OCEANAGOLD
Haile Operation

12 November 2018

Pamela Whiteside
S.C. Dept. of Health & Environmental Control
Bureau of Air Quality – Air Permitting Division
2600 Bull Street
Columbia, SC 29201

Subject: Title V Operating Permit Application (Form 2937)

Dear Ms. Whiteside,
Please find enclosed a new original for the lost Title V Operating Permit Application – Form 2937.
I apologize for this inconvenience.

If you have any questions, please contact me at 803 475-1220 or scott.mcdaniel@oceanagold.com.

Sincerely,

Scott McDaniel
Haile HS&E Manager

6911 Snowy Owl Road, P.O. Box 128, Kershaw, South Carolina 29067 USA
Telephone (803) 475-1220, Facsimile (803) 475-2317

Bureau of Air Quality
Title V Operating Permit Application
Facility Information

FACILITY IDENTIFICATION	
SC Air Permit Number (8-digits only) 1460 - 0070	Application Date October 3, 2018
Facility Name *(This should be the name used to identify the facility at the physical address listed below)* Haile Gold Mine, Inc.	Facility Federal Tax Identification Number *(Established by the U.S. Internal Revenue Service to identify a business entity)* 26-0716741

FACILITY PHYSICAL ADDRESS		
Physical Address: 6911 Snowy Owl Road, PO Box 128		County: Lancaster
City: Kershaw	State: SC	Zip Code: 29067
Facility Coordinates *(Facility coordinates should be based at the front door or main entrance of the facility.)*		
Latitude: 34° 36' 00.43"	Longitude: 80° 32' 27.77"	☐ NAD27 *(North American Datum of 1927)* Or ☒ NAD83 *(North American Datum of 1983)*

CO-LOCATION DETERMINATION
Are there other facilities in close proximity that could be considered co-located? ☒ No ☐ Yes*
List potential co-located facilities, including air permit numbers, if applicable:
If applicable, location in application for co-location determination:

*(*If yes, please submit co-location applicability determination details in an attachment to this application.)*

CONFIDENTIAL INFORMATION / DATA
Does this application contain confidential information or data? ☒ No ☐ Yes*

If yes, include a sanitized version of the application for public review and **ONLY ONE COPY OF CONFIDENTIAL INFORMATION SHOULD BE SUBMITTED*

AIR PERMIT FACILITY CONTACT *(Person who can answer technical questions about the facility and permit application.)*			
Title/Position: HS&E Manager	Salutation: Mr.	First Name: Scott	Last Name: McDaniel
Mailing Address: 6911 Snowy Owl Road, PO Box 128			
City: Kershaw		State: SC	Zip Code: 29067
E-mail Address: Scott.McDaniel@oceanagold.com		Phone No.: 803.475.2943	Cell No.: 803.577.3380

Bureau of Air Quality
Title V Operating Permit Application
Facility Information
Page 2 of 2

RESPONSIBLE OFFICIAL			
Title/Position: Health Safety & Environmental Manager	Salutation: Mr.	First Name: Scott	Last Name: McDaniel
Mailing Address: 6911 Snowy Owl Road, PO Box 128			
City: Kershaw		State: South Carolina	Zip Code: 29067
E-mail Address: scott.mcdaniel@oceanagold.com		Phone No.: 803.475.1220	Cell No.:
RESPONSIBLE OFFICIAL SIGNATURE			
I certify, to the best of my knowledge and belief, that no applicable standards and/or regulations will be contravened or violated. I certify that any application form, report, or compliance certification submitted in this permit application is true, accurate, and complete based on information and belief formed after reasonable inquiry. I understand that any statements and/or descriptions, which are found to be incorrect, may result in the immediate revocation of any permit issued for this application.			

W Scott [illegible] — 26 OCTOBER 2018

Signature of Responsible Official — Date

H. AIR PERMIT CONSULTANT			
Consulting Firm Name: Tetra Tech, Inc.			
Title/Position: Principle Engineer	Salutation: Mr.	First Name: Daryl	Last Name: Longwell
Mailing Address: 350 Indiana Street, Suite 500			
City: Golden		State: Colorado	Zip Code: 80401
E-mail Address: daryl.longwell@tetratech.com		Phone No.: 303.217.5700	Cell No.: 303.588.0902
SC Professional Engineer License/Registration No. (if applicable): 32120			

Whiteside, Pamela

From: Whiteside, Pamela
Sent: Friday, October 05, 2018 3:34 PM
To: 'scott.mcdaniel@oceangold.com'
Cc: Singleton, Mareesa
Subject: Title V Operating Request 1460-0070

Tracking:

Recipient	Delivery
'scott.mcdaniel@oceangold.com'	
Singleton, Mareesa	Delivered: 10/5/2018 3:34 PM

I received a Title V Operating Permit request but Page 2 of DHEC 2937 form is not signed. Please sign page and mail in with original signature.

Thanks.

Pamela Whiteside

S.C. Dept. of Health & Environmental Control
Bureau of Air Quality - Air Permitting Division
Office: (803) 898-4276

OCEANAGOLD
Haile Operation

October 3, 2018

Ms. Mareesa Singleton
South Carolina Department of Health and Environmental Control
Bureau of Air Quality
2600 Bull Street
Columbia, SC 29201

Program ID: 1460-0070

Re: Haile Gold Mine
Construction Permit Number 1460-0070-CA
Title V Operating Permit Application

Dear Ms. Singleton,

Haile Gold Mine (Haile) is submitting the enclosed Title V Operating Permit application. While Haile is not a major source of emissions, the Title V Operating Permit is required because Haile is subject to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for the Gold Mine Ore Processing and Production Area Source Category at 40 CFR 63 Subpart EEEEEEE.

Background

Haile received a Construction Permit (No. 1460-0070-CA) from the South Carolina Department of Health and Environmental Control (DHEC) on October 4, 2013. DHEC provided a draft State Operating Permit (No. SOP-1460-0070) which Haile has reviewed and is submitting comments to DHEC separately.

A facility is subject to the Title V Operating Permit requirements if it is subject to a standard under Section 112 of the Clean Air Act, such as 40 CFR 63 Subpart EEEEEEE, per 40 CFR 70.3(a)(3) and DHEC 61-62.70.3(a)(3). Only those emissions units that cause the facility to be subject to the Title V Operating Permit program are to be listed in the Title V Operating Permit per 40 CFR 70.3(c)(2) and DHEC 61-62-70.3(c)(2). Therefore, this Title V Operating Permit Application is limited to the three emission units subject to the NESHAP, specifically:

- PT-5A – Carbon Regeneration Kiln;
- PT-5B – Electrowinning Cells and Pregnant Solution Tank; and
- PT-6 – Melt Furnace.

Following the guidance cited below, only mercury (Hg) emissions from these emission units are addressed in this Title V Operating Permit application. Other pollutants emitted from these emission units will be subject to the State Operating Permit requirements. Further, all other emission units will be subject to the State Operating Permit requirements.

6911 Snowy Owl Road, P.O. Box 128, Kershaw, South Carolina 29067 USA
Telephone (803) 475-1220, Facsimile (803) 475-2317

Guidance

40 CFR 63.11640(d) under Subpart EEEEEEE states, "If you own or operate a source subject to this subpart, you must have or you must obtain a permit under 40 CFR part 70 or 40 CFR part 71." Therefore, Haile is obligated to submit a Title V Operating Permit application. A White Paper issued on July 10, 1995, by the U.S. Environmental Protection Agency (USEPA) titled "White Paper for Streamlined Development of Part 70 Permit Applications" clarifies and provides guidance for non-major sources required to submit a Title V Operating Permit Application. The section of the white paper addressing "Applications from Non-major Sources" states:

> *"Applications for non-major sources subject to part 70 can be less comprehensive than those for major sources ... While permits for major sources must include all applicable requirements for all emissions units at the source, § 70.3(c)(2) stipulates that permits for non-major sources have to address only the requirements applicable to emissions units that cause the source to be subject to part 70 (e.g., requirements of sections 111 or 112 of the Act applicable to non-major sources). Other emissions units at non-major sources that do not trigger part 70 applicability, even if they are subject to applicable requirements, do not have to be included in the permit. Since permits for non-major sources do not have to include applicable requirements for emissions units that do not cause the source to be subject to part 70, no information on those units is needed in the permit application."*

Per the guidance of this white paper, only requirements applicable to the emission units subject to NESHAP must be included in the Title V Operating Permit Application. Therefore, requirements imposed on those emission units to demonstrate compliance with the NESHAP's mercury emissions standard must be covered by the Title V Operating Permit.

The NESHAP additionally requires monitoring of wet scrubber parameters. Haile operates a wet scrubber on emission unit PT-5A for the purpose of reducing particulate matter (PM) emissions and another on emission unit PT-5B for the purpose of reducing ammonia emissions. While these wet scrubbers are not designed to reduce mercury emissions from these emission units, the NESHAP nevertheless requires the recording of water flow rate (or line pressure) and pressure drop once per shift. Therefore, these recordkeeping requirements must also be covered by the Title V Operating Permit.

All other requirements imposed on these emission units must be covered by the State Operating Permit, including but not limited to visible emissions (opacity) limitations, criteria pollutant emission limitations, and monitoring, recordkeeping, and reporting requirements not affiliated with the NESHAP.

Title V Operating Permit Application

The Title V Operating Permit Application must be filed within 12 months of initial start-up of operations per 40 CFR 70.5(a)(1)(i) and DHEC 61-62.70.5(a)(1)(i). The facility started operations on October 4, 2017; therefore, the Title V operating permit application must be submitted by October 4, 2018. This application meets the required timeline for submittal.

Attachment A provides the completed forms and other materials required by DHEC, including:

- Form D-2937, Title V Operating Permit Application – Facility Information;

- Form D-2940, Title V Operating Permit Application – Emission Unit, Equipment, and Processes;
- Form D-2942, Title V Operating Permit Application – Facility Wide Raw Materials and Products;
- Form D-2943, Title V Operating Permit Application – Facility Wide Emissions;
- Form D-2946, Title V Operating Permit Application – Regulatory Information;
- Form D-2948, Title V Operating Permit Application – Permit Shield; and
- 40 CFR 63 Subparts A and EEEEEEE with applicable requirements highlighted in green.

The forms have been completed per the Title V Operating Permit program regulations and guidance issued for non-major sources. Thus, for example, Form D-2943 addresses only mercury emissions from the three subject emission units with regard to facility wide emissions.

Note that we have revised the calculation of potential mercury emissions to be consistent with the 40 CFR 63 Subpart EEEEEEE limit of 0.14 lb/concentrate ton and multiplying by our estimated potential production of wet concentrate of 26.4 tons per year (as previously identified in our construction permit application). Based on this, our estimated potential mercury emissions are 3.7 pounds per year (1.85 ×10-3 tpy). This is greater than our previous estimate of 1.29 lb/yr. This increase is represented by a change in the calculation procedure and not by a physical change or change in the method of operation of our facility. The increase in the calculated mercury emissions is also considerably less than permitting thresholds. Nevertheless, we have updated the air toxics screening analysis to reflect the change in calculated emissions and to demonstrate that we remain in compliance with Standard No. 8. The updated emissions calculation and air toxics screening analysis are provided in Attachment B.

Haile has no equipment included on the Insignificant Activity Equipment list (Form D-2944). Hence, we are not including that form in Attachment A. Only NESHAP emission units have been included in the Title V Operating Permit Application.

We are not certifying compliance with the 40 CFR 63 Subpart EEEEEEE requirements. Emission Unit PT-5B requires installation of sensors to record pressure drop across the scrubber. Form 2946 provides the date by which we expect to be in compliance, as well as the date by which we will submit our first progress report. By the compliance date, the pressure drop sensor installation will be complete and Haile will comply with the requirements of 40 CFR 60.11647(h).

Haile is in compliance with all other requirements of 40 CFR 63 Subpart EEEEEEE, including the mercury emission standard of 0.14 lb Hg per ton concentrate and the wet scrubber requirements for Emission Unit PT-5A. Attachment C provides a copy of the most recent annual compliance report submitted to DHEC, which demonstrates compliance with the mercury emission standard imposed by the NESHAP.

We look forward to working with DHEC in drafting the Title V Operating Permit and the State Operating Permit. If you have any questions or require further clarification, please call me at (803) 475-2943.

Sincerely,

Scott McDaniel
Health, Safety & Environmental Manager

Attachment A

Application Forms

RECEIVED
OCT 05 2018
BUREAU OF AIR QUALITY

dhec

Bureau of Air Quality
Title V Operating Permit Application
Facility Information

FACILITY IDENTIFICATION	
SC Air Permit Number (8-digits only) 1460 - 0070	Application Date October 3, 2018
Facility Name *(This should be the name used to identify the facility at the physical address listed below)* Haile Gold Mine, Inc.	Facility Federal Tax Identification Number *(Established by the U.S. Internal Revenue Service to identify a business entity)* 26-0716741

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Are there other facilities in close proximity that could be considered co-located? ☒ No ☐ Yes*
List potential co-located facilities, including air permit numbers, if applicable:
If applicable, location in application for co-location determination:

*(*If yes, please submit co-location applicability determination details in an attachment to this application.)*

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Does this application contain confidential information or data? ☒ No ☐ Yes*

If yes, include a sanitized version of the application for public review and **ONLY ONE COPY OF CONFIDENTIAL INFORMATION SHOULD BE SUBMITTED*

AIR PERMIT FACILITY CONTACT *(Person who can answer technical questions about the facility and permit application.)*			
Title/Position: HS&E Manager	Salutation: Mr.	First Name: Scott	Last Name: McDaniel
Mailing Address: 6911 Snowy Owl Road, PO Box 128			
City: Kershaw		State: SC	Zip Code: 29067
E-mail Address: Scott.McDaniel@oceanagold.com		Phone No.: 803.475.2943	Cell No.: 803.577.3380

RESPONSIBLE OFFICIAL			
Title/Position: General Manager	Salutation: Mr	First Name: Terry	Last Name: Strong
Mailing Address: 6911 Snowy Owl Road, PO Box 128			
City: Kershaw		State: SC	Zip Code: 29067
E-mail Address: Terry.Strong@oceanagold.com		Phone No.: 803.475.1220	Cell No.:
RESPONSIBLE OFFICIAL SIGNATURE			
I certify, to the best of my knowledge and belief, that no applicable standards and/or regulations will be contravened or violated. I certify that any application form, report, or compliance certification submitted in this permit application is true, accurate, and complete based on information and belief formed after reasonable inquiry. I understand that any statements and/or descriptions, which are found to be incorrect, may result in the immediate revocation of any permit issued for this application.			

Signature of Responsible Official Date

H. AIR PERMIT CONSULTANT			
Consulting Firm Name: Tetra Tech, Inc.			
Title/Position: Principal Engineer	Salutation: Mr.	First Name: Daryl	Last Name: Longwell
Mailing Address: 350 Indiana Street, Suite 500			
City: Golden		State: CO	Zip Code: 80401
E-mail Address: Daryl.Longwell@tetratech.com		Phone No.: 303.217.5700	Cell No.: 303.588.0902
SC Professional Engineer License/Registration No. (if applicable): 32120			

Bureau of Air Quality
Title V Operating Permit Application
Emission Unit, Equipment and Processes
Page 1 of 2

Please use a separate form for each Emission Unit ID

APPLICATION IDENTIFICATION *(Please ensure that the information list in this table is the same on all of the forms and required information submitted in the Title V application package.)*		
Facility Name *(This should be the name used to identify the facility)* Haile Gold Mine, Inc.	SC Air Permit Number (8-digits only) *(Leave blank if one has never been assigned)* 1460 - 0070	Application Date October 3, 2018

EMISSION UNIT IDENTIFICATION	
Emission Unit ID	**Emission Unit Description**
PT-5A	Carbon Kiln
PT-5B	Electrowinning Cells and Pregnant Solution Tank
PT-6	Melt Furnace

ASSOCIATED EQUIPMENT / PROCESS INFORMATION

Equipment/ Process ID	Action	Equipment / Process Description	Installation/ Modification Date	Maximum Design Capacity (Units)	Control Device ID(s)	Pollutants Controlled (Include CAS#)	Capture System Efficiency and Description	Emission Point ID(s)
PT-5A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Carbon Kiln	10/04/2017	971 lbs/hr; 2.2 MMBtu/hr	N/A	N/A	N/A Note: Unit has a wet scrubber designed for PM control. It is not designed to achieve Hg Control.	PT-5A
PT-5B	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Electrowinning Cells and Pregnant SolutionTank	10/04/2017	4,500 acfm	N/A	N/A	N/A Note: Unit has a wet scrubber designed for NH3 control. It is not designed to achieve Hg Control.	PT-5B
PT-6	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Melt Furnace	10/04/2017	5,000 acfm	N/A	N/A	N/A Note: Unit has a baghouse designed to recover PM for reprocessing. It is not designed to achieve Hg Control.	PT-6

ASSOCIATED CONTROL DEVICE INFORMATION						
Control Device ID	**Action**	**Control Device Description**	**Installation/Modification Date**	**Maximum Design Capacity (Units)**	**Inherent/Required/Voluntary (Explain)**	**Destruction / Removal Efficiency**
CD-PT-5A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Wet Scrubber	10/04/2017	1,104 acfm	The unit is not designed to achieve Hg control, but is subject to the NESHAP monitoring requirement.	N/A
CD-PT-5B	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Wet Scrubber	10/04/2017	4,500 acfm	The unit is not designed to achieve Hg control, but is subject to the NESHAP monitoring requirement.	N/A
CD-PT-6	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Product Recovery Filter	10/04/2017	5,000 acfm	The unit is inherent to the process and is not designed to achieve Hg control.	N/A

FUEL INFORMATION				
Equipment ID Process ID Control Device ID	**Fuels Combusted**	**BTU Content**	**% Sulfur by Weight**	**% Ash by Weight**
PT-5A	Natural Gas	1,000 Btu/scf	N/A	N/A
PT-5B	N/A			
PT-6	N/A			

Bureau of Air Quality
Title V Operating Permit Application
Facility Wide Raw Materials and Products
Page 1 of 1

APPLICATION IDENTIFICATION *(Please ensure that the information list in this table is the same on all of the forms and required information submitted in the Title V application package.)*		
Facility Name *(This should be the name used to identify the facility)* Haile Gold Mine, Inc.	SC Air Permit Number (8-digits only) *(Leave blank if one has never been assigned)* 1460 - 0070	Application Date October 3, 2018

FACILITY WIDE RAW MATERIALS LIST *(This section lists all of the raw materials used in the total process.)*	
Raw Materials Used*	**Quantity Used Annually** *(Indicate units of measure.)*
Ore	3,328,800 tons/yr

NOTE: *List all major raw materials which comprise 10% or more of the materials used in the total process. Other raw materials must be listed if they are a regulated pollutant or contribute to the formation of a regulated pollutant.

FACILITY WIDE PRODUCTS LIST *(This section lists all of the products manufactured at this facility.)*			
Products Manufactured *(List products in order of major to minor.)*	SIC Code *(Standard Industrial Classification Codes)*	NAICS Code *(North American Industry Classification System)*	**Annual Production Rate** *(Indicate units of measure.)*
Wet Concentrate	1041	212221	26.4 tons/yr

Bureau of Air Quality
Title V Operating Permit Application
Facility Wide Emissions

APPLICATION IDENTIFICATION *(Please ensure that the information list in this table is the same on all of the forms and required information submitted in the Title V application package.)*		
Facility Name *(This should be the name used to identify the facility)* Haile Gold Mine, Inc.	SC Air Permit Number (8-digits only) *(Leave blank if one has never been assigned)* 1460 - 0070	Application Date October 3, 2018

EMISSION DATA FOR REGULATED POLLUTANTS

Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled / Limited		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	
PT-5A	PT-5A	HAP	Hg	7439-97-6	2.23E-04	9.78E-04	2.23E-04	9.78E-04	August 2018 stack test results and 40 CFR 63 Subpart EEEEEEE 0.14 lb Hg/ton limit
PT-5B	PT-5B	HAP	Hg	7439-97-6	4.24E-05	1.86E-04	4.24E-05	1.86E-04	August 2018 stack test results and 40 CFR 63 Subpart EEEEEEE 0.14 lb Hg/ton limit
PT-6	PT-6	HAP	Hg	7439-97-6	5.48E-04	6.84E-04	5.48E-04	6.84E-04	August 2018 stack test results and 40 CFR 63 Subpart EEEEEEE 0.14 lb Hg/ton limit

SUMMARY OF FACILITY WIDE TOTAL EMISSIONS		
Pollutants	Total Uncontrolled Emissions (tons/year)	Total Controlled / Limited Emissions (tons/year)
Particulate Matter (PM)	N/A	N/A
Particulate Matter <10 Microns (PM_{10})	N/A	N/A
Particulate Matter <2.5 Microns ($PM_{2.5}$)	N/A	N/A
Sulfur Dioxide (SO_2)	N/A	N/A
Nitrogen Oxides (NO_x)	N/A	N/A
Carbon Monoxide (CO)	N/A	N/A
Total Volatile Organic Compounds (VOC)	N/A	N/A
Lead (Pb)	N/A	N/A
Highest HAP (CAS #: N/A)	N/A	N/A
Other HAP (CAS #: 7439-97-6, Mercury)	1.85E-03	1.85E-03
Other HAP (CAS #:)		
Other HAP (CAS #:)		
Other HAP (CAS #:)		
Other HAP (CAS #:)		
Total HAP Emissions*	1.85E-03	1.85E-03
112(r) Pollutant (N/A)		
112(r) Pollutant ( )		
112(r) Pollutant ( )		
112(r) Pollutant ( )		
112(r) Pollutant ( )		

(*All HAP emitted from the various equipment or processes must be listed in "Emission Data for Regulated Pollutants" table.)

Bureau of Air Quality
Title V Operating Permit Application
Regulatory Information

APPLICATION IDENTIFICATION *(Please ensure that the information list in this table is the same on all of the forms and required information submitted in the Title V application package.)*		
Facility Name *(This should be the name used to identify the facility)* Haile Gold Mine, Inc.	SC Air Permit Number (8-digits only) *(Leave blank if one has never been assigned)* 1460 - 0070	Application Date October 3, 2018

EMISSIONS LIMITS AND STANDARDS
(This section summarizes the emission unit emission limits and standards.)

Emission Unit ID	Pollutant / Standard	Limit	Reference Method	Applicable Regulation* (Regulation Citation / Condition)
PT-5A	Mercury emissions standard	0.14 lbs Hg/ton concentrate	Method 29 [40 CFR 63.11646(a)(1)(v)], or upon approval by the permitting authority, ASTM D6784 or Method 30B [40 CFR 63.11646(a)(1)(vi) or (vii)]	40 CFR 63 Subpart EEEEEEE, 63.11645(g) and (i), note that the emission limit applies to the sum of emissions from all subject emission units (i.e., PT-5A, PT-5B, and PT-6).
PT-5B	Mercury emissions standard	0.14 lbs Hg/ton concentrate	Method 29 [40 CFR 63.11646(a)(1)(v)], or upon approval by the permitting authority, ASTM D6784 or Method 30B [40 CFR 63.11646(a)(1)(vi) or (vii)]	40 CFR 63 Subpart EEEEEEE, 63.11645(g) and (i), note that the emission limit applies to the sum of emissions from all subject emission units (i.e., PT-5A, PT-5B, and PT-6).
PT-6	Mercury emissions standard	0.14 lbs Hg/ton concentrate	Method 29 [40 CFR 63.11646(a)(1)(v)], or upon approval by the permitting authority, ASTM D6784 or Method 30B [40 CFR 63.11646(a)(1)(vi) or (vii)]	40 CFR 63 Subpart EEEEEEE, 63.11645(g) and (i), note that the emission limit applies to the sum of emissions from all subject emission units (i.e., PT-5A, PT-5B, and PT-6).

NOTE: *For sources subject to a NESHAP Standard, the applicant must submit an electronic copy of the NESHAP Standard with all applicable requirements highlighted.

COMPLIANCE AND PERMIT REQUIREMENTS *(This section summarizes the emission unit compliance requirements.)*					
Emission Unit ID	**Applicable Requirement (Regulation Citation / Permit Condition)**	**In Compliance (Y/N)**	**Compliance Statement***	**Compliance Date**	**First Submittal**
PT-5A	40 CFR Part 63 Subpart EEEEEEE, with specific applicable provisions as highlighted in the enclosed electronic copy of the NESHAP	Y		N/A	N/A
PT-5B	40 CFR Part 63 Subpart EEEEEEE, with specific applicable provisions as highlighted in the enclosed electronic copy of the NESHAP	N		11/01/2018	11/01/2018
PT-6	40 CFR Part 63 Subpart EEEEEEE, with specific applicable provisions as highlighted in the enclosed electronic copy of the NESHAP	Y		N/A	N/A

* By initialing here, the Responsible Official certifies that this emission unit is in compliance with current applicable requirements and that the source will continue to comply with such requirements during the permit term. Further, for applicable requirements that will become effective during the permit term, the source will meet such requirements on a timely basis, unless a more detailed schedule is expressly required by the applicable requirement.

MONITORING / APPLICABLE REGULATION AND PERMIT / RULE REQUIREMENTS – PART I *(This section summarizes the monitoring and reporting requirements. Parts I, II, III and IV must be completed for each emission unit.)*					
Emission Unit ID	**Pollutant / Parameter**	**Limit**	**Required Monitoring**	**Monitoring Frequency**	**Reporting Frequency**
PT-5A	Mercury Emission Standard	0.14 lbs Hg/ton concentrate, applies to all subject units combined	Method 29 [40 CFR 63.11646(a)(1)(v)], or upon approval by the permitting authority, ASTM D6784 or Method 30B [40 CFR 63.11646(a)(1)(vi) or (vii)]	Within 180 days of the compliance date and annually thereafter	Annual
PT-5B	Mercury Emission Standard	0.14 lbs Hg/ton concentrate, applies to all subject units combined	Method 29 [40 CFR 63.11646(a)(1)(v)], or upon approval by the permitting authority, ASTM D6784 or Method 30B [40 CFR 63.11646(a)(1)(vi) or (vii)]	Within 180 days of the compliance date and annually thereafter	Annual
PT-6	Mercury Emission Standard	0.14 lbs Hg/ton concentrate, applies to all subject units combined	Method 29 [40 CFR 63.11646(a)(1)(v)], or upon approval by the permitting authority, ASTM D6784 or Method 30B [40 CFR 63.11646(a)(1)(vi) or (vii)]	Within 180 days of the compliance date and annually thereafter	Annual

MONITORING / APPLICABLE REGULATION AND PERMIT / RULE REQUIREMENTS – PART I *(This section summarizes the monitoring and reporting requirements. Parts I, II, III and IV must be completed for each emission unit.)*					
Emission Unit ID	**Pollutant / Parameter**	**Limit**	**Required Monitoring**	**Monitoring Frequency**	**Reporting Frequency**
PT-5A	Wet scrubber water flow rate (or line pressure) and pressure drop	Establish minimum operating value	Wet scrubber water flow rate (or line pressure) and pressure drop	Once per shift	Semi-annual, only if a deviation occurs
PT-5B	Wet scrubber water flow rate (or line pressure) and pressure drop	Establish minimum operating value	Wet scrubber water flow rate (or line pressure) and pressure drop	Once per shift	Semi-annual, only if a deviation occurs

MONITORING / APPLICABLE REGULATION AND PERMIT / RULE REQUIREMENTS – PART II *(This section summarizes the monitoring and reporting requirements.)*						
Emission Unit ID	**Pollutant / Standard or Pollutant / Parameter**	**Limit**	**Recordkeeping Frequency**	**Averaging Time**	**Stack Test**	
					Y/N	**Frequency**
PT-5A	Mercury Emission Standard	0.14 lbs Hg/ton concentrate, applies to all subject units combined	Hourly records of operating hours and monthly records of concentrate production	N/A	Y	Within 180 days of the compliance date and annually thereafter
PT-5B	Mercury Emission Standard	0.14 lbs Hg/ton concentrate, applies to all subject units combined	Hourly records of operating hours and monthly records of concentrate production	N/A	Y	Within 180 days of the compliance date and annually thereafter
PT-6	Mercury Emission Standard	0.14 lbs Hg/ton concentrate, applies to all subject units combined	Hourly records of operating hours and monthly records of concentrate production	N/A	Y	Within 180 days of the compliance date and annually thereafter
PT-5A	Wet scrubber water flow rate (or line pressure) and pressure drop	Establish minimum operating value	Once per shift	N/A	N	N/A
PT-5B	Wet scrubber water flow rate (or line pressure) and pressure drop	Establish minimum operating value	Once per shift	N/A	N	N/A

MONITORING / APPLICABLE REGULATION AND PERMIT / RULE REQUIREMENTS – PART III *(This section summarizes the monitoring & reporting requirements not described in Parts I & II. Also summarizes applicable regulations that no monitoring & reporting is needed.)*				
Emission Unit ID	**Pollutant / Parameter**	**Limit**	**If no monitoring required, why?**	**List any monitoring requirements not listed above**
PT-5A	Mercury Emission Standard	0.14 lbs Hg/ton concentrate, applies to all subject units combined	N/A, all monitoring described above	N/A, all monitoring described above
PT-5B	Mercury Emission Standard	0.14 lbs Hg/ton concentrate, applies to all subject units combined	N/A, all monitoring described above	N/A, all monitoring described above
PT-6	Mercury Emission Standard	0.14 lbs Hg/ton concentrate, applies to all subject units combined	N/A, all monitoring described above	N/A, all monitoring described above
PT-5A	Wet scrubber water flow rate (or line pressure) and pressure drop	Establish minimum operating value	N/A, all monitoring described above	N/A, all monitoring described above
PT-5B	Wet scrubber water flow rate (or line pressure) and pressure drop	Establish minimum operating value	N/A, all monitoring described above	N/A, all monitoring described above

MONITORING / APPLICABLE REGULATION AND PERMIT / RULE REQUIREMENTS – PART IV *(This section summarizes the monitoring and reporting requirements.)*									
Emission Unit ID	**Description (include equip/process ID)**	**Potential Uncontrolled Emissions**		**Control Device ID**	**Potential Controlled Emissions**	**Subject to CAM Rule (40 CFR 64)?**			
		Pollutant	**Tons/Year**		**Tons/Year**	**Yes ***	**No**	**Exempt**	**Reason Exempt?**
PT-5A	Entire Emission Unit	Hg	9.78E-04	N/A	9.78E-04	☐	☒	☐	
PT-5B	Enitre Emission Unit	Hg	1.86E-04	N/A	1.86E-04	☐	☒	☐	
PT-6	Enitre Emission Unit	Hg	6.84E-04	N/A	6.84E-04	☐	☒	☐	

NOTE: * If yes, the applicant must submit additional information in the form of a CAM plan as required under 40 CFR 64.

FACILITY WIDE LIMITS FOR REGULATORY AVOIDANCE – PART V *(This section summarizes emission unit(s) covered under a limit to avoid an applicable regulation.)*				
Emission Unit ID *(emission unit covered under the limit)*	**Pollutant / Parameter**	**Limit (Facility-Wide)**	**Parameter to Monitor**	**Applicable Regulation Avoidance**
N/A				

ADDITIONAL INFORMATION FOR NESHAP SOURCES* – PART VI *(This section allows for additional information or requirements for sources subject to a NESHAP Standard.)*				
Emission Unit ID	**New or Existing Equipment**	**Control Device ID**	**Applicable NESHAP Standard**	**List any unit/equipment which is specifically exempt from the NESHAP Standard and state why.**
N/A				

NOTE: *For sources subject to a NESHAP Standard, the applicant must submit an electronic copy of each applicable NESHAP Standard with all applicable requirements highlighted.

