel	0	0	0
Building #24 Boiler #4	MDE 5-0811	Diesel	0	0	0
Building #24 Boiler #5	MDE 5-0812	Diesel	0	0	0
Building 24C Generator #1 (1000 KW)	MDE 9-1054	Diesel	0	0	0
Building 24C Generator #2 (1000 KW)	MDE 9-1055	Diesel	0	0	0
Building 24C Generator #3 (1000 KW)	MDE 9-1056	Diesel	0	0	0
Building 24C Generator #4 (1000 KW)	MDE 9-1057	Diesel	0	0	0
Building 24C Generator #8 (1000 KW)	MDE 9-1058	Diesel	0	0	0
Building 24C Generator #6 (1000 KW)	MDE 9-1366	Diesel	0	0	0
Building 31 Generator #1 (1450 KW)	MDE 9-1049	Diesel	0	0	0
Building 31 Generator #2 (1450 KW)	MDE 9-1050	Diesel	0	0	0
Building 31 Generator #3 (1450 KW)	MDE 9-1051	Diesel	0	0	0
Building 31 Generator #4 (1450 KW)	MDE 9-1052	Diesel	0	0	0
Building 31 Generator #5 (1450 KW)	MDE 9-1053	Diesel	0	0	0
Building 302 Boiler #1	MDE 5-0831	Natural Gas	0	0	0
Building 302 Boiler #3	MDE 5-1533	Natural Gas	0	0	0
Building 35 Boiler #1	MDE 5-1531	Natural Gas	0	0	0
Building 35 Boiler #2	MDE 5-1532	Natural Gas	0	0	0
Building 97 Boiler #1	MDE 5-0846	Natural Gas	0	0	0
Building 7 Generator #1 (500 KW)	MDE 9-1045	Diesel	0	0	0
Building 7 Generator #2 (500 KW)	MDE 9-1433	Diesel	0	0	0
Building 10 Generator #1 (500 KW)	MDE 9-1047	Diesel	0	0	0
Building 29 Generator #1 (1000 kW)	MDE 9-1422	Diesel	0	0	0
TOTAL			0	6	1

Note:

The displayed numbers above are rounded to the nearest whole number. For instance, 0.6 (which displays as 1) plus 0.6 (which displays as 1) equals 1.2 (which will display 1) as the SUBTOTAL. Also, 0.4 (which displays as 0) plus 0.4 (which displays as 0) equals 0.8 (which will display 1) as the SUBTOTAL.

FORM 6: Greenhouse Gases

Calendar Year: 2017

**GREENHOUSE GAS AIR POLLUTANTS
EMISSIONS CERTIFICATION REPORT**

Facility Name: GSFC

Facility ID: 24-033-00675

Pollutant: CH₄

Equipment Description	MDE Number	Energy Type	Actual Emissions		
			Tons/yr	lbs/dy	lbs/hr
Building #24 Boiler #1	MDE 5-0808	Natural Gas	0	2	0
Building #24 Boiler #2	MDE 5-0809	Natural Gas	0	2	0
Building #24 Boiler #3	MDE 5-0810	Natural Gas	0	1	0
Building #24 Boiler #4	MDE 5-0811	Natural Gas	0	2	0
Building #24 Boiler #5	MDE 5-0812	Natural Gas	0	1	0
Building #24 Boiler #1	MDE 5-0808	Landfill Gas	0	1	0
Building #24 Boiler #2	MDE 5-0809	Landfill Gas	0	1	0
Building #24 Boiler #3	MDE 5-0810	Landfill Gas	0	0	0
Building #24 Boiler #4	MDE 5-0811	Landfill Gas	0	1	0
Building #24 Boiler #5	MDE 5-0812	Landfill Gas	0	0	0
Building #24 Boiler #1	MDE 5-0808	Diesel	0	0	0
Building #24 Boiler #2	MDE 5-0809	Diesel	0	0	0
Building #24 Boiler #3	MDE 5-0810	Diesel	0	0	0
Building #24 Boiler #4	MDE 5-0811	Diesel	0	0	0
Building #24 Boiler #5	MDE 5-0812	Diesel	0	0	0
Building 24C Generator #1 (1000 KW)	MDE 9-1054	Diesel	0	0	0
Building 24C Generator #2 (1000 KW)	MDE 9-1055	Diesel	0	0	0
Building 24C Generator #3 (1000 KW)	MDE 9-1056	Diesel	0	0	0
Building 24C Generator #4 (1000 KW)	MDE 9-1057	Diesel	0	0	0
Building 24C Generator #8 (1000 KW)	MDE 9-1058	Diesel	0	0	0
Building 24C Generator #6 (1000 KW)	MDE 9-1366	Diesel	0	0	0
Building 31 Generator #1 (1450 KW)	MDE 9-1049	Diesel	0	0	0
Building 31 Generator #2 (1450 KW)	MDE 9-1050	Diesel	0	0	0
Building 31 Generator #3 (1450 KW)	MDE 9-1051	Diesel	0	0	0
Building 31 Generator #4 (1450 KW)	MDE 9-1052	Diesel	0	0	0
Building 31 Generator #5 (1450 KW)	MDE 9-1053	Diesel	0	0	0
Building 302 Boiler #1	MDE 5-0831	Natural Gas	0	0	0
Building 302 Boiler #3	MDE 5-1533	Natural Gas	0	0	0
Building 35 Boiler #1	MDE 5-1531	Natural Gas	0	0	0
Building 35 Boiler #2	MDE 5-1532	Natural Gas	0	0	0
Building 97 Boiler #1	MDE 5-0846	Natural Gas	0	0	0
Building 7 Generator #1 (500 KW)	MDE 9-1045	Diesel	0	0	0
Building 7 Generator #2 (500 KW)	MDE 9-1433	Diesel	0	0	0
Building 10 Generator #1 (500 KW)	MDE 9-1047	Diesel	0	0	0
Building 29 Generator #1 (1000 kW)	MDE 9-1422	Diesel	0	0	0
TOTAL			1	14	1

Note:

The displayed numbers above are rounded to the nearest whole number. For instance, 0.6 (which displays as 1) plus 0.6 (which displays as 1) equals 1.2 (which will display 1) as the SUBTOTAL. Also, 0.4 (which displays as 0) plus 0.4 (which displays as 0) equals 0.8 (which will display 1) as the SUBTOTAL.

**PART 70 PERMIT RENEWAL
APPLICATION**

**GODDARD SPACE FLIGHT CENTER
GREENBELT, MARYLAND**

APPENDIX B

2017 Annual Compliance Certification Report

National Aeronautics and Space Administration
Goddard Space Flight Center
Greenbelt, MD 20771



March 28, 2018

Reply to Attn of: 250

Ms. Laramie Daniel
Maryland Department of the Environment
Air and Radiation Administration
1800 Washington Boulevard, Suite 715
Baltimore, MD 21230-1720

Dear Ms. Daniel:

Enclosed please find a copy of the 2017 Annual Compliance Certification Report for NASA's Goddard Space Flight Center. The Compliance Certification Report identifies each term or condition of the Part 70 Operating Permit, compliance status (whether continuous or intermittent), methods used to determine compliance, and any other pertinent information required for compliance with the permit. This report is submitted in compliance with Section IV of the Part 70 Operating Permit Number 24-033-00675.

If you have any questions or comments concerning this matter, please call Ms. Kathleen Moxley at (301) 286-0717.

Sincerely,

A handwritten signature in black ink that reads "Theodore J. Meyer".

Theodore J. Meyer
Acting Chief, Medical and Environmental Management Division

Enclosure



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Goddard Space Flight Center

Greenbelt, MD 20771

2017 Annual Compliance Certification

Prepared By:



**209 Business Park Drive, Suite 200
Virginia Beach, VA 23462
Phone: 757-498-0100**

Enclosure



OMB No. 2060-0336,
Approval Expires 05/31/2019

Federal Operating Permit Program (40 CFR Part 71)
CERTIFICATION OF TRUTH, ACCURACY, AND COMPLETENESS (CTAC)

This form must be completed, signed by the "Responsible Official" designated for the facility or emission unit, and sent with each submission of documents (i.e., application forms, updates to applications, reports, or any information required by a part 71 permit).

A. Responsible Official

Name: (Last) Meyer (First) Theodore (MI) J

Title Acting Chief, Medical and Environmental Management Division

Street or P.O. Box 8800 Greenbelt Road

City Greenbelt State MD ZIP 20771 - 2400

Telephone (301) 286 - 7442 Ext. _____ Facsimile (301) 286 - 1644

B. Certification of Truth, Accuracy and Completeness (to be signed by the responsible official)

I certify under penalty of law, based on information and belief formed after reasonable inquiry, the statements and information contained in these documents are true, accurate and complete.

Name (signed) *Theodore J. Meyer*

Name (typed) Theodore J. Meyer Date: 3 / 28 / 2018

1800 1810 1820

1830 1840 1850

Federal Operating Permit Program (40 CFR Part 71)
ANNUAL COMPLIANCE CERTIFICATION (A-COMP)

A. GENERAL INFORMATION

Permit No. 24-033-00675

Reporting Period: Beg 01 / 01 / 2017 End 12 / 31 / 2017

Source / Company Name NASA's Goddard Space Flight Center

Mailing Address: Street or P.O. Box Mail Code 250; 8800 Greenbelt Road

City Greenbelt State MD ZIP 20771 -

Contact person Kathleen M. Moxley Title Air Program Manager

Telephone (301) 286 - 0717 Ext.

Continued on next page

B. COMPLIANCE STATUS

Describe the compliance status of each permit term for the reporting period. Copy this page as many times as necessary to cover all permit terms and conditions.

Emission Unit ID(s): Facility Wide

Permit Term (Describe requirements and cross-reference)

1.1 Applicable Standards/Limits:

Applicable to facility-wide operations that are subject to COMAR 26.11.19.

Control of VOC

COMAR 26.11.19.02I(2), Good Operating Practices.

- (a) "A person who is subject to this section shall implement good operating practices to minimize VOC emissions into the atmosphere."
- (b) "Good operating practices shall, at a minimum, include the following:
 - (i) Provisions for training of operators on practices, procedures, and maintenance requirements that are consistent with the equipment manufacturers' recommendations and the source's experience in operating the equipment, with the training to include proper procedures for maintenance of air pollution control equipment;
 - (ii) Maintenance of covers on containers and other vessels that contain VOC and VOC-containing materials when not in use;
 - (iii) Minimize spills of VOC-containing cleaning materials;
 - (iv) Convey VOC-containing cleaning materials from one location to another in closed containers or pipelines;
 - (v) Minimize VOC emissions from cleaning of storage, mixing, and conveying equipment;
 - (vi) As practical, scheduling of operations to minimize color or material changes when applying VOC coatings or other materials by spray gun;
 - (vii) For spray gun applications of coatings, use of high volume low pressure (HVLP) or other high efficiency application methods where practical; and
 - (viii) As practical, mixing or blending materials containing VOC in closed containers and taking preventive measures to minimize emissions for products that contain VOC."
- (c) "A person subject to this regulation shall:
 - (i) Establish good operating practices in writing;
 - (ii) Make the written operating practices available to the Department upon request; and
 - (iii) Display the good operating practices so that they are clearly visible to the operator or include them in operator training."

COMAR 26.11.19.02I(3), Equipment Cleanup.

- (a) "A person subject to this section shall take all reasonable precautions to prevent or minimize the discharge of VOC into the atmosphere when cleaning process and coating application equipment, including containers, vessels, tanks, lines, and pumps."
- (b) "Reasonable precautions for equipment cleanup shall, at a minimum, include the following:
 - (i) Storing all wastes and waste materials, including cloth and paper that are contaminated with VOC, in closed containers;
 - (ii) Preparing written standard operating procedures for frequently cleaned equipment, including when practical, provisions for the use of low-VOC or non-VOC materials and procedures to minimize the quantity of VOC materials used;
 - (iii) Using enclosed spray gun cleaning, VOC-recycling systems and other spray gun cleaning methods where practical that reduce or eliminate VOC emissions; and
 - (iv) Using, when practical, detergents, high-pressure water, or other non-VOC cleaning options to clean coating lines, containers, and process equipment."

COMAR 26.11.19.02I(4), VOC Storage and Transfer.

- (a) "A person subject to this section who stores VOCs shall, at a minimum, install conservation vents or other vapor control measures on storage tanks with a capacity of 2,000 gallons or more to minimize VOC emissions."
- (b) "A person subject to this section shall, at a minimum, utilize vapor balance, vapor control lines, or other vapor control measures when VOCs are transferred from a tank truck into a stationary storage tank with a capacity greater than 10,000 gallons and less than 40,000 gallons that store VOCs or materials containing VOCs, other than gasoline, that have a vapor pressure greater than 1.5 psia."

COMAR 26.11.19.16C, Control of VOC Equipment Leaks – General Requirements. "A person subject to this regulation shall comply with all of the following requirements:

- (1) Visually inspect all components on the premises for leaks at least once each calendar month.
- (2) Tag any leak immediately so that the tag is clearly visible. The tag shall be made of a material that will withstand any weather or corrosive conditions to which it may be normally exposed. The tag shall bear an identification number, the date the leak was discovered, and the name of the person who discovered the leak. The tag shall remain in place until the leak has been repaired.
- (3) Take immediate action to repair all observed VOC leaks that can be repaired within 48 hours.
- (4) Repair all other leaking components not later than 15 days after the leak is discovered. If a replacement part is needed, the part shall be ordered within 3 days after discovery of the leak, and the leak shall be repaired within 48 hours after receiving the part.
- (5) Maintain a supply of components or component parts that are recognized by the source to wear or corrode, or that otherwise need to be routinely replaced, such as seals, gaskets, packing, and pipe fittings.
- (6) Maintain a log that includes the name of the person conducting the inspection and the date on which leak inspections are made, the findings of the inspection, and a list of leaks by tag identification number. The log shall be made available to the Department upon request. Leak records shall be maintained for a period of not less than 2 years from the date of their occurrence."

COMAR 26.11.19.16D, Exceptions. "Components that cannot be repaired as required in this regulation because they are inaccessible, or that cannot be repaired during operation of the source, shall be identified in the log and included within the source's maintenance schedule for repair during the next source shutdown."

1.2 Testing Requirements:

Control of VOC

See Section 1.4, Record Keeping Requirements.

1.3 Monitoring Requirements:

Control of VOC

See Section 1.4, Record Keeping Requirements.

1.4 Record Keeping Requirements:

Control of VOC

The Permittee shall maintain the following:

- (a) All written descriptions of "good operating practices" designed to minimize emissions of VOCs; and
- (b) VOC leak detection and repair logs that include identification of the persons who conducted the leak detection inspections, the dates on which the inspections were conducted, the findings during the inspections, a listing by tag identification number and a description of all leaks discovered, and the date and nature of all leak repairs effected.

1.5 Reporting Requirements:

Control of VOC

See Section 1.4, Record Keeping Requirements.

Compliance Methods for the Above (Description and Citation):

1.1 Applicable Standards/Limits:

Control of VOC

The Goddard Space Flight Center (GSFC)'s operations subject to COMAR 26.11.19 are vapor degreasing, solvent cleaning, aerospace coating, and equipment leaks.

The only vapor degreaser at GSFC is EU7-4 – Ultrasonic Vapor Degreaser with a Solvent Capacity of 9.2 Gallons, located in Building 7. This unit did not operate in 2017.