ADDITIONAL INFORMATION FOR NESHAP SOURCES* – PART VII *(This section allows for additional requirements for sources subject to a NESHAP Standard.)*	
Emission Unit ID	**List Other NESHAP Requirements: Include compliance plans such as Operations, Maintenance and Monitoring (OM&M) Plans; Startup, Shutdown and Malfunction (SS&M) Plans; Leak Detection and Repair (LDAR) Plans; O&M plans; wastewater equipment requirements; training; etc.)**
N/A	

NOTE: *For sources subject to a NESHAP Standard, the applicant must submit an electronic copy of each applicable NESHAP Standard with all applicable requirements highlighted.

Bureau of Air Quality
Title V Operating Permit Application
Permit Shield

APPLICATION IDENTIFICATION *(Please ensure that the information list in this table is the same on all of the forms and required information submitted in the Title V application package.)*		
Facility Name *(This should be the name used to identify the facility)* Haile Gold Mine, Inc.	SC Air Permit Number (8-digits only) *(Leave blank if one has never been assigned)* 1460 - 0070	Application Date October 3, 2018

PERMIT SHIELD REQUEST
(This section summarizes the regulations)

Regulation Citation	Regulation Title	Applicable? Yes	Applicable? No	If applicable, list all applicable requirements in the regulation that the facility requests to be shielded. Include emission units and equipment subject. Include emission limits, testing, monitoring, record keeping, reporting, etc. If not applicable, provide a detailed explanation of why the regulation is not applicable.
40 CFR 63 Subparts A and EEEEEEE	National Emission Standards for Hazardous Air Pollutants: General Provisions and Gold Mine Ore Processing and Production Area Source Category	☒	☐	All applicable requirements are highlighted in the enclosed annotated copies of 40 CFR 63 Subparts A and EEEEEEE. Applies to emission units PT-5A, PT-5B, and PT-6.
40 CFR 63 Subparts A and EEEEEEE	National Emission Standards for Hazardous Air Pollutants: General Provisions and Gold Mine Ore Processing and Production Area Source Category	☐	☒	All non-applicable requirements are those provisions not highlighted in the enclosed annotated copies of 40 CFR 63 Subparts A and EEEEEEE.
40 CFR 70	State Operating Permit Programs	☒	☐	All applicable requirements are highlighted in the enclosed annotated copy of 40 CFR 70. Applies to emission units PT-5A, PT-5B, and PT-6.
40 CFR 70	State Operating Permit Programs	☐	☒	All non-applicable requirements are those provisions not highlighted in the enclosed annotated copy of 40 CFR 70.
		☐	☐	
		☐	☐	
		☐	☐	
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		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	

Subpart EEEEEEE—National Emission Standards for Hazardous Air Pollutants: Gold Mine Ore Processing and Production Area Source Category

Contents

SOURCE: 76 FR 9480, Feb. 17, 2011, unless otherwise noted.

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APPLICABILITY AND COMPLIANCE DATES

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§63.11640 Am I subject to this subpart?

(a) You are subject to this subpart if you own or operate a gold mine ore processing and production facility as defined in §63.11651, that is an area source.

(b) This subpart applies to each new or existing affected source. The affected sources are each collection of "ore pretreatment processes" at a gold mine ore processing and production facility, each collection of "carbon processes with mercury retorts" at a gold mine ore processing and production facility, each collection of "carbon processes without mercury retorts" at a gold mine ore processing and production facility, and each collection of "non-carbon concentrate processes" at a gold mine ore processing and production facility, as defined in §63.11651.

(1) An affected source is existing if you commenced construction or reconstruction of the affected source on or before April 28, 2010.

(2) An affected source is new if you commenced construction or reconstruction of the affected source after April 28, 2010.

(c) This subpart does not apply to research and development facilities, as defined in section 112(c)(7) of the Clean Air Act (CAA).

(d) If you own or operate a source subject to this subpart, you must have or you must obtain a permit under 40 CFR part 70 or 40 CFR part 71.

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§63.11641 What are my compliance dates?

(a) If you own or operate an existing affected source, you must comply with the applicable provisions of this subpart no later than February 17, 2014.

(b) If you own or operate a new affected source, and the initial startup of your affected source is on or before February 17, 2011, you must comply with the provisions of this subpart no later than February 17, 2011.

(c) If you own or operate a new affected source, and the initial startup of your affected source is after February 17, 2011, you must comply with the provisions of this subpart upon startup of your affected source.

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STANDARDS AND COMPLIANCE REQUIREMENTS

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§63.11645 What are my mercury emission standards?

(a) For existing ore pretreatment processes, you must emit no more than 127 pounds of mercury per million tons of ore processed.

(b) For existing carbon processes with mercury retorts, you must emit no more than 2.2 pounds of mercury per ton of concentrate processed.

(c) For existing carbon processes without mercury retorts, you must emit no more than 0.17 pounds of mercury per ton of concentrate processed.

(d) For existing non-carbon concentrate processes, you must emit no more than 0.2 pounds of mercury per ton of concentrate processed.

(e) For new ore pretreatment processes, you must emit no more than 84 pounds of mercury per million tons of ore processed.

(f) For new carbon processes with mercury retorts, you must emit no more than 0.8 pounds of mercury per ton of concentrate processed.

(g) For new carbon processes without mercury retorts, you must emit no more than 0.14 pounds of mercury per ton of concentrate processed.

(h) For new non-carbon concentrate processes, you must emit no more than 0.1 pounds of mercury per ton of concentrate processed.

(i) The standards set forth in this section apply at all times.

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§63.11646 What are my compliance requirements?

(a) Except as provided in paragraph (b) of this section, you must conduct a mercury compliance emission test within 180 days of the compliance date for all process units at new and existing affected sources according to the requirements in paragraphs (a)(1) through (a)(13) of this section. This compliance testing must be repeated annually thereafter, with no two consecutive annual compliance tests occurring less than 3 months apart or more than 15 months apart.

(1) You must determine the concentration of mercury and the volumetric flow rate of the stack gas according to the following test methods and procedures:

(i) Method 1 or 1A (40 CFR part 60, appendix A-1) to select sampling port locations and the number of traverse points in each stack or duct. Sampling sites must be located at the outlet of the control device (or at the outlet of the emissions source if no control device is present) and prior to any releases to the atmosphere.

(ii) Method 2, 2A, 2C, 2D, 2F (40 CFR part 60, appendix A-1), or Method 2G (40 CFR part 60, appendix A-2) to determine the volumetric flow rate of the stack gas.

(iii) Method 3, 3A, or 3B (40 CFR part 60, appendix A-2) to determine the dry molecular weight of the stack gas. You may use ANSI/ASME PTC 19.10, "Flue and Exhaust Gas Analyses" (incorporated by reference-see §63.14) as an alternative to EPA Method 3B.

(iv) Method 4 (40 CFR part 60, appendix A-3) to determine the moisture content of the stack gas.

(v) Method 29 (40 CFR part 60, appendix A-8) to determine the concentration of mercury, except as provided in paragraphs (a)(1)(vi) and (vii) of this section.

(vi) Upon approval by the permitting authority, ASTM D6784; "Standard Test Method for Elemental, Oxidized, Particle-Bound and Total Mercury in Flue Gas Generated from Coal-Fired Stationary Sources (Ontario Hydro Method)" (incorporated by reference—see §63.14) may be used as an alternative to Method 29 to determine the concentration of mercury.

(vii) Upon approval by the permitting authority, Method 30B (40 CFR part 60, appendix A-8) may be used as an alternative to Method 29 to determine the concentration of mercury for those process units with relatively low particulate-bound mercury as specified in Section 1.2 of Method 30B.

(2) A minimum of three test runs must be conducted for each performance test of each process unit. Each test run conducted with Method 29 must collect a minimum sample volume of 0.85 dry standard cubic meters (30 dry standard cubic feet). If conducted with Method 30B or ASTM D6784, determine sample time and volume according to the testing criteria set forth in the relevant method. If the emission testing results for any of the emission points yields a non-detect value, then the minimum detection limit (MDL) must be used to calculate the mass emissions rate (lb/hr) used to calculate the emissions factor (lb/ton) for that emission point and, in turn, for calculating the sum of the emissions (in units of pounds of mercury per ton of concentrate, or pounds of mercury per million tons of ore) for all emission points subject to the emission standard for determining compliance. If the resulting mercury emissions are greater than the MACT emission standard, the owner or operator may use procedures that produce lower MDL results and repeat the mercury emissions testing one additional time for any emission point for which the measured result was below the MDL. If this additional testing is performed, the results from that testing must be used to determine compliance (*i.e.*, there are no additional opportunities allowed to lower the MDL).

(3) Performance tests shall be conducted under such conditions as the Administrator specifies to the owner or operator based on representative performance of the affected source for the period being tested. Upon request, the

owner or operator shall make available to the Administrator such records as may be necessary to determine the conditions of performance tests. Performance tests must be conducted under operating conditions (including process or production throughputs) that are based on representative performance. Record and report to the permit authority the process throughput for each test run. For sources with multiple emission units (*e.g.,* two roasters, or a furnace, electrowinning circuit and a mercury retort) ducted to a common control device and stack, compliance testing must be performed either by conducting a single compliance test with all affected emissions units in operation or by conducting a separate compliance test on each emissions unit. Alternatively, the owner or operator may request approval from the permit authority for an alternative testing approach. If the units are tested separately, any emissions unit that is not tested initially must be tested as soon as is practicable. If the performance test is conducted when all affected units are operating, then the number of hours of operation used for calculating emissions pursuant to paragraphs (a)(6) and (7) of this section must be the total number of hours for the unit that has the greatest total operating hours for that period of time, or based on an appropriate alternative method approved by the permit authority to account for the hours of operation for each separate unit in these calculations.