The only industrial solvent cleaning operation is located within the Parts, Packaging, and Assemblies Technologies Shop (or Microelectronic Laboratory), in Building 35. According to COMAR 26.11.19.09-1.A, industrial solvent cleaning does not include cleaning of electrical and electronic components, cleaning of high precision optics, and janitorial cleaning. Therefore, the industrial solvent cleaning operation is exempt from the requirements of COMAR 26.11.19.

There are two aerospace coating operations at GSFC. The first one is located within the Thermal Coating Laboratory, in Building 4. The second one is located within the Advanced Composite Materials Laboratory, in Building 5A. These units are being operated according to the requirements of their permit to construct (PTC) (PTC Nos. 033-0675-6-1101 & 033-0675-6-1323), which already include COMAR 26.11.19.02I and COMAR 26.11.19.16C as requirements. Therefore, the requirements of VOC control at the aerospace coating operations are being implemented.

The main sources of VOC equipment leaks are the E-85 and gasoline storage tanks and associated components, located at Building 27. The tanks and associated components are being inspected monthly for leaks and a log of inspection is maintained. If leaks are discovered, they are repaired immediately and a log of the repair is maintained by the Motor Pool. Therefore, the requirements of VOC equipment leak detection and repair under COMAR 26.11.19.16 are being implemented.

1.2 Testing Requirements:

Control of VOC

See Section 1.4, Record Keeping Requirements.

1.3 Monitoring Requirements:

Control of VOC

See Section 1.4, Record Keeping Requirements.

1.4 Record Keeping Requirements:

All records are maintained onsite for a period of at least 5 years and are available to the Department upon request.

Control of VOC

- (a) Description of good operating practices and maintenance plan and records designed to minimize emissions of VOCs are kept in Building 4 and 5A for the surface coating operations.
- (b) Records of leak detection and repair and monthly inspection of the E-85 and gasoline tanks and associated equipment are maintained by the Motor Pool.

1.5 Reporting Requirements:Control of VOC

See Section 1.4, Record Keeping Requirements.

Status (Check one): ___ Intermittent Compliance X Continuous Compliance**Emission Unit ID(s): EU24-1, EU24-2, EU24-3, EU24-4, EU24-5****Permit Term (Describe requirements and cross-reference)**2.1 Applicable Standards/Limits:A. Visible Emissions Limitations**COMAR 26.11.09.05A(2) – Fuel Burning Equipment.**

"In Areas III and IV, a person may not cause or permit the discharge of emissions from any fuel burning equipment, other than water in an uncombined form, which is visible to human observers except that, for the purpose of demonstrating compliance using COM data, emissions that are visible to a human observer are those that are equal to or greater than 10 percent opacity."

COMAR 26.11.09.05A(3) - Exceptions. "Section A(1) and (2) of this regulation do not apply to emissions during load changes, soot blowing, start-up, or adjustments or occasional cleaning of control equipment if:

- (a) The visible emissions are not greater than 40 percent opacity; and
- (b) The visible emissions do not occur for more than 6 consecutive minutes in any sixty minute period."

40 CFR §60.43c - Standards for Particulate Matter

- (1) The Permittee shall not cause to be discharged into the atmosphere from that affected facility any gases that exhibit greater than 20 percent opacity (6-minute average), except for one 6-minute period per hour of not more than 27 percent opacity. [Reference: 40 CFR §60.43c(e)]
- (2) The opacity standard applies at all times, except during periods of startup, shutdown, or malfunction. [Reference: 40 CFR §60.43c(d)]

Note: Compliance with the "No Visible Emissions" requirements of COMAR 26.11.09.05A(2) and (3) will be used to show compliance with this NSPS standard.

40 CFR §60.47c(f) - Emission Monitoring for Particulate Matter.

An owner or operator of an affected facility that is subject to an opacity standard in §60.43c(c) is not required to operate a COMS provided that the affected facility meets the conditions in either paragraphs (f)(1), (2), or (3) of this section. (3) The affected facility burns only gaseous fuels and/or fuel oils that contain no greater than 0.5 weight percent sulfur, and the owner or operator operates the unit according to a written site specific monitoring plan approved by the permitting authority. This monitoring plan must include procedures and criteria for establishing and monitoring specific parameters for the affected facility indicative of compliance with the opacity standard. For testing performed as part of this site-specific monitoring plan, the permitting authority may require as an alternative to the notification and reporting requirements specified in §§60.8 and 60.11 that the owner or operator submit any deviations with the excess emissions report required under §60.48c(c). [Reference: 40 CFR §60.47c(f)(3)]

B. Control of Sulfur Oxides(1) **COMAR 26.11.09.07A(2)(b) - Sulfur Content Limitations for Fuel.**

"A person may not burn, sell, or make available for sale any fuel with a sulfur content by weight in excess of or which otherwise exceeds the following limitations: (2) In Areas III and IV: (b) Distillate fuel oils, 0.3 percent."

- (2) The Permittee shall not cause to be discharged into the atmosphere from that affected facility any gases that contain SO₂ in excess of 215 ng/J (0.50 lb/MMBtu) heat input from oil; or, as an alternative, no owner or operator of an affected facility that combusts oil shall combust oil in the affected facility that contains greater than 0.5 weight percent sulfur. The percent reduction requirements are not applicable to affected facilities under this paragraph. [Reference: 40 CFR §60.42c(d)]
- (3) The SO₂ emission limits, fuel oil sulfur limits, and percent reduction requirements in 40 CFR §60.42c apply at all times, including periods of startup, shutdown, and malfunction [Reference: 40 CFR §60.42c(i)]

Note: The monitoring, record keeping, and reporting requirements under NSPS Subpart Dc will be used to demonstrate compliance with COMAR 26.11.09.07A and NSPS sulfur in fuel standards.

C. Control of Nitrogen Oxides

COMAR 26.11.09.08E, Requirements for Fuel-Burning Equipment with a Rated Heat Input Capacity of 100 Million Btu Per Hour or Less. "A person who owns or operates fuel-burning equipment with a rated heat input capacity of 100 Million Btu per hour or less shall:

- (1) Submit to the Department an identification of each affected installation, the rated heat input capacity of each installation, and the type of fuel burned in each;
- (2) Perform a combustion analysis for each installation at least once each year and optimize combustion based on the analysis;

- (3) Maintain the results of the combustion analysis at the site for at least 2 years and make this data available to the Department and the EPA upon request;
- (4) Once every 3 years, require each operator of the installation to attend operator training programs on combustion optimization that are sponsored by the Department, the EPA, or equipment vendors; and
- (5) Prepare and maintain a record of training program attendance for each operator at the site, and make these records available to the Department upon request."

D. Operational Limitation

Conditions (1) through (4) apply to Emission Units EU24-1, EU24-2, EU24-3, EU24-4, and EU24-5.

- (1) Each boiler is subject to a NO_x emission limit of 0.1 pounds per MMBtu for a 24-hour average when burning natural gas. [Reference: MDE PTC 033-5-0808 through 5-0812, issued April 27, 2005]
- (2) The total 12-month rolling heat input consumed by the five (5) boilers shall not exceed 750,000 MMBtu. [Reference: MDE PTC 033-5-0808 through 5-0812, issued April 27, 2005]
- (3) The combined average NO_x emissions from all five (5) boilers shall not exceed 0.1 pounds per MMBtu based on a calendar monthly average when burning a combination of any of the following fuels: natural gas, No.2 fuel oil, and/or landfill gas. [Reference: MDE PTC 033-5-0808 through 5-0812, issued April 27, 2005]
- (4) The combined average SO_x emissions for the five (5) boilers is limited to less than 40 tons per year for a 12-month rolling average when burning a combination of any of the following fuels: natural gas, No.2 fuel oil, and/or landfill gas. [Reference: MDE PTC 033-5-0808 through 5-0812, issued April 27, 2005]

Condition (5) applies to Emission Units EU24-1, EU24-2, and EU24-4 only.

- (5) Emission Units EU24-1, EU24-2, and EU24-4 are each individually subject to a NO_x emission limit of 0.1 pounds per MMBtu for a 24-hour average when burning landfill gas alone or in combination with natural gas. [Reference: MDE PTC 033-5-0808 through 5-0812, issued April 27, 2005]

2.2 Testing Requirements:

A. Visible Emissions Limitations

See Section 2.3, Monitoring Requirements.

B. Control of Sulfur Oxides

The performance test shall consist of the certification from the fuel supplier. [Reference: 40 CFR §60.44c(h)]

C. Control of Nitrogen Oxides

The Permittee shall perform a combustion analysis for each installation at least once each year. [Reference: COMAR 26.11.09.08E(2)]

D. Operational Limitations

The Permittee shall conduct a stack test of NO_x, SO_x, and PM on one of the boilers capable of burning all three fuels (ARMA Registration Nos.033-0675-5-0808, 5-0809, OR 5-0811) in Building 24 at least once within the first three years of issuance of the Title V Permit to Operate. The test shall measure emissions burning natural gas, landfill gas, and No. 2 fuel oil. The Permittee shall submit a test protocol to the Department 30 days prior to the proposed scheduled test date. The Permittee shall submit the stack test results to the Department 45 days after the performance test. [Reference: COMAR 26.11.03.06C]

Note: The Permittee does not need to operate on No.2 fuel oil solely for the purpose of conducting this test.

2.3 Monitoring Requirements:

A. Visible Emissions Limitations

The Permittee shall properly operate and maintain the boilers in a manner to prevent visible emissions; and verify that there are no visible emissions when burning No. 2 fuel oil. The Permittee shall perform a visual observation of stack emissions for a 6-minute period once for each 168 hours that the boiler burns oil or at a minimum of once per year. [Reference: COMAR 26.11.03.06C]

Note: The Permittee does not need to operate on No.2 fuel oil solely for the purpose of conducting this test.

The Permittee shall perform the following, if visible emissions are observed:

- (1) Inspect combustion control system and boiler operations;
- (2) Perform all necessary adjustments and/or repairs to the boiler within 48 hours, so that visible emissions are eliminated;
- (3) Document in writing the results of the inspections, adjustments, and/or repairs to the boiler; and
- (4) After 48 hours, if the required adjustments and/or repairs had not eliminated the visible emissions, perform Method 9 observations once daily for 18 minutes until corrective actions have eliminated the visible emissions.

[Reference: COMAR 26.11.03.06C]

The Permittee shall use Method 9 of appendix A-4 of 40 CFR Part 60, Subpart Dc, to determine the opacity of stack emissions. [Reference: 40 CFR §60.45c(a)(8)]

Note: The Permittee does not need to operate on No.2 fuel oil solely for the purpose of conducting this test.

B. Control of Sulfur Oxides

The Permittee shall obtain fuel supplier certifications to demonstrate compliance with SO₂ standards. [Reference: 40 CFR §60.46c(e)]

C. Control of Nitrogen Oxides

The Permittee shall optimize combustion based on the combustion analysis. [Reference: COMAR 26.11.09.08E(2)]

D. Operational Limitations

The Permittee shall:

- (1) Measure the NO_x content of the flue gases from each boiler when burning natural gas or landfill gas for a 3 to 5-minute period every 168 hours of operation;
- (2) For any month that distillate fuel is burned in a boiler, measure the NO_x content of the flue gases from that boiler when burning distillate fuel for a 3 to 5-minute period every 168 hours of operation;
- (3) Monthly calculate the heat input to the boilers at the end of each month for the prior rolling 12-month period;
- (4) Monthly calculate the average NO_x emission rate using all measurements taken from all five boilers for each calendar month;
- (5) Calculate the total annual SO_x emissions from all five boilers on a 12-month rolling basis; and
- (6) Use an analyzer that is properly calibrated and maintained in accordance with the vendor specification for all measurements. The analyzer shall be the type approved by the Department.

[Reference: MDE PTC 033-5-0808 thru 5-0812, issued April 27, 2005]

2.4 Record Keeping Requirements:

Note: All records must be maintained for a period of at least five (5) years and be made available to the Department upon request. [Reference: COMAR 26.11.03.06C(5)(g)]

A. Visible Emissions Limitations

- (1) The Permittee shall maintain an operations manual and preventative maintenance plan and records of maintenance performed that relates to combustion performance. [Reference: COMAR 26.11.03.06C]
- (2) The Permittee shall maintain records of the maintenance performed on the boiler that relate to preventing visible emissions. [Reference: COMAR 26.11.03.06C]
- (3) The Permittee shall maintain a log of visible emission observations performed. [Reference: COMAR 26.11.03.06C]

B. Control of Sulfur Oxides

The Permittee shall keep records and submit reports to the Administrator (the Department) as required [Reference: 40 CFR §60.48c(d)]

The Permittee shall provide records of fuel supplier certifications which include the following information:

- (1) The name of the oil supplier;
 - (2) A statement from the oil supplier that the oil complies with the specifications under the definition of distillate oil in §60.41c; and
 - (3) The sulfur content or maximum sulfur content of the oil.
- [Reference: 40 CFR §60.48c(f)(1)]

C. Control of Nitrogen Oxides

The Permittee shall maintain on site records of:

- (1) The results of the annual combustion analysis
- (2) Training program attendance for each operator.

[Reference: COMAR 26.11.09.08E(5)]

D. Operational Limitations

The Permittee shall maintain records of:

- (1) NO_x content of the flue gases from each boiler when burning natural gas or landfill gas for a 3 to 5-minute period every 168 hours of operation.
- (2) The calculated total rolling 12-month heat input to the five boilers.
- (3) The average NO_x emission rate from all five (5) boilers on a calendar monthly basis.
- (4) The average SO_x emissions from all five (5) boilers on a 12-month rolling basis.

[Reference: MDE PTC 033-5-0808 through 5-0812, issued April 27, 2005]

2.5 Reporting Requirements:**A. Visible Emissions Limitations**

The Permittee shall report incidents of visible emissions in accordance with Permit Condition 4, Section III, "Report of Excess Emissions and Deviations."

B. Control of Sulfur Oxides

The Permittee shall report and maintain records of the amounts of each fuel combusted during each day. [Reference: 40 CFR §60.48c(g)(1)]

The reporting period for the reports required under 40 CFR Part 60, Subpart Dc is each six-month period. All reports shall be submitted to the Administrator (The Department) and shall be postmarked by the 30th day following the end of the reporting period. [Reference: 40 CFR §60.48c(j)]

The report submitted shall include a certified statement signed by the Permittee that the records of fuel supplier certifications submitted represent all of the fuel oil combusted during the reporting period. [Reference: 40 CFR §60.48c(e)(11)]

C. Control of Nitrogen Oxides

The Permittee shall submit:

- (1) The results of combustion analysis to the Department and the EPA upon request. [Reference: COMAR 26.11.09.08E(3)]

(2) A record of training program attendance for each operator to the Department upon request. [COMAR 26.11.09.08E(5)]

D. Operational Limitations

The Permittee shall report as part of the Annual Emission Certification the following:

- (1) The calculated total rolling 12-month heat input to the five boilers.
- (2) The average NO_x emission rate from all five (5) boilers on calendar monthly basis.
- (3) The average SO_x emissions from all five (5) boilers on a 12-month rolling basis.

[Reference: MDE PTC 033-5-0808 thru 5-0812, issued April 27, 2005]

If there is an exceedance of any of the NO_x emission limits, the Permittee shall notify the Department within 7 days of the exceedance and shall submit a root cause analysis and preventative action report within 30 days.