(4) Calculate the mercury emission rate (lb/hr), based on the average of 3 test run values, for each process unit (or combination of units that are ducted to a common stack and are tested when all affected sources are operating pursuant to paragraph (a)(3) of this section) using Equation (1) of this section:

```
E = Cs * Qs * K      (Eq. 1)
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Where:

E = mercury emissions in lb/hr;

Cs = concentration of mercury in the stack gas, in grains per dry standard cubic foot (gr/dscf);

Qs = volumetric flow rate of the stack gas, in dry standard cubic feet per hour; and

K = conversion factor for grains (gr) to pounds (lb), 1.43×10^{-4}.

(5) Monitor and record the number of one-hour periods each process unit operates during each month.

(6) For the initial compliance determination for both new and existing sources, determine the total mercury emissions for all the full calendar months between the compliance date and the date of the initial compliance test by multiplying the emission rate in lb/hr for each process unit (or combination of units ducted to a common stack that are tested together) by the number of one-hour periods each process unit (or the unit that had the greatest total operating hours among the combination of multiple units with one stack that are tested together, or an alternative method approved by the permit authority, pursuant to paragraph (a)(3) of this section) operated during those full calendar months prior to the initial compliance test. This initial period must include at least 1 full month of operations. After the initial compliance test, for subsequent compliance tests, determine the mercury mass emissions for the 12 full calendar months prior to the compliance test in accordance with the procedures in paragraph (a)(7) of this section. Existing sources may use a previous emission test for their initial compliance determination in lieu of conducting a new test if the test was conducted within one year of the compliance date using the methods specified in paragraphs (a)(1) through (a)(4) of this section, and the tests were representative of current operating processes and conditions. If a previous test is used for their initial compliance determination, 3 to 12 full months of data on hours of operation and production (*i.e.,* million tons of ore or tons of concentrate), including the month the test was conducted, must be used to calculate the emissions rate (in units of pounds of mercury per million tons of ore for the ore pretreatment affected sources, or in units of pounds of mercury per tons of concentrate for the other affected sources).

(7) For compliance determinations following the initial compliance test for new and existing sources, determine the total mercury mass emissions for each process unit for the 12 full calendar months preceding the performance test by multiplying the emission rate in lb/hr for each process unit (or combination of units ducted to a common stack that are tested together) by the number of one-hour periods each process unit (or the unit that had the greatest total operating hours among the combination of multiple units with one stack that are tested together, or an alternative

method approved by the permit authority, pursuant to paragraph (a)(3) of this section) operated during the 12 full calendar months preceding the completion of the performance tests.

(8) You must install, calibrate, maintain and operate an appropriate weight measurement device, mass flow meter, or densitometer and volumetric flow meter to measure ore throughput for each roasting operation and autoclave and calculate hourly, daily and monthly totals in tons of ore according to paragraphs (a)(8)(i) and (a)(8)(ii) of this section.

(i) Measure the weight or the density and volumetric flow rate of the oxidized ore slurry as it exits the roaster oxidation circuit(s) and before the carbon-in-leach tanks. Alternatively, the weight of the ore can be measured "as fed" if approved by the permit authority as an acceptable equivalent method to measure amount of ore processed.

(ii) Measure the weight or the density and volumetric flow rate of the ore slurry as it is fed to the autoclave(s). Alternatively, the weight or the density and volumetric flow rate of the oxidized ore slurry can be measured as it exits the autoclave and before the carbon-in-leach tanks if approved by the permit authority as an acceptable equivalent method to measure amount of ore processed.

(9) Measure the weight of concentrate (produced by electrowinning, Merrill Crowe process, gravity feed, or other methods) using weigh scales for each batch prior to processing in mercury retorts or melt furnaces. For facilities with mercury retorts, the concentrate must be weighed in the same state and condition as it is when fed to the mercury retort. For facilities without mercury retorts, the concentrate must be weighed prior to being fed to the melt furnace before drying in any ovens. For facilities that ship concentrate offsite, measure the weight of concentrate as shipped offsite. You must keep accurate records of the weights of each batch of concentrate processed and calculate, and record the total weight of concentrate processed each month.

(10) You must maintain the systems for measuring density, volumetric flow rate, and weight within ±5 percent accuracy. You must describe the specific equipment used to make measurements at your facility and how that equipment is periodically calibrated. You must also explain, document, and maintain written procedures for determining the accuracy of the measurements and make these written procedures available to your permitting authority upon request. You must determine, record, and maintain a record of the accuracy of the measuring systems before the beginning of your initial compliance test and during each subsequent quarter of affected source operation.

(11) Record the weight in tons of ore for ore pretreatment processes and concentrate for carbon processes with mercury retorts, carbon processes without mercury retorts, and for non-carbon concentrate processes on a daily and monthly basis.

(12) Calculate the emissions from each new and existing affected source for the sum of all full months between the compliance date and the date of the initial compliance test in pounds of mercury per ton of process input using the procedures in paragraphs (a)(12)(i) through (a)(12)(iv) of this section to determine initial compliance with the emission standards in §63.11645. This must include at least 1 full month of data. Or, if a previous test is used pursuant to paragraph (a)(6) of this section for the initial compliance test, use a period of time pursuant to paragraph (a)(6) of this section to calculate the emissions for the affected source. After this initial compliance test period, determine annual compliance using the procedures in paragraph (a)(13) of this section for existing sources.

(i) For ore pretreatment processes, divide the sum of mercury mass emissions (in pounds) from all roasting operations and autoclaves during the number of full months between the compliance date and the initial compliance test by the sum of the total amount of gold mine ore processed (in million tons) in these process units during those same full months following the compliance date. Or, if a previous test is used to determine initial compliance, pursuant to paragraph (a)(6) of this section, then the same 3 to 12 full months of production data (*i.e.,* million tons of ore) and hours of operation referred to in paragraph (a)(6) of this section, must be used to determine the emissions in pounds of mercury per million tons of ore.

(ii) For carbon processes with mercury retorts, divide the sum of mercury mass emissions (in pounds) from all carbon kilns, preg tanks, electrowinning, mercury retorts, and melt furnaces during the initial number of full months between the compliance date and the initial compliance tests by the total amount of concentrate (in tons) processed

in these process units during those same full months following the compliance date. If a previous test is used to determine initial compliance, pursuant to paragraph (a)(6) of this section, then the same 3 to 12 full months of production data (*i.e.,* tons of concentrate) and hours of operation referred to in paragraph (a)(6) of this section, must be used to determine the emissions in pounds of mercury per tons of concentrate.

(iii) For carbon processes without mercury retorts, divide the sum of mercury mass emissions (in pounds) from all carbon kilns, preg tanks, electrowinning, and melt furnaces during the initial number of full months between the compliance date and the initial compliance tests by the total amount of concentrate (in tons) processed in these process units during those same full months following the compliance date. If a previous test is used to determine initial compliance, pursuant to paragraph (a)(6) of this section, then the same 3 to 12 full months of production data (*i.e.,* tons of concentrate) and hours of operation referred to in paragraph (a)(6) of this section, must be used to determine the emissions in pounds of mercury per tons of concentrate.

(iv) For non-carbon concentrate processes, divide the sum of mercury mass emissions (in pounds) from mercury retorts and melt furnaces during the initial number of full months between the compliance date and the initial compliance tests by the total amount of concentrate (in tons) processed in these process units during those same full months following the compliance date. If a previous test is used to determine initial compliance, pursuant to paragraph (a)(6) of this section, then the same 3 to 12 full months of production data (*i.e.,* tons of concentrate) and hours of operation referred to in paragraph (a)(6) of this section, must be used to determine the emissions in pounds of mercury per tons of concentrate.

(13) After the initial compliance test, calculate the emissions from each new and existing affected source for each 12-month period preceding each subsequent compliance test in pounds of mercury per ton of process input using the procedures in paragraphs (a)(13)(i) through (iv) of this section to determine compliance with the emission standards in §63.11645.

(i) For ore pretreatment processes, divide the sum of mercury mass emissions (in pounds) from all roasting operations and autoclaves in the 12-month period preceding a compliance test by the sum of the total amount of gold mine ore processed (in million tons) in that 12-month period.

(ii) For carbon processes with mercury retorts, divide the sum of mercury mass emissions (in pounds) from all carbon kilns, preg tanks, electrowinning, mercury retorts, and melt furnaces in the 12-month period preceding a compliance test by the total amount of concentrate (in tons) processed in these process units in that 12-month period.

(iii) For carbon processes without mercury retorts, divide the sum of mercury mass emissions (in pounds) from all carbon kilns, preg tanks, electrowinning, and melt furnaces in the 12-month period preceding a compliance test by the total amount of concentrate (in tons) processed in these process units in that 12-month period.

(iv) For non-carbon concentrate processes, divide the sum of mercury mass emissions (in pounds) from mercury retorts and melt furnaces in the 12-month period preceding a compliance test by the total amount of concentrate (in tons) processed in these process units in that 12-month period.

(b) At all times, you must operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.

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§63.11647 What are my monitoring requirements?

(a) Except as provided in paragraph (a)(5) of this section, you must monitor each roaster for mercury emissions using one of the procedures in paragraphs (a)(1), (a)(2), or (a)(3) of this section and establish operating limits for mercury concentration as described in paragraph (a)(4) of this section.

(1) Perform sampling and analysis of the roaster's exhaust for mercury concentration using EPA Performance Specification 12B (40 CFR part 60, appendix B and Procedure 5 of appendix F) or EPA Method 30B (40 CFR part 60, appendix A-8) at least twice per month. A minimum of two measurements must be taken per month that are at least 11 days apart from other consecutive tests. The mercury concentration must be maintained below the operating limit established in paragraph (a)(4) of this section. The results of the sampling must be obtained within 72 hours of the time the sample is taken.

(i) To determine the appropriate sampling duration, you must review the available data from previous stack tests to determine the upper 99th percentile of the range of mercury concentrations in the exit stack gas. Based on this upper end of expected concentrations, select an appropriate sampling duration that is likely to provide a valid sample and not result in breakthrough of the sampling tubes. If breakthrough of the sampling tubes occurs, you must re-sample within 7 days using a shorter sampling duration.

(ii) If any mercury concentration measurement from the twice per month sampling with PS 12B or Method 30B is higher than the operating limit, the exceedance must be reported to the permit authority as a deviation and corrective actions must be implemented within 48 hours upon receipt of the sampling results. Moreover, within 96 hours of the exceedance, the owner or operator must measure the concentration again (with PS 12B (40 CFR part 60, appendix B and Procedure 5 of appendix F), Method 30B or Method 29 (40 CFR part 60, appendix A-8), or ASTM D6784(incorporated by reference—see §63.14)) and demonstrate to the permit authority that the mercury concentration is no higher than the operating limit, or inform the permit authority that the limit continues to be exceeded. If the measured mercury concentration exceeds the operating limit for mercury concentration after these 96 hours, the exceedance must be reported as a deviation within 24 hours to the permitting authority. The owner or operator must conduct a full compliance test pursuant to §63.11646(a) for the roaster operations within 40 days to determine if the affected source is in compliance with the MACT emission standard. For facilities that have roasters and autoclaves, the owner or operator can use the results of the previous compliance test for the autoclaves to determine the emissions for those process units to be used in the calculations of the emissions for the affected source. If the source is determined to be in compliance, the compliance test may also be used to establish a new operating limit for mercury concentration (in accordance with paragraph (e) of this section).

(2) Install, operate, calibrate, and maintain a continuous emissions monitoring system (CEMS) to continuously measure the mercury concentration in the final exhaust stream from each roaster according to the requirements of Performance Specification 12A (40 CFR part 60, appendix B) except that calibration standards traceable to the National Institute of Standards and Technology are not required. You must perform a data accuracy assessment of the CEMS according to section 5 of Appendix F in part 60 and follow the applicable monitoring requirements in §63.8 as provided in Table 1 to subpart EEEEEEE.

(i) You must continuously monitor the daily average mercury concentration from the roaster and maintain the daily average concentration below the operating limit established in paragraph (a)(4) of this section.

(ii) If the daily average mercury concentration from the CEMs is higher than the operating limit, the exceedance must be reported to the permit authority as a deviation and corrective actions must be implemented within 48 hours upon receipt of the sampling results. Moreover, within 96 hours of the exceedance, the owner or operator must measure the concentration again (with the CEMs (40 CFR part 60, appendix B and Procedure 5 of appendix F) and demonstrate to the permit authority that the mercury concentration is no higher than the operating limit, or inform the permit authority that the limit continues to be exceeded. If the measured mercury concentration exceeds the operating limit for mercury concentration after these 96 hours, the exceedance must be reported as a deviation within 24 hours to the permitting authority, and the owner or operator must conduct a full compliance test pursuant to §63.11646(a) for the roaster operations within 40 days to determine if the affected source is in compliance with the MACT emission standard. For facilities that have roasters and autoclaves, the owner or operator can use the results of the previous compliance test for the autoclaves to determine the emissions for those process units to be used in the calculations of the emissions for the affected source. If the source is determined to be in compliance, the

compliance test results may also be used to establish a new operating limit for mercury concentration (in accordance with paragraph (e) of this section).

(iii) You must submit a monitoring plan that includes quality assurance and quality control (QA/QC) procedures sufficient to demonstrate the accuracy of the CEMS to your permitting authority for approval 180 days prior to your initial compliance test. At a minimum, the QA/QC procedures must include daily calibrations and an annual accuracy test for the CEMS.

(3) Continuously measure the mercury concentration in the final exhaust stream from each roaster using EPA Performance Specification 12B (40 CFR part 60 appendix B and Procedure 5 of appendix F).

(i) You must continuously measure the mercury concentration in the roaster exhaust and maintain the average daily mercury concentration below the operating limit established in paragraph (a)(4) of this section. To determine the appropriate sampling duration, you must review the available data from previous stack tests to determine the upper 99th percentile of the range of mercury concentrations in the exit stack gas. Based on this upper end of expected concentrations, select an appropriate sampling duration that is likely to provide a valid sample and not result in breakthrough of the sampling tubes. If breakthrough of the sampling tubes occurs, you must re-sample within 7 days using a shorter sampling duration.

(ii) If the daily average mercury concentration is higher than the operating limit, the exceedance must be reported to the permit authority as a deviation and corrective actions must be implemented within 48 hours upon receipt of the sampling results. Moreover, within 96 hours of the exceedance, the owner or operator must measure the concentration again with PS 12B (40 CFR part 60, appendix B and Procedure 5 of appendix F), Method 30B or Method 29 (40 CFR part 60, appendix A-8), or ASTM D6784(incorporated by reference—see §63.14) and demonstrate to the permit authority that the mercury concentration is no higher than the operating limit, or inform the permit authority that the limit continues to be exceeded. If the measured mercury concentration exceeds the operating limit for mercury concentration after these 96 hours, the exceedance must be reported as a deviation within 24 hours to the permitting authority and the owner or operator must conduct a full compliance test pursuant to §63.11646(a) for the roaster operations within 40 days to determine if the affected source is in compliance with the MACT emission standard. For facilities that have roasters and autoclaves, the owner or operator can use the results of the previous compliance test for the autoclaves to determine the emissions for those process units to be used in the calculations of the emissions for the affected source. If the source is determined to be in compliance, the compliance test results may also be used to establish a new operating limit for mercury concentration (in accordance with paragraph (e) of this section).

(4) Use Equation (2) of this section to establish an upper operating limit for mercury concentration as determined by using the procedures in paragraphs (a)(1), (a)(2), or (a)(3) of this section concurrently while you are conducting your annual compliance performance stack tests according to the procedures in §63.11646(a).

$$OLR = C_{test} * (EL/CT) \qquad \text{(Eq 2)}$$

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Where:

OLR = mercury concentration operating limit for the roaster (or roasters that share a common stack) (in micrograms per cubic meter);

C_{test} = average mercury concentration measured by the monitoring procedures (PS 12A or PS 12B or 30B) during the compliance performance stack test (in micrograms per cubic meter);

EL = emission standard for ore pretreatment processes (in lb/million tons of ore);

CT = compliance test results for ore pretreatment processes (in lb/million tons of ore).

(5) For roasters that utilize calomel-based mercury control systems for emissions controls, you are not required to perform the monitoring for mercury emissions in paragraphs (a)(1), (a)(2), or (a)(3) of this section if you demonstrate to the satisfaction of your permitting authority that mercury emissions from the roaster are less than 10

pounds of mercury per million tons of ore throughput. If you make this demonstration, you must conduct the parametric monitoring as described below in paragraphs (b) and (c) of this section.

(i) The initial demonstration must include three or more consecutive independent stack tests for mercury at least one month apart on the roaster exhaust stacks. Subsequent demonstrations may be based upon the single stack test required in paragraph (a) of section §63.11646. The results of each of the tests must be less than 10 pounds of mercury per million tons of ore. The testing must be performed according to the procedures in §63.11646(a)(1) through (a)(4) to determine mercury emissions in pounds per hour.

(ii) Divide the mercury emission rate in pounds per hour by the ore throughput rate during the test expressed in millions of tons per hour to determine the emissions in pounds per million tons of ore.

(b) For facilities with roasters and a calomel-based mercury control system that choose to monitor for mercury emissions using the procedures in paragraph (a)(1) of this section or that qualify for and choose to follow the requirements in paragraph (a)(5) of this section, you must establish operating parameter limits for scrubber liquor flow (or line pressure) and scrubber inlet gas temperature and monitor these parameters. You may establish your operating parameter limits from the initial compliance test, according to the manufacturer's specifications, or based on limits established by the permitting authority. If you choose to establish your operating parameter limits from the initial compliance test, monitor the scrubber liquor flow (or line pressure) and scrubber inlet gas temperature during each run of your initial compliance test. The minimum operating limit for scrubber liquor flow rate (or line pressure) is either the lowest value during any run of the initial compliance test or 10 percent less than the average value measured during the compliance test, and your maximum scrubber inlet temperature limit is the highest temperature measured during any run of the initial compliance test or 10 percent higher than the average value measured during the compliance test. You must monitor the scrubber liquor flow rate (or line pressure) and scrubber inlet gas temperature hourly and maintain the scrubber liquor flow (or line pressure) at or above the established operating parameter and maintain the inlet gas temperature below the established operating parameter limit.

(c) For facilities with roasters and a calomel-based mercury control system that choose to monitor for mercury emissions using the procedures in paragraph (a)(1) of this section or that qualify for and follow the requirements in paragraph (a)(5) of this section, you must establish operating parameter ranges for mercuric ion and chloride ion concentrations or for oxidation reduction potential and pH using the procedures in paragraph (c)(1) or (c)(2) of this section respectively.

(1) Establish the mercuric ion concentration and chloride ion concentration ranges for each calomel-based mercury control system. The mercuric ion concentration and chloride ion concentration ranges for each calomel-based mercury control system must be based on the manufacturer's specifications, or based on approval by your permitting authority. Measure the mercuric ion concentration and chloride ion concentrations at least once during each run of your initial compliance test. The measurements must be within the established concentration range for mercuric ion concentration and chloride ion concentration. Subsequently, you must sample at least once daily and maintain the mercuric ion concentration and chloride ion concentrations within their established range.

(2) Establish the oxidation reduction potential and pH range for each calomel-based mercury control system. The oxidation reduction potential and pH range for each calomel-based mercury control system must be based on the manufacturer's specifications, or based on approval by your permitting authority. Install monitoring equipment to continuously monitor the oxidation reduction potential and pH of the calomel-based mercury control system scrubber liquor. Measure the oxidation reduction potential and pH of the scrubber liquor during each run of your initial compliance test. The measurements must be within the established range for oxidation reduction potential and pH. Subsequently, you must monitor the oxidation reduction potential and pH of the scrubber liquor continuously and maintain it within the established operating range.

(d) If you have an exceedance of a control device operating parameter range provided in paragraphs (b) or (c) of this section, you must take corrective action and bring the parameters back into the established parametric ranges. If the corrective actions taken following an exceedance do not result in the operating parameter value being returned within the established range within 48 hours, a mercury concentration measurement (with PS 12B or PS 12A CEMS (40 CFR part 60, appendix B and Procedure 5 of appendix F), Method 30B or Method 29 (40 CFR part 60, appendix A-8), or ASTM D6784 (incorporated by reference—see §63.14)) must be made to determine if the

operating limit for mercury concentration is being exceeded. The measurement must be performed and the mercury concentration determined within 48 hours (after the initial 48 hours, or a total of 96 hours from the time the parameter range was exceeded). If the measured mercury concentration meets the operating limit for mercury concentration established under §63.11647(a)(4), the corrective actions are deemed successful, and the owner or operator can request the permit authority to establish a new limit or range for the parameter. If the measured mercury concentration exceeds the operating limit for mercury concentration after these 96 hours, the exceedance must be reported as a deviation within 24 hours to the permitting authority and the owner or operator must conduct a full compliance test pursuant to §63.11646(a) for the roaster operations within 40 days to determine if the affected source is in compliance with the MACT emission standard. For facilities that have roasters and autoclaves, the owner or operator can use the results of the previous compliance test for the autoclaves to determine the emissions for those process units to be used in the calculations of the emissions for the affected source. If the source is determined to be in compliance with the MACT emission standard, the compliance test may also be used to establish a new operating limit for mercury concentration (see paragraph (e) of this section).

(e) You may submit a request to your permitting authority for approval to change the operating limits established under paragraph (a)(4) of this section for the monitoring required in paragraph (a)(1),(a)(2), or (a)(3) of this section. In the request, you must demonstrate that the proposed change to the operating limit detects changes in levels of mercury emission control. An approved change to the operating limit under this paragraph only applies until a new operating limit is established during the next annual compliance test.

(f) You must monitor each process unit at each new and existing affected source that uses a carbon adsorber to control mercury emissions using the procedures in paragraphs (f)(1) or (f)(2) of this section. A carbon adsorber may include a fixed carbon bed, carbon filter packs or modules, carbon columns, and other variations.

(1) Continuously sample and analyze the exhaust stream from the carbon adsorber for mercury using Method 30B (40 CFR part 60, appendix A-8) for a duration of at least the minimum sampling time specified in Method 30B and up to one week that includes the period of the annual performance test.

(i) Establish an upper operating limit for the process as determined using the mercury concentration measurements from the sorbent trap (Method 30B) as calculated from Equation (3) of this section.

$$OLC = C_{trap} * (EL/CT) \qquad (Eq\ 3)$$

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Where:

OLC = mercury concentration operating limit for the carbon adsorber control device on the process as measured using the sorbent trap, (micrograms per cubic meter);

C_{trap} = average mercury concentration measured using the sorbent trap during the week that includes the compliance performance test (micrograms per cubic meter);

EL = emission standard for the affected sources (lb/ton of concentrate);

CT = compliance test results for the affected sources (lb/ton of concentrate).

(ii) Sample and analyze the exhaust stream from the carbon adsorber for mercury at least monthly using Method 30B (40 CFR part 60, appendix A-8). When the mercury concentration reaches 75 percent of the operating limit, begin weekly sampling and analysis. When the mercury concentration reaches 90 percent of the operating limit, replace the carbon in the carbon adsorber within 30 days. If mercury concentration exceeds the operating limit, change the carbon in the carbon adsorber within 30 days and report the deviation to your permitting authority.

(2) Conduct an initial sampling of the carbon in the carbon bed for mercury 90 days after the replacement of the carbon. A representative sample must be collected from the inlet of the bed and the exit of the bed and analyzed using SW-846 Method 7471B (incorporated by reference—see §63.14). The depth to which the sampler is inserted must be recorded. The design capacity is established by calculating the average carbon loading from the inlet and

outlet measurements. Sampling and analysis of the carbon bed for mercury must be performed quarterly thereafter. When the carbon loading reaches 50 percent of the design capacity of the carbon, monthly sampling must be performed until 90 percent of the carbon loading capacity is reached. The carbon must be removed and replaced with fresh carbon no later than 30 days after reaching 90 percent of capacity. For carbon designs where there may be multiple carbon columns or beds, a representative sample may be collected from the first and last column or bed instead of the inlet or outlet. If the carbon loading exceeds the design capacity of the carbon, change the carbon within 30 days and report the deviation to your permitting authority.

(g) You must monitor gas stream temperature at the inlet to the carbon adsorber for each process unit (*i.e.,*carbon kiln, melt furnace, *etc.*) equipped with a carbon adsorber. Establish a maximum value for the inlet temperature either during the annual performance test (required in §63.11646(a)), according to the manufacturer's specifications, or as approved by your permitting authority. If you choose to establish the temperature operating limit during the performance test, establish the temperature operating limit based on either the highest reading during the test or at 10 °F higher than the average temperature measured during the performance test. Monitor the inlet temperature once per shift. If an inlet temperature exceeds the temperature operating limit, you must take corrective actions to get the temperature back within the parameter operating limit within 48 hours. If the exceedance persists, within 144 hours of the exceedance, you must sample and analyze the exhaust stream from the carbon adsorber using Method 30B (40 CFR part 60, appendix A-8) and compare to an operating limit (calculated pursuant to (f)(1)(i)) or you must conduct carbon sampling pursuant to (f)(2) of this section. If the concentration measured with Method 30B is below 90 percent of the operating limit or the carbon sampling results are below 90 percent of the carbon loading capacity, you may set a new temperature operating limit 10 °F above the previous operating limit or at an alternative level approved by your permit authority. If the concentration is above 90 percent of the operating limit or above 90 percent of the carbon loading capacity you must change the carbon in the bed within 30 days and report the event to your permitting authority, and reestablish an appropriate maximum temperature limit based on approval of your permit authority.

(h) For each wet scrubber at each new and existing affected source not followed by a mercury control system, you must monitor the water flow rate (or line pressure) and pressure drop. Establish a minimum value as the operating limit for water flow rate (or line pressure) and pressure drop either during the performance test required in §63.11646(a), according to the manufacturer's specifications, or as approved by your permitting authority. If you choose to establish the operating limit based on the results of the performance test, the new operating limit must be established based on either the lowest value during any test run or 10 percent less than the average value measured during the test. For wet scrubbers on an autoclave, establish the pressure drop range according to manufacturer's specifications. You must monitor the water flow rate and pressure drop once per shift and take corrective action within 24 hours if any daily average is less than the operating limit. If the parameters are not in range within 72 hours, the owner or operator must report the deviation to the permitting authority and perform a compliance test for the process unit(s) controlled with the wet scrubber that has the parameter exceedance within 40 days to determine if the affected source is in compliance with the MACT limit. For the other process units included in the affected source, the owner or operator can use the results of the previous compliance test to determine the emissions for those process units to be used in the calculations of the emissions for the affected source.

(i) You may conduct additional compliance tests according to the procedures in §63.11646 and re-establish the operating limits required in paragraphs (a) through (c) and (f) through (h) of this section at any time. You must submit a request to your permitting authority for approval to re-establish the operating limits. In the request, you must demonstrate that the proposed change to the operating limit detects changes in levels of mercury emission control. An approved change to the operating limit under this paragraph only applies until a new operating limit is established during the next annual compliance test.

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§63.11648 What are my notification, reporting, and recordkeeping requirements?

(a) You must submit the Initial Notification required by §63.9(b)(2) no later than 120 calendar days after the date of publication of the final rule in the FEDERAL REGISTER or within 120 days after the source becomes subject to the standard. The Initial Notification must include the information specified in §63.9(b)(2)(i) through (b)(2)(iv).

(b) You must submit an initial Notification of Compliance Status as required by §63.9(h).

(c) If a deviation occurs during a semiannual reporting period, you must submit a deviation report to your permitting authority according to the requirements in paragraphs (c)(1) and (2) of this section.

(1) The first reporting period covers the period beginning on the compliance date specified in §63.11641 and ending on June 30 or December 31, whichever date comes first after your compliance date. Each subsequent reporting period covers the semiannual period from January 1 through June 30 or from July 1 through December 31. Your deviation report must be postmarked or delivered no later than July 31 or January 31, whichever date comes first after the end of the semiannual reporting period.

(2) A deviation report must include the information in paragraphs (c)(2)(i) through (c)(2)(iv) of this section.

(i) Company name and address.

(ii) Statement by a responsible official, with the official's name, title, and signature, certifying the truth, accuracy and completeness of the content of the report.

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

(iv) Identification of the affected source, the pollutant being monitored, applicable requirement, description of deviation, and corrective action taken.

(d) If you had a malfunction during the reporting period, the compliance report required in §63.11648(b) must include the number, duration, and a brief description for each type of malfunction which occurred during the reporting period and which caused or may have caused any applicable emission limitation to be exceeded. The report must also include a description of actions taken by an owner or operator during a malfunction of an affected source to minimize emissions in accordance with §63.11646(b), including actions taken to correct a malfunction.

(e) You must keep the records specified in paragraphs (e)(1) through (e)(3) of this section. The form and maintenance of records must be consistent with the requirements in section 63.10(b)(1) of the General Provisions.

(1) As required in §63.10(b)(2)(xiv), you must keep a copy of each notification that you submitted to comply with this subpart and all documentation supporting any Initial Notification, Notification of Compliance Status, and semiannual compliance certifications that you submitted.

(2) You must keep the records of all performance tests, measurements, monitoring data, and corrective actions required by §§63.11646 and 63.11647, and the information identified in paragraphs (c)(2)(i) through (c)(2)(vi) of this section for each corrective action required by §63.11647.

(i) The date, place, and time of the monitoring event requiring corrective action;

(ii) Technique or method used for monitoring;

(iv) Operating conditions during the activity;

(v) Results, including the date, time, and duration of the period from the time the monitoring indicated a problem to the time that monitoring indicated proper operation; and

(vi) Maintenance or corrective action taken (if applicable).

(3) You must keep records of operating hours for each process as required by §63.11646(a)(5) and records of the monthly quantity of ore and concentrate processed or produced as required by §63.11646(a)(10).

(f) Your records must be in a form suitable and readily available for expeditious review, according to §63.10(b)(1). As specified in §63.10(b)(1), you must keep each record for 5 years following the date of each recorded action. You must keep each record onsite for at least 2 years after the date of each recorded action according to §63.10(b)(1). You may keep the records offsite for the remaining 3 years.

(g) After December 31, 2011, within 60 days after the date of completing each performance evaluation conducted to demonstrate compliance with this subpart, the owner or operator of the affected facility must submit the test data to EPA by entering the data electronically into EPA's WebFIRE data base through EPA's Central Data Exchange. The owner or operator of an affected facility shall enter the test data into EPA's data base using the Electronic Reporting Tool or other compatible electronic spreadsheet. Only performance evaluation data collected using methods compatible with ERT are subject to this requirement to be submitted electronically into EPA's WebFIRE database.

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OTHER REQUIREMENTS AND INFORMATION

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§63.11650 What General Provisions apply to this subpart?

Table 1 to this subpart shows which parts of the General Provisions in §§63.1 through 63.16 apply to you.

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§63.11651 What definitions apply to this subpart?

Terms used in this subpart are defined in the Clean Air Act, in §63.2, and in this section as follows:

Autoclave means a pressure oxidation vessel that is used to treat gold ores (primarily sulfide refractory ore) and involves pumping a slurry of milled ore into the vessel which is highly pressurized with oxygen and heated to temperatures of approximately 350° to 430 °F.

Calomel-based mercury control system means a mercury emissions control system that uses scrubbers to remove mercury from the gas stream of a roaster or combination of roasters by complexing the mercury from the gas stream with mercuric chloride to form mercurous chloride (calomel). These scrubbers are also referred to as "mercury scrubbers."

Carbon adsorber means a control device consisting of a single fixed carbon bed, multiple carbon beds or columns, carbon filter packs or modules, and other variations that uses activated carbon to remove pollutants from a gas stream.

Carbon kiln means a kiln or furnace where carbon is regenerated by heating, usually in the presence of steam, after the gold has been stripped from the carbon.

Carbon processes with mercury retorts means the affected source that includes carbon kilns, preg tanks, electrowinning cells, mercury retorts, and melt furnaces at gold mine ore processing and production facilities that use activated carbon, or resins that can be used as a substitute for activated carbon, to recover (adsorb) gold from the pregnant cyanide solution.

Carbon processes without mercury retorts means the affected source that includes carbon kilns, preg tanks, electrowinning cells, and melt furnaces, but has no retorts, at gold mine ore processing and production facilities that use activated carbon, or resins that can be used as a substitute for activated carbon, to recover (adsorb) gold from the pregnant cyanide solution.

Concentrate means the sludge-like material that is loaded with gold along with various other metals (such as silver, copper, and mercury) and various other substances, that is produced by electrowinning, the Merrill-Crowe process, flotation and gravity separation processes. *Concentrate* is measured as the input to mercury retorts, or for facilities without mercury retorts, as the input to melt furnaces before any drying takes place. For facilities without mercury retorts or melt furnaces, *concentrate* is measured as the quantity shipped.

Deviation means any instance where an affected source subject to this subpart, or an owner or operator of such a source:

(1) Fails to meet any requirement or obligation established by this subpart, including but not limited to any emissions limitation or work practice standard;

(2) Fails to meet any term or condition that is adopted to implement an applicable requirement in this subpart and that is included in the operating permit for any affected source required to obtain such a permit; or

(3) Exceeds any operating limit established under this subpart.

Electrowinning means a process that uses induced voltage on anode and cathode plates to remove metals from the continuous flow of solution, where the gold in solution is plated onto the cathode. Steel wool is typically used as the plating surface.

Electrowinning Cells means a tank in which the electrowinning takes place.

Gold mine ore processing and production facility means any industrial facility engaged in the processing of gold mine ore that uses any of the following processes: Roasting operations, autoclaves, carbon kilns, preg tanks, electrowinning, mercury retorts, or melt furnaces. Laboratories (see CAA section 112(c)(7)), individual prospectors, and very small pilot scale mining operations that processes or produces less than 100 pounds of concentrate per year are not a gold mine ore processing and production facility. A facility that produces primarily metals other than gold, such as copper, lead, zinc, or nickel (where these metals other than gold comprise 95 percent or more of the total metal production) that may also recover some gold as a byproduct is not a gold mine ore processing and production facility. Those facilities whereby 95 percent or more of total mass of metals produced are metals other than gold, whether final metal production is onsite or offsite, are not part of the gold mine ore processing and production source category.

Melt furnace means a furnace (typically a crucible furnace) that is used for smelting the gold-bearing material recovered from mercury retorting, or the gold-bearing material from electrowinning, the Merrill-Crowe process, or other processes for facilities without mercury retorts.

Mercury retort means a vessel that is operated under a partial vacuum at approximately 1,100° to 1,300 °F to remove mercury and moisture from the gold bearing sludge material that is recovered from electrowinning, the Merrill-Crowe process, or other processes. Mercury retorts are usually equipped with condensers that recover liquid mercury during the processing.

Merrill-Crowe process means a precipitation technique using zinc oxide for removing gold from a cyanide solution. Zinc dust is added to the solution, and gold is precipitated to produce a concentrate.

Non-carbon concentrate processes means the affected source that includes mercury retorts and melt furnaces at gold mine ore processing and production facilities that use the Merrill-Crowe process or other processes and do not use carbon (or resins that substitute for carbon) to recover (adsorb) gold from the pregnant cyanide solution.

Ore dry grinding means a process in which the gold ore is ground and heated (dried) prior to additional preheating or prior to entering the roaster.

Ore preheating means a process in which ground gold ore is preheated prior to entering the roaster.

Ore pretreatment processes means the affected source that includes roasting operations and autoclaves that are used to pre-treat gold mine ore at gold mine ore processing and production facilities prior to the cyanide leaching process.

Pregnant solution tank (or preg tank) means a storage tank for pregnant solution, which is the cyanide solution that contains gold-cyanide complexes that is generated from leaching gold ore with cyanide solution.

Pregnant cyanide solution means the cyanide solution that contains gold-cyanide complexes that are generated from leaching gold ore with a dilute cyanide solution.

Quenching means a process in which the hot calcined ore is cooled and quenched with water after it leaves the roaster.

Roasting operation means a process that uses an industrial furnace in which milled ore is combusted across a fluidized bed to oxidize and remove organic carbon and sulfide mineral grains in refractory gold ore. The emissions points of the roasting operation subject to this subpart include ore dry grinding, ore preheating, the roaster stack, and quenching.

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§63.11652 Who implements and enforces this subpart?

(a) This subpart can be implemented and enforced by the U.S. EPA or a delegated authority, such as your state, local, or tribal agency. If the U.S. EPA Administrator has delegated authority to your state, local, or tribal agency, then that agency has the authority to implement and enforce this subpart. You should contact your U.S. EPA Regional Office to find out if this subpart is delegated to your state, local, or tribal agency.

(b) In delegating implementation and enforcement authority of this subpart to a state, local, or tribal agency under 40 CFR part 63, subpart E, the authorities contained in paragraph (c) of this section are retained by the Administrator of the U.S. EPA and are not transferred to the state, local, or tribal agency.