Compliance Methods for the Above (Description and Citation):

2.1 Applicable Standards/Limits:

A. Visible Emissions Limitations

The GSFC Central Heating/Refrigeration Plant operating plans are to burn fuel oil only in the case of a natural gas outage. Under these conditions, no boiler is likely to reach 168 hours of operation on fuel oil. Therefore, visual emissions observations when the boilers are operating on fuel oil are scheduled to take place during the boiler calibration/combustion optimization.

Annual six-minute visual observation of EU24-1 was conducted while the boiler was burning No. 2 fuel oil on December 14, 2017. Annual six-minute visual observation of EU24-3 was conducted while the boiler was burning No. 2 fuel oil on December 18, 2017. No visual emissions were observed.

Note that annual six-minute visual observations of EU24-2, EU24-4, and EU24-5 were not conducted in 2017. These boilers were below 168 hours of operation.

B. Control of Sulfur Oxides

Fuel supplier certifications were included within the Semi-Annual Fuel Reports, which were submitted to the Department on July 25, 2017 (reporting period January 2017 to June 2017) and January 25, 2018 (reporting period July 2017 to December 2017). These certifications demonstrate compliance with the SO₂ standards. The Semi-Annual Fuel Reports referenced above certify that the fuel delivered and burned during 2017 meets or exceeds the 0.3% maximum sulfur content limit and requirements identified in the Title V operating permit. GSFC does not sell or make available for sale any fuel. The fuel supplier certifications certify that all of the fuel oil delivered in 2017 is a 15 ppm sulfur (maximum) dyed ultra-low sulfur diesel fuel.

C. Control of Nitrogen Oxides

- (1) The identification of each affected installation, the rated heat input capacity of each installation, and the type of fuel burned in each installation were included within the Semi-Annual Fuel Reports, which were submitted to the Department on July 25, 2017 (reporting period January 2017 to June 2017) and January 25, 2018 (reporting period July 2017 to December 2017).
- (2) A combustion analysis for each installation is performed for 3-5 minute periods at least once every 168 hours of operation, and combustion is optimized based on the analysis.
- (3) The results of the combustion analyses are maintained onsite for at least 2 years and these data are available to the Department and EPA upon request.
- (4) Each operator has attended an operator training program on combustion analysis, which is sponsored by the Department, EPA, or equipment vendors. The most recent training sessions occurred on November 28 and 29, 2017.
- (5) Records of training program attendance for each operator are maintained onsite and these records are available to the Department upon request.

D. Operational Limitations

For Emission Units EU24-1, EU24-2, EU24-3, EU24-4, and EU24-5

- (1) Combustion analysis of each boiler indicates that the NO_x emission limit of 0.1 lbs/MMBtu for a 24-hour average has not been exceeded, when burning natural gas, in the calendar year.
- (2) Monthly calculations indicate that the total 12-month rolling sum of the heat input consumed by all five boilers has not exceeded 750,000 MMBtu within the calendar year.
- (3) Combustion analysis of these units indicate that the combined average NO_x emissions from all five boilers has not exceeded the NO_x emission limit of 0.1 lbs/MMBtu based on a calendar monthly average when burning a combination of any of the following fuels: natural gas, No. 2 fuel oil, and/or landfill gas, within the calendar year.
- (4) Monthly calculations indicate that the combined average SO_x emission for the five boilers was less than 40 tons per year for a 12-month rolling average, within the calendar year, when burning a combination of any of the following fuels: natural gas, No. 2 fuel oil, and landfill gas.

For Emission Units EU24-1, EU24-2, and EU24-4

Combustion analysis of each of these boilers indicates that EU24-1, EU24-2, and EU24-4 have not exceeded the NO_x emission limit of 0.1 lbs/MMBtu for a 24-hour average, within the calendar year, when burning landfill gas alone or in combination with natural gas.

2.2 Testing Requirements:

A. Visible Emissions Limitations

See Section 2.3, Monitoring Requirements.

B. Control of Sulfur Oxides

Fuel supplier certifications were included within the Semi-Annual Fuel Reports, which were submitted to the Department on July 25,

2017 (reporting period January 2017 to June 2017) and January 25, 2018 (reporting period July 2017 to December 2017). These certifications demonstrate compliance with the SO₂ standards. The Semi-Annual Fuel Reports referenced above certify that the fuel delivered and burned during 2017 meets or exceeds the 0.3% maximum sulfur content limit and requirements identified in the Title V operating permit. GSFC does not sell or make available for sale any fuel. The fuel supplier certifications certify that all of the fuel oil delivered in 2017 is a 15 ppm sulfur (maximum) dyed ultra-low sulfur diesel fuel.

C. Control of Nitrogen Oxides

A combustion analysis for each installation is performed for 3-5 minute periods at least once every 168 hours of operation.

D. Operational Limitations

A stack test of NO_x, SO_x, and PM was performed on one of the boilers (EU24-3) burning all three fuels and an additional boiler (EU24-5) burning natural gas and No. 2 fuel oil in the GSFC Central Heating/Refrigeration Plant on January 15 to 19, 2018. This followed a MDE-approved extension on December 20, 2017 for the test to be performed before December 31, 2017. The tests measured emissions when burning natural gas, landfill gas, and No. 2 fuel oil. A test protocol was submitted to the Department at least 30 days prior to the test date, on November 2, 2017 and approved by the Department on November 30, 2017. The stack test results were submitted to the Department electronically within 45 days after the test date, on March 7, 2018.

2.3 Monitoring Requirements:

A. Visible Emissions Limitations

The GSFC Central Heating/Refrigeration Plant operating plans are to burn fuel oil only in the case of a natural gas outage. Under these conditions, no boiler is likely to reach 168 hours of operation on fuel oil. Therefore, visual emissions observations when the boilers are operating on fuel oil are scheduled to take place during the boiler calibration/combustion optimization.

Annual six-minute visual observation of EU24-1 was conducted while the boiler was burning No. 2 fuel oil on December 14, 2017.

Annual six-minute visual observation of EU24-3 was conducted while the boiler was burning No. 2 fuel oil on December 18, 2017. No visual emissions were observed.

Note that annual six-minute visual observations of EU24-2, EU24-4, and EU24-5 were not conducted in 2017. These boilers were below 168 hours of operation.

B. Control of Sulfur Oxides

Fuel supplier certifications were included within the Semi-Annual Fuel Reports, which were submitted to the Department on July 25, 2017 (reporting period January 2017 to June 2017) and January 25, 2018 (reporting period July 2017 to December 2017). These certifications demonstrate compliance with the SO₂ standards. The Semi-Annual Fuel Reports referenced above certify that the fuel delivered and burned during 2017 meets or exceeds the 0.3% maximum sulfur content limit and requirements identified in the Title V operating permit. GSFC does not sell or make available for sale any fuel. The fuel supplier certifications certify that all of the fuel oil delivered in 2017 is a 15 ppm sulfur (maximum) dyed ultra-low sulfur diesel fuel.

C. Control of Nitrogen Oxides

A combustion analysis for each installation is performed for 3-5 minute periods at least once every 168 hours of operation, and combustion is optimized based on the analysis.

D. Operational Limitations

- (1) The NO_x content of the flue gases from each boiler is analyzed for a 3 to 5-minute period every 168 hours of operation when burning natural gas or landfill gas.
- (2) The NO_x content of the flue gases from each boiler is analyzed for a 3 to 5-minute period every 168 hours of operation when burning distillate fuel for any month that distillate fuel is burned in a boiler.
- (3) The heat input to the boilers is calculated monthly at the end of each month for the prior rolling 12-month period and maintained in the Air Emissions Database.
- (4) The average NO_x emission rate using all measurements taken from all five boilers for each calendar month is calculated monthly and maintained in the Air Emissions Database.
- (5) The total annual SO_x emissions from all five boilers on a 12-month rolling basis is calculated and maintained in the Air Emissions Database.
- (6) All analyzers are the types approved by the Department and are properly calibrated and maintained in accordance with the vendor specification for all measurements.

2.4 Record Keeping Requirements:

All records are maintained onsite for a period of at least 5 years and are available to the Department upon request.

A. Visible Emissions Limitations

- (1) All operations manuals are maintained onsite by the Facilities Management Division. A preventive maintenance plan and records of maintenance performed that relates to combustion performance are continuously maintained in the MAXIMO database.
- (2) All records of maintenance performed on the boiler that relate to preventing visible emissions are continuously maintained in the MAXIMO database for a period of at least 5 years.
- (3) Records of visible emissions inspections performed are collected annually and maintained onsite by the Facilities Management Division for a period of at least 5 years.

B. Control of Sulfur Oxides

Records of fuel supplier certifications are collected following the fuel deliveries and are maintained onsite by the Facilities Management Division.

- C. **Control of Nitrogen Oxides**
Records of combustion analysis performed and training program attendance for each operator are collected upon completion and maintained onsite by the Facilities Management Division for a period of at least 5 years.
- D. **Operational Limitations**
- (1) Records of combustion analysis are maintained by the Facilities Management Division and are stored in the Air Emissions Database.
 - (2) The calculated total rolling 12-month heat input to the five boilers is maintained in the Air Emissions Database on a monthly basis.
 - (3) The average NO_x emission rate from all five boilers on a calendar monthly basis is calculated and maintained in the Air Emissions Database monthly.
 - (4) The average SO_x emissions from all five boilers on a 12-month rolling basis is calculated and maintained in the Air Emissions Database monthly.

2.5 **Reporting Requirements:**

- A. **Visible Emissions Limitations**
There were no known incidents of visible emissions from these units within the calendar year. Any incidents of visible emissions are reported in accordance with Permit Condition 4, Section III, "Report of Excess Emissions and Deviations."
- B. **Control of Sulfur Oxides**
Fuel supplier certifications were included within the Semi-Annual Fuel Reports, which were submitted to the Department on July 25, 2017 (reporting period January 2017 to June 2017) and January 25, 2018 (reporting period July 2017 to December 2017).
- C. **Control of Nitrogen Oxides**
Records of training program attendance and the results of combustion analyses are maintained onsite by the Facilities Management Division and are available to the Department and EPA upon request. The most recent training sessions occurred on November 28 and 29, 2017.
- D. **Operational Limitations**
The Annual Emission Certification will be submitted to the Department by April 1, 2018 and will include the following:
- (1) The calculated total rolling 12-month heat input to the five boilers.
 - (3) The average NO_x emission rate from all five boilers for each calendar month.
 - (4) The total annual SO_x emissions from all five boilers on a 12-month rolling basis.

Status (Check one): Intermittent Compliance Continuous Compliance

Emission Unit ID(s): EU24C-1, EU24C-2, EU24C-3, EU24C-4, EU24C-6, EU24C-8, EU31-1, EU31-2, EU31-3, EU31-4, EU31-5, EU7-2, EU10-3, EU29-1, EU7-3

Permit Term (Describe requirements and cross-reference)

3.1 **Applicable Standards/Limits:**

- A. **Visible Emissions Limitations**
COMAR 26.11.09.05E(2), Stationary Internal Combustion Engine Powered Equipment - Emissions During Idle Mode. "A person may not cause or permit the discharge of emissions from any engine, operating at idle, greater than 10 percent opacity."

COMAR 26.11.09.05E(3), Stationary Internal Combustion Engine Powered Equipment - Emissions During Operating Mode. "A person may not cause or permit the discharge of emissions from any engine, operating at other than idle conditions, greater than 40 percent opacity."

COMAR 26.11.09.05E(4) - Stationary Internal Combustion Engine Powered Equipment - Exceptions.
(a) "Section E(2) of this regulation does not apply for a period of 2 consecutive minutes after a period of idling of 15 consecutive minutes for the purpose of clearing the exhaust system."
(b) "Section E(2) of this regulation does not apply to emissions resulting directly from cold engine start-up and warm-up for the following maximum periods:
(i) Engines that are idled continuously when not in service: 30 minutes;
(ii) All other engines: 15 minutes."
(c) "Section E(2) and (3) of this regulation do not apply while maintenance, repair, or testing is being performed by qualified mechanics."
- B. **Control of Sulfur Oxides**
COMAR 26.11.09.07A - Sulfur Content Limitation for Fuel "A person may not burn, sell or make available for sale any fuel with a sulfur content by weight in excess of or which otherwise exceeds the following limitations: (2) In Areas III and IV: (b) Distillate fuel oils, 0.3 percent."

C. Control of Nitrogen Oxides

COMAR 26.11.09.08G(1), Requirements for Fuel-Burning Equipment with a Capacity Factor of 15 Percent or Less, and Combustion Turbines with a Capacity Factor Greater than 15 Percent.

- (1) "A person who owns or operates fuel-burning equipment with a capacity factor (as defined in 40 CFR Part 72.2) of 15 percent or less shall:
- (a) Provide certification of the capacity factor of the equipment to the Department in writing;
 - (b) For fuel-burning equipment that operates more than 500 hours during a calendar year, perform a combustion analysis and optimize combustion at least once annually;
 - (c) Maintain the results of the combustion analysis at the site for at least 2 years and make these results available to the Department and the EPA upon request;
 - (d) Require each operator of an installation, except combustion turbines, to attend operator training programs at least once every 3 years, on combustion optimization that are sponsored by the Department, the EPA, or equipment vendors; and
 - (e) Maintain a record of training program attendance for each operator at the site, and make these records available to the Department upon request."

D. Operational Limitation

This condition does NOT apply to EU24C-6 and EU29-1 (ARMA Registration Nos. 033-0675-9-1366 and 9-1422)

In order to remain exempt from the requirements of 40 CFR Part 63, Subpart ZZZZ per 40 CFR §63.6585(f)(3), the engines may not operate or be contractually obligated to be available for more than 15 hours per calendar year for emergency demand response or periods where there is a deviation of voltage or frequency of 5 percent or greater below standard voltage or frequency. In addition the engines may not operate for non-emergency situations to supply power as part of a financial arrangement with another entity. The Permittee does not need to operate on No.2 fuel oil solely for the purpose of conducting this test.

3.2 Testing Requirements:**A. Visible Emissions Limitations**

See Section 3.3, Monitoring Requirements.

B. Control of Sulfur Oxides

See Section 3.3, Monitoring Requirements.

C. Control of Nitrogen Oxides

The Permittee shall perform a combustion analysis and optimize combustion at least once annually when the fuel-burning equipment operates for more than 500 hours in a calendar year. [Reference: COMAR 26.11.09.08G(1)(b)]

D. Operation Limitation

See Section 3.4, Record Keeping Requirements.

3.3 Monitoring Requirements:**A. Visible Emissions Limitations**

The Permittee shall perform preventive maintenance to optimize combustion performance. [Reference: COMAR 26.11.03.06(C)]

B. Control of Sulfur Oxides

The Permittee shall obtain a certification from the fuel supplier indicating that the fuel oil is in compliance with the limitation on the sulfur content of the fuel oil or obtain sulfur in fuel analyses of oil that is representative of the oil burned. [Reference: COMAR 26.11.03.06C]

C. Control of Nitrogen Oxides

The Permittee shall calculate the capacity factor of each unit for within 30 days after the end of each month. [Reference: COMAR 26.11.03.06C]

D. Operational Limitation

See Section 3.4, Record Keeping Requirements.