(c) The authorities that will not be delegated to state, local, or tribal agencies are listed in paragraphs (c)(1) through (4) of this section.

(1) Approval of alternatives to the applicability requirements in §63.11640, the compliance date requirements in §63.11641, and the applicable standards in §63.11645.

(2) Approval of an alternative nonopacity emissions standard under §63.6(g).

(3) Approval of a major change to a test method under §63.7(e)(2)(ii) and (f). A "major change to test method" is defined in §63.90(a).

(4) Approval of a major change to monitoring under §63.8(f). A "major change to monitoring" is defined in §63.90(a).

(5) Approval of a waiver of recordkeeping or reporting requirements under §63.10(f), or another major change to recordkeeping/reporting. A "major change to recordkeeping/reporting" is defined in §63.90(a).

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§63.11653 [Reserved]

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Table 1 to Subpart EEEEEEE of Part 63—Applicability of General Provisions to Subpart EEEEEE

As stated in §63.11650, you must comply with the applicable General Provisions requirements according to the following table

Citation	Subject	Applies to subpart EEEEEEE	Explanation
§63.1(a)(1), (a)(2), (a)(3), (a)(4), (a)(6), (a)(10)-(a)(12), (b)(1), (b)(3), (c)(1), (c)(2), (c)(5), (e)	Applicability	Yes	
§63.1(a)(5), (a)(7)-(a)(9), (b)(2), (c)(3), (c)(4), (d)	Reserved	No	
§63.2	Definitions	Yes	
§63.3	Units and Abbreviations	Yes	
§63.4	Prohibited Activities and Circumvention	Yes	
§63.5	Preconstruction Review and Notification Requirements	Yes	
§63.6(a), (b)(1)-(b)(5), (b)(7), (c)(1), (c)(2), (c)(5), (e)(1)(iii), (f)(2), (f)(3), (g), (i), (j)	Compliance with Standards and Maintenance Requirements	Yes	
§63.6(e)(1)(i) and (ii), (e)(3), and (f)(1)	Startup, Shutdown and Malfunction Requirements (SSM)	No	Subpart EEEEEEE standards apply at all times.
§63.6(h)(1), (h)(2), (h)(4),(h)(5)(i), (ii), (iii) and (v), (h)(6)-(h)(9)	Compliance with Opacity and Visible Emission Limits	No	Subpart EEEEEEE does not contain opacity or visible emission limits.
§63.6(b)(6), (c)(3), (c)(4), (d), (e)(2), (e)(3)(ii), (h)(3), (h)(5)(iv)	Reserved	No	
§63.7, except (e)(1)	Applicability and Performance Test Dates	Yes	
§63.7(e)(1)	Performance Testing Requirements Related to SSM	No	
§63.8(a)(1), (b)(1), (f)(1)-(5), (g)	Monitoring Requirements	Yes	
§63.8(a)(2), (a)(4), (b)(2)-(3), (c), (d), (e), (f)(6), (g)	Continuous Monitoring Systems	Yes	Except cross references to SSM requirements in §63.6(e)(1) and (3) do not apply.

§63.8(a)(3)	[Reserved]	No	
§63.9(a), (b)(1), (b)(2)(i)-(v), (b)(4), (b)(5), (c), (d), (e), (g), (h)(1)-(h)(3), (h)(5), (h)(6), (i), (j)	Notification Requirements	Yes	
§63.9(f)		No	
§63.9(b)(3), (h)(4)	Reserved	No	
§63.10(a), (b)(1), (b)(2)(vi)-(xiv), (b)(3), (c), (d)(1)-(4), (e), (f)	Recordkeeping and Reporting Requirements	Yes	
§63.10(b)(2)(i)-(v), (d)(5)	Recordkeeping/Reporting Associated with SSM	No	
§63.10(c)(2)-(c)(4), (c)(9)	Reserved	No	
§63.11	Control Device Requirements	No	
§63.12	State Authority and Delegations	Yes	
§§63.13-63.16	Addresses, Incorporation by Reference, Availability of Information, Performance Track Provisions	Yes	

Title 40: Protection of Environment
PART 63—NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES

Subpart A—General Provisions

Contents

SOURCE: 59 FR 12430, Mar. 16, 1994, unless otherwise noted.

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§63.1 Applicability.

(a) *General.* (1) Terms used throughout this part are defined in §63.2 or in the Clean Air Act (Act) as amended in 1990, except that individual subparts of this part may include specific definitions in addition to or that supersede definitions in §63.2.

(2) This part contains national emission standards for hazardous air pollutants (NESHAP) established pursuant to section 112 of the Act as amended November 15, 1990. These standards regulate specific categories of stationary sources that emit (or have the potential to emit) one or more hazardous air pollutants listed in this part pursuant to section 112(b) of the Act. This section explains the applicability of such standards to sources affected by them. The standards in this part are independent of NESHAP contained in 40 CFR part 61. The NESHAP in part 61 promulgated by signature of the Administrator before November 15, 1990 (i.e., the date of enactment of the Clean Air Act Amendments of 1990) remain in effect until they are amended, if appropriate, and added to this part.

(3) No emission standard or other requirement established under this part shall be interpreted, construed, or applied to diminish or replace the requirements of a more stringent emission limitation or other applicable requirement established by the Administrator pursuant to other authority of the Act (section 111, part C or D or any other authority of this Act), or a standard issued under State authority. The Administrator may specify in a specific standard under this part that facilities subject to other provisions under the Act need only comply with the provisions of that standard.

(4)(i) Each relevant standard in this part 63 must identify explicitly whether each provision in this subpart A is or is not included in such relevant standard.

(ii) If a relevant part 63 standard incorporates the requirements of 40 CFR part 60, part 61 or other part 63 standards, the relevant part 63 standard must identify explicitly the applicability of each corresponding part 60, part 61, or other part 63 subpart A (General) provision.

(iii) The General Provisions in this subpart A do not apply to regulations developed pursuant to section 112(r) of the amended Act, unless otherwise specified in those regulations.

(5) [Reserved]

(6) To obtain the most current list of categories of sources to be regulated under section 112 of the Act, or to obtain the most recent regulation promulgation schedule established pursuant to section 112(e) of the Act, contact the Office of the Director, Emission Standards Division, Office of Air Quality Planning and Standards, U.S. EPA (MD-13), Research Triangle Park, North Carolina 27711.

(7)-(9) [Reserved]

(10) For the purposes of this part, time periods specified in days shall be measured in calendar days, even if the word "calendar" is absent, unless otherwise specified in an applicable requirement.

(11) For the purposes of this part, if an explicit postmark deadline is not specified in an applicable requirement for the submittal of a notification, application, test plan, report, or other written communication to the Administrator, the owner or operator shall postmark the submittal on or before the number of days specified in the applicable requirement. For example, if a notification must be submitted 15 days before a particular event is scheduled to take place, the notification shall be postmarked on or before 15 days preceding the event; likewise, if a notification must be submitted 15 days after a particular event takes place, the notification shall be postmarked on or before 15 days following the end of the event. The use of reliable non-Government mail carriers that provide indications of verifiable delivery of information required to be submitted to the Administrator, similar to the postmark provided by the U.S. Postal Service, or alternative means of delivery agreed to by the permitting authority, is acceptable.

(12) Notwithstanding time periods or postmark deadlines specified in this part for the submittal of information to the Administrator by an owner or operator, or the review of such information by the Administrator, such time periods or deadlines may be changed by mutual agreement between the owner or operator and the Administrator. Procedures governing the implementation of this provision are specified in §63.9(i).

(b) *Initial applicability determination for this part.* (1) The provisions of this part apply to the owner or operator of any stationary source that—

(i) Emits or has the potential to emit any hazardous air pollutant listed in or pursuant to section 112(b) of the Act; and

(ii) Is subject to any standard, limitation, prohibition, or other federally enforceable requirement established pursuant to this part.

(2) [Reserved]

(3) An owner or operator of a stationary source who is in the relevant source category and who determines that the source is not subject to a relevant standard or other requirement established under this part must keep a record as specified in §63.10(b)(3).

(c) *Applicability of this part after a relevant standard has been set under this part.* (1) If a relevant standard has been established under this part, the owner or operator of an affected source must comply with the provisions of that standard and of this subpart as provided in paragraph (a)(4) of this section.

(2) Except as provided in §63.10(b)(3), if a relevant standard has been established under this part, the owner or operator of an affected source may be required to obtain a title V permit from a permitting authority in the State in

which the source is located. Emission standards promulgated in this part for area sources pursuant to section 112(c)(3) of the Act will specify whether—

(i) States will have the option to exclude area sources affected by that standard from the requirement to obtain a title V permit (i.e., the standard will exempt the category of area sources altogether from the permitting requirement);

(ii) States will have the option to defer permitting of area sources in that category until the Administrator takes rulemaking action to determine applicability of the permitting requirements; or

(iii) If a standard fails to specify what the permitting requirements will be for area sources affected by such a standard, then area sources that are subject to the standard will be subject to the requirement to obtain a title V permit without any deferral.

(3)-(4) [Reserved]

(5) If an area source that otherwise would be subject to an emission standard or other requirement established under this part if it were a major source subsequently increases its emissions of hazardous air pollutants (or its potential to emit hazardous air pollutants) such that the source is a major source that is subject to the emission standard or other requirement, such source also shall be subject to the notification requirements of this subpart.

(d) [Reserved]

(e) If the Administrator promulgates an emission standard under section 112(d) or (h) of the Act that is applicable to a source subject to an emission limitation by permit established under section 112(j) of the Act, and the requirements under the section 112(j) emission limitation are substantially as effective as the promulgated emission standard, the owner or operator may request the permitting authority to revise the source's title V permit to reflect that the emission limitation in the permit satisfies the requirements of the promulgated emission standard. The process by which the permitting authority determines whether the section 112(j) emission limitation is substantially as effective as the promulgated emission standard must include, consistent with part 70 or 71 of this chapter, the opportunity for full public, EPA, and affected State review (including the opportunity for EPA's objection) prior to the permit revision being finalized. A negative determination by the permitting authority constitutes final action for purposes of review and appeal under the applicable title V operating permit program.

[59 FR 12430, Mar. 16, 1994, as amended at 67 FR 16595, Apr. 5, 2002]

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§63.2 Definitions.

The terms used in this part are defined in the Act or in this section as follows:

Act means the Clean Air Act (42 U.S.C. 7401 *et seq.*, as amended by Pub. L. 101-549, 104 Stat. 2399).

Actual emissions is defined in subpart D of this part for the purpose of granting a compliance extension for an early reduction of hazardous air pollutants.

Administrator means the Administrator of the United States Environmental Protection Agency or his or her authorized representative (e.g., a State that has been delegated the authority to implement the provisions of this part).

Affected source, for the purposes of this part, means the collection of equipment, activities, or both within a single contiguous area and under common control that is included in a section 112(c) source category or subcategory for which a section 112(d) standard or other relevant standard is established pursuant to section 112 of the Act. Each relevant standard will define the "affected source," as defined in this paragraph unless a different

definition is warranted based on a published justification as to why this definition would result in significant administrative, practical, or implementation problems and why the different definition would resolve those problems. The term "affected source," as used in this part, is separate and distinct from any other use of that term in EPA regulations such as those implementing title IV of the Act. Affected source may be defined differently for part 63 than affected facility and stationary source in parts 60 and 61, respectively. This definition of "affected source," and the procedures for adopting an alternative definition of "affected source," shall apply to each section 112(d) standard for which the initial proposed rule is signed by the Administrator after June 30, 2002.

Alternative emission limitation means conditions established pursuant to sections 112(i)(5) or 112(i)(6) of the Act by the Administrator or by a State with an approved permit program.

Alternative emission standard means an alternative means of emission limitation that, after notice and opportunity for public comment, has been demonstrated by an owner or operator to the Administrator's satisfaction to achieve a reduction in emissions of any air pollutant at least equivalent to the reduction in emissions of such pollutant achieved under a relevant design, equipment, work practice, or operational emission standard, or combination thereof, established under this part pursuant to section 112(h) of the Act.

Alternative test method means any method of sampling and analyzing for an air pollutant that is not a test method in this chapter and that has been demonstrated to the Administrator's satisfaction, using Method 301 in appendix A of this part, to produce results adequate for the Administrator's determination that it may be used in place of a test method specified in this part.

Approved permit program means a State permit program approved by the Administrator as meeting the requirements of part 70 of this chapter or a Federal permit program established in this chapter pursuant to title V of the Act (42 U.S.C. 7661).

Area source means any stationary source of hazardous air pollutants that is not a major source as defined in this part.

Commenced means, with respect to construction or reconstruction of an affected source, that an owner or operator has undertaken a continuous program of construction or reconstruction or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or reconstruction.

Compliance date means the date by which an affected source is required to be in compliance with a relevant standard, limitation, prohibition, or any federally enforceable requirement established by the Administrator (or a State with an approved permit program) pursuant to section 112 of the Act.

Compliance schedule means: (1) In the case of an affected source that is in compliance with all applicable requirements established under this part, a statement that the source will continue to comply with such requirements; or

(2) In the case of an affected source that is required to comply with applicable requirements by a future date, a statement that the source will meet such requirements on a timely basis and, if required by an applicable requirement, a detailed schedule of the dates by which each step toward compliance will be reached; or

(3) In the case of an affected source not in compliance with all applicable requirements established under this part, a schedule of remedial measures, including an enforceable sequence of actions or operations with milestones and a schedule for the submission of certified progress reports, where applicable, leading to compliance with a relevant standard, limitation, prohibition, or any federally enforceable requirement established pursuant to section 112 of the Act for which the affected source is not in compliance. This compliance schedule shall resemble and be at least as stringent as that contained in any judicial consent decree or administrative order to which the source is subject. Any such schedule of compliance shall be supplemental to, and shall not sanction noncompliance with, the applicable requirements on which it is based.

Construction means the on-site fabrication, erection, or installation of an affected source. Construction does not include the removal of all equipment comprising an affected source from an existing location and reinstallation of such equipment at a new location. The owner or operator of an existing affected source that is relocated may elect not to reinstall minor ancillary equipment including, but not limited to, piping, ductwork, and valves. However, removal and reinstallation of an affected source will be construed as reconstruction if it satisfies the criteria for reconstruction as defined in this section. The costs of replacing minor ancillary equipment must be considered in determining whether the existing affected source is reconstructed.

Continuous emission monitoring system (CEMS) means the total equipment that may be required to meet the data acquisition and availability requirements of this part, used to sample, condition (if applicable), analyze, and provide a record of emissions.

Continuous monitoring system (CMS) is a comprehensive term that may include, but is not limited to, continuous emission monitoring systems, continuous opacity monitoring systems, continuous parameter monitoring systems, or other manual or automatic monitoring that is used for demonstrating compliance with an applicable regulation on a continuous basis as defined by the regulation.

Continuous opacity monitoring system (COMS) means a continuous monitoring system that measures the opacity of emissions.

Continuous parameter monitoring system means the total equipment that may be required to meet the data acquisition and availability requirements of this part, used to sample, condition (if applicable), analyze, and provide a record of process or control system parameters.

Effective date means:

(1) With regard to an emission standard established under this part, the date of promulgation in the FEDERAL REGISTER of such standard; or

(2) With regard to an alternative emission limitation or equivalent emission limitation determined by the Administrator (or a State with an approved permit program), the date that the alternative emission limitation or equivalent emission limitation becomes effective according to the provisions of this part.

Emission standard means a national standard, limitation, prohibition, or other regulation promulgated in a subpart of this part pursuant to sections 112(d), 112(h), or 112(f) of the Act.

Emissions averaging is a way to comply with the emission limitations specified in a relevant standard, whereby an affected source, if allowed under a subpart of this part, may create emission credits by reducing emissions from specific points to a level below that required by the relevant standard, and those credits are used to offset emissions from points that are not controlled to the level required by the relevant standard.

EPA means the United States Environmental Protection Agency.

Equivalent emission limitation means any maximum achievable control technology emission limitation or requirements which are applicable to a major source of hazardous air pollutants and are adopted by the Administrator (or a State with an approved permit program) on a case-by-case basis, pursuant to section 112(g) or (j) of the Act.

Excess emissions and continuous monitoring system performance report is a report that must be submitted periodically by an affected source in order to provide data on its compliance with relevant emission limits, operating parameters, and the performance of its continuous parameter monitoring systems.

Existing source means any affected source that is not a new source.

Federally enforceable means all limitations and conditions that are enforceable by the Administrator and citizens under the Act or that are enforceable under other statutes administered by the Administrator. Examples of federally enforceable limitations and conditions include, but are not limited to:

(1) Emission standards, alternative emission standards, alternative emission limitations, and equivalent emission limitations established pursuant to section 112 of the Act as amended in 1990;

(2) New source performance standards established pursuant to section 111 of the Act, and emission standards established pursuant to section 112 of the Act before it was amended in 1990;

(3) All terms and conditions in a title V permit, including any provisions that limit a source's potential to emit, unless expressly designated as not federally enforceable;

(4) Limitations and conditions that are part of an approved State Implementation Plan (SIP) or a Federal Implementation Plan (FIP);

(5) Limitations and conditions that are part of a Federal construction permit issued under 40 CFR 52.21 or any construction permit issued under regulations approved by the EPA in accordance with 40 CFR part 51;

(6) Limitations and conditions that are part of an operating permit where the permit and the permitting program pursuant to which it was issued meet all of the following criteria:

(i) The operating permit program has been submitted to and approved by EPA into a State implementation plan (SIP) under section 110 of the CAA;

(ii) The SIP imposes a legal obligation that operating permit holders adhere to the terms and limitations of such permits and provides that permits which do not conform to the operating permit program requirements and the requirements of EPA's underlying regulations may be deemed not "federally enforceable" by EPA;

(iii) The operating permit program requires that all emission limitations, controls, and other requirements imposed by such permits will be at least as stringent as any other applicable limitations and requirements contained in the SIP or enforceable under the SIP, and that the program may not issue permits that waive, or make less stringent, any limitations or requirements contained in or issued pursuant to the SIP, or that are otherwise "federally enforceable";

(iv) The limitations, controls, and requirements in the permit in question are permanent, quantifiable, and otherwise enforceable as a practical matter; and

(v) The permit in question was issued only after adequate and timely notice and opportunity for comment for EPA and the public.

(7) Limitations and conditions in a State rule or program that has been approved by the EPA under subpart E of this part for the purposes of implementing and enforcing section 112; and

(8) Individual consent agreements that the EPA has legal authority to create.

Fixed capital cost means the capital needed to provide all the depreciable components of an existing source.

Force majeure means, for purposes of §63.7, an event that will be or has been caused by circumstances beyond the control of the affected facility, its contractors, or any entity controlled by the affected facility that prevents the owner or operator from complying with the regulatory requirement to conduct performance tests within the specified timeframe despite the affected facility's best efforts to fulfill the obligation. Examples of such events are acts of nature, acts of war or terrorism, or equipment failure or safety hazard beyond the control of the affected facility.

Fugitive emissions means those emissions from a stationary source that could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening. Under section 112 of the Act, all fugitive emissions are to be considered in determining whether a stationary source is a major source.

Hazardous air pollutant means any air pollutant listed in or pursuant to section 112(b) of the Act.

Issuance of a part 70 permit will occur, if the State is the permitting authority, in accordance with the requirements of part 70 of this chapter and the applicable, approved State permit program. When the EPA is the permitting authority, issuance of a title V permit occurs immediately after the EPA takes final action on the final permit.

Major source means any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit considering controls, in the aggregate, 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants, unless the Administrator establishes a lesser quantity, or in the case of radionuclides, different criteria from those specified in this sentence.

Malfunction means any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.

Monitoring means the collection and use of measurement data or other information to control the operation of a process or pollution control device or to verify a work practice standard relative to assuring compliance with applicable requirements. Monitoring is composed of four elements:

(1) Indicator(s) of performance—the parameter or parameters you measure or observe for demonstrating proper operation of the pollution control measures or compliance with the applicable emissions limitation or standard. Indicators of performance may include direct or predicted emissions measurements (including opacity), operational parametric values that correspond to process or control device (and capture system) efficiencies or emissions rates, and recorded findings of inspection of work practice activities, materials tracking, or design characteristics. Indicators may be expressed as a single maximum or minimum value, a function of process variables (for example, within a range of pressure drops), a particular operational or work practice status (for example, a damper position, completion of a waste recovery task, materials tracking), or an interdependency between two or among more than two variables.

(2) Measurement techniques—the means by which you gather and record information of or about the indicators of performance. The components of the measurement technique include the detector type, location and installation specifications, inspection procedures, and quality assurance and quality control measures. Examples of measurement techniques include continuous emission monitoring systems, continuous opacity monitoring systems, continuous parametric monitoring systems, and manual inspections that include making records of process conditions or work practices.

(3) Monitoring frequency—the number of times you obtain and record monitoring data over a specified time interval. Examples of monitoring frequencies include at least four points equally spaced for each hour for continuous emissions or parametric monitoring systems, at least every 10 seconds for continuous opacity monitoring systems, and at least once per operating day (or week, month, etc.) for work practice or design inspections.

(4) Averaging time—the period over which you average and use data to verify proper operation of the pollution control approach or compliance with the emissions limitation or standard. Examples of averaging time include a 3-hour average in units of the emissions limitation, a 30-day rolling average emissions value, a daily average of a control device operational parametric range, and an instantaneous alarm.

New affected source means the collection of equipment, activities, or both within a single contiguous area and under common control that is included in a section 112(c) source category or subcategory that is subject to a section 112(d) or other relevant standard for new sources. This definition of "new affected source," and the criteria to be

utilized in implementing it, shall apply to each section 112(d) standard for which the initial proposed rule is signed by the Administrator after June 30, 2002. Each relevant standard will define the term "new affected source," which will be the same as the "affected source" unless a different collection is warranted based on consideration of factors including:

(1) Emission reduction impacts of controlling individual sources versus groups of sources;

(2) Cost effectiveness of controlling individual equipment;

(3) Flexibility to accommodate common control strategies;

(4) Cost/benefits of emissions averaging;

(5) Incentives for pollution prevention;

(6) Feasibility and cost of controlling processes that share common equipment (e.g., product recovery devices);

(7) Feasibility and cost of monitoring; and

(8) Other relevant factors.

New source means any affected source the construction or reconstruction of which is commenced after the Administrator first proposes a relevant emission standard under this part establishing an emission standard applicable to such source.

One-hour period, unless otherwise defined in an applicable subpart, means any 60-minute period commencing on the hour.

Opacity means the degree to which emissions reduce the transmission of light and obscure the view of an object in the background. For continuous opacity monitoring systems, opacity means the fraction of incident light that is attenuated by an optical medium.

Owner or operator means any person who owns, leases, operates, controls, or supervises a stationary source.

Performance audit means a procedure to analyze blind samples, the content of which is known by the Administrator, simultaneously with the analysis of performance test samples in order to provide a measure of test data quality.

Performance evaluation means the conduct of relative accuracy testing, calibration error testing, and other measurements used in validating the continuous monitoring system data.

Performance test means the collection of data resulting from the execution of a test method (usually three emission test runs) used to demonstrate compliance with a relevant emission standard as specified in the performance test section of the relevant standard.

Permit modification means a change to a title V permit as defined in regulations codified in this chapter to implement title V of the Act (42 U.S.C. 7661).

Permit program means a comprehensive State operating permit system established pursuant to title V of the Act (42 U.S.C. 7661) and regulations codified in part 70 of this chapter and applicable State regulations, or a comprehensive Federal operating permit system established pursuant to title V of the Act and regulations codified in this chapter.

Permit revision means any permit modification or administrative permit amendment to a title V permit as defined in regulations codified in this chapter to implement title V of the Act (42 U.S.C. 7661).

Permitting authority means: (1) The State air pollution control agency, local agency, other State agency, or other agency authorized by the Administrator to carry out a permit program under part 70 of this chapter; or

(2) The Administrator, in the case of EPA-implemented permit programs under title V of the Act (42 U.S.C. 7661).

Pollution Prevention means *source reduction* as defined under the Pollution Prevention Act (42 U.S.C. 13101-13109). The definition is as follows:

(1) *Source reduction* is any practice that:

(i) Reduces the amount of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment, or disposal; and

(ii) Reduces the hazards to public health and the environment associated with the release of such substances, pollutants, or contaminants.

(2) The term *source reduction* includes equipment or technology modifications, process or procedure modifications, reformulation or redesign of products, substitution of raw materials, and improvements in housekeeping, maintenance, training, or inventory control.

(3) The term *source reduction* does not include any practice that alters the physical, chemical, or biological characteristics or the volume of a hazardous substance, pollutant, or contaminant through a process or activity which itself is not integral to and necessary for the production of a product or the providing of a service.

Potential to emit means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the stationary source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable.

Reconstruction, unless otherwise defined in a relevant standard, means the replacement of components of an affected or a previously nonaffected source to such an extent that:

(1) The fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable new source; and

(2) It is technologically and economically feasible for the reconstructed source to meet the relevant standard(s) established by the Administrator (or a State) pursuant to section 112 of the Act. Upon reconstruction, an affected source, or a stationary source that becomes an affected source, is subject to relevant standards for new sources, including compliance dates, irrespective of any change in emissions of hazardous air pollutants from that source.

Regulation promulgation schedule means the schedule for the promulgation of emission standards under this part, established by the Administrator pursuant to section 112(e) of the Act and published in the FEDERAL REGISTER

Relevant standard means:

(1) An emission standard;

(2) An alternative emission standard;

(3) An alternative emission limitation; or

(4) An equivalent emission limitation established pursuant to section 112 of the Act that applies to the collection of equipment, activities, or both regulated by such standard or limitation. A relevant standard may include or consist

of a design, equipment, work practice, or operational requirement, or other measure, process, method, system, or technique (including prohibition of emissions) that the Administrator (or a State) establishes for new or existing sources to which such standard or limitation applies. Every relevant standard established pursuant to section 112 of the Act includes subpart A of this part, as provided by §63.1(a)(4), and all applicable appendices of this part or of other parts of this chapter that are referenced in that standard.

Responsible official means one of the following:

(1) For a corporation: A president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities and either:

(i) The facilities employ more than 250 persons or have gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars); or

(ii) The delegation of authority to such representative is approved in advance by the Administrator.

(2) For a partnership or sole proprietorship: a general partner or the proprietor, respectively.

(3) For a municipality, State, Federal, or other public agency: either a principal executive officer or ranking elected official. For the purposes of this part, a principal executive officer of a Federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of the EPA).

(4) For affected sources (as defined in this part) applying for or subject to a title V permit: "responsible official" shall have the same meaning as defined in part 70 or Federal title V regulations in this chapter (42 U.S.C. 7661), whichever is applicable.

Run means one of a series of emission or other measurements needed to determine emissions for a representative operating period or cycle as specified in this part.

Shutdown means the cessation of operation of an affected source or portion of an affected source for any purpose.

Six-minute period means, with respect to opacity determinations, any one of the 10 equal parts of a 1-hour period.

Source at a Performance Track member facility means a major or area source located at a facility which has been accepted by EPA for membership in the Performance Track Program (as described at *www.epa.gov/PerformanceTrack*) and is still a member of the Program. The Performance Track Program is a voluntary program that encourages continuous environmental improvement through the use of environmental management systems, local community outreach, and measurable results.

Standard conditions means a temperature of 293 K (68 °F) and a pressure of 101.3 kilopascals (29.92 in. Hg).

Startup means the setting in operation of an affected source or portion of an affected source for any purpose.

State means all non-Federal authorities, including local agencies, interstate associations, and State-wide programs, that have delegated authority to implement: (1) The provisions of this part and/or (2) the permit program established under part 70 of this chapter. The term State shall have its conventional meaning where clear from the context.

Stationary source means any building, structure, facility, or installation which emits or may emit any air pollutant.

Test method means the validated procedure for sampling, preparing, and analyzing for an air pollutant specified in a relevant standard as the performance test procedure. The test method may include methods described in an appendix of this chapter, test methods incorporated by reference in this part, or methods validated for an application through procedures in Method 301 of appendix A of this part.

Title V permit means any permit issued, renewed, or revised pursuant to Federal or State regulations established to implement title V of the Act (42 U.S.C. 7661). A title V permit issued by a State permitting authority is called a part 70 permit in this part.

Visible emission means the observation of an emission of opacity or optical density above the threshold of vision.

Working day means any day on which Federal Government offices (or State government offices for a State that has obtained delegation under section 112(l)) are open for normal business. Saturdays, Sundays, and official Federal (or where delegated, State) holidays are not working days.

[59 FR 12430, Mar. 16, 1994, as amended at 67 FR 16596, Apr. 5, 2002; 68 FR 32600, May 30, 2003; 69 FR 21752, Apr. 22, 2004; 72 FR 27443, May 16, 2007]

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§63.3 Units and abbreviations.

Used in this part are abbreviations and symbols of units of measure. These are defined as follows:

(a) *System International (SI) units of measure:*

A = ampere

g = gram

Hz = hertz

J = joule

°K = degree Kelvin

kg = kilogram

l = liter

m = meter

m^3 = cubic meter

mg = milligram = 10^{-3} gram

ml = milliliter = 10^{-3} liter

mm = millimeter = 10^{-3} meter

Mg = megagram = 10^6 gram = metric ton

MJ = megajoule

mol = mole

N = newton

ng = nanogram = 10^{-9} gram

nm = nanometer = 10^{-9} meter

Pa = pascal

s = second

V = volt

W = watt

Ω = ohm

μg = microgram = 10^{-6} gram

μl = microliter = 10^{-6} liter

(b) *Other units of measure:*

Btu = British thermal unit

°C = degree Celsius (centigrade)

cal = calorie

cfm = cubic feet per minute

cc = cubic centimeter

cu ft = cubic feet

d = day

dcf = dry cubic feet

dcm = dry cubic meter

dscf = dry cubic feet at standard conditions

dscm = dry cubic meter at standard conditions

eq = equivalent

°F degree Fahrenheit

ft = feet

ft^2 = square feet

ft^3 = cubic feet

gal = gallon

gr = grain

g-eq = gram equivalent

g-mole = gram mole

hr = hour

in. = inch

in. H_2O = inches of water

K = 1,000

kcal = kilocalorie

lb = pound

lpm = liter per minute

meq = milliequivalent

min = minute

MW = molecular weight

oz = ounces

ppb = parts per billion

ppbw = parts per billion by weight

ppbv = parts per billion by volume

ppm = parts per million

ppmw = parts per million by weight

ppmv = parts per million by volume

psia = pounds per square inch absolute

psig = pounds per square inch gage

°R = degree Rankine

scf = cubic feet at standard conditions

scfh = cubic feet at standard conditions per hour

scm = cubic meter at standard conditions

scmm = cubic meter at standard conditions per minute

sec = second

sq ft = square feet

std = at standard conditions

v/v = volume per volume

yd^2 = square yards

yr = year

(c) *Miscellaneous:*

act = actual

avg = average

I.D. = inside diameter

M = molar

N = normal

O.D. = outside diameter

% = percent

[59 FR 12430, Mar. 16, 1994, as amended at 67 FR 16598, Apr. 5, 2002]

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§63.4 Prohibited activities and circumvention.

(a) *Prohibited activities.* (1) No owner or operator subject to the provisions of this part must operate any affected source in violation of the requirements of this part. Affected sources subject to and in compliance with either an extension of compliance or an exemption from compliance are not in violation of the requirements of this part. An extension of compliance can be granted by the Administrator under this part; by a State with an approved permit program; or by the President under section 112(i)(4) of the Act.

(2) No owner or operator subject to the provisions of this part shall fail to keep records, notify, report, or revise reports as required under this part.

(3)-(5) [Reserved]

(b) *Circumvention.* No owner or operator subject to the provisions of this part shall build, erect, install, or use any article, machine, equipment, or process to conceal an emission that would otherwise constitute noncompliance with a relevant standard. Such concealment includes, but is not limited to—

(1) The use of diluents to achieve compliance with a relevant standard based on the concentration of a pollutant in the effluent discharged to the atmosphere;

(2) The use of gaseous diluents to achieve compliance with a relevant standard for visible emissions; and

(c) *Fragmentation.* Fragmentation after November 15, 1990 which divides ownership of an operation, within the same facility among various owners where there is no real change in control, will not affect applicability. The owner and operator must not use fragmentation or phasing of reconstruction activities (i.e., intentionally dividing reconstruction into multiple parts for purposes of avoiding new source requirements) to avoid becoming subject to new source requirements.

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§63.5 Preconstruction review and notification requirements.

(a) *Applicability.* (1) This section implements the preconstruction review requirements of section 112(i)(1). After the effective date of a relevant standard, promulgated pursuant to section 112(d), (f), or (h) of the Act, under this part, the preconstruction review requirements in this section apply to the owner or operator of new affected sources and reconstructed affected sources that are major-emitting as specified in this section. New and reconstructed affected sources that commence construction or reconstruction before the effective date of a relevant standard are not subject to the preconstruction review requirements specified in paragraphs (b)(3), (d), and (e) of this section.

(2) This section includes notification requirements for new affected sources and reconstructed affected sources that are not major-emitting affected sources and that are or become subject to a relevant promulgated emission standard after the effective date of a relevant standard promulgated under this part.

(b) *Requirements for existing, newly constructed, and reconstructed sources.* (1) A new affected source for which construction commences after proposal of a relevant standard is subject to relevant standards for new affected sources, including compliance dates. An affected source for which reconstruction commences after proposal of a relevant standard is subject to relevant standards for new sources, including compliance dates, irrespective of any change in emissions of hazardous air pollutants from that source.

(2) [Reserved]

(3) After the effective date of any relevant standard promulgated by the Administrator under this part, no person may, without obtaining written approval in advance from the Administrator in accordance with the procedures specified in paragraphs (d) and (e) of this section, do any of the following:

(i) Construct a new affected source that is major-emitting and subject to such standard;

(ii) Reconstruct an affected source that is major-emitting and subject to such standard; or

(iii) Reconstruct a major source such that the source becomes an affected source that is major-emitting and subject to the standard.

(4) After the effective date of any relevant standard promulgated by the Administrator under this part, an owner or operator who constructs a new affected source that is not major-emitting or reconstructs an affected source that is not major-emitting that is subject to such standard, or reconstructs a source such that the source becomes an affected source subject to the standard, must notify the Administrator of the intended construction or reconstruction. The notification must be submitted in accordance with the procedures in §63.9(b).

(5) [Reserved]

(6) After the effective date of any relevant standard promulgated by the Administrator under this part, equipment added (or a process change) to an affected source that is within the scope of the definition of affected source under the relevant standard must be considered part of the affected source and subject to all provisions of the relevant standard established for that affected source.

(c) [Reserved]

(d) *Application for approval of construction or reconstruction.* The provisions of this paragraph implement section 112(i)(1) of the Act.

(1) *General application requirements.* (i) An owner or operator who is subject to the requirements of paragraph (b)(3) of this section must submit to the Administrator an application for approval of the construction or reconstruction. The application must be submitted as soon as practicable before actual construction or reconstruction begins. The application for approval of construction or reconstruction may be used to fulfill the initial notification requirements of §63.9(b)(5). The owner or operator may submit the application for approval well in advance of the date actual construction or reconstruction begins in order to ensure a timely review by the Administrator and that the planned date to begin will not be delayed.

(ii) A separate application shall be submitted for each construction or reconstruction. Each application for approval of construction or reconstruction shall include at a minimum:

(A) The applicant's name and address;

(B) A notification of intention to construct a new major affected source or make any physical or operational change to a major affected source that may meet or has been determined to meet the criteria for a reconstruction, as defined in §63.2 or in the relevant standard;

(C) The address (i.e., physical location) or proposed address of the source;

(D) An identification of the relevant standard that is the basis of the application;

(E) The expected date of the beginning of actual construction or reconstruction;

(F) The expected completion date of the construction or reconstruction;

(G) [Reserved]

(H) The type and quantity of hazardous air pollutants emitted by the source, reported in units and averaging times and in accordance with the test methods specified in the relevant standard, or if actual emissions data are not yet available, an estimate of the type and quantity of hazardous air pollutants expected to be emitted by the source reported in units and averaging times specified in the relevant standard. The owner or operator may submit percent reduction information if a relevant standard is established in terms of percent reduction. However, operating parameters, such as flow rate, shall be included in the submission to the extent that they demonstrate performance and compliance; and

(I) [Reserved]

(J) Other information as specified in paragraphs (d)(2) and (d)(3) of this section.

(iii) An owner or operator who submits estimates or preliminary information in place of the actual emissions data and analysis required in paragraphs (d)(1)(ii)(H) and (d)(2) of this section shall submit the actual, measured emissions data and other correct information as soon as available but no later than with the notification of compliance status required in §63.9(h) (see §63.9(h)(5)).