3.4 Record Keeping Requirements:

Note: All records must be maintained for a period of at least five (5) years and be made available to the Department upon request. [Reference: COMAR 26.11.03.06C(5)(g)]

A. Visible Emissions Limitations

The Permittee shall:

- (1) Maintain an operation manual and prevention maintenance plan; and
 - (2) Maintain a record of the maintenance performed that relates to combustion performance.
- [Reference: COMAR 26.11.03.06C]

B. Control of Sulfur Oxides

The Permittee shall maintain records of fuel supplier's certification or sulfur in fuel analyses. [Reference: COMAR 26.11.09.07C]

C. Control of Nitrogen Oxides

The Permittee shall:

- (1) Maintain the results of the combustion analysis performed when the hours of operation exceeds 500 hours. [Reference: COMAR 26.11.09.08G(1)(e)]
- (2) Retain records of training program attendance for each operator. [Reference: COMAR 26.11.09.08G(1)(e)]
- (3) Retain monthly records of the calculated capacity factors. [Reference: COMAR 26.11.03.06C]

D. Operational Limitation

The Permittee shall maintain for at least five (5) years, an operating log for each generator, listing the dates, hours of operation, and reason for generator operation (i.e. maintenance, operational testing, power outage, etc). [Reference: COMAR 26.11.03.06]

3.5 Reporting Requirements:**A. Visible Emissions Limitations**

See Section 3.4, Record Keeping Requirements.

B. Control of Sulfur Oxides

The Permittee shall report fuel supplier certifications or a copy of the sulfur in fuel analyses to the Department upon request. [Reference: COMAR 26.11.09.07C]

C. Control of Nitrogen Oxides

The Permittee shall submit a record of the training program attendance for each operator to the Department upon request. [Reference: COMAR 26.11.09.08G(1)(e)]

The Permittee shall provide certification of the capacity factor of the equipment to the Department in writing as part of the annual Emissions Certification Report. [Reference: COMAR 26.11.09.08G(1)(a) and COMAR 26.11.03.06C]

D. Operational Limitation

The Permittee shall submit a record of the total generator operating hours in writing as part of the Annual Emissions Certification Report. [Reference: COMAR 26.11.03.06C]

Compliance Methods for the Above (Description and Citation):**3.1 Applicable Standards/Limits:****A. Visible Emissions Limitations**

Current records do not indicate any discharge from these units greater than 10 percent opacity while operating in idle mode, or greater than 40 percent opacity during operating mode.

B. Control of Sulfur Oxides

Fuel supplier certifications were included within the Semi-Annual Fuel Reports, which were submitted to the Department on July 25, 2017 (reporting period January 2017 to June 2017) and January 25, 2018 (reporting period July 2017 to December 2017).

The fuel supplier certifications certify that the fuel delivered in 2017 meets or exceeds the sulfur content limits and requirements identified in the Title V operating permit. The certifications certify the fuel oil is a 15 ppm sulfur (maximum) dyed ultra-low sulfur diesel fuel.

C. Control of Nitrogen Oxides

- (a) The capacity factors of all the generators are calculated within 30 days after the end of each month and maintained by the Air Emissions Database. All calculated capacity factors are less than 15%. They are included in the Annual Emission Certification Report submitted to the Department by April 1, 2018.
- (b) A combustion analysis has not been required because the generators have not operated more than 500 hours during the calendar year.
- (c) Results of any combustion analysis are maintained onsite for at least 2 years and the results are available to the Department and EPA upon request.
- (d) Each operator has attended an operator training program on combustion analysis, which is sponsored by the Department, EPA, or equipment vendors. The most recent training sessions occurred on November 28 and 29, 2017.
- (e) Records of the training programs attendance for each operator are maintained onsite and will be made available to the Department upon request.

D. Operational Limitation

Records indicate that the generators EU7-2, EU10-3, EU24C-1 to 4 and 8, EU31-1 to 5, and EU7-3 did not operate and were not contractually obligated to be available for more than 15 hours during the year for emergency demand response or periods where there is a deviation of voltage or frequency of 5 percent or greater below standard voltage or frequency. Records also indicate that the engines did not operate for non-emergency situations to supply power as part of a financial arrangement with another entity. Therefore, they remain exempt from the requirements of 40 CFR 63 Subpart ZZZZ.

3.2 Testing Requirements:**A. Visible Emissions Limitations**

See Section 3.3, Monitoring Requirements.

B. Control of Sulfur Oxides

See Section 3.3, Monitoring Requirements.

C. Control of Nitrogen Oxides

These units were not operated for more than 500 hours this calendar year, therefore, no combustion analysis was required.

D. Operation Limitation

See Section 3.4, Record Keeping Requirements.

3.3 Monitoring Requirements:**A. Visible Emissions Limitations**

Preventive maintenance to optimize combustion performance is performed on these units on a monthly basis.

B. Control of Sulfur Oxides

Fuel supplier certifications were included within the Semi-Annual Fuel Reports, which were submitted to the Department on July 25, 2017 (reporting period January 2017 to June 2017) and January 25, 2018 (reporting period July 2017 to December 2017).

The fuel supplier certifications certify that the fuel delivered in 2017 meets or exceeds the sulfur content limits and requirements identified in the Title V operating permit. The certifications certify the fuel oil is a 15 ppm sulfur (maximum) dyed ultra-low sulfur diesel fuel.

C. Control of Nitrogen Oxides

The monthly capacity factor of each unit is calculated and maintained in the Air Emissions Database within 30 days after the end of each month.

D. Operational Limitation

See Section 3.4, Record Keeping Requirements.

3.4 Record Keeping Requirements:

All records are maintained onsite for a period of at least 5 years and are available to the Department upon request.

A. Visible Emissions Limitations

All operations manuals are maintained onsite by the Facilities Management Division. Preventive maintenance plans and records of maintenance performed that relates to combustion performance are continuously maintained in the MAXIMO database.

B. Control of Sulfur Oxides

Records of fuel oil supplier certifications are collected after fuel deliveries and are maintained onsite by the Facilities Management Division. Sulfur in fuel analyses are also performed and those records are maintained by the Medical and Environmental Management Division.

C. Control of Nitrogen Oxides

- (1) Hours of operation for the units are collected on a monthly basis. These records indicate that operation did not exceed 500 hours, therefore, no combustion analysis was required.
- (2) Records of training program attendance for each operator are maintained onsite by the Facilities Management Division for a period of at least 5 years.
- (3) Monthly records of the calculated capacity factors of each unit are maintained in the Air Emissions Database. These data are also reported in the Annual Emissions Certification Report submitted to the Department.

D. Operational Limitation

The operating log for each generator, listing the dates, hours of operation, and reason for generator operation is maintained onsite by the Facilities Management Division for a period of at least 5 years. These data are also reported in the Annual Emissions Certification Report and the Semi-Annual Fuel Report submitted to the Department.

3.5 Reporting Requirements:**A. Visible Emissions Limitations**

See Section 3.4, Record Keeping Requirements.

B. Control of Sulfur Oxides

Fuel supplier certifications were included within the Semi-Annual Fuel Reports, which were submitted to the Department on July 25, 2017 (reporting period January 2017 to June 2017) and January 25, 2018 (reporting period July 2017 to December 2017).

The fuel supplier certifications certify that the fuel delivered in 2017 meets or exceeds the sulfur content limits and requirements identified in the Title V operating permit. The certifications certify the fuel oil is a 15 ppm sulfur (maximum) dyed ultra-low sulfur diesel fuel.

C. Control of Nitrogen Oxides

Records of training program attendance and the results of combustion analysis are maintained onsite by the Facilities Management Division and are available to the Department and EPA upon request. The most recent training sessions occurred on November 28 and 29, 2017.

The Annual Emission Certification will be submitted to the Department by April 1, 2018 and will include monthly calculations of the capacity factor of each unit.

D. Operational Limitation

The Annual Emission Certification will be submitted to the Department by April 1, 2018 and will include the total generator operating hours.

Status (Check one): Intermittent Compliance Continuous Compliance

Emission Unit ID(s): EU24C-6, EU29-1**Permit Term (Describe requirements and cross-reference)****3a.1 Applicable Standards/Limits:****A. Visible Emissions Limitations**

The Permittee must not exceed the following opacity emission standards:

- (a) 20 percent during the acceleration mode;
- (b) 15 percent during the lugging mode; and
- (c) 50 percent during the peaks in either the acceleration or lugging modes.

[Reference: 40 CFR §60.4205(b), §60.4202(a)(2), and §89.113(a)]

B. Control of Sulfur Oxides

The Permittee must meet the non-road diesel fuel sulfur requirements of 40 CFR §80.510(b) as follows:

- (a) Maximum sulfur content 15 ppm and
- (b) Minimum cetane index of 40; or
- (c) Maximum aromatic content of 35 volume percent.

[Reference: 40 CFR §60.4207(b) and 40 CFR §80.510(b)]

C. Control of Nitrogen Oxides

The Permittee must not exceed the following emission requirement: NMHC + NOx: 6.4 grams per kilowatt hour. [Reference: 40 CFR §60.4205(b), §60.4202(a)(2), §89.112(a), and 40 CFR §89.112(a) Table 1]

D. Control of Particulate Matter

The Permittee must not exceed the following emission requirement: PM: 0.2 grams per kilowatt hour. [Reference: 40 CFR §60.4205(b), §60.4202(a)(2), §89.112(a), and 40 CFR §89.112(a) Table 1]

E. Control of Carbon Monoxide

The Permittee must not exceed the following emission requirement: CO: 3.5 grams per kilowatt hour. [Reference: 40 CFR §60.4205(b), §60.4202(a)(2), §89.112(a), and 40 CFR §89.112(a) Table 1]

F. Operational Limitations

The Permittee must install and operate a non-resettable hourly time meter on each engine. [Reference: 40 CFR §60.4209(a)]

The Permittee must operate and maintain the engines in a manner that achieves the emissions standards of the entire life of the engine. [Reference: 40 CFR §60.4206]

The Permittee must operate and maintain the engines and control devices according to the manufacturer's emission related written instruction. [Reference: 40 CFR §60.4211(a)(1)]

The Permittee may change only those emission related settings that are approved by the manufacturer. [Reference: 40 CFR §60.4211(a)(2)]

The Permittee must operate the emergency engines as described below.

- (1) There is no time limit on the use of emergency stationary ICE in emergency situations.
- (2) The Permittee may operate the emergency engine as described below for a maximum of 100 hours per calendar year:
 - (i) Emergency stationary ICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that federal, state, or local standards require maintenance and testing of emergency ICE beyond 100 hours per calendar year.
 - (ii) Emergency stationary ICE may be operated for emergency demand response for periods in which the Reliability Coordinator under the North American Electric Reliability Corporation (NERC) Reliability Standard EOP-002-3, Capacity and Energy Emergencies (incorporated by reference, see §60.17), or other authorized entity as determined by the Reliability Coordinator, has declared an Energy Emergency Alert Level 2 as defined in the NERC Reliability Standard EOP-002-3.
 - (iii) Emergency stationary ICE may be operated for periods where there is a deviation of voltage or frequency of 5 percent or greater below standard voltage or frequency.
- (3) Emergency stationary ICE may be operated for up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing and emergency demand response provided in paragraph (f)(2) of this section. Except as provided in paragraph (f)(3)(i) of this section, the 50 hours per calendar year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to an electric grid or otherwise supply power as part of a financial arrangement with another entity.
 - (i) The 50 hours per year for non-emergency situations can be used to supply power as part of a financial arrangement with another entity if all of the following conditions are met:
 - (A) The engine is dispatched by the local balancing authority or local transmission and distribution system operator.
 - (B) The dispatch is intended to mitigate local transmission and/or distribution limitations so as to avert potential voltage collapse or line overloads that could lead to the interruption of power supply in a local area or region.

- (C) The dispatch follows reliability, emergency operation or similar protocols that follow specific NERC, regional, state, public utility commission or local standards or guidelines.
- (D) The power is provided only to the facility itself or to support the local transmission and distribution system.
- (E) The owner or operator identifies and records the entity that dispatches the engine and the specific NERC, regional, state, public utility commission or local standards or guidelines that are being followed for dispatching the engine. The local balancing authority or local transmission and distribution system operator may keep these records on behalf of the engine owner or operator.

(ii) [Reserved]

[Reference: 40 CFR §60.4211(f)]

3a.2 Testing Requirements:

- A. **Visible Emissions Limitations**
See Section 3a.3, Monitoring Requirements.
- B. **Control of Sulfur Oxides**
See Section 3a.4, Record Keeping Requirements.
- C. **Control of Nitrogen Oxides**
See Section 3a.3, Monitoring Requirements.
- D. **Control of Particulate Matter**
See Section 3a.3, Monitoring Requirements.
- E. **Control of Carbon Monoxide**
See Section 3a.3, Monitoring Requirements.
- F. **Operational Limitations**
See Section 3a.4, Record Keeping Requirements.

3a.3 Monitoring Requirements:

- A. **Visible Emissions Limitations**
The Permittee will demonstrate compliance with this condition by purchasing an engine certified to the emission standards in 40 CFR §60.4205(b). [Reference: 40 CFR §60.4211(c)]
- B. **Control of Sulfur Oxides**
See Section 3a.4, Record Keeping Requirements.
- C. **Control of Nitrogen Oxides**
The Permittee will demonstrate compliance with this condition by purchasing an engine certified to the emission standards in 40 CFR §60.4205(b). [Reference: 40 CFR §60.4211(c)]
- D. **Control of Particulate Matter**
The Permittee will demonstrate compliance with this condition by purchasing an engine certified to the emission standards in 40 CFR §60.4205(b). [Reference: 40 CFR §60.4211(c)]
- E. **Control of Carbon Monoxide**
The Permittee will demonstrate compliance with this condition by purchasing an engine certified to the emission standards in 40 CFR §60.4205(b). [Reference: 40 CFR §60.4211(c)]
- F. **Operational Limitations**
See Section 3a.4, Record Keeping Requirements.

3a.4 Record Keeping Requirements:

- A. **Visible Emissions Limitations**
See Section 3a.3, Monitoring Requirements.
- B. **Control of Sulfur Oxides**
The Permittee shall maintain for at least five (5) years and make available to the Department upon request, records for each fuel delivery from the fuel supplier a fuel supplier certification consisting of the name of the oil supplier, the date of delivery, the amount of fuel delivered, and a statement from the fuel supplier that the diesel fuel oil complies with the specifications of 40 CFR §80.510(b).
- C. **Control of Nitrogen Oxides**
The Permittee shall maintain for at least five (5) years and make available to the Department upon request, records of the certifications of compliance or manufacturer engine test data required by 40 CFR §60.4211.
- D. **Control of Particulate Matter**
The Permittee shall maintain for at least five (5) years and make available to the Department upon request, records of the certifications of compliance or manufacturer engine test data required by 40 CFR §60.4211.
- E. **Control of Carbon Monoxide**
The Permittee shall maintain for at least five (5) years and make available to the Department upon request, records of the certifications of compliance or manufacturer engine test data required by 40 CFR §60.4211.

F. Operational Limitations

The Permittee shall maintain for at least five (5) years and make available to the Department upon request, an operating log for each generator, listing the dates, hours of operation, and reason for generator operation (i.e. maintenance, operational testing, power outage, etc.). [Reference: COMAR 26.11.03.06C]

3a.5 Reporting Requirements:**A. Visible Emissions Limitations**

See Section 3a.3, Monitoring Requirements.

B. Control of Sulfur Oxides

See Section 3a.4, Record Keeping Requirements.

C. Control of Nitrogen Oxides

See Section 3a.4, Record Keeping Requirements.

D. Control of Particulate Matter

See Section 3a.4, Record Keeping Requirements.

E. Control of Carbon Monoxide

See Section 3a.4, Record Keeping Requirements.

F. Operational Limitations

In years in which the generator is contractually obligated to be available for more than 15 hours per year for the purposes of emergency demand response or for periods where there is a deviation of voltage or frequency of 5 percent or greater below standard voltage or frequency, or for non-emergency situations to supply power as part of a financial arrangement with another entity, the Permittee must submit an annual report according to the following requirements:

(a) The report must contain the following information:

- (i) Company name and address where the engine is located.
- (ii) Date of the report and beginning and ending dates of the reporting period.
- (iii) Engine site rating and model year.
- (iv) Latitude and longitude of the engine in decimal degrees reported to the fifth decimal place.
- (v) Hours operated for the purposes of emergency demand response and for periods where there is a deviation of voltage or frequency of 5 percent or greater below standard voltage or frequency, including the date, start time, and end time for engine operation for this use.
- (vi) Number of hours the engine is contractually obligated to be available for the purposes of emergency demand response and for periods where there is a deviation of voltage or frequency of 5 percent or greater below standard voltage or frequency.
- (vii) Hours spent for operation for the purposes specified in §60.4211(f)(3)(i), including the date, start time, and end time for engine operation for the purposes specified in §60.4211(f)(3)(i). The report must also identify the entity that dispatched the engine and the situation that necessitated the dispatch of the engine.

(b) The first annual report must cover the calendar year 2015 and must be submitted no later than March 31, 2016. Subsequent annual reports for each calendar year must be submitted no later than March 31 of the following calendar year.

(c) The annual report must be submitted electronically using the subpart specific reporting form in the Compliance and Emissions Data Reporting Interface (CEDRI) that is accessed through EPA's Central Data Exchange (CDX) (www.epa.gov/cdx). However, if the reporting form specific to this subpart is not available in CEDRI at the time that the report is due, the written report must be submitted to the Administrator at the appropriate address listed in 40 CFR §60.4.

[Reference: 40 CFR §60.4214(d)]

Compliance Methods for the Above (Description and Citation):**3a.1 Applicable Standards/Limits:****A. Visible Emissions Limitations**

To comply with this condition, an engine certified to the emission standards in 40CFR60.4205(b) must be purchased. The emissions standards at 40CFR60.4205(b) represent Tier 2 emissions standards for nonroad engines. According to their specifications, EU24C-6 is certified to meet EPA regulations for Tier 2 emissions standards for nonroad engine and EU29-1 is certified to meet EPA regulations for Tier 4i emissions standards for nonroad engine, which are more stringent than the Tier 2 standards.

B. Control of Sulfur Oxides

Fuel supplier certifications were included within the Semi-Annual Fuel Reports, which were submitted to the Department on July 25, 2017 (reporting period January 2017 to June 2017) and January 25, 2018 (reporting period July 2017 to December 2017).

The fuel oil supplier certifications certify that the fuel oil delivered in 2017 meet the maximum sulfur content requirement of 15 ppm, the minimum cetane index requirement of 40 and/or the maximum aromatic content requirement of 35 percent by volume.

C. Control of Nitrogen Oxides

To comply with this condition, an engine certified to the emission standards in 40CFR60.4205(b) must be purchased. The emissions standards at 40CFR60.4205(b) represent Tier 2 emissions standards for nonroad engines. According to their specifications, EU24C-6 is certified to meet EPA regulations for Tier 2 emissions standards for nonroad engine and EU29-1 is certified to meet EPA regulations for Tier 4i emissions standards for nonroad engine, which are more stringent than the Tier 2 standards.

D. Control of Particulate Matter

To comply with this condition, an engine certified to the emission standards in 40CFR60.4205(b) must be purchased. The emissions standards at 40CFR60.4205(b) represent Tier 2 emissions standards for nonroad engines. According to their specifications, EU24C-6 is certified to meet EPA regulations for Tier 2 emissions standards for nonroad engine and EU29-1 is certified to meet EPA regulations for Tier 4i emissions standards for nonroad engine, which are more stringent than the Tier 2 standards.

E. Control of Carbon Monoxide

To comply with this condition, an engine certified to the emission standards in 40CFR60.4205(b) must be purchased. The emissions standards at 40CFR60.4205(b) represent Tier 2 emissions standards for nonroad engines. According to their specifications, EU24C-6 is certified to meet EPA regulations for Tier 2 emissions standards for nonroad engine and EU29-1 is certified to meet EPA regulations for Tier 4i emissions standards for nonroad engine, which are more stringent than the Tier 2 standards.

F. Operational Limitations

A non-resettable hourly time meter is installed and operated on each engine.

EU24C-6 and EU29-1 are being operated and maintained according to the operation manuals and each engine specification documentation, which contain the emissions standards to achieve, emission related written instructions, and the required emission related settings.

GSFC operated both emergency engines as described below.

- (1) Even though there is no time limit on the use of these two emergency generators in emergency situations, EU29-1 did not operate in emergency situation and EU24C-6 operated only 4 hours in emergency situation, in calendar year 2017.
- (2) Records indicate that the emergency generators did not operate close to the maximum 100 hours in calendar year 2017:
 - (i) Records indicate that the emergency generators operated only for maintenance checks and readiness.
 - (ii) Rule vacated. However, records indicate that the emergency generators did not operate for emergency demand response.
 - (iii) Rule vacated. However, records indicate that the emergency generators did not operate for periods where there was a deviation of voltage or frequency of 5 percent or greater below standard voltage or frequency.
- (3) Records indicate that the emergency generators did not operate in non-emergency situations in calendar year 2017.

3a.2 Testing Requirements:**A. Visible Emissions Limitations**

See Section 3a.3, Monitoring Requirements.

B. Control of Sulfur Oxides

See Section 3a.4, Record Keeping Requirements.

C. Control of Nitrogen Oxides

See Section 3a.3, Monitoring Requirements.

D. Control of Particulate Matter

See Section 3a.3, Monitoring Requirements.

E. Control of Carbon Monoxide

See Section 3a.3, Monitoring Requirements.

F. Operational Limitations

See Section 3a.4, Record Keeping Requirements.

3a.3 Monitoring Requirements:**A. Visible Emissions Limitations**

To comply with this condition, an engine certified to the emission standards in 40CFR60.4205(b) must be purchased. The emissions standards at 40CFR60.4205(b) represent Tier 2 emissions standards for nonroad engines. According to their specifications, EU24C-6 is certified to meet EPA regulations for Tier 2 emissions standards for nonroad engine and EU29-1 is certified to meet EPA regulations for Tier 4i emissions standards for nonroad engine, which are more stringent than the Tier 2 standards.

B. Control of Sulfur Oxides

See Section 3a.4, Record Keeping Requirements.

C. Control of Nitrogen Oxides

To comply with this condition, an engine certified to the emission standards in 40CFR60.4205(b) must be purchased. The emissions standards at 40CFR60.4205(b) represent Tier 2 emissions standards for nonroad engines. According to their specifications, EU24C-6 is certified to meet EPA regulations for Tier 2 emissions standards for nonroad engine and EU29-1 is certified to meet EPA regulations for Tier 4i emissions standards for nonroad engine, which are more stringent than the Tier 2 standards.

D. Control of Particulate Matter

To comply with this condition, an engine certified to the emission standards in 40CFR60.4205(b) must be purchased. The emissions standards at 40CFR60.4205(b) represent Tier 2 emissions standards for nonroad engines. According to their specifications, EU24C-6 is certified to meet EPA regulations for Tier 2 emissions standards for nonroad engine and EU29-1 is certified to meet EPA regulations for Tier 4i emissions standards for nonroad engine, which are more stringent than the Tier 2 standards.

E. Control of Carbon Monoxide

To comply with this condition, an engine certified to the emission standards in 40CFR60.4205(b) must be purchased. The emissions standards at 40CFR60.4205(b) represent Tier 2 emissions standards for nonroad engines. According to their specifications, EU24C-6 is

certified to meet EPA regulations for Tier 2 emissions standards for nonroad engine and EU29-1 is certified to meet EPA regulations for Tier 4i emissions standards for nonroad engine, which are more stringent than the Tier 2 standards.

- F. **Operational Limitations**
See Section 3a.4, Record Keeping Requirements.

3a.4 Record Keeping Requirements:

All records are maintained onsite for a period of at least 5 years and are available to the Department upon request.

- A. **Visible Emissions Limitations**
See Section 3a.3, Monitoring Requirements.
- B. **Control of Sulfur Oxides**
Records of fuel oil supplier certifications, which consist of the name of the oil supplier, the date of delivery, the amount of fuel delivered, and a statement from the fuel supplier that the diesel fuel oil complies with the specifications of 40CFR80.510(b), are collected after fuel deliveries and are maintained onsite by the Facilities Management Division. The sulfur content and cetane index of fuel analyses are also performed and those records are maintained by the Medical and Environmental Management Division.
- C. **Control of Nitrogen Oxides**
Records of the manufacturer's engine test data required by 40CFR60.4211 are contained in the generators' specification documentation, which are maintained onsite by the Facilities Management Division.
- D. **Control of Particulate Matter**
Records of the manufacturer's engine test data required by 40CFR60.4211 are contained in the generators' specification documentation, which are maintained onsite by the Facilities Management Division.
- E. **Control of Carbon Monoxide**
Records of the manufacturer's engine test data required by 40CFR60.4211 are contained in the generators' specification documentation, which are maintained onsite by the Facilities Management Division.
- F. **Operational Limitations**
The operating log for each generator, listing the dates, hours of operation, and reason for generator operation is maintained onsite by the Facilities Management Division for a period of at least 5 years. These data are also reported in the Annual Emissions Certification Report and the Semi-Annual Fuel Report submitted to the Department.

3a.5 Reporting Requirements:

- A. **Visible Emissions Limitations**
See Section 3a.3, Monitoring Requirements.
- B. **Control of Sulfur Oxides**
See Section 3a.4, Record Keeping Requirements.
- C. **Control of Nitrogen Oxides**
See Section 3a.4, Record Keeping Requirements.
- D. **Control of Particulate Matter**
See Section 3a.4, Record Keeping Requirements.
- E. **Control of Carbon Monoxide**
See Section 3a.4, Record Keeping Requirements.
- F. **Operational Limitations**
In calendar year 2017, the generators EU24C-6 and E29-1 were not contractually obligated to be available for more than 15 hours per year for the purposes of emergency demand response or for periods where there was a deviation of voltage or frequency of 5 percent or greater below standard voltage or frequency, or for non-emergency situations to supply power as part of a financial arrangement with another entity. Therefore, GSFC does not have to submit an annual report to the Compliance and Emissions Data Reporting Interface.

Status (Check one): Intermittent Compliance Continuous Compliance

Emission Unit ID(s): EU97-1, EU302-1, EU302-3, EU35-1, EU35-2

Permit Term (Describe requirements and cross-reference)

4.1 Applicable Standards/Limits:

- A. **Visible Emissions Limitations**
COMAR 26.11.09.05A(2) – Fuel Burning Equipment. "In areas III and IV, a person may not cause or permit the discharge of emissions from any fuel burning equipment, other than water in an uncombined form, which is visible to human observers except that, for the

purpose of demonstrating compliance using COM data, emissions that are visible to a human observer are those that are equal to or greater than 10 percent opacity.”

COMAR 26.11.09.05A(3) Exceptions. “Section A(1) and (2) of this regulation do not apply to emissions during load changes, soot blowing, start-up or adjustments or occasional cleaning of control equipment if:

- (a) The visible emissions are not greater than 40 percent opacity; and
- (b) The visible emissions do not occur for more than 6 consecutive minutes in any sixty minute period.

B. Control of Nitrogen Oxides

COMAR 26.11.09.08F, Requirements for Space Heaters.

- (1) “A person who owns or operates a space heater as defined in Regulation .01B of this chapter shall:
 - (a) Submit to the Department a list of each affected installation on the premises and the types of fuel used in each installation;
 - (b) Develop an operating and maintenance plan to minimize NO_x emissions based on the recommendations of equipment vendors and other information including the source’s operating and maintenance experience;
 - (c) Implement the operating and maintenance plan and maintain the plan at the premises for review upon request by the Department;
 - (d) Require installation operators to attend in-State operator training programs once every 3 years on combustion optimization that are sponsored by the Department, the EPA, or equipment vendors; and
 - (e) Prepare and maintain a record of training program attendance for each operator at the site and make these records available to the Department upon request.”
- (2) “A person who owns or operates an installation that no longer qualifies as a space heater shall inform the Department not later than 60 days after the date when the fuel-burning equipment did not qualify, and shall meet the applicable fuel-burning equipment RACT requirement in this regulation.”

C. Operational Limitations

The Permittee shall burn only natural gas, unless approval is obtained from the Department. [Reference: COMAR 26.11.02.09A(6)]

4.2 Testing Requirements:

A. Visible Emissions Limitations

See Section 4.3, Monitoring Requirements.

B. Control of Nitrogen Oxides

See Section 4.3, Monitoring Requirements.

C. Operational Limitations

See Section 4.4, Record Keeping Requirements.

4.3 Monitoring Requirements:

A. Visible Emissions Limitations

The Permittee shall properly operate and maintain the boiler in a manner to prevent visible emissions. [Reference: COMAR 26.11.03.06C]

B. Control of Nitrogen Oxides

The Permittee shall maintain an operating and maintenance plan to minimize NO_x emissions based on the recommendations of equipment vendors and other information including the source’s operating and maintenance experience. [Reference: COMAR 26.11.09.08F(1)(b)]

C. Operational Limitations

See Section 4.4, Record Keeping Requirements.

4.4 Record Keeping Requirements:

Note: All records must be maintained for a period of at least five (5) years and be made available to the Department upon request. [Reference: COMAR 26.11.03.06C(5)(g)]

A. Visible Emissions Limitations

The Permittee shall maintain an operations manual and preventative maintenance plan and record of the maintenance performed based on the recommendations of equipment vendors and other information including the source’s operating and maintenance experience. [Reference: COMAR 26.11.09.08F]

B. Control of Nitrogen Oxides

The Permittee shall:

- (1) Maintain the records of the maintenance performed based on the recommendations of equipment vendors and other information including the source’s operating and maintenance experience. [Reference: COMAR 26.11.09.08F(1)(c)]
- (2) Retain records of training program attendance for each operator. [Reference: COMAR 26.11.09.08G(1)(e)]
- (3) Maintain an operations manual and preventive maintenance plan.
- (4) Maintain the records of fuel usage that demonstrates that each boiler meets the definition of a space heater. [Reference: COMAR 26.11.09.08K(3) and COMAR 26.11.03.06C]

C. Operational Limitations

The Permittee shall maintain a record of combined gas usage by the boilers based on meter readings and use this data to estimate fuel usage for each boiler. [Reference: COMAR 26.11.03.06C]

4.5 Reporting Requirements:

- A. **Visible Emissions Limitations**
See Section 4.4, Record Keeping Requirements.
- B. **Control of Nitrogen Oxides**
The Permittee shall submit a record of training program attendance for each operator to the Department upon request. [Reference: COMAR 26.11.09.08F(1)(e)]
- C. **Operational Limitations**
See Section 4.4, Record Keeping Requirements.