(2) *Application for approval of construction.* Each application for approval of construction must include, in addition to the information required in paragraph (d)(1)(ii) of this section, technical information describing the proposed nature, size, design, operating design capacity, and method of operation of the source, including an identification of each type of emission point for each type of hazardous air pollutant that is emitted (or could reasonably be anticipated to be emitted) and a description of the planned air pollution control system (equipment or method) for each emission point. The description of the equipment to be used for the control of emissions must include each control device for each hazardous air pollutant and the estimated control efficiency (percent) for each control device. The description of the method to be used for the control of emissions must include an estimated control efficiency (percent) for that method. Such technical information must include calculations of emission estimates in sufficient detail to permit assessment of the validity of the calculations.

(3) *Application for approval of reconstruction.* Each application for approval of reconstruction shall include, in addition to the information required in paragraph (d)(1)(ii) of this section—

(i) A brief description of the affected source and the components that are to be replaced;

(ii) A description of present and proposed emission control systems (i.e., equipment or methods). The description of the equipment to be used for the control of emissions shall include each control device for each hazardous air pollutant and the estimated control efficiency (percent) for each control device. The description of the method to be used for the control of emissions shall include an estimated control efficiency (percent) for that method. Such technical information shall include calculations of emission estimates in sufficient detail to permit assessment of the validity of the calculations;

(iii) An estimate of the fixed capital cost of the replacements and of constructing a comparable entirely new source;

(iv) The estimated life of the affected source after the replacements; and

(v) A discussion of any economic or technical limitations the source may have in complying with relevant standards or other requirements after the proposed replacements. The discussion shall be sufficiently detailed to demonstrate to the Administrator's satisfaction that the technical or economic limitations affect the source's ability to comply with the relevant standard and how they do so.

(vi) If in the application for approval of reconstruction the owner or operator designates the affected source as a reconstructed source and declares that there are no economic or technical limitations to prevent the source from complying with all relevant standards or other requirements, the owner or operator need not submit the information required in paragraphs (d)(3)(iii) through (d)(3)(v) of this section.

(4) *Additional information.* The Administrator may request additional relevant information after the submittal of an application for approval of construction or reconstruction.

(e) *Approval of construction or reconstruction.* (1)(i) If the Administrator determines that, if properly constructed, or reconstructed, and operated, a new or existing source for which an application under paragraph (d) of this section was submitted will not cause emissions in violation of the relevant standard(s) and any other federally enforceable requirements, the Administrator will approve the construction or reconstruction.

(ii) In addition, in the case of reconstruction, the Administrator's determination under this paragraph will be based on:

(A) The fixed capital cost of the replacements in comparison to the fixed capital cost that would be required to construct a comparable entirely new source;

(B) The estimated life of the source after the replacements compared to the life of a comparable entirely new source;

(C) The extent to which the components being replaced cause or contribute to the emissions from the source; and

(D) Any economic or technical limitations on compliance with relevant standards that are inherent in the proposed replacements.

(2)(i) The Administrator will notify the owner or operator in writing of approval or intention to deny approval of construction or reconstruction within 60 calendar days after receipt of sufficient information to evaluate an application submitted under paragraph (d) of this section. The 60-day approval or denial period will begin after the owner or operator has been notified in writing that his/her application is complete. The Administrator will notify the owner or operator in writing of the status of his/her application, that is, whether the application contains sufficient information to make a determination, within 30 calendar days after receipt of the original application and within 30 calendar days after receipt of any supplementary information that is submitted.

(ii) When notifying the owner or operator that his/her application is not complete, the Administrator will specify the information needed to complete the application and provide notice of opportunity for the applicant to present, in writing, within 30 calendar days after he/she is notified of the incomplete application, additional information or arguments to the Administrator to enable further action on the application.

(3) Before denying any application for approval of construction or reconstruction, the Administrator will notify the applicant of the Administrator's intention to issue the denial together with—

(i) Notice of the information and findings on which the intended denial is based; and

(ii) Notice of opportunity for the applicant to present, in writing, within 30 calendar days after he/she is notified of the intended denial, additional information or arguments to the Administrator to enable further action on the application.

(4) A final determination to deny any application for approval will be in writing and will specify the grounds on which the denial is based. The final determination will be made within 60 calendar days of presentation of additional information or arguments (if the application is complete), or within 60 calendar days after the final date specified for presentation if no presentation is made.

(5) Neither the submission of an application for approval nor the Administrator's approval of construction or reconstruction shall—

(i) Relieve an owner or operator of legal responsibility for compliance with any applicable provisions of this part or with any other applicable Federal, State, or local requirement; or

(ii) Prevent the Administrator from implementing or enforcing this part or taking any other action under the Act.

(f) *Approval of construction or reconstruction based on prior State preconstruction review.* (1) Preconstruction review procedures that a State utilizes for other purposes may also be utilized for purposes of this section if the procedures are substantially equivalent to those specified in this section. The Administrator will approve an application for construction or reconstruction specified in paragraphs (b)(3) and (d) of this section if the owner or operator of a new affected source or reconstructed affected source, who is subject to such requirement meets the following conditions:

(i) The owner or operator of the new affected source or reconstructed affected source has undergone a preconstruction review and approval process in the State in which the source is (or would be) located and has received a federally enforceable construction permit that contains a finding that the source will meet the relevant promulgated emission standard, if the source is properly built and operated.

(ii) Provide a statement from the State or other evidence (such as State regulations) that it considered the factors specified in paragraph (e)(1) of this section.

(2) The owner or operator must submit to the Administrator the request for approval of construction or reconstruction under this paragraph (f)(2) no later than the application deadline specified in paragraph (d)(1) of this section (see also §63.9(b)(2)). The owner or operator must include in the request information sufficient for the Administrator's determination. The Administrator will evaluate the owner or operator's request in accordance with the procedures specified in paragraph (e) of this section. The Administrator may request additional relevant information after the submittal of a request for approval of construction or reconstruction under this paragraph (f)(2).

[59 FR 12430, Mar. 16, 1994, as amended at 67 FR 16598, Apr. 5, 2002]

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§63.6 Compliance with standards and maintenance requirements.

(a) *Applicability.* (1) The requirements in this section apply to the owner or operator of affected sources for which any relevant standard has been established pursuant to section 112 of the Act and the applicability of such requirements is set out in accordance with §63.1(a)(4) unless—

(i) The Administrator (or a State with an approved permit program) has granted an extension of compliance consistent with paragraph (i) of this section; or

(ii) The President has granted an exemption from compliance with any relevant standard in accordance with section 112(i)(4) of the Act.

(2) If an area source that otherwise would be subject to an emission standard or other requirement established under this part if it were a major source subsequently increases its emissions of hazardous air pollutants (or its potential to emit hazardous air pollutants) such that the source is a major source, such source shall be subject to the relevant emission standard or other requirement.

(b) *Compliance dates for new and reconstructed sources.* (1) Except as specified in paragraphs (b)(3) and (4) of this section, the owner or operator of a new or reconstructed affected source for which construction or reconstruction commences after proposal of a relevant standard that has an initial startup before the effective date of a relevant standard established under this part pursuant to section 112(d), (f), or (h) of the Act must comply with such standard not later than the standard's effective date.

(2) Except as specified in paragraphs (b)(3) and (4) of this section, the owner or operator of a new or reconstructed affected source that has an initial startup after the effective date of a relevant standard established under this part pursuant to section 112(d), (f), or (h) of the Act must comply with such standard upon startup of the source.

(3) The owner or operator of an affected source for which construction or reconstruction is commenced after the proposal date of a relevant standard established under this part pursuant to section 112(d), 112(f), or 112(h) of the Act but before the effective date (that is, promulgation) of such standard shall comply with the relevant emission standard not later than the date 3 years after the effective date if:

(i) The promulgated standard (that is, the relevant standard) is more stringent than the proposed standard; for purposes of this paragraph, a finding that controls or compliance methods are "more stringent" must include control technologies or performance criteria and compliance or compliance assurance methods that are different but are substantially equivalent to those required by the promulgated rule, as determined by the Administrator (or his or her authorized representative); and

(ii) The owner or operator complies with the standard as proposed during the 3-year period immediately after the effective date.

(4) The owner or operator of an affected source for which construction or reconstruction is commenced after the proposal date of a relevant standard established pursuant to section 112(d) of the Act but before the proposal date of a relevant standard established pursuant to section 112(f) shall not be required to comply with the section 112(f) emission standard until the date 10 years after the date construction or reconstruction is commenced, except that, if the section 112(f) standard is promulgated more than 10 years after construction or reconstruction is commenced, the owner or operator must comply with the standard as provided in paragraphs (b)(1) and (2) of this section.

(5) The owner or operator of a new source that is subject to the compliance requirements of paragraph (b)(3) or (4) of this section must notify the Administrator in accordance with §63.9(d)

(6) [Reserved]

(7) When an area source becomes a major source by the addition of equipment or operations that meet the definition of new affected source in the relevant standard, the portion of the existing facility that is a new affected source must comply with all requirements of that standard applicable to new sources. The source owner or operator must comply with the relevant standard upon startup.

(c) *Compliance dates for existing sources.* (1) After the effective date of a relevant standard established under this part pursuant to section 112(d) or 112(h) of the Act, the owner or operator of an existing source shall comply with such standard by the compliance date established by the Administrator in the applicable subpart(s) of this part. Except as otherwise provided for in section 112 of the Act, in no case will the compliance date established for an existing source in an applicable subpart of this part exceed 3 years after the effective date of such standard.

(2) If an existing source is subject to a standard established under this part pursuant to section 112(f) of the Act, the owner or operator must comply with the standard by the date 90 days after the standard's effective date, or by the date specified in an extension granted to the source by the Administrator under paragraph (i)(4)(ii) of this section, whichever is later.

(3)-(4) [Reserved]

(5) Except as provided in paragraph (b)(7) of this section, the owner or operator of an area source that increases its emissions of (or its potential to emit) hazardous air pollutants such that the source becomes a major source shall be subject to relevant standards for existing sources. Such sources must comply by the date specified in the standards for existing area sources that become major sources. If no such compliance date is specified in the standards, the source shall have a period of time to comply with the relevant emission standard that is equivalent to the compliance period specified in the relevant standard for existing sources in existence at the time the standard becomes effective.

(d) [Reserved]

(e) *Operation and maintenance requirements.* (1)(i) At all times, including periods of startup, shutdown, and malfunction, the owner or operator must operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. During a period of startup, shutdown, or malfunction, this general duty to minimize emissions requires that the owner or operator reduce emissions from the affected source to the greatest extent which is consistent with safety and good air pollution control practices. The general duty to minimize emissions during a period of startup, shutdown, or malfunction does not require the owner or operator to achieve emission levels that would be required by the applicable standard at other times if this is not consistent with safety and good air pollution control practices, nor does it require the owner or operator to make any further efforts to reduce emissions if levels required by the applicable standard have been achieved. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, review of operation and maintenance procedures (including the startup, shutdown, and malfunction plan required in paragraph (e)(3) of this section), review of operation and maintenance records, and inspection of the source.

(ii) Malfunctions must be corrected as soon as practicable after their occurrence. To the extent that an unexpected event arises during a startup, shutdown, or malfunction, an owner or operator must comply by minimizing emissions during such a startup, shutdown, and malfunction event consistent with safety and good air pollution control practices.

(iii) Operation and maintenance requirements established pursuant to section 112 of the Act are enforceable independent of emissions limitations or other requirements in relevant standards.

(2) [Reserved]

(3) *Startup, shutdown, and malfunction plan.* (i) The owner or operator of an affected source must develop a written startup, shutdown, and malfunction plan that describes, in detail, procedures for operating and maintaining the source during periods of startup, shutdown, and malfunction; and a program of corrective action for malfunctioning process, air pollution control, and monitoring equipment used to comply with the relevant standard. The startup, shutdown, and malfunction plan does not need to address any scenario that would not cause the source to exceed an applicable emission limitation in the relevant standard. This plan must be developed by the owner or operator by the source's compliance date for that relevant standard. The purpose of the startup, shutdown, and malfunction plan is to—

(A) Ensure that, at all times, the owner or operator operates and maintains each affected source, including associated air pollution control and monitoring equipment, in a manner which satisfies the general duty to minimize emissions established by paragraph (e)(1)(i) of this section;

(B) Ensure that owners or operators are prepared to correct malfunctions as soon as practicable after their occurrence in order to minimize excess emissions of hazardous air pollutants; and

(C) Reduce the reporting burden associated with periods of startup, shutdown, and malfunction (including corrective action taken to restore malfunctioning process and air pollution control equipment to its normal or usual manner of operation).

(ii) [Reserved]

(iii) When actions taken by the owner or operator during a startup or shutdown (and the startup or shutdown causes the source to exceed any applicable emission limitation in the relevant emission standards), or malfunction (including actions taken to correct a malfunction) are consistent with the procedures specified in the affected source's startup, shutdown, and malfunction plan, the owner or operator must keep records for that event which demonstrate that the procedures specified in the plan were followed. These records may take the form of a "checklist," or other effective form of recordkeeping that confirms conformance with the startup, shutdown, and malfunction plan and describes the actions taken for that event. In addition, the owner or operator must keep records of these events as specified in paragraph 63.10(b), including records of the occurrence and duration of each startup or shutdown (if the startup or shutdown causes the source to exceed any applicable emission limitation in

the relevant emission standards), or malfunction of operation and each malfunction of the air pollution control and monitoring equipment. Furthermore, the owner or operator shall confirm that actions taken during the relevant reporting period during periods of startup, shutdown, and malfunction were consistent with the affected source's startup, shutdown and malfunction plan in the semiannual (or more frequent) startup, shutdown, and malfunction report required in §63.10(d)(5).

(iv) If an action taken by the owner or operator during a startup, shutdown, or malfunction (including an action taken to correct a malfunction) is not consistent with the procedures specified in the affected source's startup, shutdown, and malfunction plan, and the source exceeds any applicable emission limitation in the relevant emission standard, then the owner or operator must record the actions taken for that event and must report such actions within 2 working days after commencing actions inconsistent with the plan, followed by a letter within 7 working days after the end of the event, in accordance with §63.10(d)(5) (unless the owner or operator makes alternative reporting arrangements, in advance, with the Administrator).

(v) The owner or operator must maintain at the affected source a current startup, shutdown, and malfunction plan and must make the plan available upon request for inspection and copying by the Administrator. In addition, if the startup, shutdown, and malfunction plan is subsequently revised as provided in paragraph (e)(3)(viii) of this section, the owner or operator must maintain at the affected source each previous (i.e., superseded) version of the startup, shutdown, and malfunction plan, and must make each such previous version available for inspection and copying by the Administrator for a period of 5 years after revision of the plan. If at any time after adoption of a startup, shutdown, and malfunction plan the affected source ceases operation or is otherwise no longer subject to the provisions of this part, the owner or operator must retain a copy of the most recent plan for 5 years from the date the source ceases operation or is no longer subject to this part and must make the plan available upon request for inspection and copying by the Administrator. The Administrator may at any time request in writing that the owner or operator submit a copy of any startup, shutdown, and malfunction plan (or a portion thereof) which is maintained at the affected source or in the possession of the owner or operator. Upon receipt of such a request, the owner or operator must promptly submit a copy of the requested plan (or a portion thereof) to the Administrator. The owner or operator may elect to submit the required copy of any startup, shutdown, and malfunction plan to the Administrator in an electronic format. If the owner or operator claims that any portion of such a startup, shutdown, and malfunction plan is confidential business information entitled to protection from disclosure under section 114(c) of the Act or 40 CFR 2.301, the material which is claimed as confidential must be clearly designated in the submission.

(vi) To satisfy the requirements of this section to develop a startup, shutdown, and malfunction plan, the owner or operator may use the affected source's standard operating procedures (SOP) manual, or an Occupational Safety and Health Administration (OSHA) or other plan, provided the alternative plans meet all the requirements of this section and are made available for inspection or submitted when requested by the Administrator.

(vii) Based on the results of a determination made under paragraph (e)(1)(i) of this section, the Administrator may require that an owner or operator of an affected source make changes to the startup, shutdown, and malfunction plan for that source. The Administrator must require appropriate revisions to a startup, shutdown, and malfunction plan, if the Administrator finds that the plan:

(A) Does not address a startup, shutdown, or malfunction event that has occurred;

(B) Fails to provide for the operation of the source (including associated air pollution control and monitoring equipment) during a startup, shutdown, or malfunction event in a manner consistent with the general duty to minimize emissions established by paragraph (e)(1)(i) of this section;

(C) Does not provide adequate procedures for correcting malfunctioning process and/or air pollution control and monitoring equipment as quickly as practicable; or

(D) Includes an event that does not meet the definition of startup, shutdown, or malfunction listed in §63.2.

(viii) The owner or operator may periodically revise the startup, shutdown, and malfunction plan for the affected source as necessary to satisfy the requirements of this part or to reflect changes in equipment or procedures at the affected source. Unless the permitting authority provides otherwise, the owner or operator may make such revisions

to the startup, shutdown, and malfunction plan without prior approval by the Administrator or the permitting authority. However, each such revision to a startup, shutdown, and malfunction plan must be reported in the semiannual report required by §63.10(d)(5). If the startup, shutdown, and malfunction plan fails to address or inadequately addresses an event that meets the characteristics of a malfunction but was not included in the startup, shutdown, and malfunction plan at the time the owner or operator developed the plan, the owner or operator must revise the startup, shutdown, and malfunction plan within 45 days after the event to include detailed procedures for operating and maintaining the source during similar malfunction events and a program of corrective action for similar malfunctions of process or air pollution control and monitoring equipment. In the event that the owner or operator makes any revision to the startup, shutdown, and malfunction plan which alters the scope of the activities at the source which are deemed to be a startup, shutdown, or malfunction, or otherwise modifies the applicability of any emission limit, work practice requirement, or other requirement in a standard established under this part, the revised plan shall not take effect until after the owner or operator has provided a written notice describing the revision to the permitting authority.

(ix) The title V permit for an affected source must require that the owner or operator develop a startup, shutdown, and malfunction plan which conforms to the provisions of this part, but may do so by citing to the relevant subpart or subparagraphs of paragraph (e) of this section. However, any revisions made to the startup, shutdown, and malfunction plan in accordance with the procedures established by this part shall not be deemed to constitute permit revisions under part 70 or part 71 of this chapter and the elements of the startup, shutdown, and malfunction plan shall not be considered an applicable requirement as defined in §70.2 and §71.2 of this chapter. Moreover, none of the procedures specified by the startup, shutdown, and malfunction plan for an affected source shall be deemed to fall within the permit shield provision in section 504(f) of the Act.

(f) *Compliance with nonopacity emission standards*—(1) *Applicability.* The non-opacity emission standards set forth in this part shall apply at all times except during periods of startup, shutdown, and malfunction, and as otherwise specified in an applicable subpart. If a startup, shutdown, or malfunction of one portion of an affected source does not affect the ability of particular emission points within other portions of the affected source to comply with the non-opacity emission standards set forth in this part, then that emission point must still be required to comply with the non-opacity emission standards and other applicable requirements.

(2) *Methods for determining compliance.* (i) The Administrator will determine compliance with nonopacity emission standards in this part based on the results of performance tests conducted according to the procedures in §63.7, unless otherwise specified in an applicable subpart of this part.

(ii) The Administrator will determine compliance with nonopacity emission standards in this part by evaluation of an owner or operator's conformance with operation and maintenance requirements, including the evaluation of monitoring data, as specified in §63.6(e) and applicable subparts of this part.

(iii) If an affected source conducts performance testing at startup to obtain an operating permit in the State in which the source is located, the results of such testing may be used to demonstrate compliance with a relevant standard if—

(A) The performance test was conducted within a reasonable amount of time before an initial performance test is required to be conducted under the relevant standard;

(B) The performance test was conducted under representative operating conditions for the source;

(C) The performance test was conducted and the resulting data were reduced using EPA-approved test methods and procedures, as specified in §63.7(e) of this subpart; and

(D) The performance test was appropriately quality-assured, as specified in §63.7(c).

(iv) The Administrator will determine compliance with design, equipment, work practice, or operational emission standards in this part by review of records, inspection of the source, and other procedures specified in applicable subparts of this part.

(v) The Administrator will determine compliance with design, equipment, work practice, or operational emission standards in this part by evaluation of an owner or operator's conformance with operation and maintenance requirements, as specified in paragraph (e) of this section and applicable subparts of this part.

(3) *Finding of compliance.* The Administrator will make a finding concerning an affected source's compliance with a non-opacity emission standard, as specified in paragraphs (f)(1) and (2) of this section, upon obtaining all the compliance information required by the relevant standard (including the written reports of performance test results, monitoring results, and other information, if applicable), and information available to the Administrator pursuant to paragraph (e)(1)(i) of this section.

(g) *Use of an alternative nonopacity emission standard.* (1) If, in the Administrator's judgment, an owner or operator of an affected source has established that an alternative means of emission limitation will achieve a reduction in emissions of a hazardous air pollutant from an affected source at least equivalent to the reduction in emissions of that pollutant from that source achieved under any design, equipment, work practice, or operational emission standard, or combination thereof, established under this part pursuant to section 112(h) of the Act, the Administrator will publish in the FEDERAL REGISTER a notice permitting the use of the alternative emission standard for purposes of compliance with the promulgated standard. Any FEDERAL REGISTER notice under this paragraph shall be published only after the public is notified and given the opportunity to comment. Such notice will restrict the permission to the stationary source(s) or category(ies) of sources from which the alternative emission standard will achieve equivalent emission reductions. The Administrator will condition permission in such notice on requirements to assure the proper operation and maintenance of equipment and practices required for compliance with the alternative emission standard and other requirements, including appropriate quality assurance and quality control requirements, that are deemed necessary.

(2) An owner or operator requesting permission under this paragraph shall, unless otherwise specified in an applicable subpart, submit a proposed test plan or the results of testing and monitoring in accordance with §63.7 and §63.8, a description of the procedures followed in testing or monitoring, and a description of pertinent conditions during testing or monitoring. Any testing or monitoring conducted to request permission to use an alternative nonopacity emission standard shall be appropriately quality assured and quality controlled, as specified in §63.7 and §63.8.

(3) The Administrator may establish general procedures in an applicable subpart that accomplish the requirements of paragraphs (g)(1) and (g)(2) of this section.

(h) *Compliance with opacity and visible emission standards*—(1) *Applicability.* The opacity and visible emission standards set forth in this part must apply at all times except during periods of startup, shutdown, and malfunction, and as otherwise specified in an applicable subpart. If a startup, shutdown, or malfunction of one portion of an affected source does not affect the ability of particular emission points within other portions of the affected source to comply with the opacity and visible emission standards set forth in this part, then that emission point shall still be required to comply with the opacity and visible emission standards and other applicable requirements.

(2) *Methods for determining compliance.* (i) The Administrator will determine compliance with opacity and visible emission standards in this part based on the results of the test method specified in an applicable subpart. Whenever a continuous opacity monitoring system (COMS) is required to be installed to determine compliance with numerical opacity emission standards in this part, compliance with opacity emission standards in this part shall be determined by using the results from the COMS. Whenever an opacity emission test method is not specified, compliance with opacity emission standards in this part shall be determined by conducting observations in accordance with Test Method 9 in appendix A of part 60 of this chapter or the method specified in paragraph (h)(7)(ii) of this section. Whenever a visible emission test method is not specified, compliance with visible emission standards in this part shall be determined by conducting observations in accordance with Test Method 22 in appendix A of part 60 of this chapter.

(ii) [Reserved]

(iii) If an affected source undergoes opacity or visible emission testing at startup to obtain an operating permit in the State in which the source is located, the results of such testing may be used to demonstrate compliance with a relevant standard if—

(A) The opacity or visible emission test was conducted within a reasonable amount of time before a performance test is required to be conducted under the relevant standard;

(B) The opacity or visible emission test was conducted under representative operating conditions for the source;

(C) The opacity or visible emission test was conducted and the resulting data were reduced using EPA-approved test methods and procedures, as specified in §63.7(e); and

(D) The opacity or visible emission test was appropriately quality-assured, as specified in §63.7(c) of this section.

(3) [Reserved]

(4) *Notification of opacity or visible emission observations.* The owner or operator of an affected source shall notify the Administrator in writing of the anticipated date for conducting opacity or visible emission observations in accordance with §63.9(f), if such observations are required for the source by a relevant standard.

(5) *Conduct of opacity or visible emission observations.* When a relevant standard under this part includes an opacity or visible emission standard, the owner or operator of an affected source shall comply with the following:

(i) For the purpose of demonstrating initial compliance, opacity or visible emission observations shall be conducted concurrently with the initial performance test required in §63.7 unless one of the following conditions applies:

(A) If no performance test under §63.7 is required, opacity or visible emission observations shall be conducted within 60 days after achieving the maximum production rate at which a new or reconstructed source will be operated, but not later than 120 days after initial startup of the source, or within 120 days after the effective date of the relevant standard in the case of new sources that start up before the standard's effective date. If no performance test under §63.7 is required, opacity or visible emission observations shall be conducted within 120 days after the compliance date for an existing or modified source; or

(B) If visibility or other conditions prevent the opacity or visible emission observations from being conducted concurrently with the initial performance test required under §63.7, or within the time period specified in paragraph (h)(5)(i)(A) of this section, the source's owner or operator shall reschedule the opacity or visible emission observations as soon after the initial performance test, or time period, as possible, but not later than 30 days thereafter, and shall advise the Administrator of the rescheduled date. The rescheduled opacity or visible emission observations shall be conducted (to the extent possible) under the same operating conditions that existed during the initial performance test conducted under §63.7. The visible emissions observer shall determine whether visibility or other conditions prevent the opacity or visible emission observations from being made concurrently with the initial performance test in accordance with procedures contained in Test Method 9 or Test Method 22 in appendix A of part 60 of this chapter.

(ii) For the purpose of demonstrating initial compliance, the minimum total time of opacity observations shall be 3 hours (30 6-minute averages) for the performance test or other required set of observations (e.g., for fugitive-type emission sources subject only to an opacity emission standard).

(iii) The owner or operator of an affected source to which an opacity or visible emission standard in this part applies shall conduct opacity or visible emission observations in accordance with the provisions of this section, record the results of the evaluation of emissions, and report to the Administrator the opacity or visible emission results in accordance with the provisions of §63.10(d).

(iv) [Reserved]

(v) Opacity readings of portions of plumes that contain condensed, uncombined water vapor shall not be used for purposes of determining compliance with opacity emission standards.

(6) *Availability of records.* The owner or operator of an affected source shall make available, upon request by the Administrator, such records that the Administrator deems necessary to determine the conditions under which the visual observations were made and shall provide evidence indicating proof of current visible observer emission certification.

(7) *Use of a continuous opacity monitoring system.* (i) The owner or operator of an affected source required to use a continuous opacity monitoring system (COMS) shall record the monitoring data produced during a performance test required under §63.7 and shall furnish the Administrator a written report of the monitoring results in accordance with the provisions of §63.10(e)(4).

(ii) Whenever an opacity emission test method has not been specified in an applicable subpart, or an owner or operator of an affected source is required to conduct Test Method 9 observations (see appendix A of part 60 of this chapter), the owner or operator may submit, for compliance purposes, COMS data results produced during any performance test required under §63.7 in lieu of Method 9 data. If the owner or operator elects to submit COMS data for compliance with the opacity emission standard, he or she shall notify the Administrator of that decision, in writing, simultaneously with the notification under §63.7(b) of the date the performance test is scheduled to begin. Once the owner or operator of an affected source has notified the Administrator to that effect, the COMS data results will be used to determine opacity compliance during subsequent performance tests required under §63.7, unless the owner or operator notifies the Administrator in writing to the contrary not later than with the notification under §63.7(b) of the date the subsequent performance test is scheduled to begin.

(iii) For the purposes of determining compliance with the opacity emission standard during a performance test required under §63.7 using COMS data, the COMS data shall be reduced to 6-minute averages over the duration of the mass emission performance test.

(iv) The owner or operator of an affected source using a COMS for compliance purposes is responsible for demonstrating that he/she has complied with the performance evaluation requirements of §63.8(e), that the COMS has been properly maintained, operated, and data quality-assured, as specified in §63.8(c) and §63.8(d), and that the resulting data have not been altered in any way.

(v) Except as provided in paragraph (h)(7)(ii) of this section, the results of continuous monitoring by a COMS that indicate that the opacity at the time visual observations were made was not in excess of the emission standard are probative but not conclusive evidence of the actual opacity of an emission, provided that the affected source proves that, at the time of the alleged violation, the instrument used was properly maintained, as specified in §63.8(c), and met Performance Specification 1 in appendix B of part 60 of this chapter, and that the resulting data have not been altered in any way.

(8) *Finding of compliance.* The Administrator will make a finding concerning an affected source's compliance with an opacity or visible emission standard upon obtaining all the compliance information required by the relevant standard (including the written reports of the results of the performance tests required by §63.7, the results of Test Method 9 or another required opacity or visible emission test method, the observer certification required by paragraph (h)(6) of this section, and the continuous opacity monitoring system results, whichever is/are applicable) and any information available to the Administrator needed to determine whether proper operation and maintenance practices are being used.

(9) *Adjustment to an opacity emission standard.* (i) If the Administrator finds under paragraph (h)(8) of this section that an affected source is in compliance with all relevant standards for which initial performance tests were conducted under §63.7, but during the time such performance tests were conducted fails to meet any relevant opacity emission standard, the owner or operator of such source may petition the Administrator to make appropriate adjustment to the opacity emission standard for the affected source. Until the Administrator notifies the owner or operator of the appropriate adjustment, the relevant opacity emission standard remains applicable.

(ii) The Administrator may grant such a petition upon a demonstration by the owner or operator that—

(A) The affected source and its associated air pollution control equipment were operated and maintained in a manner to minimize the opacity of emissions during the performance tests;

(B) The performance tests were performed under the conditions established by the Administrator; and

(C) The affected source and its associated air pollution control equipment were incapable of being adjusted or operated to meet the relevant opacity emission standard.

(iii) The Administrator will establish an adjusted opacity emission standard for the affected source meeting the above requirements at a level at which the source will be able, as indicated by the performance and opacity tests, to meet the opacity emission standard at all times during which the source is meeting the mass or concentration emission standard. The Administrator will promulgate the new opacity emission standard in the FEDERAL REGISTER.

(iv) After the Administrator promulgates an adjusted opacity emission standard for an affected source, the owner or operator of such source shall be subject to the new opacity emission standard, and the new opacity emission standard shall apply to such source during any subsequent performance tests.

(i) *Extension of compliance with emission standards.* (1) Until an extension of compliance has been granted by the Administrator (or a State with an approved permit program) under this paragraph, the owner or operator of an affected source subject to the requirements of this section shall comply with all applicable requirements of this part.

(2) *Extension of compliance for early reductions and other reductions*—(i) *Early reductions.* Pursuant to section 112(i)(5) of the Act, if the owner or operator of an existing source demonstrates that the source has achieved a reduction in emissions of hazardous air pollutants in accordance with the provisions of subpart D of this part, the Administrator (or the State with an approved permit program) will grant the owner or operator an extension of compliance with specific requirements of this part, as specified in subpart D.

(ii) *Other reductions.* Pursuant to section 112(i)(6) of the Act, if the owner or operator of an existing source has installed best available control technology (BACT) (as defined in section 169(3) of the Act) or technology required to meet a lowest achievable emission rate (LAER) (as defined in section 171 of the Act) prior to the promulgation of an emission standard in this part applicable to such source and the same pollutant (or stream of pollutants) controlled pursuant to the BACT or LAER installation, the Administrator will grant the owner or operator an extension of compliance with such emission standard that will apply until the date 5 years after the date on which such installation was achieved, as determined by the Administrator.

(3) *Request for extension of compliance.* Paragraphs (i)(4) through (i)(7) of this section concern requests for an extension of compliance with a relevant standard under this part (except requests for an extension of compliance under paragraph (i)(2)(i) of this section will be handled through procedures specified in subpart D of this part).

(4)(i)(A) The owner or operator of an existing source who is unable to comply with a relevant standard established under this part pursuant to section 112(d) of the Act may request that the Administrator (or a State, when the State has an approved part 70 permit program and the source is required to obtain a part 70 permit under that program, or a State, when the State has been delegated the authority to implement and enforce the emission standard for that source) grant an extension allowing the source up to 1 additional year to comply with the standard, if such additional period is necessary for the installation of controls. An additional extension of up to 3 years may be added for mining waste operations, if the 1-year extension of compliance is insufficient to dry and cover mining waste in order to reduce emissions of any hazardous air pollutant. The owner or operator of an affected source who has requested an extension of compliance under this paragraph and who is otherwise required to obtain a title V permit shall apply for such permit or apply to have the source's title V permit revised to incorporate the conditions of the extension of compliance. The conditions of an extension of compliance granted under this paragraph will be incorporated into the affected source's title V permit according to the provisions of part 70 or Federal title V regulations in this chapter (42 U.S.C. 7661), whichever are applicable.

(B) Any request under this paragraph for an extension of compliance with a relevant standard must be submitted in writing to the appropriate authority no later than 120 days prior to the affected source's compliance date (as specified in paragraphs (b) and (c) of this section), except as provided for in paragraph (i)(4)(i)(C) of this section. Nonfrivolous requests submitted under this paragraph will stay the applicability of the rule as to the emission points in question until such time as the request is granted or denied. A denial will be effective as of the date of denial. Emission standards established under this part may specify alternative dates for the submittal of requests for an extension of compliance if alternatives are appropriate for the source categories affected by those standards.

(C) An owner or operator may submit a compliance extension request after the date specified in paragraph (i)(4)(i)(B) of this section provided the need for the compliance extension arose after that date, and before the otherwise applicable compliance date and the need arose due to circumstances beyond reasonable control of the owner or operator. This request must include, in addition to the information required in paragraph (i)(6)(i) of this section, a statement of the reasons additional time is needed and the date when the owner or operator first learned of the problems. Nonfrivolous requests submitted under this paragraph will stay the applicability of the rule as to the emission points in question until such time as the request is granted or denied. A denial will be effective as of the original compliance date.