Compliance Methods for the Above (Description and Citation):**4.1 Applicable Standards/Limits:**

- A. **Visible Emissions Limitations**
Records maintained onsite indicate that there were no discharges of visible emissions from these units during the calendar year.
- B. **Control of Nitrogen Oxides**
 - (1) (a) A list of each affected emissions unit on the premises and the types of fuel used in each unit is submitted to the Department as part of the Semi-Annual Fuel Reports, which were submitted to the Department on July 25, 2017 (reporting period January 2017 to June 2017) and January 25, 2018 (reporting period July 2017 to December 2017).
 - (b) The operating and maintenance plans of these units to minimize NO_x emissions have been developed according to the recommendations of equipment vendors and other information including the sources' operating and maintenance experience.
 - (c) The operating and maintenance plans for these units have been implemented and are maintained onsite by the Facilities Management Division in the MAXIMO database. These records are available to the Department upon request.
 - (d) Once every 3 years, each operator is required to attend operator training programs on combustion optimization that are sponsored by the Department, the EPA, or equipment vendors. Training was last completed on November 28 and 29, 2017.
 - (e) Records of training program attendance for each operator are maintained onsite and these records are available to the Department upon request.
 - (2) As soon as it becomes apparent that GSFC no longer owns or operates an installation that qualifies as a space heater; GSFC will inform the Department no later than 60 days after the discovery, and will meet the applicable fuel-burning equipment RACT requirements in this regulation.
- C. **Operational Limitations**
Fuel usage records indicate that these units have only burned natural gas. However, The natural gas provider, Washington Gas, did not submit monthly invoices for the natural gas usage for the building 97 space heating boilers from 01/01/2017 to 12/31/2017 and building 35 space heating boilers from 05/01/2017 to 06/30/2017. GSFC continued to request the monthly invoices as a corrective action.

4.2 Testing Requirements:

- A. **Visible Emissions Limitations**
See Section 4.3, Monitoring Requirements.
- B. **Control of Nitrogen Oxides**
See Section 4.3, Monitoring Requirements.
- C. **Operational Limitations**
See Section 4.4, Record Keeping Requirements.

4.3 Monitoring Requirements:

- A. **Visible Emissions Limitations**
These units are operated and maintained in a way that prevents the discharge of visible emissions.
- B. **Control of Nitrogen Oxides**
The operating and maintenance plans for these units are maintained by the Facilities Management Division in the MAXIMO database.
- C. **Operational Limitations**
See Section 4.4, Record Keeping Requirements.

4.4 Record Keeping Requirements:

All records are maintained onsite for a period of at least 5 years and are available to the Department upon request.

- A. **Visible Emissions Limitations**
The operating and maintenance plans and records of maintenance for these units are maintained by the Facilities Management Division in the MAXIMO database.

- B. Control of Nitrogen Oxides**
 - (1) Records of maintenance performed on these units are maintained by the Facilities Management Division in the MAXIMO database.
 - (2) Records of training program attendance for each operator are maintained onsite. Training was last completed on November 28 and 29, 2017.
 - (3) The operating and maintenance plans for these units are maintained by the Facilities Management Division in the MAXIMO database.
 - (4) Records of fuel usage are maintained in the Air Emissions Database.
 - C. Operational Limitations**
Records of the combined fuel usage by the boilers based on meter readings are maintained in the Air Emissions Database.
- 4.5 Reporting Requirements:**
- A. Visible Emissions Limitations**
See Section 4.4, Record Keeping Requirements.
 - B. Control of Nitrogen Oxides**
Records of training program attendance for each operator are maintained onsite and available to the department upon request.
 - C. Operational Limitations**
See Section 4.4, Record Keeping Requirements.

Status (Check one): Intermittent Compliance Continuous Compliance

Emission Unit ID(s): EU4-2, EU4-3, EU4-6, EU5A-3

Permit Term (Describe requirements and cross-reference)

5.1 Applicable Standards/Limits:

- A. Visible Emissions Limitations**
COMAR 26.11.06.02C(2), Visible Emission Standards. "In areas III and IV a person may not cause or permit the discharge of emissions from any installation or building, other than water in an uncombined form, which is visible to human observers."

COMAR 26.11.06.02A(2), Exceptions. "The visible emissions standards in §C of this regulation do not apply to emissions during start-up and process modification or adjustments, or occasional cleaning of control equipment, if:
(a) The visible emissions are not greater than 40 percent opacity; and
(b) The visible emissions do not occur for more than 6 consecutive minutes in any 60 minute period."
- B. Control of Particulate Matter**
COMAR 26.11.06.03B(2)(a) – Particulate Matter from Confined Sources. "Areas III and IV. (a) A person may not cause or permit to be discharged into the outdoor atmosphere from any other installation, particulate matter in excess of 0.03 gr/SCFD (68.7 mg/dscm)."
- C. Control of VOC**
COMAR 26.11.19.13-1A, – Applicability and Exemptions.
(1) "This regulation applies to an aerospace coating operation at a premises where the total actual VOC emissions from all aerospace coating operations is 20 pounds or more per day."
(2) "The standards in §C(2) of this regulation do not apply to tooling and touch up and repair operations."
(3) "A person subject to the standards in §C(2) of this regulation may comply with those standards by using an air pollution control device (see Regulation .02B(2)(b) of this chapter)."

COMAR 26.11.19.13-1C, General Requirements for Aerospace Coating Operations.
(1) "Except as provided in §C(3) of this regulation, a person who owns or operates an aerospace coating operation subject to this regulation may not cause or permit the discharge of VOC into the atmosphere unless the standards in §C(2) of this regulation are met."
(2) Aerospace Coating Operation Standards.
(a) Coating Standards at Maximum Allowable VOC in Pounds Per Gallon (Grams Per Liter) of Coating Applied (Minus Water)

Coating Types	Pounds/Gallon (Grams/Liter)
Topcoats	3.5 (420)
Self-priming topcoat	3.5 (420)
Primers	2.9 (350)
Chemical Milling Maskants	1.3 (160)
Exterior primer for large commercial aircrafts	5.4 (650)
Primer for general aviation rework facilities	4.5 (540)
(b) Standards for Specialty Coatings.	

Coating	Pounds/Gallon (Grams/Liter)
Ablative Coating	5.0 (600)
Adhesion Promoter	7.42 (890)
Adhesive Bonding Primers: Cured at 250°F or below	7.09 (850)
Adhesive Bonding Primers: Cured above 250°F	8.59 (1030)
Antichafe Coating	5.50 (660)
Bearing Coating	5.17 (620)
Bonding Maskant	10.26 (1,230)
Caulking and Smoothing Compounds	7.09 (850)
Chemical Agent-Resistant Coating	4.58 (550)
Clear Coating	6.00 (720)
Commercial Exterior Aerodynamic Structure Primer	5.42 (650)
Commercial Interior Adhesive	6.34 (760)
Compatible Substrate Primer	6.50 (780)
Corrosion Prevention Compound	5.92 (710)
Critical Use and Line Sealer Maskant	8.51 (1,020)
Cryogenic Flexible Primer	5.38 (645)
Cryoprotective Coating	5.00 (600)
Cyanoacrylate Adhesive	8.51 (1,020)
Dry Lubricative Material	7.34 (880)
Electric or Radiation-Effect Coating	6.67 (800)
Electrostatic Discharge and Electromagnetic Interference (EMI) Coating	6.67 (800)
Elevated-Temperature Skydrol-Resistant Commercial Primer	6.17 (740)
Epoxy Polyamide Topcoat	5.50 (660)
Fire-Resistant (interior) Coating	6.67 (800)
Flexible Primer	5.34(640)
Flight-Test Coatings Missile or Single Use Aircraft	3.50 (420)
Flight-Test Coatings All Other	7.0 (840)
Fuel Tank Adhesive	5.17 (620)
Fuel-Tank Coating	6.00 (720)
High-Temperature Coating	7.09 (850)
Insulation Covering	6.17 (740)
Intermediate Release Coating	6.25 (750)
Lacquer	6.9 (830)
Metallized Epoxy Coating	6.17 (740)
Mold Release	6.50 (780)
Nonstructural Adhesive	3.00 (360)
Optical Antireflective Coating	6.25 (750)
Part Marking Coating	7.09 (850)
Pretreatment Coating	6.50
Rain Erosion-Resistant Coating	7.09 (850)
Rocket Motor Bonding Adhesive	7.42 (890)
Rocket Motor Nozzle Coating	5.50 (660)
Rubber-Based Adhesive	7.09 (850)
Scale Inhibitor	7.34 (880)
Screen Print Ink	7.00 (840)
Sealants: Extrudable/Roliable/Brushable Sealant	2.33 (280)
Sprayable Sealant	5.0 (600)
Seal Coat Maskant	10.26 (1,230)
Silicone Insulation Material	7.09 (850)
Solid Film Lubricant	7.34 (880)
Specialized Function Coating	7.42 (890)
Structural Autoclavable Adhesive	0.50 (60)
Structural Nonautoclavable Adhesive	7.09 (850)
Temporary Protective Coating	2.67 (320)
Thermal Control Coating	6.67 (800)
Wet fastener installation coating	5.63 (675)
Wing coating	7.09 (850)

- (3) "A person subject to this regulation may exceed the specialty coating standards in §C(2)(b) of this regulation if the total VOC emissions from all specialty coatings that exceed the standard in §C(2)(b) of this regulation do not exceed 20 pounds on any day."
- (4) "A person who owns or operates an aerospace coating operation subject to this regulation shall comply with the primer and topcoat applications operations, chemical milling maskant operations, and the test methods and coating averaging procedures specified in 40 CFR §§63.745(a)-(e), 63.747(a)-(e), and 63.750 as applicable, which are incorporated by reference."
- (5) **Cleanup Requirements.** "A person who owns or operates an aerospace coating operation shall:
- Store all waste materials containing VOC, including cloth or paper, in closed containers;
 - Maintain lids on surface preparation and cleanup materials when not in use; and
 - Use enclosed containers or VOC recycling equipment to clean spray gun equipment."

5.2 Testing Requirements:

- A. **Visible Emissions Limitations**
See Section 5.3, Monitoring Requirements.
- B. **Control of Particulate Matter**
See Section 5.3, Monitoring Requirements.
- C. **Control of VOC**
See Section 5.4, Record Keeping Requirements.

5.3 Monitoring Requirements:

- A. **Visible Emissions Limitations**
The Permittee shall conduct an annual one-minute visual observation of the spray booth exhaust. The visual observation must be conducted while the spray booth is in operation. If visible emissions are observed during any visual observation, the Permittee must increase the schedule of exhaust observation to a monthly basis and maintain that schedule until no visible emissions are observed in six consecutive monthly visual observations. If visible emissions are observed during any observation, the Permittee must inspect the spray booth for cause of visible emissions and perform necessary adjustments or repairs within 24-hours or prior to operating the spray booth. If visible emissions have not been eliminated, the Permittee shall perform daily 18-minute visual observation for opacity in accordance with EPA Reference Method 9 when operating the spray booth. [Reference: COMAR 26.11.03.06(C)]
- B. **Control of Particulate Matter**
The Permittee shall maintain a preventative maintenance plan for the spray booth system that describes the maintenance activity and time schedule for completing each activity. The Permittee shall perform maintenance activities within the timeframes established in the plan. [Reference: COMAR 26.11.03.06(C)]
- C. **Control of VOC**
See Section 5.4, Record Keeping Requirements.

5.4 Record Keeping Requirements:

Note: All records must be maintained for a period of at least 5 years and be made available to the Department upon request. [Reference: COMAR 26.11.03.06C(5)(g)]

- A. **Visible Emissions Limitations**
The Permittee shall maintain a log of visible emission observations performed. [Reference: COMAR 26.11.03.06C]
- B. **Control of Particulate Matter**
The Permittee shall maintain records of maintenance activities designed to minimize air emissions. [Reference: COMAR 26.11.03.06(C)]
- C. **Control of VOC**
Aerospace Coating Operations - Record Keeping.
(1) "A person subject to this regulation shall maintain the following records:
(i) A description and the volume of each coating used; and
(ii) The total weight and VOC content of each coating used on a monthly basis."
(2) "Records shall be retained for 3 years and be made available to the Department on request."
[Reference: COMAR 26.11.19.13-1(C)(6)]

The Permittee shall maintain a copy of MSDS/VOC data sheet for each coating used and retain records of monthly inspections of work practices on site for at least five years and make these records available to the Department upon request. [Reference: COMAR 26.11.03.06C]

The Permittee shall maintain records of material usage for the surface coating operation on site. [Reference: MDE Permit to Construct No 16-7-0235M, Condition #6]

The Permittee shall maintain records of the quantity of materials used in the paint spray booth and the hours of operation of the booth. [Reference: MDE Permit to Construct No. 037-6-1323, Part D(1)(a)]

5.5 Reporting Requirements:

- A. **Visible Emissions Limitations**
The Permittee shall report incidents of visible emissions in accordance with Permit Condition 4, Section III, "Report of Excess Emissions and Deviations".
- B. **Control of Particulate Matter**
See Section 5.4, Record Keeping Requirements
- C. **Control of VOC**
The Permittee shall report material usage and VOC content of coatings in the annual Emission Certification Report. [Reference: COMAR 26.11.02.19C & D and COMAR 26.11.19.13-1C(6)]

Compliance Methods for the Above (Description and Citation):

5.1 Applicable Standards/Limits:

A. Visible Emissions Limitations

Annual one-minute visual observation of the spray booth exhausts were conducted for EU4-2 on November 30, 2017; EU4-3 on December 1, 2017; and EU5A-3 on November 13, 2017. No visual emissions were observed.

B. Control of Particulate Matter

Filter banks and exhaust fans collect overspray and particulate matter from the paint booth operations. Filters are replaced as necessary to ensure that no discharge of particulate matter in excess of 0.03gr/SCFD is released into the outdoor atmosphere.

C. Control of VOC

Records maintained onsite indicate that the total actual VOC emissions from all aerospace coating operations are less than 20 pounds per day.

Review of material usage records indicate that all general requirements for aerospace coating operations per COMAR 26.11.19.13-1(C) are being met. In addition, review of monthly and weekly inspection checklists indicates that work practices are in compliance with cleanup requirements.

5.2 Testing Requirements:

A. Visible Emissions Limitations

See Section 5.3, Monitoring Requirements.

B. Control of Particulate Matter

See Section 5.3, Monitoring Requirements.

C. Control of VOC

See Section 5.4, Record Keeping Requirements.

5.3 Monitoring Requirements:

A. Visible Emissions Limitations

Annual one-minute visual observation of the spray booth exhausts were conducted for EU4-2 on November 30, 2017; EU4-3 on December 1, 2017; and EU5A-3 on November 13, 2017. No visual emissions were observed.

B. Control of Particulate Matter

The preventive maintenance plan for these units, which describes the maintenance activity and time scheduled for completing each activity is maintained onsite. Records demonstrating that maintenance activities are performed within the timeframes established in the plan are maintained continuously onsite by Code 546 for EU4-2 and EU4-3 and Code 547 for EU5A-3.

C. Control of VOC

See Section 5.4, Record Keeping Requirements.

5.4 Record Keeping Requirements:

All records are maintained onsite for a period of at least 5 years and are available to the Department upon request.

A. Visible Emissions Limitations

Copies of visual emission observations performed forms are maintained by the Medical and Environmental Management Division.

B. Control of Particulate Matter

Records containing dates of maintenance activities, designed to minimize air emissions, that were performed on these units are stored continuously onsite by Code 546 for EU4-2 and EU4-3 and Code 547 for EU5A-3.

C. Control of VOC

Records of material usage are maintained onsite daily. They contain a description and volume of each coating used. The total weight and VOC content of each coating are calculated and maintained onsite.

Copies of MSDS/VOC data sheets for each coating used and records of monthly inspections of work practices are maintained onsite.

For EU5A-3, the hours of operation of the booth are also maintained onsite.

5.5 Reporting Requirements:

A. Visible Emissions Limitations

There were no known incidents of visible emissions reported within the calendar year. Any incidence will be reported in accordance with Permit Condition 4, Section III, "Report of Excess Emissions and Deviations".

B. Control of Particulate Matter

See Section 5.4, Record Keeping Requirements

C. Control of VOC

The Annual Emission Certification will be submitted to the Department by April 1, 2018 and will include material usage and VOC

content of coatings from surface coating operations.

Status (Check one): ___ Intermittent Compliance X Continuous Compliance

Emission Unit ID(s): EU5-2, EU5-4, EU5-6

Permit Term (Describe requirements and cross-reference)

6.1 Applicable Standards/Limits:

A. Visible Emissions Limitations

COMAR 26.11.06.02C(2), Visible Emission Standards. "In areas III and IV a person may not cause or permit the discharge of emissions from any installation or building, other than water in an uncombined form, which is visible to human observers."

COMAR 26.11.06.02A(2), Exceptions. "The visible emissions standards in §C of this regulation do not apply to emissions during start-up and process modification or adjustments, or occasional cleaning of control equipment, if:

- (a) The visible emissions are not greater than 40 percent opacity; and
- (b) The visible emissions do not occur for more than 6 consecutive minutes in any 60 minute period."

B. Control of Particulate Matter

COMAR 26.11.06.03B(2), Particulate Matter from Confined Sources. Areas III and IV. (a) A person may not cause or permit to be discharged in the outdoor atmosphere from any other installation, particulate matter in excess of 0.03 gr/SCFD (68.7 mg/dscm)."

C. Operational Limitation

Prior to engaging in chromium electroplating or chromium anodizing, the source shall submit for approval a demonstration of compliance with 40 CFR 63, Subpart N, National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks. [Reference: MDE Permit to Construct No. 16-6-0855 N 1997]

6.2 Testing Requirements:

A. Visible Emissions Limitations

See Section 6.3, Monitoring Requirements.

B. Control of Particulate Matter

See Section 6.3, Monitoring Requirements.

C. Operational Limitation

See Section 6.5, Reporting Requirements.

6.3 Monitoring Requirements:

A. Visible Emissions Limitations

The Permittee shall conduct an annual one-minute visual observation of the exhaust. The visual observation must be conducted while the plating line is in operation. If visible emissions are observed during any visual observation, the Permittee must perform monthly observations of the exhaust and maintain that schedule until no visible emissions are observed in six consecutive monthly visual observations. If visible emissions are observed during any observation, the Permittee must inspect the plating line for the cause of visible emissions and perform necessary adjustments or repairs within 24-hours or prior to again operating the plating line. [Reference: COMAR 26.11.03.06(C)]

B. Control of Particulate Matter

The Permittee shall maintain a preventative maintenance plan for the plating shop that describes the maintenance activity designed to minimize air emissions and time schedule for completing each activity. The Permittee shall perform the described maintenance activities within the timeframes established in the plan and shall maintain a log with records of the dates that maintenance was performed. [Reference: COMAR 26.11.03.06(C)]

C. Operational Limitation

See Section 6.5, Reporting Requirements.

6.4 Record Keeping Requirements:

Note: All records must be maintained for a period of at least 5 years and be made available to the Department upon request. [Reference: COMAR 26.11.03.06C(5)(g)]

A. Visible Emissions Limitations

The Permittee shall maintain a log of visible emission observations performed. [Reference: COMAR 26.11.03.06C]

B. Control of Particulate Matter

The Permittee shall maintain records of maintenance activities designed to minimize air emissions. [Reference: COMAR 26.11.03.06C]

- C. **Operational Limitation**
See Section 6.5, Reporting Requirements.

6.5 Reporting Requirements:

- A. **Visible Emissions Limitations**
The Permittee shall report incidents of visible emissions in accordance with Permit Condition 4, Section III, "Report of Excess Emissions and Deviations".
- B. **Control of Particulate Matter**
See Section 6.4, Record Keeping Requirements.
- C. **Operational Limitation**
The Permittee shall submit for approval, a demonstration of compliance with 40 CFR Part 63, Subpart N, National Emissions Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks, prior to engaging in chromium electroplating or chromium anodizing activities. [Reference: MOE Permit to Construct No. 16-6-0855 N issued in 1997]

Compliance Methods for the Above (Description and Citation):

6.1 Applicable Standards/Limits:

- A. **Visible Emissions Limitations**
Annual one-minute visual observations of EU5-2, EU5-4, and EU5-6 exhausts were conducted on May 15, 2017. No visual emissions were observed.
- B. **Control of Particulate Matter**
No particulate matter in excess of 0.03 gr/SCFD is discharged from these units into the outdoor atmosphere. Emission controls implemented include using floating plastic balls, keeping tanks covered when not in use, and keeping specific tanks covered at all times.
- C. **Operational Limitation**
GSFC only engages in approved operations.

6.2 Testing Requirements:

- A. **Visible Emissions Limitations**
See Section 6.3, Monitoring Requirements.
- B. **Control of Particulate Matter**
See Section 6.3, Monitoring Requirements.
- C. **Operational Limitation**
See Section 6.5, Reporting Requirements.

6.3 Monitoring Requirements:

- A. **Visible Emissions Limitations**
Annual one-minute visual observations of EU5-2, EU5-4, and EU5-6 exhausts were conducted on May 15, 2017. No visual emissions were observed.
- B. **Control of Particulate Matter**
Preventive maintenance plans for the plating shop that describe the maintenance activity necessary to minimize air emissions, time schedules for completing each activity, and dates of completion, are maintained onsite by Code 547. All maintenance activities are performed within the timeframes established in the plan.
- C. **Operational Limitation**
See Section 6.5, Reporting Requirements.

6.4 Record Keeping Requirements:

All records are maintained onsite for a period of at least 5 years and are available to the Department upon request.

- A. **Visible Emissions Limitations**
Copies of visual emission observations performed forms are maintained by the Medical and Environmental Management Division.
- B. **Control of Particulate Matter**
Records of maintenance activities designed to minimize air emissions that were performed on these units are maintained onsite by Code 547.
- C. **Operational Limitation**
See Section 6.5, Reporting Requirements.

6.5 Reporting Requirements:

- A. **Visible Emissions Limitations**
There were no known incidents of visible emissions reported within the calendar year. Any incidences will be reported in accordance with Permit Condition 4, Section III, "Report of Excess Emissions and Deviations."
- B. **Control of Particulate Matter**
See Section 6.4, Record Keeping Requirements.
- C. **Operational Limitation**
GSFC only engages in approved operations.

Status (Check one): Intermittent Compliance Continuous Compliance

Emission Unit ID(s): EU30-1, EU30-2, EU30-3, EU30-4, EU30-5, EU30-6, EU30-7, EU30-8**Permit Term (Describe requirements and cross-reference)****7.1 Applicable Standards/Limits:**

- A. **Visible Emissions Limitations**
COMAR 26.11.06.02C(2), Visible Emission Standards. "In Areas III and IV a person may not cause or permit the discharge of emissions from any installation or building, other than water in an uncombined form, which is visible to human observers."

COMAR 26.11.06.02A(2), Exceptions. "The visible emissions standards in §C of this regulation do not apply to emissions during start-up and process modification or adjustments, or occasional cleaning of control equipment, if:
(a) The visible emissions are not greater than 40 percent opacity; and
(b) The visible emissions do not occur for more than 6 consecutive minutes in any 60 minute period."
- B. **Control of Particulate Matter**
COMAR 26.11.06.03B(2), Particulate Matter from Confined Sources. "Arcas III and IV. (a)A person may not cause or permit to be discharged into the outdoor atmosphere from any other installation, particulate matter in excess of 0.03 gr/SCFD (68.7 mg/dscm)."
- C. **Control of VOC**
COMAR 26.11.06.06B(1), Control of VOC from Installations. "The following requirements apply in Baltimore City and Anne Arundel, Baltimore, Carroll, Harford, Howard, Montgomery, and Prince George's counties: (b) Installations Constructed On or After May 12, 1972. Except as provided in §E of this regulation, a person may not cause or permit the discharge of VOC from any installation constructed on or after May 12, 1972, in excess of 20 pounds (9.07 kilograms) per day unless the discharge is reduced by 85 percent or more overall."
- D. **Operational Limitation**
The emissions from the Clean Room operation shall be controlled by a wet scrubber. The wet scrubber shall be operated in accordance with the specifications contained in this application and operating procedures that were specified in the application by the equipment vendors. [Reference: MDE PTC 16-6-0903 N, Issued August 26, 1997]

7.2 Testing Requirements:

- A. **Visible Emissions Limitations**
See Section 7.3, Monitoring Requirements.
- B. **Control of Particulate Matter**
See Section 7.3, Monitoring Requirements.
- C. **Control of VOC**
See Section 7.3, Monitoring Requirements.
- D. **Operational Limitation**
See Section 7.4, Record Keeping Requirements.

7.3 Monitoring Requirements:

- A. **Visible Emissions Limitations**
The Permittee shall conduct annual one-minute visual observations of the scrubber exhaust. The visual observation must be conducted while the clean room processes and scrubber are in operation. If visible emissions are observed during any visual observation, the Permittee must increase the frequency of the observation of the scrubber exhaust to a monthly basis and maintain that schedule until no visible emissions are observed in six consecutive monthly visual observations. If visible emissions are observed during any observation, the Permittee must inspect the scrubber and clean room operations for the cause of visible emissions and perform necessary adjustments or repairs within 24-hours or prior to again operating the clean room processes. If visible emissions have not been eliminated, the Permittee shall perform daily 18-minute visual observation for opacity in accordance with EPA Reference Method 9

when operating the clean room operations. [Reference: COMAR 26.11.03.06C]

B. Control of Particulate Matter

The Permittee shall maintain a preventative maintenance plan for the scrubber that describes the maintenance activity and time schedule for completing each activity. The Permittee shall perform maintenance activities within the timeframes established in the plan and shall maintain a log with records of the dates that maintenance was performed. [Reference: COMAR 26.11.03.06C]

C. Control of VOC

The operator shall check MSDS and material usage to ensure that the total VOC emissions do not exceed 20 lbs per day. The MSDS shall contain VOC data that is based on EPA Method 24 testing or equivalent. [Reference: COMAR 26.11.03.06C]

D. Operational Limitation

See Section 7.4, Record Keeping Requirements.

7.4 Record Keeping Requirements:

Note: All records must be maintained for a period of at least 5 years and be made available to the Department upon request. [Reference: COMAR 26.11.03.06C(5)(g)]

A. Visible Emissions Limitations

The Permittee must maintain records of visible emissions observations. [Reference: COMAR 26.11.03.06C]

B. Control of Particulate Matter

See Section 7.3, Monitoring Requirements.

C. Control of VOC

The Permittee shall maintain the following records:

- (1) Material usage;
 - (2) The weight and HAP and VOC content of each material used totaled on a monthly basis;
 - (3) A copy of MSDS/VOC data sheet for each material used; and
 - (4) Preventative Maintenance log including records of monthly inspections of work practices.
- [Reference: COMAR 26.11.03.06C and MDE PTC 16-6-0903 N Issued August 26, 1997]

D. Operational Limitation

The Permittee shall maintain records of material usage. [Reference: COMAR 26.11.03.06C]

7.5 Reporting Requirements:

A. Visible Emissions Limitations

The Permittee shall report incidents of visible emissions in accordance with Permit Condition 4, Section III, "Report of Excess Emissions and Deviations". [Reference: COMAR 26.11.03.06C]

B. Control of Particulate Matter

See Section 7.3, Monitoring Requirements.

C. Control of VOC

Records of material usage and calculated HAP, TAP and VOC emissions shall be submitted to the department as part of the annual Emissions Certification Report. [Reference: COMAR 26.11.03.06C]

D. Operational Limitation

The Permittee shall report material usage to the Department as part of the annual Emissions Certification Report. [Reference: COMAR 26.11.03.06C]

Compliance Methods for the Above (Description and Citation):

7.1 Applicable Standards/Limits:

A. Visible Emissions Limitations

Annual one-minute visual observations of EU30-1 through EU30-8 exhausts were conducted on May 18, 2017. No visual emissions were observed.

B. Control of Particulate Matter

The wet scrubber installed controls emissions for the Clean Room operations. The scrubber is operated in accordance with the specification contained in the application and operating procedures that were specified in the application by equipment vendors. The scrubber ensures that no particulate matter in excess of 0.03 gr/SCFD is discharged into the outdoor atmosphere.

C. Control of VOC

The calculated VOC discharge demonstrates that less than 20 pounds per day of VOCs are discharged from these units.

D. Operational Limitation

The Clean Room operation is controlled by a wet scrubber operated in accordance with permit specifications and operating procedures that were specified by the equipment vendors.

7.2 Testing Requirements:

- A. **Visible Emissions Limitations**
See Section 7.3, Monitoring Requirements.
- B. **Control of Particulate Matter**
See Section 7.3, Monitoring Requirements.
- C. **Control of VOC**
See Section 7.3, Monitoring Requirements.
- D. **Operational Limitation**
See Section 7.4, Record Keeping Requirements.

7.3 Monitoring Requirements:

- A. **Visible Emissions Limitations**
Annual one-minute visual observations of EU30-1 through EU30-8 exhausts were conducted on May 18, 2017. No visual emissions were observed.
- B. **Control of Particulate Matter**
The preventive maintenance plan for the scrubber and records containing dates of maintenance activities that were performed on these units are stored in the MAXIMO database.
- C. **Control of VOC**
Material usage records are collected by the Medical and Environmental Management Division on a quarterly basis. The VOC discharge is then calculated. The calculated VOC discharge demonstrates that less than 20 pounds per day of VOCs are discharged from these units.
- D. **Operational Limitation**
See Section 7.4, Record Keeping Requirements.

7.4 Record Keeping Requirements:

All records are maintained onsite for a period of at least 5 years and are available to the Department upon request.

- A. **Visible Emissions Limitations**
Copies of records of visual emission observations performed are maintained by the Medical and Environmental Management Division.
- B. **Control of Particulate Matter**
See Section 7.3, Monitoring Requirements.
- C. **Control of VOC**
The following records are maintained onsite:
 - (1) Material usage;
 - (2) The weight and HAP and VOC content of each material used totaled on a monthly basis are calculated;
 - (3) A copy of MSDS/VOC data sheet for each material used; and
 - (4) Preventive Maintenance records are maintained in the MAXIMO database and records of monthly inspections of work practices are collected by the Medical and Environmental Management Division.
- D. **Operational Limitation**
Records of material usage are maintained onsite.

7.5 Reporting Requirements:

- A. **Visible Emissions Limitations**
There were no known incidents of visible emissions reported within the calendar year. Any incidences will be reported in accordance with Permit Condition 4, Section III, "Report of Excess Emissions and Deviations."
- B. **Control of Particulate Matter**
See Section 7.3, Monitoring Requirements.
- C. **Control of VOC**
The Annual Emission Certification will be submitted to the Department by April 1, 2018 and will include records of material usage and calculated HAPs, TAPs, and VOCs.
- D. **Operational Limitation**
The Annual Emission Certification will be submitted to the Department by April 1, 2018 and will include material usage for these units.