(ii) The owner or operator of an existing source unable to comply with a relevant standard established under this part pursuant to section 112(f) of the Act may request that the Administrator grant an extension allowing the source up to 2 years after the standard's effective date to comply with the standard. The Administrator may grant such an extension if he/she finds that such additional period is necessary for the installation of controls and that steps will be taken during the period of the extension to assure that the health of persons will be protected from imminent endangerment. Any request for an extension of compliance with a relevant standard under this paragraph must be submitted in writing to the Administrator not later than 90 calendar days after the effective date of the relevant standard.

(5) The owner or operator of an existing source that has installed BACT or technology required to meet LAER [as specified in paragraph (i)(2)(ii) of this section] prior to the promulgation of a relevant emission standard in this part may request that the Administrator grant an extension allowing the source 5 years from the date on which such installation was achieved, as determined by the Administrator, to comply with the standard. Any request for an extension of compliance with a relevant standard under this paragraph shall be submitted in writing to the Administrator not later than 120 days after the promulgation date of the standard. The Administrator may grant such an extension if he or she finds that the installation of BACT or technology to meet LAER controls the same pollutant (or stream of pollutants) that would be controlled at that source by the relevant emission standard.

(6)(i) The request for a compliance extension under paragraph (i)(4) of this section shall include the following information:

(A) A description of the controls to be installed to comply with the standard;

(B) A compliance schedule, including the date by which each step toward compliance will be reached. At a minimum, the list of dates shall include:

(*1*) The date by which on-site construction, installation of emission control equipment, or a process change is planned to be initiated; and

(2) The date by which final compliance is to be achieved.

(3) The date by which on-site construction, installation of emission control equipment, or a process change is to be completed; and

(*4*) The date by which final compliance is to be achieved;

(C)-(D)

(ii) The request for a compliance extension under paragraph (i)(5) of this section shall include all information needed to demonstrate to the Administrator's satisfaction that the installation of BACT or technology to meet LAER controls the same pollutant (or stream of pollutants) that would be controlled at that source by the relevant emission standard.

(7) Advice on requesting an extension of compliance may be obtained from the Administrator (or the State with an approved permit program).

(8) *Approval of request for extension of compliance.* Paragraphs (i)(9) through (i)(14) of this section concern approval of an extension of compliance requested under paragraphs (i)(4) through (i)(6) of this section.

(9) Based on the information provided in any request made under paragraphs (i)(4) through (i)(6) of this section, or other information, the Administrator (or the State with an approved permit program) may grant an extension of compliance with an emission standard, as specified in paragraphs (i)(4) and (i)(5) of this section.

(10) The extension will be in writing and will—

(i) Identify each affected source covered by the extension;

(ii) Specify the termination date of the extension;

(iii) Specify the dates by which steps toward compliance are to be taken, if appropriate;

(iv) Specify other applicable requirements to which the compliance extension applies (e.g., performance tests); and

(v)(A) Under paragraph (i)(4), specify any additional conditions that the Administrator (or the State) deems necessary to assure installation of the necessary controls and protection of the health of persons during the extension period; or

(B) Under paragraph (i)(5), specify any additional conditions that the Administrator deems necessary to assure the proper operation and maintenance of the installed controls during the extension period.

(11) The owner or operator of an existing source that has been granted an extension of compliance under paragraph (i)(10) of this section may be required to submit to the Administrator (or the State with an approved permit program) progress reports indicating whether the steps toward compliance outlined in the compliance schedule have been reached. The contents of the progress reports and the dates by which they shall be submitted will be specified in the written extension of compliance granted under paragraph (i)(10) of this section.

(12)(i) The Administrator (or the State with an approved permit program) will notify the owner or operator in writing of approval or intention to deny approval of a request for an extension of compliance within 30 calendar days after receipt of sufficient information to evaluate a request submitted under paragraph (i)(4)(i) or (i)(5) of this section. The Administrator (or the State) will notify the owner or operator in writing of the status of his/her application, that is, whether the application contains sufficient information to make a determination, within 30 calendar days after receipt of the original application and within 30 calendar days after receipt of any supplementary information that is submitted. The 30-day approval or denial period will begin after the owner or operator has been notified in writing that his/her application is complete.

(ii) When notifying the owner or operator that his/her application is not complete, the Administrator will specify the information needed to complete the application and provide notice of opportunity for the applicant to present, in writing, within 30 calendar days after he/she is notified of the incomplete application, additional information or arguments to the Administrator to enable further action on the application.

(iii) Before denying any request for an extension of compliance, the Administrator (or the State with an approved permit program) will notify the owner or operator in writing of the Administrator's (or the State's) intention to issue the denial, together with—

(A) Notice of the information and findings on which the intended denial is based; and

(B) Notice of opportunity for the owner or operator to present in writing, within 15 calendar days after he/she is notified of the intended denial, additional information or arguments to the Administrator (or the State) before further action on the request.

(iv) The Administrator's final determination to deny any request for an extension will be in writing and will set forth the specific grounds on which the denial is based. The final determination will be made within 30 calendar days after presentation of additional information or argument (if the application is complete), or within 30 calendar days after the final date specified for the presentation if no presentation is made.

(13)(i) The Administrator will notify the owner or operator in writing of approval or intention to deny approval of a request for an extension of compliance within 30 calendar days after receipt of sufficient information to evaluate a request submitted under paragraph (i)(4)(ii) of this section. The 30-day approval or denial period will begin after the owner or operator has been notified in writing that his/her application is complete. The Administrator (or the State) will notify the owner or operator in writing of the status of his/her application, that is, whether the application contains sufficient information to make a determination, within 15 calendar days after receipt of the original application and within 15 calendar days after receipt of any supplementary information that is submitted.

(ii) When notifying the owner or operator that his/her application is not complete, the Administrator will specify the information needed to complete the application and provide notice of opportunity for the applicant to present, in writing, within 15 calendar days after he/she is notified of the incomplete application, additional information or arguments to the Administrator to enable further action on the application.

(iii) Before denying any request for an extension of compliance, the Administrator will notify the owner or operator in writing of the Administrator's intention to issue the denial, together with—

(A) Notice of the information and findings on which the intended denial is based; and

(B) Notice of opportunity for the owner or operator to present in writing, within 15 calendar days after he/she is notified of the intended denial, additional information or arguments to the Administrator before further action on the request.

(iv) A final determination to deny any request for an extension will be in writing and will set forth the specific grounds on which the denial is based. The final determination will be made within 30 calendar days after presentation of additional information or argument (if the application is complete), or within 30 calendar days after the final date specified for the presentation if no presentation is made.

(14) The Administrator (or the State with an approved permit program) may terminate an extension of compliance at an earlier date than specified if any specification under paragraph (i)(10)(iii) or (iv) of this section is not met. Upon a determination to terminate, the Administrator will notify, in writing, the owner or operator of the Administrator's determination to terminate, together with:

(i) Notice of the reason for termination; and

(ii) Notice of opportunity for the owner or operator to present in writing, within 15 calendar days after he/she is notified of the determination to terminate, additional information or arguments to the Administrator before further action on the termination.

(iii) A final determination to terminate an extension of compliance will be in writing and will set forth the specific grounds on which the termination is based. The final determination will be made within 30 calendar days after

presentation of additional information or arguments, or within 30 calendar days after the final date specified for the presentation if no presentation is made.

(15) [Reserved]

(16) The granting of an extension under this section shall not abrogate the Administrator's authority under section 114 of the Act.

(j) *Exemption from compliance with emission standards.* The President may exempt any stationary source from compliance with any relevant standard established pursuant to section 112 of the Act for a period of not more than 2 years if the President determines that the technology to implement such standard is not available and that it is in the national security interests of the United States to do so. An exemption under this paragraph may be extended for 1 or more additional periods, each period not to exceed 2 years.

[59 FR 12430, Mar. 16, 1994, as amended at 67 FR 16599, Apr. 5, 2002; 68 FR 32600, May 30, 2003; 71 FR 20454, Apr. 20, 2006]

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§63.7 Performance testing requirements.

(a) *Applicability and performance test dates.* (1) The applicability of this section is set out in §63.1(a)(4).

(2) Except as provided in paragraph (a)(4) of this section, if required to do performance testing by a relevant standard, and unless a waiver of performance testing is obtained under this section or the conditions of paragraph (c)(3)(ii)(B) of this section apply, the owner or operator of the affected source must perform such tests within 180 days of the compliance date for such source.

(i)-(viii) [Reserved]

(ix) Except as provided in paragraph (a)(4) of this section, when an emission standard promulgated under this part is more stringent than the standard proposed (see §63.6(b)(3)), the owner or operator of a new or reconstructed source subject to that standard for which construction or reconstruction is commenced between the proposal and promulgation dates of the standard shall comply with performance testing requirements within 180 days after the standard's effective date, or within 180 days after startup of the source, whichever is later. If the promulgated standard is more stringent than the proposed standard, the owner or operator may choose to demonstrate compliance with either the proposed or the promulgated standard. If the owner or operator chooses to comply with the proposed standard initially, the owner or operator shall conduct a second performance test within 3 years and 180 days after the effective date of the standard, or after startup of the source, whichever is later, to demonstrate compliance with the promulgated standard.

(3) The Administrator may require an owner or operator to conduct performance tests at the affected source at any other time when the action is authorized by section 114 of the Act.

(4) If a force majeure is about to occur, occurs, or has occurred for which the affected owner or operator intends to assert a claim of force majeure:

(i) The owner or operator shall notify the Administrator, in writing as soon as practicable following the date the owner or operator first knew, or through due diligence should have known that the event may cause or caused a delay in testing beyond the regulatory deadline specified in paragraph (a)(2) or (a)(3) of this section, or elsewhere in this part, but the notification must occur before the performance test deadline unless the initial force majeure or a subsequent force majeure event delays the notice, and in such cases, the notification shall occur as soon as practicable.

(ii) The owner or operator shall provide to the Administrator a written description of the force majeure event and a rationale for attributing the delay in testing beyond the regulatory deadline to the force majeure; describe the

measures taken or to be taken to minimize the delay; and identify a date by which the owner or operator proposes to conduct the performance test. The performance test shall be conducted as soon as practicable after the force majeure occurs.

(iii) The decision as to whether or not to grant an extension to the performance test deadline is solely within the discretion of the Administrator. The Administrator will notify the owner or operator in writing of approval or disapproval of the request for an extension as soon as practicable.

(iv) Until an extension of the performance test deadline has been approved by the Administrator under paragraphs (a)(4)(i), (a)(4)(ii), and (a)(4)(iii) of this section, the owner or operator of the affected facility remains strictly subject to the requirements of this part.

(b) *Notification of performance test.* (1) The owner or operator of an affected source must notify the Administrator in writing of his or her intention to conduct a performance test at least 60 calendar days before the performance test is initially scheduled to begin to allow the Administrator, upon request, to review an approve the site-specific test plan required under paragraph (c) of this section and to have an observer present during the test.

(2) In the event the owner or operator is unable to conduct the performance test on the date specified in the notification requirement specified in paragraph (b)(1) of this section due to unforeseeable circumstances beyond his or her control, the owner or operator must notify the Administrator as soon as practicable and without delay prior to the scheduled performance test date and specify the date when the performance test is rescheduled. This notification of delay in conducting the performance test shall not relieve the owner or operator of legal responsibility for compliance with any other applicable provisions of this part or with any other applicable Federal, State, or local requirement, nor will it prevent the Administrator from implementing or enforcing this part or taking any other action under the Act.

(c) *Quality assurance program.* (1) The results of the quality assurance program required in this paragraph will be considered by the Administrator when he/she determines the validity of a performance test.

(2)(i) *Submission of site-specific test plan.* Before conducting a required performance test, the owner or operator of an affected source shall develop and, if requested by the Administrator, shall submit a site-specific test plan to the Administrator for approval. The test plan shall include a test program summary, the test schedule, data quality objectives, and both an internal and external quality assurance (QA) program. Data quality objectives are the pretest expectations of precision, accuracy, and completeness of data.

(ii) The internal QA program shall include, at a minimum, the activities planned by routine operators and analysts to provide an assessment of test data precision; an example of internal QA is the sampling and analysis of replicate samples.

(iii) The performance testing shall include a test method performance audit (PA) during the performance test. The PAs consist of blind audit samples supplied by an accredited audit sample provider and analyzed during the performance test in order to provide a measure of test data bias. Gaseous audit samples are designed to audit the performance of the sampling system as well as the analytical system and must be collected by the sampling system during the compliance test just as the compliance samples are collected. If a liquid or solid audit sample is designed to audit the sampling system, it must also be collected by the sampling system during the compliance test. If multiple sampling systems or sampling trains are used during the compliance test for any of the test methods, the tester is only required to use one of the sampling systems per method to collect the audit sample. The audit sample must be analyzed by the same analyst using the same analytical reagents and analytical system and at the same time as the compliance samples. Retests are required when there is a failure to produce acceptable results for an audit sample. However, if the audit results do not affect the compliance or noncompliance status of the affected facility, the compliance authority may waive the reanalysis requirement, further audits, or retests and accept the results of the compliance test. Acceptance of the test results shall constitute a waiver of the reanalysis requirement, further audits, or retests. The compliance authority may also use the audit sample failure and the compliance test results as evidence to determine the compliance or noncompliance status of the affected facility. A blind audit sample is a sample whose value is known only to the sample provider and is not revealed to the tested facility until after they report the measured value of the audit sample. For pollutants that exist in the gas phase at ambient temperature,

the audit sample shall consist of an appropriate concentration of the pollutant in air or nitrogen that can be introduced into the sampling system of the test method at or near the same entry point as a sample from the emission source. If no gas phase audit samples are available, an acceptable alternative is a sample of the pollutant in the same matrix that would be produced when the sample is recovered from the sampling system as required by the test method. For samples that exist only in a liquid or solid form at ambient temperature, the audit sample shall consist of an appropriate concentration of the pollutant in the same matrix that would be produced when the sample is recovered from the sampling system as required by the test method. An accredited audit sample provider (AASP) is an organization that has been accredited to prepare audit samples by an independent, third party accrediting body.

(A) The source owner, operator, or representative of the tested facility shall obtain an audit sample, if commercially available, from an AASP for each test method used for regulatory compliance purposes. No audit samples are required for the following test methods: Methods 3A and 3C of appendix A-3 of part 60 of this chapter; Methods 6C, 7E, 9, and 10 of appendix A-4 of part 60; Methods 18 and 19 of appendix A-6 of part 60; Methods 20, 22, and 25A of appendix A-7 of part 60; Methods 30A and 30B of appendix A-8 of part 60; and Methods 303, 318, 320, and 321 of appendix A of this part. If multiple sources at a single facility are tested during a compliance test event, only one audit sample is required for each method used during a compliance test. The compliance authority responsible for the compliance test may waive the requirement to include an audit sample if they believe that an audit sample is not necessary. "Commercially available" means that two or more independent AASPs have blind audit samples available for purchase. If the source owner, operator, or representative cannot find an audit sample for a specific method, the owner, operator, or representative shall consult the EPA Web site at the following URL, *www.epa.gov/ttn/emc,* to confirm whether there is a source that can supply an audit sample for that method. If the EPA Web site does not list an available audit sample at least 60 days prior to the beginning of the compliance test, the source owner, operator, or representative shall not be required to include an audit sample as part of the quality assurance program for the compliance test. When ordering an audit sample, the source owner, operator, or representative shall give the sample provider an estimate for the concentration of each pollutant that is emitted by the source or the estimated concentration of each pollutant based on the permitted level and the name, address, and phone number of the compliance authority. The source owner, operator, or representative shall report the results for the audit sample along with a summary of the emission test results for the audited pollutant to the compliance authority and shall report the results of the audit sample to the AASP. The source owner, operator, or representative shall make both reports at the same time and in the same manner or shall report to the compliance authority first and then report to the AASP. If the method being audited is a method that allows the samples to be analyzed in the field and the tester plans to analyze the samples in the field, the tester may analyze the audit samples prior to collecting the emission samples provided a representative of the compliance authority is present at the testing site. The tester may request, and the compliance authority may grant, a waiver to the requirement that a representative of the compliance authority must be present at the testing site during the field analysis of an audit sample. The source owner, operator, or representative may report the results of the audit sample to the compliance authority and then report the results of the audit sample to the AASP prior to collecting any emission samples. The test protocol and final test report shall document whether an audit sample was ordered and utilized and the pass/fail results as applicable.

(B) An AASP shall have and shall prepare, analyze, and report the true value of audit samples in accordance with a written technical criteria document that describes how audit samples will be prepared and distributed in a manner that will ensure the integrity of the audit sample program. An acceptable technical criteria document shall contain standard operating procedures for all of the following operations:

(*1*) Preparing the sample;

(2) Confirming the true concentration of the sample;

(*3*) Defining the acceptance limits for the results from a well qualified tester. This procedure must use well established statistical methods to analyze historical results from well qualified testers. The acceptance limits shall be set so that there is 95 percent confidence that 90 percent of well qualified labs will produce future results that are within the acceptance limit range;

(*4*) Providing the opportunity for the compliance authority to comment on the selected concentration level for an audit sample;

(*5*) Distributing the sample to the user in a manner that guarantees that the true value of the sample is unknown to the user;

(*6*) Recording the measured concentration reported by the user and determining if the measured value is within acceptable limits;

(*7*) Reporting the results from each audit sample in a timely manner to the compliance authority and to the source owner, operator, or representative by the AASP. The AASP shall make both reports at the same time and in the same manner or shall report to the compliance authority first and then report to the source owner, operator, or representative. The results shall include the name of the facility tested, the date on which the compliance test was conducted, the name of the company performing the sample collection, the name of the company that analyzed the compliance samples including the audit sample, the measured result for the audit sample, and whether the testing company passed or failed the audit. The AASP shall report the true value of the audit sample to the compliance authority. The AASP may report the true value to the source owner, operator, or representative if the AASP's operating plan ensures that no laboratory will receive the same audit sample twice.

(*8*) Evaluating the acceptance limits of samples at least once every two years to determine in consultation with the voluntary consensus standard body if they should be changed.

(*9*) Maintaining a database, accessible to the compliance authorities, of results from the audit that shall include the name of the facility tested, the date on which the compliance test was conducted, the name of the company performing the sample collection, the name of the company that analyzed the compliance samples including the audit sample, the measured result for the audit sample, the true value of the audit sample, the acceptance range for the measured value, and whether the testing company passed or failed the audit.

(C) The accrediting body shall have a written technical criteria document that describes how it will ensure that the AASP is operating in accordance with the AASP technical criteria document that describes how audit samples are to be prepared and distributed. This document shall contain standard operating procedures for all of the following operations:

(*1*) Checking audit samples to confirm their true value as reported by the AASP.

(*2*) Performing technical systems audits of the AASP's facilities and operating procedures at least once every two years.

(*3*) Providing standards for use by the voluntary consensus standard body to approve the accrediting body that will accredit the audit sample providers.

(D) The technical criteria documents for the accredited sample providers and the accrediting body shall be developed through a public process guided by a voluntary consensus standards body (VCSB). The VCSB shall operate in accordance with the procedures and requirements in the Office of Management and Budget *Circular A-119.* A copy of Circular A-119 is available upon request by writing the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th Street, NW., Washington, DC 20503, by calling (202) 395-6880 or downloading online at *http://standards.gov/standards_gov/a119.cfm.* The VCSB shall approve all accrediting bodies. The Administrator will review all technical criteria documents. If the technical criteria documents do not meet the minimum technical requirements in paragraphs (c)(2)(iii)(B) through (C) of this section, the technical criteria documents are not acceptable and the proposed audit sample program is not capable of producing audit samples of sufficient quality to be used in a compliance test. All acceptable technical criteria documents shall be posted on the EPA Web site at the following URL, *http://www.epa.gov/ttn/emc.*

(iv) The owner or operator of an affected source shall submit the site-specific test plan to the Administrator upon the Administrator's request at least 60 calendar days before the performance test is scheduled to take place,

that is, simultaneously with the notification of intention to conduct a performance test required under paragraph (b) of this section, or on a mutually agreed upon date.

(v) The Administrator may request additional relevant information after the submittal of a site-specific test plan.

(3) *Approval of site-specific test plan.* (i) The Administrator will notify the owner or operator of approval or intention to deny approval of the site-specific test plan (if review of the site-specific test plan is requested) within 30 calendar days after receipt of the original plan and within 30 calendar days after receipt of any supplementary information that is submitted under paragraph (c)(3)(i)(B) of this section. Before disapproving any site-specific test plan, the Administrator will notify the applicant of the Administrator's intention to disapprove the plan together with—

(A) Notice of the information and findings on which the intended disapproval is based; and

(B) Notice of opportunity for the owner or operator to present, within 30 calendar days after he/she is notified of the intended disapproval, additional information to the Administrator before final action on the plan.

(ii) In the event that the Administrator fails to approve or disapprove the site-specific test plan within the time period specified in paragraph (c)(3)(i) of this section, the following conditions shall apply:

(A) If the owner or operator intends to demonstrate compliance using the test method(s) specified in the relevant standard or with only minor changes to those tests methods (see paragraph (e)(2)(i) of this section), the owner or operator must conduct the performance test within the time specified in this section using the specified method(s);

(B) If the owner or operator intends to demonstrate compliance by using an alternative to any test method specified in the relevant standard, the owner or operator is authorized to conduct the performance test using an alternative test method after the Administrator approves the use of the alternative method when the Administrator approves the site-specific test plan (if review of the site-specific test plan is requested) or after the alternative method is approved (see paragraph (f) of this section). However, the owner or operator is authorized to conduct the performance test using an alternative method in the absence of notification of approval 45 days after submission of the site-specific test plan or request to use an alternative method. The owner or operator is authorized to conduct the performance test within 60 calendar days after he/she is authorized to demonstrate compliance using an alternative test method. Notwithstanding the requirements in the preceding three sentences, the owner or operator may proceed to conduct the performance test as required in this section (without the Administrator's prior approval of the site-specific test plan) if he/she subsequently chooses to use the specified testing and monitoring methods instead of an alternative.

(iii) Neither the submission of a site-specific test plan for approval, nor the Administrator's approval or disapproval of a plan, nor the Administrator's failure to approve or disapprove a plan in a timely manner shall—

(A) Relieve an owner or operator of legal responsibility for compliance with any applicable provisions of this part or with any other applicable Federal, State, or local requirement; or

(B) Prevent the Administrator from implementing or enforcing this part or taking any other action under the Act.

(d) *Performance testing facilities.* If required to do performance testing, the owner or operator of each new source and, at the request of the Administrator, the owner or operator of each existing source, shall provide performance testing facilities as follows:

(1) Sampling ports adequate for test methods applicable to such source. This includes:

(i) Constructing the air pollution control system such that volumetric flow rates and pollutant emission rates can be accurately determined by applicable test methods and procedures; and

(ii) Providing a stack or duct free of cyclonic flow during performance tests, as demonstrated by applicable test methods and procedures;

(2) Safe sampling platform(s);

(3) Safe access to sampling platform(s);

(4) Utilities for sampling and testing equipment; and

(5) Any other facilities that the Administrator deems necessary for safe and adequate testing of a source.

(e) *Conduct of performance tests.* (1) Performance tests shall be conducted under such conditions as the Administrator specifies to the owner or operator based on representative performance (i.e., performance based on normal operating conditions) of the affected source. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test, nor shall emissions in excess of the level of the relevant standard during periods of startup, shutdown, and malfunction be considered a violation of the relevant standard unless otherwise specified in the relevant standard or a determination of noncompliance is made under §63.6(e). Upon request, the owner or operator shall make available to the Administrator such records as may be necessary to determine the conditions of performance tests.

(2) Performance tests shall be conducted and data shall be reduced in accordance with the test methods and procedures set forth in this section, in each relevant standard, and, if required, in applicable appendices of parts 51, 60, 61, and 63 of this chapter unless the Administrator—

(i) Specifies or approves, in specific cases, the use of a test method with minor changes in methodology (see definition in §63.90(a)). Such changes may be approved in conjunction with approval of the site-specific test plan (see paragraph (c) of this section); or

(ii) Approves the use of an intermediate or major change or alternative to a test method (see definitions in §63.90(a)), the results of which the Administrator has determined to be adequate for indicating whether a specific affected source is in compliance; or

(iii) Approves shorter sampling times or smaller sample volumes when necessitated by process variables or other factors; or

(iv) Waives the requirement for performance tests because the owner or operator of an affected source has demonstrated by other means to the Administrator's satisfaction that the affected source is in compliance with the relevant standard.

(3) Unless otherwise specified in a relevant standard or test method, each performance test shall consist of three separate runs using the applicable test method. Each run shall be conducted for the time and under the conditions specified in the relevant standard. For the purpose of determining compliance with a relevant standard, the arithmetic mean of the results of the three runs shall apply. Upon receiving approval from the Administrator, results of a test run may be replaced with results of an additional test run in the event that—

(i) A sample is accidentally lost after the testing team leaves the site; or

(ii) Conditions occur in which one of the three runs must be discontinued because of forced shutdown; or

(iii) Extreme meteorological conditions occur; or

(iv) Other circumstances occur that are beyond the owner or operator's control.

(4) Nothing in paragraphs (e)(1) through (e)(3) of this section shall be construed to abrogate the Administrator's authority to require testing under section 114 of the Act.

(f) *Use of an alternative test method*—(1)*General.* Until authorized to use an intermediate or major change or alternative to a test method, the owner or operator of an affected source remains subject to the requirements of this section and the relevant standard.

(2) The owner or operator of an affected source required to do performance testing by a relevant standard may use an alternative test method from that specified in the standard provided that the owner or operator—

(i) Notifies the Administrator of his or her intention to use an alternative test method at least 60 days before the performance test is scheduled to begin;

(ii) Uses Method 301 in appendix A of this part to validate the alternative test method. This may include the use of specific procedures of Method 301 if use of such procedures are sufficient to validate the alternative test method; and

(iii) Submits the results of the Method 301 validation process along with the notification of intention and the justification for not using the specified test method. The owner or operator may submit the information required in this paragraph well in advance of the deadline specified in paragraph (f)(2)(i) of this section to ensure a timely review by the Administrator in order to meet the performance test date specified in this section or the relevant standard.

(3) The Administrator will determine whether the owner or operator's validation of the proposed alternative test method is adequate and issue an approval or disapproval of the alternative test method. If the owner or operator intends to demonstrate compliance by using an alternative to any test method specified in the relevant standard, the owner or operator is authorized to conduct the performance test using an alternative test method after the Administrator approves the use of the alternative method. However, the owner or operator is authorized to conduct the performance test using an alternative method in the absence of notification of approval/disapproval 45 days after submission of the request to use an alternative method and the request satisfies the requirements in paragraph (f)(2) of this section. The owner or operator is authorized to conduct the performance test within 60 calendar days after he/she is authorized to demonstrate compliance using an alternative test method. Notwithstanding the requirements in the preceding three sentences, the owner or operator may proceed to conduct the performance test as required in this section (without the Administrator's prior approval of the site-specific test plan) if he/she subsequently chooses to use the specified testing and monitoring methods instead of an alternative.

(4) If the Administrator finds reasonable grounds to dispute the results obtained by an alternative test method for the purposes of demonstrating compliance with a relevant standard, the Administrator may require the use of a test method specified in a relevant standard.

(5) If the owner or operator uses an alternative test method for an affected source during a required performance test, the owner or operator of such source shall continue to use the alternative test method for subsequent performance tests at that affected source until he or she receives approval from the Administrator to use another test method as allowed under §63.7(f).

(6) Neither the validation and approval process nor the failure to validate an alternative test method shall abrogate the owner or operator's responsibility to comply with the requirements of this part.

(g) *Data analysis, recordkeeping, and reporting.* (1) Unless otherwise specified in a relevant standard or test method, or as otherwise approved by the Administrator in writing, results of a performance test shall include the analysis of samples, determination of emissions, and raw data. A performance test is "completed" when field sample collection is terminated. The owner or operator of an affected source shall report the results of the performance test to the Administrator before the close of business on the 60th day following the completion of the performance test, unless specified otherwise in a relevant standard or as approved otherwise in writing by the Administrator (see §63.9(i)). The results of the performance test shall be submitted as part of the notification of compliance status required under §63.9(h). Before a title V permit has been issued to the owner or operator of an affected source, the owner or operator shall send the results of the performance test to the Administrator. After a title V permit has been issued to the owner or operator of an affected source, the owner or operator shall send the results of the performance test to the appropriate permitting authority.

(2) Contents of report (electronic or paper submitted copy). Unless otherwise specified in a relevant standard or test method, or as otherwise approved by the Administrator in writing, the report for a performance test shall include the elements identified in paragraphs (g)(2)(i) through (vi) of this section.

(i) General identification information for the facility including a mailing address, the physical address, the owner or operator or responsible official (where applicable) and his/her email address, and the appropriate Federal Registry System (FRS) number for the facility.

(ii) Purpose of the test including the applicable regulation requiring the test, the pollutant(s) and other parameters being measured, the applicable emission standard, and any process parameter component, and a brief process description.

(iii) Description of the emission unit tested including fuel burned, control devices, and vent characteristics; the appropriate source classification code (SCC); the permitted maximum process rate (where applicable); and the sampling location.

(iv) Description of sampling and analysis procedures used and any modifications to standard procedures, quality assurance procedures and results, record of process operating conditions that demonstrate the applicable test conditions are met, and values for any operating parameters for which limits were being set during the test.

(v) Where a test method requires you record or report, the following shall be included in your report: Record of preparation of standards, record of calibrations, raw data sheets for field sampling, raw data sheets for field and laboratory analyses, chain-of-custody documentation, and example calculations for reported results.

(vi) Identification of the company conducting the performance test including the primary office address, telephone number, and the contact for this test including his/her email address.

(3) For a minimum of 5 years after a performance test is conducted, the owner or operator shall retain and make available, upon request, for inspection by the Administrator the records or results of such performance test and other data needed to determine emissions from an affected source.

(h) *Waiver of performance tests.* (1) Until a waiver of a performance testing requirement has been granted by the Administrator under this paragraph, the owner or operator of an affected source remains subject to the requirements of this section.

(2) Individual performance tests may be waived upon written application to the Administrator if, in the Administrator's judgment, the source is meeting the relevant standard(s) on a continuous basis, or the source is being operated under an extension of compliance, or the owner or operator has requested an extension of compliance and the Administrator is still considering that request.

(3) *Request to waive a performance test.* (i) If a request is made for an extension of compliance under §63.6(i), the application for a waiver of an initial performance test shall accompany the information required for the request for an extension of compliance. If no extension of compliance is requested or if the owner or operator has requested an extension of compliance and the Administrator is still considering that request, the application for a waiver of an initial performance test shall be submitted at least 60 days before the performance test if the site-specific test plan under paragraph (c) of this section is not submitted.

(ii) If an application for a waiver of a subsequent performance test is made, the application may accompany any required compliance progress report, compliance status report, or excess emissions and continuous monitoring system performance report [such as those required under §63.6(i), §63.9(h), and §63.10(e) or specified in a relevant standard or in the source's title V permit], but it shall be submitted at least 60 days before the performance test if the site-specific test plan required under paragraph (c) of this section is not submitted.

(iii) Any application for a waiver of a performance test shall include information justifying the owner or operator's request for a waiver, such as the technical or economic infeasibility, or the impracticality, of the affected source performing the required test.

(4) *Approval of request to waive performance test.* The Administrator will approve or deny a request for a waiver of a performance test made under paragraph (h)(3) of this section when he/she—

(i) Approves or denies an extension of compliance under §63.6(i)(8); or

(ii) Approves or disapproves a site-specific test plan under §63.7(c)(3); or

(iii) Makes a determination of compliance following the submission of a required compliance status report or excess emissions and continuous monitoring systems performance report; or

(iv) Makes a determination of suitable progress towards compliance following the submission of a compliance progress report, whichever is applicable.

(5) Approval of any waiver granted under this section shall not abrogate the Administrator's authority under the Act or in any way prohibit the Administrator from later canceling the waiver. The cancellation will be made only after notice is given to the owner or operator of the affected source.

[59 FR 12430, Mar. 16, 1994, as amended at 65 FR 62215, Oct. 17, 2000; 67 FR 16602, Apr. 5, 2002; 72 FR 27443, May 16, 2007; 75 FR 55655, Sept. 13, 2010; 79 FR 11277, Feb. 27, 2014; 81 FR 59825, Aug. 30, 2016]

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§63.8 Monitoring requirements.

(a) *Applicability.* (1) The applicability of this section is set out in §63.1(a)(4).

(2) For the purposes of this part, all CMS required under relevant standards shall be subject to the provisions of this section upon promulgation of performance specifications for CMS as specified in the relevant standard or otherwise by the Administrator.

(3) [Reserved]

(4) Additional monitoring requirements for control devices used to comply with provisions in relevant standards of this part are specified in §63.11.

(b) *Conduct of monitoring.* (1) Monitoring shall be conducted as set forth in this section and the relevant standard(s) unless the Administrator—

(i) Specifies or approves the use of minor changes in methodology for the specified monitoring requirements and procedures (see §63.90(a) for definition); or

(ii) Approves the use of an intermediate or major change or alternative to any monitoring requirements or procedures (see §63.90(a) for definition).

(iii) Owners or operators with flares subject to §63.11(b) are not subject to the requirements of this section unless otherwise specified in the relevant standard.

(2)(i) When the emissions from two or more affected sources are combined before being released to the atmosphere, the owner or operator may install an applicable CMS for each emission stream or for the combined emissions streams, provided the monitoring is sufficient to demonstrate compliance with the relevant standard.

(ii) If the relevant standard is a mass emission standard and the emissions from one affected source are released to the atmosphere through more than one point, the owner or operator must install an applicable CMS at each emission point unless the installation of fewer systems is—

(A) Approved by the Administrator; or

(B) Provided for in a relevant standard (e.g., instead of requiring that a CMS be installed at each emission point before the effluents from those points are channeled to a common control device, the standard specifies that only one CMS is required to be installed at the vent of the control device).

(3) When more than one CMS is used to measure the emissions from one affected source (e.g., multiple breechings, multiple outlets), the owner or operator shall report the results as required for each CMS. However, when one CMS is used as a backup to another CMS, the owner or operator shall report the results from the CMS used to meet the monitoring requirements of this part. If both such CMS are used during a particular reporting period to meet the monitoring requirements of this part, then the owner or operator shall report the results from each CMS for the relevant compliance period.

(c) *Operation and maintenance of continuous monitoring systems.* (1) The owner or operator of an affected source shall maintain and operate each CMS as specified in this section, or in a relevant standard, and in a manner consistent with good air pollution control practices. (i) The owner or operator of an affected source must maintain and operate each CMS as specified in §63.6(e)(1).

(ii) The owner or operator must keep the necessary parts for routine repairs of the affected CMS equipment readily available.

(iii) The owner or operator of an affected source must develop a written startup, shutdown, and malfunction plan for CMS as specified in §63.6(e)(3).

(2)(i) All CMS must be installed such that representative measures of emissions or process parameters from the affected source are obtained. In addition, CEMS must be located according to procedures contained in the applicable performance specification(s).

(ii) Unless the individual subpart states otherwise, the owner or operator must ensure the read out (that portion of the CMS that provides a visual display or record), or other indication of operation, from any CMS required for compliance with the emission standard is readily accessible on site for operational control or inspection by the operator of the equipment.

(3) All CMS shall be installed, operational, and the data verified as specified in the relevant standard either prior to or in conjunction with conducting performance tests under §63.7. Verification of operational status shall, at a minimum, include completion of the manufacturer's written specifications or recommendations for installation, operation, and calibration of the system.

(4) Except for system breakdowns, out-of-control periods, repairs, maintenance periods, calibration checks, and zero (low-level) and high-level calibration drift adjustments, all CMS, including COMS and CEMS, shall be in continuous operation and shall meet minimum frequency of operation requirements as follows:

(i) All COMS shall complete a minimum of one cycle of sampling and analyzing for each successive 10-second period and one cycle of data recording for each successive 6-minute period.

(ii) All CEMS for measuring emissions other than opacity shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period.

(5) Unless otherwise approved by the Administrator, minimum procedures for COMS shall include a method for producing a simulated zero opacity condition and an upscale (high-level) opacity condition using a certified neutral density filter or other related technique to produce a known obscuration of the light beam. Such procedures shall provide a system check of all the analyzer's internal optical surfaces and all electronic circuitry, including the lamp and photodetector assembly normally used in the measurement of opacity.

(6) The owner or operator of a CMS that is not a CPMS, which is installed in accordance with the provisions of this part and the applicable CMS performance specification(s), must check the zero (low-level) and high-level calibration drifts at least once daily in accordance with the written procedure specified in the performance evaluation plan developed under paragraphs (e)(3)(i) and (ii) of this section. The zero (low-level) and high-level calibration drifts must be adjusted, at a minimum, whenever the 24-hour zero (low-level) drift exceeds two times the limits of the applicable performance specification(s) specified in the relevant standard. The system shall allow the amount of excess zero (low-level) and high-level drift measured at the 24-hour interval checks to be recorded and quantified whenever specified. For COMS, all optical and instrumental surfaces exposed to the effluent gases must be cleaned prior to performing the zero (low-level) and high-level drift adjustments; the optical surfaces and instrumental surfaces must be cleaned when the cumulative automatic zero compensation, if applicable, exceeds 4 percent opacity. The CPMS must be calibrated prior to use for the purposes of complying with this section. The CPMS must be checked daily for indication that the system is responding. If the CPMS system includes an internal system check, results must be recorded and checked daily for proper operation.

(7)(i) A CMS is out of control if—

(A) The zero (low-level), mid-level (if applicable), or high-level calibration drift (CD) exceeds two times the applicable CD specification in the applicable performance specification or in the relevant standard; or

(B) The CMS fails a performance test audit (e.g., cylinder gas audit), relative accuracy audit, relative accuracy test audit, or linearity test audit; or

(C) The COMS CD exceeds two times the limit in the applicable performance specification in the relevant standard.

(ii) When the CMS is out of control, the owner or operator of the affected source shall take the necessary corrective action and shall repeat all necessary tests which indicate that the system is out of control. The owner or operator shall take corrective action and conduct retesting until the performance requirements are below the applicable limits. The beginning of the out-of-control period is the hour the owner or operator conducts a performance check (e.g., calibration drift) that indicates an exceedance of the performance requirements established under this part. The end of the out-of-control period is the hour following the completion of corrective action and successful demonstration that the system is within the allowable limits. During the period the CMS is out of control, recorded data shall not be used in data averages and calculations, or to meet any data availability requirement established under this part.

(8) The owner or operator of a CMS that is out of control as defined in paragraph (c)(7) of this section shall submit all information concerning out-of-control periods, including start and end dates and hours and descriptions of corrective actions taken, in the excess emissions and continuous monitoring system performance report required in §63.10(e)(3).

(d) *Quality control program.* (1) The results of the quality control program required in this paragraph will be considered by the Administrator when he/she determines the validity of monitoring data.

(2) The owner or operator of an affected source that is required to use a CMS and is subject to the monitoring requirements of this section and a relevant standard shall develop and implement a CMS quality control program. As part of the quality control program, the owner or operator shall develop and submit to the Administrator for approval upon request a site-specific performance evaluation test plan for the CMS performance evaluation required in paragraph (e)(3)(i) of this section, according to the procedures specified in paragraph (e). In addition, each quality control program shall include, at a minimum, a written protocol that describes procedures for each of the following operations:

(i) Initial and any subsequent calibration of the CMS;

(ii) Determination and adjustment of the calibration drift of the CMS;

(iii) Preventive maintenance of the CMS, including spare parts inventory;

(iv) Data recording, calculations, and reporting;

(v) Accuracy audit procedures, including sampling and analysis methods; and

(vi) Program of corrective action for a malfunctioning CMS.

(3) The owner or operator shall keep these written procedures on record for the life of the affected source or until the affected source is no longer subject to the provisions of this part, to be made available for inspection, upon request, by the Administrator. If the performance evaluation plan is revised, the owner or operator shall keep previous (i.e., superseded) versions of the performance evaluation plan on record to be made available for inspection, upon request, by the Administrator, for a period of 5 years after each revision to the plan. Where relevant, e.g., program of corrective action for a malfunctioning CMS, these written procedures may be incorporated as part of the affected source's startup, shutdown, and malfunction plan to avoid duplication of planning and recordkeeping efforts.

(e) *Performance evaluation of continuous monitoring systems*—(1) *General.* When required by a relevant standard, and at any other time the Administrator may require under section 114 of the Act, the owner or operator of an affected source being monitored shall conduct a performance evaluation of the CMS. Such performance evaluation shall be conducted according to the applicable specifications and procedures described in this section or in the relevant standard.

(2) *Notification of performance evaluation.* The owner or operator shall notify the Administrator in writing of the date of the performance evaluation simultaneously with the notification of the performance test date required under §63.7(b) or at least 60 days prior to the date the performance evaluation is scheduled to begin if no performance test is required.

(3)(i) *Submission of site-specific performance evaluation test plan.* Before conducting a required CMS performance evaluation, the owner or operator of an affected source shall develop and submit a site-specific performance evaluation test plan to the Administrator for approval upon request. The performance evaluation test plan shall include the evaluation program objectives, an evaluation program summary, the performance evaluation schedule, data quality objectives, and both an internal and external QA program. Data quality objectives are the pre-evaluation expectations of precision, accuracy, and completeness of data.

(ii) The internal QA program shall include, at a minimum, the activities planned by routine operators and analysts to provide an assessment of CMS performance. The external QA program shall include, at a minimum, systems audits that include the opportunity for on-site evaluation by the Administrator of instrument calibration, data validation, sample logging, and documentation of quality control data and field maintenance activities.

(iii) The owner or operator of an affected source shall submit the site-specific performance evaluation test plan to the Administrator (if requested) at least 60 days before the performance test or performance evaluation is scheduled to begin, or on a mutually agreed upon date, and review and approval of the performance evaluation test plan by the Administrator will occur with the review and approval of the site-specific test plan (if review of the site-specific test plan is requested).

(iv) The Administrator may request additional relevant information after the submittal of a site-specific performance evaluation test plan.

(v) In the event that the Administrator fails to approve or disapprove the site-specific performance evaluation test plan within the time period specified in §63.7(c)(3), the following conditions shall apply:

(A) If the owner or operator intends to demonstrate compliance using the monitoring method(s) specified in the relevant standard, the owner or operator shall conduct the performance evaluation within the time specified in this subpart using the specified method(s);

(B) If the owner or operator intends to demonstrate compliance by using an alternative to a monitoring method specified in the relevant standard, the owner or operator shall refrain from conducting the performance evaluation

until the Administrator approves the use of the alternative method. If the Administrator does not approve the use of the alternative method within 30 days before the performance evaluation is scheduled to begin, the performance evaluation deadlines specified in paragraph (e)(4) of this section may be extended such that the owner or operator shall conduct the performance evaluation within 60 calendar days after the Administrator approves the use of the alternative method. Notwithstanding the requirements in the preceding two sentences, the owner or operator may proceed to conduct the performance evaluation as required in this section (without the Administrator's prior approval of the site-specific performance evaluation test plan) if he/she subsequently chooses to use the specified monitoring method(s) instead of an alternative.

(vi) Neither the submission of a site-specific performance evaluation test plan for approval, nor the Administrator's approval or disapproval of a plan, nor the Administrator's failure to approve or disapprove a plan in a timely manner shall—

(A) Relieve an owner or operator of legal responsibility for compliance with any applicable provisions of this part or with any other applicable Federal, State, or local requirement; or

(B) Prevent the Administrator from implementing or enforcing this part or taking any other action under the Act.

(4) *Conduct of performance evaluation and performance evaluation dates.* The owner or operator of an affected source shall conduct a performance evaluation of a required CMS during any performance test required under §63.7 in accordance with the applicable performance specification as specified in the relevant standard. Notwithstanding the requirement in the previous sentence, if the owner or operator of an affected source elects to submit COMS data for compliance with a relevant opacity emission standard as provided under §63.6(h)(7), he/she shall conduct a performance evaluation of the COMS as specified in the relevant standard, before the performance test required under §63.7 is conducted in time to submit the results of the performance evaluation as specified in paragraph (e)(5)(ii) of this section. If a performance test is not required, or the requirement for a performance test has been waived under §63.7(h), the owner or operator of an affected source shall conduct the performance evaluation not later than 180 days after the appropriate compliance date for the affected source, as specified in §63.7(a), or as otherwise specified in the relevant standard.

(5) *Reporting performance evaluation results.* (i) The owner or operator shall furnish the Administrator a copy of a written report of the results of the performance evaluation simultaneously with the results of the performance test required under §63.7 or within 60 days of completion of the performance evaluation if no test is required, unless otherwise specified in a relevant standard. The Administrator may request that the owner or operator submit the raw data from a performance evaluation in the report of the performance evaluation results.

(ii) The owner or operator of an affected source using a COMS to determine opacity compliance during any performance test required under §63.7 and described in §63.6(d)(6) shall furnish the Administrator two or, upon request, three copies of a written report of the results of the COMS performance evaluation under this paragraph. The copies shall be provided at least 15 calendar days before the performance test required under §63.7 is conducted.

(f) *Use of an alternative monitoring method*—(1) *General.* Until permission to use an alternative monitoring procedure (minor, intermediate, or major changes; see definition in §63.90(a)) has been granted by the Administrator under this paragraph (f)(1), the owner or operator of an affected source remains subject to the requirements of this section and the relevant standard.

(2) After receipt and consideration of written application, the Administrator may approve alternatives to any monitoring methods or procedures of this part including, but not limited to, the following:

(i) Alternative monitoring requirements when installation of a CMS specified by a relevant standard would not provide accurate measurements due to liquid water or other interferences caused by substances within the effluent gases;

(ii) Alternative monitoring requirements when the affected source is infrequently operated;

(iii) Alternative monitoring requirements to accommodate CEMS that require additional measurements to correct for stack moisture conditions;

(iv) Alternative locations for installing CMS when the owner or operator can demonstrate that installation at alternate locations will enable accurate and representative measurements;

(v) Alternate methods for converting pollutant concentration measurements to units of the relevant standard;

(vi) Alternate procedures for performing daily checks of zero (low-level) and high-level drift that do not involve use of high-level gases or test cells;

(vii) Alternatives to the American Society for Testing and Materials (ASTM) test methods or sampling procedures specified by any relevant standard;

(viii) Alternative CMS that do not meet the design or performance requirements in this part, but adequately demonstrate a definite and consistent relationship between their measurements and the measurements of opacity by a system complying with the requirements as specified in the relevant standard. The Administrator may require that such demonstration be performed for each affected source; or

(ix) Alternative monitoring requirements when the effluent from a single affected source or the combined effluent from two or more affected sources is released to the atmosphere through more than one point.

(3) If the Administrator finds reasonable grounds to dispute the results obtained by an alternative monitoring method, requirement, or procedure, the Administrator may require the use of a method, requirement, or procedure specified in this section or in the relevant standard. If the results of the specified and alternative method, requirement, or procedure do not agree, the results obtained by the specified method, requirement, or procedure shall prevail.

(4)(i) *Request to use alternative monitoring procedure.* An owner or operator who wishes to use an alternative monitoring procedure must submit an application to the Administrator as described in paragraph (f)(4)(ii) of this section. The application may be submitted at any time provided that the monitoring procedure is not the performance test method used to demonstrate compliance with a relevant standard or other requirement. If the alternative monitoring procedure will serve as the performance test method that is to be used to demonstrate compliance with a relevant standard, the application must be submitted at least 60 days before the performance evaluation is scheduled to begin and must meet the requirements for an alternative test method under §63.7(f).

(ii) The application must contain a description of the proposed alternative monitoring system which addresses the four elements contained in the definition of monitoring in §63.2 and a performance evaluation test plan, if required, as specified in paragraph (e)(3) of this section. In addition, the application must include information justifying the owner or operator's request for an alternative monitoring method, such as the technical or economic infeasibility, or the impracticality, of the affected source using the required method.

(iii) The owner or operator may submit the information required in this paragraph well in advance of the submittal dates specified in paragraph (f)(4)(i) above to ensure a timely review by the Administrator in order to meet the compliance demonstration date specified in this section or the relevant standard.

(iv) Application for minor changes to monitoring procedures, as specified in paragraph (b)(1) of this section, may be made in the site-specific performance evaluation plan.

(5) *Approval of request to use alternative monitoring procedure.* (i) The Administrator will notify the owner or operator of approval or intention to deny approval of the request to use an alternative monitoring method within 30 calendar days after receipt of the original request and within 30 calendar days after receipt of any supplementary information that is submitted. If a request for a minor change is made in conjunction with site-specific performance evaluation plan, then approval of the plan will constitute approval of the minor change. Before disapproving any request to use an alternative monitoring method, the Administrator will notify the applicant of the Administrator's intention to disapprove the request together with—

(A) Notice of the information and findings on which the intended disapproval is based; and

(B) Notice of opportunity for the owner or operator to present additional information to the Administrator before final action on the request. At the time the Administrator notifies the applicant of his or her intention to disapprove the request, the Administrator will specify how much time the owner or operator will have after being notified of the intended disapproval to submit the additional information.

(ii) The Administrator may establish general procedures and criteria in a relevant standard to accomplish the requirements of paragraph (f)(5)(i) of this section.

(iii) If the Administrator approves the use of an alternative monitoring method for an affected source under paragraph (f)(5)(i) of this section, the owner or operator of such source shall continue to use the alternative monitoring method until he or she receives approval from the Administrator to use another monitoring method as allowed by §63.8(f).

(6) *Alternative to the relative accuracy test.* An alternative to the relative accuracy test for CEMS specified in a relevant standard may be requested as follows:

(i) *Criteria for approval of alternative procedures.* An alternative to the test method for determining relative accuracy is available for affected sources with emission rates demonstrated to be less than 50 percent of the relevant standard. The owner or operator of an affected source may petition the Administrator under paragraph (f)(6)(ii) of this section to substitute the relative accuracy test in section 7 of Performance Specification 2 with the procedures in section 10 if the results of a performance test conducted according to the requirements in §63.7, or other tests performed following the criteria in §63.7, demonstrate that the emission rate of the pollutant of interest in the units of the relevant standard is less than 50 percent of the relevant standard. For affected sources subject to emission limitations expressed as control efficiency levels, the owner or operator may petition the Administrator to substitute the relative accuracy test with the procedures in section 10 of Performance Specification 2 if the control device exhaust emission rate is less than 50 percent of the level needed to meet the control efficiency requirement. The alternative procedures do not apply if the CEMS is used continuously to determine compliance with the relevant standard.

(ii) *Petition to use alternative to relative accuracy test.* The petition to use an alternative to the relative accuracy test shall include a detailed description of the procedures to be applied, the location and the procedure for conducting the alternative, the concentration or response levels of the alternative relative accuracy materials, and the other equipment checks included in the alternative procedure(s). The Administrator will review the petition for completeness and applicability. The Administrator's determination to approve an alternative will depend on the intended use of the CEMS data and may require specifications more stringent than in Performance Specification 2.

(iii) *Rescission of approval to use alternative to relative accuracy test.* The Administrator will review the permission to use an alternative to the CEMS relative accuracy test and may rescind such permission if the CEMS data from a successful completion of the alternative relative accuracy procedure indicate that the affected source's emissions are approaching the level of the relevant standard. The criterion for reviewing the permission is that the collection of CEMS data shows that emissions have exceeded 70 percent of the relevant standard for any averaging period, as specified in the relevant standard. For affected sources subject to emission limitations expressed as control efficiency levels, the criterion for reviewing the permission is that the collection of CEMS data shows that exhaust emissions have exceeded 70 percent of the level needed to meet the control efficiency requirement for any averaging period, as specified in the relevant standard. The owner or operator of the affected source shall maintain records and determine the level of emissions relative to the criterion for permission to use an alternative for relative accuracy testing. If this criterion is exceeded, the owner or operator shall notify the Administrator within 10 days of such occurrence and include a description of the nature and cause of the increased emissions. The Administrator will review the notification and may rescind permission to use an alternative and require the owner or operator to conduct a relative accuracy test of the CEMS as specified in section 7 of Performance Specification 2. The Administrator will review the notification and may rescind permission to use an alternative and require the owner or operator to conduct a relative accuracy test of the CEMS as specified in section 8.4 of Performance Specification 2.

(g) *Reduction of monitoring data.* (1) The owner or operator of each CMS must reduce the monitoring data as specified in paragraphs (g)(1) through (5) of this section.

(2) The owner or operator of each COMS shall reduce all data to 6-minute averages calculated from 36 or more data points equally spaced over each 6-minute period. Data from CEMS for measurement other than opacity, unless otherwise specified in the relevant standard, shall be reduced to 1-hour averages computed from four or more data points equally spaced over each 1-hour period, except during periods when calibration, quality assurance, or maintenance activities pursuant to provisions of this part are being performed. During these periods, a valid hourly average shall consist of at least two data points with each representing a 15-minute period. Alternatively, an arithmetic or integrated 1-hour average of CEMS data may be used. Time periods for averaging are defined in §63.2.

(3) The data may be recorded in reduced or nonreduced form (e.g., ppm pollutant and percent O_2 or ng/J of pollutant).

(4) All emission data shall be converted into units of the relevant standard for reporting purposes using the conversion procedures specified in that standard. After conversion into units of the relevant standard, the data may be rounded to the same number of significant digits as used in that standard to specify the emission limit (e.g., rounded to the nearest 1 percent opacity).

(5) Monitoring data recorded during periods of unavoidable CMS breakdowns, out-of-control periods, repairs, maintenance periods, calibration checks, and zero (low-level) and high-level adjustments must not be included in any data average computed under this part. For the owner or operator complying with the requirements of §63.10(b)(2)(vii)(A) or (B), data averages must include any data recorded during periods of monitor breakdown or malfunction.

[59 FR 12430, Mar. 16, 1994, as amended at 64 FR 7468, Feb. 12, 1999; 67 FR 16603, Apr. 5, 2002; 71 FR 20455, Apr. 20, 2006; 79 FR 11277, Feb. 27, 2014]

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§63.9 Notification requirements.

(a) *Applicability and general information.* (1) The applicability of this section is set out in §63.1(a)(4).

(2) For affected sources that have been granted an extension of compliance under subpart D of this part, the requirements of this section do not apply to those sources while they are operating under such compliance extensions.

(3) If any State requires a notice that contains all the information required in a notification listed in this section, the owner or operator may send the Administrator a copy of the notice sent to the State to satisfy the requirements of this section for that notification.

(4)(i) Before a State has been delegated the authority to implement and enforce notification requirements established under this part, the owner or operator of an affected source in such State subject to such requirements shall submit notifications to the appropriate Regional Office of the EPA (to the attention of the Director of the Division indicated in the list of the EPA Regional Offices in §63.13).

(ii) After a State has been delegated the authority to implement and enforce notification requirements established under this part, the owner or operator of an affected source in such State subject to such requirements shall submit notifications to the delegated State authority (which may be the same as the permitting authority). In addition, if the delegated (permitting) authority is the State, the owner or operator shall send a copy of each notification submitted to the State to the appropriate Regional Office of the EPA, as specified in paragraph (a)(4)(i) of this section. The Regional Office may waive this requirement for any notifications at its discretion.

(b) *Initial notifications.* (1)(i) The requirements of this paragraph apply to the owner or operator of an affected source when such source becomes subject to a relevant standard.

(ii) If an area source that otherwise would be subject to an emission standard or other requirement established under this part if it were a major source subsequently increases its emissions of hazardous air pollutants (or its potential to emit hazardous air pollutants) such that the source is a major source that is subject to the emission standard or other requirement, such source shall be subject to the notification requirements of this section.

(iii) Affected sources that are required under this paragraph to submit an initial notification may use the application for approval of construction or reconstruction under §63.5(d) of this subpart, if relevant, to fulfill the initial notification requirements of this paragraph.

(2) The owner or operator of an affected source that has an initial startup before the effective date of a relevant standard under this part shall notify the Administrator in writing that the source is subject to the relevant standard. The notification, which shall be submitted not later than 120 calendar days after the effective date of the relevant standard (or within 120 calendar days after the source becomes subject to the relevant standard), shall provide the following information:

(i) The name and address of the owner or operator;

(ii) The address (i.e., physical location) of the affected source;

(iii) An identification of the relevant standard, or other requirement, that is the basis of the notification and the source's compliance date;

(iv) A brief description of the nature, size, design, and method of operation of the source and an identification of the types of emission points within the affected source subject to the relevant standard and types of hazardous air pollutants emitted; and

(v) A statement of whether the affected source is a major source or an area source.

(3) [Reserved]

(4) The owner or operator of a new or reconstructed major affected source for which an application for approval of construction or reconstruction is required under §63.5(d) must provide the following information in writing to the Administrator:

(i) A notification of intention to construct a new major-emitting affected source, reconstruct a major-emitting affected source, or reconstruct a major source such that the source becomes a major-emitting affected source with the application for approval of construction or reconstruction as specified in §63.5(d)(1)(i); and

(ii)-(iv) [Reserved]

(v) A notification of the actual date of startup of the source, delivered or postmarked within 15 calendar days after that date.

(5) The owner or operator of a new or reconstructed affected source for which an application for approval of construction or reconstruction is not required under §63.5(d) must provide the following information in writing to the Administrator:

(i) A notification of intention to construct a new affected source, reconstruct an affected source, or reconstruct a source such that the source becomes an affected source, and

(ii) A notification of the actual date of startup of the source, delivered or postmarked within 15 calendar days after that date.

(iii) Unless the owner or operator has requested and received prior permission from the Administrator to submit less than the information in §63.5(d), the notification must include the information required on the application for approval of construction or reconstruction as specified in §63.5(d)(1)(i).

(c) *Request for extension of compliance.* If the owner or operator of an affected source cannot comply with a relevant standard by the applicable compliance date for that source, or if the owner or operator has installed BACT or technology to meet LAER consistent with §63.6(i)(5) of this subpart, he/she may submit to the Administrator (or the State with an approved permit program) a request for an extension of compliance as specified in §63.6(i)(4) through §63.6(i)(6).

(d) *Notification that source is subject to special compliance requirements.* An owner or operator of a new source that is subject to special compliance requirements as specified in §63.6(b)(3) and §63.6(b)(4) shall notify the Administrator of his/her compliance obligations not later than the notification dates established in paragraph (b) of this section for new sources that are not subject to the special provisions.

(e) *Notification of performance test.* The owner or operator of an affected source shall notify the Administrator in writing of his or her intention to conduct a performance test at least 60 calendar days before the performance test is scheduled to begin to allow the Administrator to review and approve the site-specific test plan required under §63.7(c), if requested by the Administrator, and to have an observer present during the test.

(f) *Notification of opacity and visible emission observations.* The owner or operator of an affected source shall notify the Administrator in writing of the anticipated date for conducting the opacity or visible emission observations specified in §63.6(h)(5), if such observations are required for the source by a relevant standard. The notification shall be submitted with the notification of the performance test date, as specified in paragraph (e) of this section, or if no performance test is required or visibility or other conditions prevent the opacity or visible emission observations from being conducted concurrently with the initial performance test required under §63.7, the owner or operator shall deliver or postmark the notification not less than 30 days before the opacity or visible emission observations are scheduled to take place.

(g) *Additional notification requirements for sources with continuous monitoring systems.* The owner or operator of an affected source required to use a CMS by a relevant standard shall furnish the Administrator written notification as follows:

(1) A notification of the date the CMS performance evaluation under §63.8(e) is scheduled to begin, submitted simultaneously with the notification of the performance test date required under §63.7(b). If no performance test is required, or if the requirement to conduct a performance test has been waived for an affected source under §63.7(h), the owner or operator shall notify the Administrator in writing of the date of the performance evaluation at least 60 calendar days before the evaluation is scheduled to begin;

(2) A notification that COMS data results will be used to determine compliance with the applicable opacity emission standard during a performance test required by §63.7 in lieu of Method 9 or other opacity emissions test method data, as allowed by §63.6(h)(7)(ii), if compliance with an opacity emission standard is required for the source by a relevant standard. The notification shall be submitted at least 60 calendar days before the performance test is scheduled to begin; and

(3) A notification that the criterion necessary to continue use of an alternative to relative accuracy testing, as provided by §63.8(f)(6), has been exceeded. The notification shall be delivered or postmarked not later than 10 days after the occurrence of such exceedance, and it shall include a description of the nature and cause of the increased emissions.

(h) *Notification of compliance status.* (1) The requirements of paragraphs (h)(2) through (h)(4) of this section apply when an affected source becomes subject to a relevant standard.

(2)(i) Before a title V permit has been issued to the owner or operator of an affected source, and each time a notification of compliance status is required under this part, the owner or operator of such source shall submit to the

Administrator a notification of compliance status, signed by the responsible official who shall certify its accuracy, attesting to whether the source has complied with the relevant standard. The notification shall list—

(A) The methods that were used to determine compliance;

(B) The results of any performance tests, opacity or visible emission observations, continuous monitoring system (CMS) performance evaluations, and/or other monitoring procedures or methods that were conducted;

(C) The methods that will be used for determining continuing compliance, including a description of monitoring and reporting requirements and test methods;

(D) The type and quantity of hazardous air pollutants emitted by the source (or surrogate pollutants if specified in the relevant standard), reported in units and averaging times and in accordance with the test methods specified in the relevant standard;

(E) If the relevant standard applies to both major and area sources, an analysis demonstrating whether the affected source is a major source (using the emissions data generated for this notification);

(F) A description of the air pollution control equipment (or method) for each emission point, including each control device (or method) for each hazardous air pollutant and the control efficiency (percent) for each control device (or method); and

(G) A statement by the owner or operator of the affected existing, new, or reconstructed source as to whether the source has complied with the relevant standard or other requirements.

(ii) The notification must be sent before the close of business on the 60th day following the completion of the relevant compliance demonstration activity specified in the relevant standard (unless a different reporting period is specified in the standard, in which case the letter must be sent before the close of business on the day the report of the relevant testing or monitoring results is required to be delivered or postmarked). For example, the notification shall be sent before close of business on the 60th (or other required) day following completion of the initial performance test and again before the close of business on the 60th (or other required) day following the completion of any subsequent required performance test. If no performance test is required but opacity or visible emission observations are required to demonstrate compliance with an opacity or visible emission standard under this part, the notification of compliance status shall be sent before close of business on the 30th day following the completion of opacity or visible emission observations. Notifications may be combined as long as the due date requirement for each notification is met.

(3) After a title V permit has been issued to the owner or operator of an affected source, the owner or operator of such source shall comply with all requirements for compliance status reports contained in the source's title V permit, including reports required under this part. After a title V permit has been issued to the owner or operator of an affected source, and each time a notification of compliance status is required under this part, the owner or operator of such source shall submit the notification of compliance status to the appropriate permitting authority following completion of the relevant compliance demonstration activity specified in the relevant standard.

(4) [Reserved]

(5) If an owner or operator of an affected source submits estimates or preliminary information in the application for approval of construction or reconstruction required in §63.5(d) in place of the actual emissions data or control efficiencies required in paragraphs (d)(1)(ii)(H) and (d)(2) of §63.5, the owner or operator shall submit the actual emissions data and other correct information as soon as available but no later than with the initial notification of compliance status required in this section.

(6) Advice on a notification of compliance status may be obtained from the Administrator.

(i) *Adjustment to time periods or postmark deadlines for submittal and review of required communications.*(1)(i) Until an adjustment of a time period or postmark deadline has been approved by the Administrator under paragraphs (i)(2) and (i)(3) of this section, the owner or operator of an affected source remains strictly subject to the requirements of this part.

(ii) An owner or operator shall request the adjustment provided for in paragraphs (i)(2) and (i)(3) of this section each time he or she wishes to change an applicable time period or postmark deadline specified in this part.

(2) Notwithstanding time periods or postmark deadlines specified in this part for the submittal of information to the Administrator by an owner or operator, or the review of such information by the Administrator, such time periods or deadlines may be changed by mutual agreement between the owner or operator and the Administrator. An owner or operator who wishes to request a change in a time period or postmark deadline for a particular requirement shall request the adjustment in writing as soon as practicable before the subject activity is required to take place. The owner or operator shall include in the request whatever information he or she considers useful to convince the Administrator that an adjustment is warranted.

(3) If, in the Administrator's judgment, an owner or operator's request for an adjustment to a particular time period or postmark deadline is warranted, the Administrator will approve the adjustment. The Administrator will notify the owner or operator in writing of approval or disapproval of the request for an adjustment within 15 calendar days of receiving sufficient information to evaluate the request.

(4) If the Administrator is unable to meet a specified deadline, he or she will notify the owner or operator of any significant delay and inform the owner or operator of the amended schedule.

(j) *Change in information already provided.* Any change in the information already provided under this section shall be provided to the Administrator in writing within 15 calendar days after the change.

[59 FR 12430, Mar. 16, 1994, as amended at 64 FR 7468, Feb. 12, 1999; 67 FR 16604, Apr. 5, 2002; 68 FR 32601, May 30, 2003]

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§63.10 Recordkeeping and reporting requirements.

(a) *Applicability and general information.* (1) The applicability of this section is set out in §63.1(a)(4).

(2) For affected sources that have been granted an extension of compliance under subpart D of this part, the requirements of this section do not apply to those sources while they are operating under such compliance extensions.

(3) If any State requires a report that contains all the information required in a report listed in this section, an owner or operator may send the Administrator a copy of the report sent to the State to satisfy the requirements of this section for that report.

(4)(i) Before a State has been delegated the authority to implement and enforce recordkeeping and reporting requirements established under this part, the owner or operator of an affected source in such State subject to such requirements shall submit reports to the appropriate Regional Office of the EPA (to the attention of the Director of the Division indicated in the list of the EPA Regional Offices in §63.13).

(ii) After a State has been delegated the authority to implement and enforce recordkeeping and reporting requirements established under this part, the owner or operator of an affected source in such State subject to such requirements shall submit reports to the delegated State authority (which may be the same as the permitting authority). In addition, if the delegated (permitting) authority is the State, the owner or operator shall send a copy of each report submitted to the State to the appropriate Regional Office of the EPA, as specified in paragraph (a)(4)(i) of this section. The Regional Office may waive this requirement for any reports at its discretion.

(5) If an owner or operator of an affected source in a State with delegated authority is required to submit periodic reports under this part to the State, and if the State has an established timeline for the submission of periodic reports that is consistent with the reporting frequency(ies) specified for such source under this part, the owner or operator may change the dates by which periodic reports under this part shall be submitted (without changing the frequency of reporting) to be consistent with the State's schedule by mutual agreement between the owner or operator and the State. For each relevant standard established pursuant to section 112 of the Act, the allowance in the previous sentence applies in each State beginning 1 year after the affected source's compliance date for that standard. Procedures governing the implementation of this provision are specified in §63.9(i).

(6) If an owner or operator supervises one or more stationary sources affected by more than one standard established pursuant to section 112 of the Act, he/she may arrange by mutual agreement between the owner or operator and the Administrator (or the State permitting authority) a common schedule on which periodic reports required for each source shall be submitted throughout the year. The allowance in the previous sentence applies in each State beginning 1 year after the latest compliance date for any relevant standard established pursuant to section 112 of the Act for any such affected source(s). Procedures governing the implementation of this provision are specified in §63.9(i).

(7) If an owner or operator supervises one or more stationary sources affected by standards established pursuant to section 112 of the Act (as amended November 15, 1990) and standards set under part 60, part 61, or both such parts of this chapter, he/she may arrange by mutual agreement between the owner or operator and the Administrator (or the State permitting authority) a common schedule on which periodic reports required by each relevant (i.e., applicable) standard shall be submitted throughout the year. The allowance in the previous sentence applies in each State beginning 1 year after the stationary source is required to be in compliance with the relevant section 112 standard, or 1 year after the stationary source is required to be in compliance with the applicable part 60 or part 61 standard, whichever is latest. Procedures governing the implementation of this provision are specified in §63.9(i).

(b) *General recordkeeping requirements.* (1) The owner or operator of an affected source subject to the provisions of this part shall maintain files of all information (including all reports and notifications) required by this part recorded in a form suitable and readily available for expeditious inspection and review. The files shall be retained for at least 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. At a minimum, the most recent 2 years of data shall be retained on site. The remaining 3 years of data may be retained off site. Such files may be maintained on microfilm, on a computer, on computer floppy disks, on magnetic tape disks, or on microfiche.

(2) The owner or operator of an affected source subject to the provisions of this part shall maintain relevant records for such source of—

(i) The occurrence and duration of each startup or shutdown when the startup or shutdown causes the source to exceed any applicable emission limitation in the relevant emission standards;

(ii) The occurrence and duration of each malfunction of operation (i.e., process equipment) or the required air pollution control and monitoring equipment;

(iii) All required maintenance performed on the air pollution control and monitoring equipment;