Status (Check one): Intermittent Compliance Continuous Compliance

Emission Unit ID(s): EU27-2, EU27-3**Permit Term (Describe requirements and cross-reference)****9.1 Applicable Standards/Limits:****Control of VOC**

COMAR 26.11.13.04C(2), Small Storage Tanks – Stage I Vapor Recovery. “An owner or operator of a gasoline tank truck or an owner or operator of a stationary storage tank subject to this regulation may not cause or permit gasoline to be loaded into a stationary tank unless the loading system is equipped with a vapor balance line that is properly installed, maintained, and used.”

COMAR 26.11.13.04D, Small Storage Tanks – General Standards. “A person may not cause or permit gasoline or VOC having a TVP greater than 1.5 psia (10.3 kilonewtons/square meter) or greater be loaded into any tank truck, railroad tank car, or other contrivance unless:

- (1) Loading connections on the vapor lines are equipped with fittings that have no leaks and that automatically and immediately close upon disconnection to prevent release of gasoline or VOC from these fittings; and
- (2) Equipment is maintained and operated in a manner to prevent avoidable liquid leaks during loading or unloading operations.”

9.2 Testing Requirements:**Control of VOC**

See Section 9.3, Monitoring Requirements

9.3 Monitoring Requirements:**Control of VOC**

The Permittee shall monitor a fuel drop to verify that the Stage 1 vapor balance system is used at least once for every 10 fuel deliveries that are received. In addition, at least once for every 10 fuel deliveries during a delivery, the Permittee shall monitor a fuel drop for liquid spills and check the hose fittings and connections for leaks and proper operation. If leaks are detected, corrective action shall be as follows:

- (1) Take immediate action to repair all observed VOC leaks that can be repaired with 48 hours; and
- (2) Repair all other leaking components not later than 15 days after the leak is discovered. If a replacement part is needed, the part shall be ordered within 3 days after discovery of the leak, and the leak shall be repaired within 48 hours after receiving the part.

[Reference: COMAR 26.11.03.06C]

9.4 Record Keeping Requirements:

Note: All records must be maintained for a period of at least 5 years and be made available to the Department upon request. [Reference: COMAR 26.11.03.06C(5)(g)]

Control of VOC

COMAR 26.11.24.07D, – Record Keeping and Reporting Requirements.

“An owner or operator of a gasoline dispensing facility exempted according to Regulation .02C of this chapter shall create and maintain records on gasoline throughput and tank sizes and make the records available to the Department upon request.” [Reference: COMAR 26.11.24.02B]

COMAR 26.11.24.02F, - Applicability, Exemptions, and Effective Date.

“An owner or operator of a gasoline dispensing facility shall install and operate an approved system within 1 year after any calendar year in which the average monthly gasoline throughput at the facility during the calendar year exceeds 50,000 gallons per month for existing independent small business gasoline marketers, or 10,000 gallons per month for other existing gasoline dispensing facilities. The owner and operator of these facilities are subject to all applicable requirements of this chapter.”

9.5 Reporting Requirements:**Control of VOC**

See Section 9.4, Record Keeping Requirements.

Compliance Methods for the Above (Description and Citation):**9.1 Applicable Standards/Limits:****Control of VOC**

EU 27-2 and EU27-3 are equipped with Stage I vapor recovery systems. GSFC does not permit gasoline to be loaded into a stationary tank unless the loading system is equipped with a vapor balance line that is properly installed, maintained, and used.

GSFC's Integrated Contingency Plan contains detailed procedures for fuel transfers. These procedures require that all hose connections to the tank and truck be checked by the driver during loading operations and that the driver properly drains all hoses prior to securing them to his/her vehicle. These procedures also require that equipment is operated in a manner to prevent avoidable liquid leaks during loading or unloading operations.

9.2 Testing Requirements:**Control of VOC**

See Section 9.3, Monitoring Requirements.

9.3 Monitoring Requirements:**Control of VOC**

At least once for every 10 fuel deliveries it is verified that the Stage I vapor balance system is used. GSFC's Integrated Contingency Plan contains detailed procedures for fuel transfers. These procedures require that all hose connections to the tank and truck be checked by the driver during loading operations and that the driver properly drains all hoses prior to securing them to his/her vehicle. In addition, each fuel delivery is monitored for fuel leaks. Any leaking component will be repaired no later than 15 days after the leak is discovered. If a replacement part is needed, the part will be ordered within 3 days after the leak is discovered, and the leak will be repaired within 48 hours after receiving the part.

9.4 Record Keeping Requirements:

All records are maintained onsite for a period of at least 5 years and are available to the Department upon request.

Control of VOC

- (a) Records of gasoline throughput and tank sizes are maintained onsite and are available to the Department upon request.
- (b) The average monthly gasoline throughput at the facility is less than 10,000 gallons per month.

9.5 Reporting Requirements:**Control of VOC**

See Section 9.4, Record Keeping Requirements.

Status (Check one): Intermittent Compliance Continuous Compliance

Section VI State – Only Enforceable Conditions

Permit Term (Describe requirements and cross-reference)

The Permittee is subject to the following State-only enforceable requirements:

1. Applicable Regulations:

- (A) COMAR 26.11.06.08 and 26.11.06.09, which generally prohibit the discharge of emissions beyond the property line in such a manner that a nuisance or air pollution is created.
- (B) COMAR 26.11.15.05, which requires that the Permittee implement "Best Available Control Technology for Toxics" (T-BACT) to control emissions of toxic air pollutants.
- (C) COMAR 26.11.15.06, which prohibits the discharge of toxic air pollutants to the extent that such emissions will unreasonably endanger human health.

Condition (D) applies to the four (4) charbroilers only. (ARMA Registration Nos. 033-0675-8-01 86, 8-0187, 8-0188, and 8-0189)

- (D) COMAR 26.11.18.06B(2), which states that "A person who constructs, owns, or operates a char-broiler or pit barbecue not subject to §B(1), of this regulation, may not cause or permit the discharge of emissions greater than 30 percent opacity."

Condition (E) applies to the fifteen (15) emergency generators only.

- (E) COMAR 26.11.36.03A(3)(b), which states that this regulation does not apply to "any engine that operates as a redundant system for power without direct or indirect compensation that is: (b) Located at a facility where operation of the engine is necessary to support critical national activities relating to security, aerospace research, or communications."

2. Operating Conditions:

This condition applies to the Electroplating Process only (ARMA Registration Nos. 033-0675-6-0852, 6-0854, and 6-0862)

To comply with T-BACT, the Permittee shall:

- (a) Use floating plastic balls to cover the liquid surface on Tanks A-1, A-2, A-4, and A-11 as a fume suppressant.
- (b) Keep tanks B-1A, B-1B, B-3, B-4A, B-4B, E-1, E-2, E-3, N-3B, N-5A, N-5B, N-5C, and N-8 covered when not in operation.
- (c) Keep tanks E-7 and E-8 covered at all times.

3. Testing and Monitoring Requirements:

No State-Only Testing or Monitoring Requirements at this time.

4. Record Keeping and Reporting Requirements:

The Permittee shall submit to the Department, by April 1 of each year during the term of this permit, a written certification of the results of an analysis of emissions of toxic air pollutants from the Permittee's facility during the previous calendar year. The analysis shall include either:

- (a) a statement that previously submitted compliance demonstrations for emissions of toxic air pollutants remain valid; or
- (b) a revised compliance demonstration, developed in accordance with requirements included under COMAR 26.11.15 & 16, that accounts for changes in operations, analytical methods, emissions determinations, or other factors that have invalidated previous demonstrations.

Compliance Methods for the Above (Description and Citation):

The Permittee is subject to the following State-only enforceable requirements:

1. Applicable Regulations:

- (A) No discharge of air pollutants (including toxic air pollutants) has been emitted in a way such to cause a nuisance or danger to public health.
- (B) T-BACT is evaluated and implemented for all necessary emission units.
- (C) No discharge of air pollutants (including toxic air pollutants) has been emitted in a way such to cause a nuisance or danger to public health.
- (D) The four (4) char-broilers are not permitted the discharge of emissions greater than 30 percent opacity.
- (E) COMAR 26.11.36.03, Emergency Generators and Load Shaving Units NO_x Requirements, which this section should have applied to, has been vacated and replaced with COMAR 26.11.26.03, Requirements for Stationary Engines, which adopts the requirements of 40CFR63, Subpart ZZZZ and 40CFR60, Subpart IIII and JJJJ. As stated above in the generator sections, the 15 GSFC emergency generators comply with 40CFR63, Subpart ZZZZ and 40CFR60, Subpart IIII as applicable.

2. Operating Conditions:

To comply with T-BACT:

- (a) Periodic inspections indicate that the plating shop uses floating plastic balls to cover the liquid surface on tanks A-1, A-2, A-4, and A-11 as a fume suppressant.
- (b) Periodic inspections indicate that tanks B-1A, B-1B, B-3, B-4A, B-4B, E-1, E-2, E-3, N-3B, N-5A, N-5B, N-5C, and N-8 are covered when not in operation.
- (c) Periodic inspections indicate that tanks E-7 and E-8 are covered at all times.

3. Testing and Monitoring:

There are no state-only testing or monitoring requirements at this time.

4. Record Keeping and Reporting:

The Annual Emission Certification will be submitted to the Department by April 1, 2018 and will include an emission analysis of toxic air pollutants for the facility for the calendar year. This analysis will include either a statement of continued compliance from previous demonstrations of toxic air pollutants, or a revised compliance demonstration developed under the proper regulations.

Status (Check one): ___ Intermittent Compliance X Continuous Compliance

3. DEVIATIONS FROM PERMIT TERMS AND CONDITIONS

Report all deviations from permit terms (whether reported previously or not) that occurred during the permit term. Cross-reference deviations already reported in the six-month report. Indicate whether each deviation is a possible exception to compliance. Start and end period of each deviation should be in mo/day/yr, hr:min format (24-hour clock). Also specify the date when the written deviation report was submitted (If written report required, but not submitted, leave the date field blank).

Permit Term for Which There was a Deviation:

Section 4.4.B.(4): Maintain the records of fuel usage that demonstrates that each boiler meets the definition of a space heater. [Reference: COMAR 26.11.09.08K(3) and COMAR 26.11.03.06C]

Section 4.4.C.: The Permittee shall maintain a record of combined gas usage by the boilers based on meter readings and use this data to estimate fuel usage for each boiler. [Reference: COMAR 26.11.03.06C]

Emission Units (unit IDs): EU97-1

Deviation Start 01 / 01 / 2017 00 : 00 End: 06 / 30 / 2017 23 : 59

Date Written Report Submitted 07 / 25 / 2017

Emission Units (unit IDs): EU35-1 and EU35-2

Deviation Start 05 / 01 / 2017 00 : 00 End: 06 / 30 / 2017 23 : 59

Date Written Report Submitted 07 / 25 / 2017

Emission Units (unit IDs): EU97-1

Deviation Start 01 / 01 / 2017 00 : 00 End: 12 / 31 / 2017 23 : 59

Date Written Report Submitted 01 / 25 / 2018

CERTIFICATION OF PLANT-WIDE CONDITIONS (SECTION III OF PART 70 OPERATING PERMIT)

Indicate compliance with the following requirements of Section III of your Part 70 Operating Permit in the space provided below:

1. Particulate Matter from Construction and Demolition

NASA GSFC complies with this requirement under the Part 70 Operating Permit. Procedures for controlling particulate matter emissions are specified in GSFC Construction Specifications for contractors. Section 01500 specifies requirements for dust control from worksites and access roads, and Section 01730 specifies that a detailed Demolition Plan must describe procedures for demolition. [COMAR 26.11.06.03D]

2. Open Burning

NASA GSFC complies with this requirement under the Part 70 Operating Permit. No unregulated open burning occurred during calendar year 2017. The regulation permits open burning for the instruction of industrial employees under the supervision of an appropriate fire control official. [COMAR 26.11.07.04(B)(2)]

3. Air Pollution Episode (N/A)

NASA GSFC complies with this requirement under the Part 70 Operating Permit. If requested by the Department, the Permittee will prepare, in writing, standby emissions reduction plans consistent with good industrial and safe operating procedures. No emission reduction plans were requested from the Department. [COMAR 26.11.05.04]

4. Report of Excess Emissions and Deviations

NASA GSFC complies with this requirement under the Part 70 Operating Permit. The Department is notified of conditions for occurrences of excess emissions and deviation. Deviations related to the record keeping of the natural gas usage of EU97-1, EU35-1 and EU35-2 were included in the 6-Month Monitoring Reports submitted to the Department on July 25, 2017 and January 25, 2018. [COMAR 26.11.01.07] and [COMAR 26.11.03.06C (7)]

5. Accidental Release Provisions (if applicable)

NASA GSFC complies with this requirement under the Part 70 Operating Permit. GSFC did not become subject to 40 CFR Part 68 during the 2017 calendar year. [COMAR 26.11.03.03B (23)] and [40 CFR 68]

6. General Testing Requirements

NASA GSFC complies with the general testing requirements under the Part 70 Operating Permit. Testing is done at a reasonable time, and all information gathered during testing is provided to the Department. [COMAR 26.11.01.04]

7. Emissions Test Methods

NASA GSFC complies with Emissions Test Methods under reference documents approved by the Department including 40 CFR 60, Appendix A, 40 CFR 51, Appendix M and the Department's Technical Memorandum 91-01. [COMAR 26.11.01.04]

8. Emission Certification Report

NASA GSFC complies with this requirement under the Part 70 Operating Permit. The Emission Certification Report will be submitted to the Department by April 1, 2018. [COMAR 26.11.01.05-1], [COMAR 26.11.02.19C], and [COMAR 26.11.02.19D]

9. Compliance Certification Report

NASA GSFC complies with this requirement under the Part 70 Operating Permit. The Annual Compliance Certification report will be submitted to the Department and EPA by April 1, 2018. [COMAR 26.11.03.06G (6) and (7)]

10. Certification by Responsible Official

NASA GSFC complies with this requirement under the Part 70 Operating Permit. All applications forms, reports, and compliance certifications submitted are certified as to truth, accuracy, and completeness by the Chief, Medical and Environmental Management Division. [COMAR 26.11.02.02F]

11. Sampling and Emissions Testing Record Keeping

NASA GSFC complies with sampling and emissions testing under the Part 70 Operating Permit. Records of NO_x meter measurements, visible emissions observations, and stack tests include the pertinent testing information. [COMAR 26.11.03.06C (5)]

12. General Record Keeping

NASA GSFC complies with this requirement under the Part 70 Operating Permit. All records are maintained for a period of at least 5 years and will be made available to the Department upon request. [COMAR 26.11.03.06C (6)]

13. General Conformity (N/A except for federal facilities)

NASA GSFC complies with the General Conformity rule under the Part 70 Operating Permit. [COMAR 26.11.26.09]

14. Asbestos Provisions (if applicable)

Procedures for complying with asbestos requirements when conducting any renovation or demolition activities are specified in GSFC Construction Specifications for contractors. Section 13285 Asbestos Abatement specifies requirements to comply with 40 CFR 61, Subpart M, as applicable.

15. Ozone Depleting Regulations (if applicable)

NASA GSFC manages Ozone Depleting Substance (ODS) regulations in accordance with 40 CFR Part 82, Subpart F, as applicable. This includes training of operators and registration of equipment. [40 CFR 82, Subpart F]

16. Acid Rain Permit (if applicable)

N/A