(iv)(A) Actions taken during periods of startup or shutdown when the source exceeded applicable emission limitations in a relevant standard and when the actions taken are different from the procedures specified in the affected source's startup, shutdown, and malfunction plan (see §63.6(e)(3)); or

(B) Actions taken during periods of malfunction (including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation) when the actions taken are different from the procedures specified in the affected source's startup, shutdown, and malfunction plan (see §63.6(e)(3));

(v) All information necessary, including actions taken, to demonstrate conformance with the affected source's startup, shutdown, and malfunction plan (see §63.6(e)(3)) when all actions taken during periods of startup or shutdown (and the startup or shutdown causes the source to exceed any applicable emission limitation in the relevant emission standards), and malfunction (including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation) are consistent with the procedures specified in such plan. (The information needed to demonstrate conformance with the startup, shutdown, and malfunction plan may be recorded using a "checklist," or some other effective form of recordkeeping, in order to minimize the recordkeeping burden for conforming events);

(vi) Each period during which a CMS is malfunctioning or inoperative (including out-of-control periods);

(vii) All required measurements needed to demonstrate compliance with a relevant standard (including, but not limited to, 15-minute averages of CMS data, raw performance testing measurements, and raw performance evaluation measurements, that support data that the source is required to report);

(A) This paragraph applies to owners or operators required to install a continuous emissions monitoring system (CEMS) where the CEMS installed is automated, and where the calculated data averages do not exclude periods of CEMS breakdown or malfunction. An automated CEMS records and reduces the measured data to the form of the pollutant emission standard through the use of a computerized data acquisition system. In lieu of maintaining a file of all CEMS subhourly measurements as required under paragraph (b)(2)(vii) of this section, the owner or operator shall retain the most recent consecutive three averaging periods of subhourly measurements and a file that contains a hard copy of the data acquisition system algorithm used to reduce the measured data into the reportable form of the standard.

(B) This paragraph applies to owners or operators required to install a CEMS where the measured data is manually reduced to obtain the reportable form of the standard, and where the calculated data averages do not exclude periods of CEMS breakdown or malfunction. In lieu of maintaining a file of all CEMS subhourly measurements as required under paragraph (b)(2)(vii) of this section, the owner or operator shall retain all subhourly measurements for the most recent reporting period. The subhourly measurements shall be retained for 120 days from the date of the most recent summary or excess emission report submitted to the Administrator.

(C) The Administrator or delegated authority, upon notification to the source, may require the owner or operator to maintain all measurements as required by paragraph (b)(2)(vii), if the administrator or the delegated authority determines these records are required to more accurately assess the compliance status of the affected source.

(viii) All results of performance tests, CMS performance evaluations, and opacity and visible emission observations;

(ix) All measurements as may be necessary to determine the conditions of performance tests and performance evaluations;

(x) All CMS calibration checks;

(xi) All adjustments and maintenance performed on CMS;

(xii) Any information demonstrating whether a source is meeting the requirements for a waiver of recordkeeping or reporting requirements under this part, if the source has been granted a waiver under paragraph (f) of this section;

(xiii) All emission levels relative to the criterion for obtaining permission to use an alternative to the relative accuracy test, if the source has been granted such permission under §63.8(f)(6); and

(xiv) All documentation supporting initial notifications and notifications of compliance status under §63.9.

(3) *Recordkeeping requirement for applicability determinations.* If an owner or operator determines that his or her stationary source that emits (or has the potential to emit, without considering controls) one or more hazardous air pollutants regulated by any standard established pursuant to section 112(d) or (f), and that stationary source is in the source category regulated by the relevant standard, but that source is not subject to the relevant standard (or other requirement established under this part) because of limitations on the source's potential to emit or an exclusion, the owner or operator must keep a record of the applicability determination on site at the source for a period of 5 years after the determination, or until the source changes its operations to become an affected source, whichever comes first. The record of the applicability determination must be signed by the person making the determination and include an analysis (or other information) that demonstrates why the owner or operator believes the source is unaffected (e.g., because the source is an area source). The analysis (or other information) must be sufficiently detailed to allow the Administrator to make a finding about the source's applicability status with regard to the relevant standard or other requirement. If relevant, the analysis must be performed in accordance with requirements established in relevant subparts of this part for this purpose for particular categories of stationary sources. If relevant, the analysis should be performed in accordance with EPA guidance materials published to assist sources in making applicability determinations under section 112, if any. The requirements to determine applicability of a standard under §63.1(b)(3) and to record the results of that determination under paragraph (b)(3) of this section shall not by themselves create an obligation for the owner or operator to obtain a title V permit.

(c) *Additional recordkeeping requirements for sources with continuous monitoring systems.* In addition to complying with the requirements specified in paragraphs (b)(1) and (b)(2) of this section, the owner or operator of an affected source required to install a CMS by a relevant standard shall maintain records for such source of—

(1) All required CMS measurements (including monitoring data recorded during unavoidable CMS breakdowns and out-of-control periods);

(2)-(4) [Reserved]

(5) The date and time identifying each period during which the CMS was inoperative except for zero (low-level) and high-level checks;

(6) The date and time identifying each period during which the CMS was out of control, as defined in §63.8(c)(7);

(7) The specific identification (i.e., the date and time of commencement and completion) of each period of excess emissions and parameter monitoring exceedances, as defined in the relevant standard(s), that occurs during startups, shutdowns, and malfunctions of the affected source;

(8) The specific identification (i.e., the date and time of commencement and completion) of each time period of excess emissions and parameter monitoring exceedances, as defined in the relevant standard(s), that occurs during periods other than startups, shutdowns, and malfunctions of the affected source;

(9) [Reserved]

(10) The nature and cause of any malfunction (if known);

(11) The corrective action taken or preventive measures adopted;

(12) The nature of the repairs or adjustments to the CMS that was inoperative or out of control;

(13) The total process operating time during the reporting period; and

(14) All procedures that are part of a quality control program developed and implemented for CMS under §63.8(d).

(15) In order to satisfy the requirements of paragraphs (c)(10) through (c)(12) of this section and to avoid duplicative recordkeeping efforts, the owner or operator may use the affected source's startup, shutdown, and malfunction plan or records kept to satisfy the recordkeeping requirements of the startup, shutdown, and malfunction plan specified in §63.6(e), provided that such plan and records adequately address the requirements of paragraphs (c)(10) through (c)(12).

(d) *General reporting requirements.* (1) Notwithstanding the requirements in this paragraph or paragraph (e) of this section, and except as provided in §63.16, the owner or operator of an affected source subject to reporting requirements under this part shall submit reports to the Administrator in accordance with the reporting requirements in the relevant standard(s).

(2) *Reporting results of performance tests.* Before a title V permit has been issued to the owner or operator of an affected source, the owner or operator shall report the results of any performance test under §63.7 to the Administrator. After a title V permit has been issued to the owner or operator of an affected source, the owner or operator shall report the results of a required performance test to the appropriate permitting authority. The owner or operator of an affected source shall report the results of the performance test to the Administrator (or the State with an approved permit program) before the close of business on the 60th day following the completion of the performance test, unless specified otherwise in a relevant standard or as approved otherwise in writing by the Administrator. The results of the performance test shall be submitted as part of the notification of compliance status required under §63.9(h).

(3) *Reporting results of opacity or visible emission observations.* The owner or operator of an affected source required to conduct opacity or visible emission observations by a relevant standard shall report the opacity or visible emission results (produced using Test Method 9 or Test Method 22, or an alternative to these test methods) along with the results of the performance test required under §63.7. If no performance test is required, or if visibility or other conditions prevent the opacity or visible emission observations from being conducted concurrently with the performance test required under §63.7, the owner or operator shall report the opacity or visible emission results before the close of business on the 30th day following the completion of the opacity or visible emission observations.

(4) *Progress reports.* The owner or operator of an affected source who is required to submit progress reports as a condition of receiving an extension of compliance under §63.6(i) shall submit such reports to the Administrator (or the State with an approved permit program) by the dates specified in the written extension of compliance.

(5)(i) *Periodic startup, shutdown, and malfunction reports.* If actions taken by an owner or operator during a startup or shutdown (and the startup or shutdown causes the source to exceed any applicable emission limitation in the relevant emission standards), or malfunction of an affected source (including actions taken to correct a malfunction) are consistent with the procedures specified in the source's startup, shutdown, and malfunction plan (see §63.6(e)(3)), the owner or operator shall state such information in a startup, shutdown, and malfunction report. Actions taken to minimize emissions during such startups, shutdowns, and malfunctions shall be summarized in the report and may be done in checklist form; if actions taken are the same for each event, only one checklist is necessary. Such a report shall also include the number, duration, and a brief description for each type of malfunction which occurred during the reporting period and which caused or may have caused any applicable emission limitation to be exceeded. Reports shall only be required if a startup or shutdown caused the source to exceed any applicable emission limitation in the relevant emission standards, or if a malfunction occurred during the reporting period. The startup, shutdown, and malfunction report shall consist of a letter, containing the name, title, and signature of the owner or operator or other responsible official who is certifying its accuracy, that shall be submitted to the Administrator semiannually (or on a more frequent basis if specified otherwise in a relevant standard or as established otherwise by the permitting authority in the source's title V permit). The startup, shutdown, and malfunction report shall be delivered or postmarked by the 30th day following the end of each calendar half (or other calendar reporting period, as appropriate). If the owner or operator is required to submit excess emissions and continuous monitoring system performance (or other periodic) reports under this part, the startup, shutdown, and malfunction reports required under this paragraph may be submitted simultaneously with the excess emissions and continuous monitoring system performance (or other) reports. If startup, shutdown, and malfunction reports are submitted with excess emissions and continuous monitoring system performance (or other periodic) reports, and the owner or operator receives approval to reduce the frequency of reporting for the latter under paragraph (e) of this section, the frequency of reporting for the startup, shutdown, and malfunction reports

also may be reduced if the Administrator does not object to the intended change. The procedures to implement the allowance in the preceding sentence shall be the same as the procedures specified in paragraph (e)(3) of this section.

(ii) *Immediate startup, shutdown, and malfunction reports.* Notwithstanding the allowance to reduce the frequency of reporting for periodic startup, shutdown, and malfunction reports under paragraph (d)(5)(i) of this section, any time an action taken by an owner or operator during a startup or shutdown that caused the source to exceed any applicable emission limitation in the relevant emission standards, or malfunction (including actions taken to correct a malfunction) is not consistent with the procedures specified in the affected source's startup, shutdown, and malfunction plan, the owner or operator shall report the actions taken for that event within 2 working days after commencing actions inconsistent with the plan followed by a letter within 7 working days after the end of the event. The immediate report required under this paragraph (d)(5)(ii) shall consist of a telephone call (or facsimile (FAX) transmission) to the Administrator within 2 working days after commencing actions inconsistent with the plan, and it shall be followed by a letter, delivered or postmarked within 7 working days after the end of the event, that contains the name, title, and signature of the owner or operator or other responsible official who is certifying its accuracy, explaining the circumstances of the event, the reasons for not following the startup, shutdown, and malfunction plan, describing all excess emissions and/or parameter monitoring exceedances which are believed to have occurred (or could have occurred in the case of malfunctions), and actions taken to minimize emissions in conformance with §63.6(e)(1)(i). Notwithstanding the requirements of the previous sentence, after the effective date of an approved permit program in the State in which an affected source is located, the owner or operator may make alternative reporting arrangements, in advance, with the permitting authority in that State. Procedures governing the arrangement of alternative reporting requirements under this paragraph (d)(5)(ii) are specified in §63.9(i).

(e) *Additional reporting requirements for sources with continuous monitoring systems*—(1) *General.* When more than one CEMS is used to measure the emissions from one affected source (e.g., multiple breechings, multiple outlets), the owner or operator shall report the results as required for each CEMS.

(2) *Reporting results of continuous monitoring system performance evaluations.* (i) The owner or operator of an affected source required to install a CMS by a relevant standard shall furnish the Administrator a copy of a written report of the results of the CMS performance evaluation, as required under §63.8(e), simultaneously with the results of the performance test required under §63.7, unless otherwise specified in the relevant standard.

(ii) The owner or operator of an affected source using a COMS to determine opacity compliance during any performance test required under §63.7 and described in §63.6(d)(6) shall furnish the Administrator two or, upon request, three copies of a written report of the results of the COMS performance evaluation conducted under §63.8(e). The copies shall be furnished at least 15 calendar days before the performance test required under §63.7 is conducted.

(3) *Excess emissions and continuous monitoring system performance report and summary report.* (i) Excess emissions and parameter monitoring exceedances are defined in relevant standards. The owner or operator of an affected source required to install a CMS by a relevant standard shall submit an excess emissions and continuous monitoring system performance report and/or a summary report to the Administrator semiannually, except when—

(A) More frequent reporting is specifically required by a relevant standard;

(B) The Administrator determines on a case-by-case basis that more frequent reporting is necessary to accurately assess the compliance status of the source; or

(C) [Reserved]

(D) The affected source is complying with the Performance Track Provisions of §63.16, which allows less frequent reporting.

(ii) *Request to reduce frequency of excess emissions and continuous monitoring system performance reports.* Notwithstanding the frequency of reporting requirements specified in paragraph (e)(3)(i) of this section, an owner or operator who is required by a relevant standard to submit excess emissions and continuous monitoring

system performance (and summary) reports on a quarterly (or more frequent) basis may reduce the frequency of reporting for that standard to semiannual if the following conditions are met:

(A) For 1 full year (e.g., 4 quarterly or 12 monthly reporting periods) the affected source's excess emissions and continuous monitoring system performance reports continually demonstrate that the source is in compliance with the relevant standard;

(B) The owner or operator continues to comply with all recordkeeping and monitoring requirements specified in this subpart and the relevant standard; and

(C) The Administrator does not object to a reduced frequency of reporting for the affected source, as provided in paragraph (e)(3)(iii) of this section.

(iii) The frequency of reporting of excess emissions and continuous monitoring system performance (and summary) reports required to comply with a relevant standard may be reduced only after the owner or operator notifies the Administrator in writing of his or her intention to make such a change and the Administrator does not object to the intended change. In deciding whether to approve a reduced frequency of reporting, the Administrator may review information concerning the source's entire previous performance history during the 5-year recordkeeping period prior to the intended change, including performance test results, monitoring data, and evaluations of an owner or operator's conformance with operation and maintenance requirements. Such information may be used by the Administrator to make a judgment about the source's potential for noncompliance in the future. If the Administrator disapproves the owner or operator's request to reduce the frequency of reporting, the Administrator will notify the owner or operator in writing within 45 days after receiving notice of the owner or operator's intention. The notification from the Administrator to the owner or operator will specify the grounds on which the disapproval is based. In the absence of a notice of disapproval within 45 days, approval is automatically granted.

(iv) As soon as CMS data indicate that the source is not in compliance with any emission limitation or operating parameter specified in the relevant standard, the frequency of reporting shall revert to the frequency specified in the relevant standard, and the owner or operator shall submit an excess emissions and continuous monitoring system performance (and summary) report for the noncomplying emission points at the next appropriate reporting period following the noncomplying event. After demonstrating ongoing compliance with the relevant standard for another full year, the owner or operator may again request approval from the Administrator to reduce the frequency of reporting for that standard, as provided for in paragraphs (e)(3)(ii) and (e)(3)(iii) of this section.

(v) *Content and submittal dates for excess emissions and monitoring system performance reports.* All excess emissions and monitoring system performance reports and all summary reports, if required, shall be delivered or postmarked by the 30th day following the end of each calendar half or quarter, as appropriate. Written reports of excess emissions or exceedances of process or control system parameters shall include all the information required in paragraphs (c)(5) through (c)(13) of this section, in §§63.8(c)(7) and 63.8(c)(8), and in the relevant standard, and they shall contain the name, title, and signature of the responsible official who is certifying the accuracy of the report. When no excess emissions or exceedances of a parameter have occurred, or a CMS has not been inoperative, out of control, repaired, or adjusted, such information shall be stated in the report.

(vi) *Summary report.* As required under paragraphs (e)(3)(vii) and (e)(3)(viii) of this section, one summary report shall be submitted for the hazardous air pollutants monitored at each affected source (unless the relevant standard specifies that more than one summary report is required, e.g., one summary report for each hazardous air pollutant monitored). The summary report shall be entitled "Summary Report—Gaseous and Opacity Excess Emission and Continuous Monitoring System Performance" and shall contain the following information:

(A) The company name and address of the affected source;

(B) An identification of each hazardous air pollutant monitored at the affected source;

(C) The beginning and ending dates of the reporting period;

(D) A brief description of the process units;

(E) The emission and operating parameter limitations specified in the relevant standard(s);

(F) The monitoring equipment manufacturer(s) and model number(s);

(G) The date of the latest CMS certification or audit;

(H) The total operating time of the affected source during the reporting period;

(I) An emission data summary (or similar summary if the owner or operator monitors control system parameters), including the total duration of excess emissions during the reporting period (recorded in minutes for opacity and hours for gases), the total duration of excess emissions expressed as a percent of the total source operating time during that reporting period, and a breakdown of the total duration of excess emissions during the reporting period into those that are due to startup/shutdown, control equipment problems, process problems, other known causes, and other unknown causes;

(J) A CMS performance summary (or similar summary if the owner or operator monitors control system parameters), including the total CMS downtime during the reporting period (recorded in minutes for opacity and hours for gases), the total duration of CMS downtime expressed as a percent of the total source operating time during that reporting period, and a breakdown of the total CMS downtime during the reporting period into periods that are due to monitoring equipment malfunctions, nonmonitoring equipment malfunctions, quality assurance/quality control calibrations, other known causes, and other unknown causes;

(K) A description of any changes in CMS, processes, or controls since the last reporting period;

(L) The name, title, and signature of the responsible official who is certifying the accuracy of the report; and

(M) The date of the report.

(vii) If the total duration of excess emissions or process or control system parameter exceedances for the reporting period is less than 1 percent of the total operating time for the reporting period, and CMS downtime for the reporting period is less than 5 percent of the total operating time for the reporting period, only the summary report shall be submitted, and the full excess emissions and continuous monitoring system performance report need not be submitted unless required by the Administrator.

(viii) If the total duration of excess emissions or process or control system parameter exceedances for the reporting period is 1 percent or greater of the total operating time for the reporting period, or the total CMS downtime for the reporting period is 5 percent or greater of the total operating time for the reporting period, both the summary report and the excess emissions and continuous monitoring system performance report shall be submitted.

(4) *Reporting continuous opacity monitoring system data produced during a performance test.* The owner or operator of an affected source required to use a COMS shall record the monitoring data produced during a performance test required under §63.7 and shall furnish the Administrator a written report of the monitoring results. The report of COMS data shall be submitted simultaneously with the report of the performance test results required in paragraph (d)(2) of this section.

(f) *Waiver of recordkeeping or reporting requirements.* (1) Until a waiver of a recordkeeping or reporting requirement has been granted by the Administrator under this paragraph, the owner or operator of an affected source remains subject to the requirements of this section.

(2) Recordkeeping or reporting requirements may be waived upon written application to the Administrator if, in the Administrator's judgment, the affected source is achieving the relevant standard(s), or the source is operating under an extension of compliance, or the owner or operator has requested an extension of compliance and the Administrator is still considering that request.

(3) If an application for a waiver of recordkeeping or reporting is made, the application shall accompany the request for an extension of compliance under §63.6(i), any required compliance progress report or compliance status report required under this part (such as under §§63.6(i) and 63.9(h)) or in the source's title V permit, or an excess emissions and continuous monitoring system performance report required under paragraph (e) of this section, whichever is applicable. The application shall include whatever information the owner or operator considers useful to convince the Administrator that a waiver of recordkeeping or reporting is warranted.

(4) The Administrator will approve or deny a request for a waiver of recordkeeping or reporting requirements under this paragraph when he/she—

(i) Approves or denies an extension of compliance; or

(ii) Makes a determination of compliance following the submission of a required compliance status report or excess emissions and continuous monitoring systems performance report; or

(iii) Makes a determination of suitable progress towards compliance following the submission of a compliance progress report, whichever is applicable.

(5) A waiver of any recordkeeping or reporting requirement granted under this paragraph may be conditioned on other recordkeeping or reporting requirements deemed necessary by the Administrator.

(6) Approval of any waiver granted under this section shall not abrogate the Administrator's authority under the Act or in any way prohibit the Administrator from later canceling the waiver. The cancellation will be made only after notice is given to the owner or operator of the affected source.

[59 FR 12430, Mar. 16, 1994, as amended at 64 FR 7468, Feb. 12, 1999; 67 FR 16604, Apr. 5, 2002; 68 FR 32601, May 30, 2003; 69 FR 21752, Apr. 22, 2004; 71 FR 20455, Apr. 20, 2006]

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§63.11 Control device and work practice requirements.

(a) *Applicability.* (1) The applicability of this section is set out in §63.1(a)(4).

(2) This section contains requirements for control devices used to comply with applicable subparts of this part. The requirements are placed here for administrative convenience and apply only to facilities covered by subparts referring to this section.

(3) This section also contains requirements for an alternative work practice used to identify leaking equipment. This alternative work practice is placed here for administrative convenience and is available to all subparts in 40 CFR parts 60, 61, 63, and 65 that require monitoring of equipment with a 40 CFR part 60, appendix A-7, Method 21 monitor.

(b) *Flares.* (1) Owners or operators using flares to comply with the provisions of this part shall monitor these control devices to assure that they are operated and maintained in conformance with their designs. Applicable subparts will provide provisions stating how owners or operators using flares shall monitor these control devices.

(2) Flares shall be steam-assisted, air-assisted, or non-assisted.

(3) Flares shall be operated at all times when emissions may be vented to them.

(4) Flares shall be designed for and operated with no visible emissions, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours. Test Method 22 in appendix A of part 60 of this chapter shall be used to determine the compliance of flares with the visible emission provisions of this part. The observation period is 2 hours and shall be used according to Method 22.

(5) Flares shall be operated with a flame present at all times. The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame.

(6) An owner/operator has the choice of adhering to the heat content specifications in paragraph (b)(6)(ii) of this section, and the maximum tip velocity specifications in paragraph (b)(7) or (b)(8) of this section, or adhering to the requirements in paragraph (b)(6)(i) of this section.

(i)(A) Flares shall be used that have a diameter of 3 inches or greater, are nonassisted, have a hydrogen content of 8.0 percent (by volume) or greater, and are designed for and operated with an exit velocity less than 37.2 m/sec (122 ft/sec) and less than the velocity V_{max}, as determined by the following equation:

$V_{max} = (X_{H2} - K_1) * K_2$

Where:

V_{max} = Maximum permitted velocity, m/sec.

K_1 = Constant, 6.0 volume-percent hydrogen.

K_2 = Constant, 3.9(m/sec)/volume-percent hydrogen.

X_{H2} = The volume-percent of hydrogen, on a wet basis, as calculated by using the American Society for Testing and Materials (ASTM) Method D1946-77. (Incorporated by reference as specified in §63.14).

(B) The actual exit velocity of a flare shall be determined by the method specified in paragraph (b)(7)(i) of this section.

(ii) Flares shall be used only with the net heating value of the gas being combusted at 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam-assisted or air-assisted; or with the net heating value of the gas being combusted at 7.45 M/scm (200 Btu/scf) or greater if the flares is non-assisted. The net heating value of the gas being combusted in a flare shall be calculated using the following equation:

$$H_T = K \sum_{i=1}^{n} C_i H_i$$

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Where:

H_i = Net heating value of the sample, MJ/scm; where the net enthalpy per mole of offgas is based on combustion at 25 °C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20 °C.

K = Constant =

$$1.740 \times 10^{-7} \left(\frac{1}{ppmv}\right)\left(\frac{g\text{-}mole}{scm}\right)\left(\frac{MJ}{kcal}\right)$$

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where the standard temperature for (g-mole/scm) is 20 °C.

C_i = Concentration of sample component i in ppmv on a wet basis, as measured for organics by Test Method 18 and measured for hydrogen and carbon monoxide by American Society for Testing and Materials (ASTM) D1946-77 or 90 (Reapproved 1994) (incorporated by reference as specified in §63.14).

H_i = Net heat of combustion of sample component i, kcal/g-mole at 25 °C and 760 mm Hg. The heats of combustion may be determined using ASTM D2382-76 or 88 or D4809-95 (incorporated by reference as specified in §63.14) if published values are not available or cannot be calculated.

n = Number of sample components.

(7)(i) Steam-assisted and nonassisted flares shall be designed for and operated with an exit velocity less than 18.3 m/sec (60 ft/sec), except as provided in paragraphs (b)(7)(ii) and (b)(7)(iii) of this section. The actual exit velocity of a flare shall be determined by dividing by the volumetric flow rate of gas being combusted (in units of emission standard temperature and pressure), as determined by Test Method 2, 2A, 2C, or 2D in appendix A to 40 CFR part 60 of this chapter, as appropriate, by the unobstructed (free) cross-sectional area of the flare tip.

(ii) Steam-assisted and nonassisted flares designed for and operated with an exit velocity, as determined by the method specified in paragraph (b)(7)(i) of this section, equal to or greater than 18.3 m/sec (60 ft/sec) but less than 122 m/sec (400 ft/sec), are allowed if the net heating value of the gas being combusted is greater than 37.3 MJ/scm (1,000 Btu/scf).

(iii) Steam-assisted and nonassisted flares designed for and operated with an exit velocity, as determined by the method specified in paragraph (b)(7)(i) of this section, less than the velocity V_{max}, as determined by the method specified in this paragraph, but less than 122 m/sec (400 ft/sec) are allowed. The maximum permitted velocity, V_{max}, for flares complying with this paragraph shall be determined by the following equation:

$$Log_{10}(V_{max}) = (H_T + 28.8)/31.7$$

Where:

V_{max} = Maximum permitted velocity, m/sec.

28.8 = Constant.

31.7 = Constant.

H_T = The net heating value as determined in paragraph (b)(6) of this section.

(8) Air-assisted flares shall be designed and operated with an exit velocity less than the velocity V_{max}. The maximum permitted velocity, V_{max}, for air-assisted flares shall be determined by the following equation:

$$V_{max} = 8.71 + 0.708(H_T)$$

Where:

V_{max} = Maximum permitted velocity, m/sec.

8.71 = Constant.

0.708 = Constant.

H_T = The net heating value as determined in paragraph (b)(6)(ii) of this section.

(c) *Alternative work practice for monitoring equipment for leaks.* Paragraphs (c), (d), and (e) of this section apply to all equipment for which the applicable subpart requires monitoring with a 40 CFR part 60, appendix A-7, Method 21 monitor, except for closed vent systems, equipment designated as leakless, and equipment identified in the applicable subpart as having no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background. An owner or operator may use an optical gas imaging instrument instead of a 40 CFR part 60, sppendix A-7, Method 21 monitor. Requirements in the existing subparts that are specific to the Method 21 instrument do not apply under this section. All other requirements in the applicable subpart that are not addressed in paragraphs (c), (d), and (e) of this section continue to apply. For example, equipment specification requirements, and non-Method 21 instrument recordkeeping and reporting requirements in the applicable subpart continue to apply. The terms defined in paragraphs (c)(1) through (5) of this section have meanings that are specific to the alternative work practice standard in paragraphs (c), (d), and (e) of this section.

(1) *Applicable subpart* means the subpart in 40 CFR parts 60, 61, 63, and 65 that requires monitoring of equipment with a 40 CFR part 60, appendix A-7, Method 21 monitor.

(2) *Equipment* means pumps, valves, pressure relief valves, compressors, open-ended lines, flanges, connectors, and other equipment covered by the applicable subpart that require monitoring with a 40 CFR part 60, appendix A-7, Method 21 monitor.

(3) *Imaging* means making visible emissions that may otherwise be invisible to the naked eye.

(4) *Optical gas imaging instrument* means an instrument that makes visible emissions that may otherwise be invisible to the naked eye.

(5) *Repair* means that equipment is adjusted, or otherwise altered, in order to eliminate a leak.

(6) *Leak* means:

(i) Any emissions imaged by the optical gas instrument;

(ii) Indications of liquids dripping;

(iii) Indications by a sensor that a seal or barrier fluid system has failed; or

(iv) Screening results using a 40 CFR part 60, appendix A-7, Method 21 monitor that exceed the leak definition in the applicable subpart to which the equipment is subject.

(d) The alternative work practice standard for monitoring equipment for leaks is available to all subparts in 40 CFR parts 60, 61, 63, and 65 that require monitoring of equipment with a 40 CFR part 60, appendix A-7, Method 21 monitor.

(1) An owner or operator of an affected source subject to 40 CFR parts 60, 61, 63, or 65 can choose to comply with the alternative work practice requirements in paragraph (e) of this section instead of using the 40 CFR part 60, appendix A-7, Method 21 monitor to identify leaking equipment. The owner or operator must document the equipment, process units, and facilities for which the alternative work practice will be used to identify leaks.

(2) Any leak detected when following the leak survey procedure in paragraph (e)(3) of this section must be identified for repair as required in the applicable subpart.

(3) If the alternative work practice is used to identify leaks, re-screening after an attempted repair of leaking equipment must be conducted using either the alternative work practice or the 40 CFR part 60, Appendix A-7, Method 21 monitor at the leak definition required in the applicable subparts to which the equipment is subject.

(4) The schedule for repair is as required in the applicable subpart.

(5) When this alternative work practice is used for detecting leaking equipment, choose one of the monitoring frequencies listed in Table 1 to subpart A of this part in lieu of the monitoring frequency specified for regulated equipment in the applicable subpart. Reduced monitoring frequencies for good performance are not applicable when using the alternative work practice.

(6) When this alternative work practice is used for detecting leaking equipment, the following are not applicable for the equipment being monitored:

(i) Skip period leak detection and repair;

(ii) Quality improvement plans; or

(iii) Complying with standards for allowable percentage of valves and pumps to leak.

(7) When the alternative work practice is used to detect leaking equipment, the regulated equipment in paragraph (d)(1)(i) of this section must also be monitored annually using a 40 CFR part 60, Appendix A-7, Method 21 monitor at the leak definition required in the applicable subpart. The owner or operator may choose the specific monitoring period (for example, first quarter) to conduct the annual monitoring. Subsequent monitoring must be conducted every 12 months from the initial period. Owners or operators must keep records of the annual Method 21 screening results, as specified in paragraph (i)(4)(vii) of this section.

(e) An owner or operator of an affected source who chooses to use the alternative work practice must comply with the requirements of paragraphs (e)(1) through (e)(5) of this section.

(1) *Instrument specifications.* The optical gas imaging instrument must comply with the requirements specified in paragraphs (e)(1)(i) and (e)(1)(ii) of this section.

(i) Provide the operator with an image of the potential leak points for each piece of equipment at both the detection sensitivity level and within the distance used in the daily instrument check described in paragraph (e)(2) of this section. The detection sensitivity level depends upon the frequency at which leak monitoring is to be performed.

(ii) Provide a date and time stamp for video records of every monitoring event.

(2) *Daily instrument check.* On a daily basis, and prior to beginning any leak monitoring work, test the optical gas imaging instrument at the mass flow rate determined in paragraph (e)(2)(i) of this section in accordance with the procedure specified in paragraphs (e)(2)(ii) through (e)(2)(iv) of this section for each camera configuration used during monitoring (for example, different lenses used), unless an alternative method to demonstrate daily instrument checks has been approved in accordance with paragraph (e)(2)(v) of this section.

(i) Calculate the mass flow rate to be used in the daily instrument check by following the procedures in paragraphs (e)(2)(i)(A) and (e)(2)(i)(B) of this section.

(A) For a specified population of equipment to be imaged by the instrument, determine the piece of equipment in contact with the lowest mass fraction of chemicals that are detectable, within the distance to be used in paragraph (e)(2)(iv)(B) of this section, at or below the standard detection sensitivity level.

(B) Multiply the standard detection sensitivity level, corresponding to the selected monitoring frequency in Table 1 of subpart A of this part, by the mass fraction of detectable chemicals from the stream identified in paragraph (e)(2)(i)(A) of this section to determine the mass flow rate to be used in the daily instrument check, using the following equation.

$$E_{dic} = (E_{std}) \sum_{i=1}^{k} x_i$$

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Where:

E_{dic} = Mass flow rate for the daily instrument check, grams per hour

x_i = Mass fraction of detectable chemical(s) i seen by the optical gas imaging instrument, within the distance to be used in paragraph (e)(2)(iv)(B) of this section, at or below the standard detection sensitivity level, E_{std}.

E_{std} = Standard detection sensitivity level from Table 1 to subpart A, grams per hour

k = Total number of detectable chemicals emitted from the leaking equipment and seen by the optical gas imaging instrument.

(ii) Start the optical gas imaging instrument according to the manufacturer's instructions, ensuring that all appropriate settings conform to the manufacturer's instructions.

(iii) Use any gas chosen by the user that can be viewed by the optical gas imaging instrument and that has a purity of no less than 98 percent.

(iv) Establish a mass flow rate by using the following procedures:

(A) Provide a source of gas where it will be in the field of view of the optical gas imaging instrument.

(B) Set up the optical gas imaging instrument at a recorded distance from the outlet or leak orifice of the flow meter that will not be exceeded in the actual performance of the leak survey. Do not exceed the operating parameters of the flow meter.

(C) Open the valve on the flow meter to set a flow rate that will create a mass emission rate equal to the mass rate calculated in paragraph (e)(2)(i) of this section while observing the gas flow through the optical gas imaging instrument viewfinder. When an image of the gas emission is seen through the viewfinder at the required emission rate, make a record of the reading on the flow meter.

(v) Repeat the procedures specified in paragraphs (e)(2)(ii) through (e)(2)(iv) of this section for each configuration of the optical gas imaging instrument used during the leak survey.

(vi) To use an alternative method to demonstrate daily instrument checks, apply to the Administrator for approval of the alternative under §63.177 or §63.178, whichever is applicable.

(3) *Leak survey procedure.* Operate the optical gas imaging instrument to image every regulated piece of equipment selected for this work practice in accordance with the instrument manufacturer's operating parameters. All emissions imaged by the optical gas imaging instrument are considered to be leaks and are subject to repair. All emissions visible to the naked eye are also considered to be leaks and are subject to repair.

(4) *Recordkeeping.* Keep the records described in paragraphs (e)(4)(i) through (e)(4)(vii) of this section:

(i) The equipment, processes, and facilities for which the owner or operator chooses to use the alternative work practice.

(ii) The detection sensitivity level selected from Table 1 to subpart A of this part for the optical gas imaging instrument.

(iii) The analysis to determine the piece of equipment in contact with the lowest mass fraction of chemicals that are detectable, as specified in paragraph (e)(2)(i)(A) of this section.

(iv) The technical basis for the mass fraction of detectable chemicals used in the equation in paragraph (e)(2)(i)(B) of this section.

(v) The daily instrument check. Record the distance, per paragraph (e)(2)(iv)(B) of this section, and the flow meter reading, per paragraph (e)(2)(iv)(C) of this section, at which the leak was imaged. Keep a video record of the daily instrument check for each configuration of the optical gas imaging instrument used during the leak survey (for example, the daily instrument check must be conducted for each lens used). The video record must include a time and date stamp for each daily instrument check. The video record must be kept for 5 years.

(vi) *Recordkeeping requirements in the applicable subpart.* A video record must be used to document the leak survey results. The video record must include a time and date stamp for each monitoring event. A video record can be used to meet the recordkeeping requirements of the applicable subparts if each piece of regulated equipment selected for this work practice can be identified in the video record. The video record must be kept for 5 years.

(vii) The results of the annual Method 21 screening required in paragraph (h)(7) of this section. Records must be kept for all regulated equipment specified in paragraph (h)(1) of this section. Records must identify the equipment

screened, the screening value measured by Method 21, the time and date of the screening, and calibration information required in the existing applicable subparts.

(5) *Reporting.* Submit the reports required in the applicable subpart. Submit the records of the annual Method 21 screening required in paragraph (h)(7) of this section to the Administrator via e-mail to *CCG-AWP@EPA.GOV.*

[59 FR 12430, Mar. 16, 1994, as amended at 63 FR 24444, May 4, 1998; 65 FR 62215, Oct. 17, 2000; 67 FR 16605, Apr. 5, 2002; 73 FR 78211, Dec. 22, 2008]

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§63.12 State authority and delegations.

(a) The provisions of this part shall not be construed in any manner to preclude any State or political subdivision thereof from—

(1) Adopting and enforcing any standard, limitation, prohibition, or other regulation applicable to an affected source subject to the requirements of this part, provided that such standard, limitation, prohibition, or regulation is not less stringent than any requirement applicable to such source established under this part;

(2) Requiring the owner or operator of an affected source to obtain permits, licenses, or approvals prior to initiating construction, reconstruction, modification, or operation of such source; or

(3) Requiring emission reductions in excess of those specified in subpart D of this part as a condition for granting the extension of compliance authorized by section 112(i)(5) of the Act.

(b)(1) Section 112(l) of the Act directs the Administrator to delegate to each State, when appropriate, the authority to implement and enforce standards and other requirements pursuant to section 112 for stationary sources located in that State. Because of the unique nature of radioactive material, delegation of authority to implement and enforce standards that control radionuclides may require separate approval.

(2) Subpart E of this part establishes procedures consistent with section 112(l) for the approval of State rules or programs to implement and enforce applicable Federal rules promulgated under the authority of section 112. Subpart E also establishes procedures for the review and withdrawal of section 112 implementation and enforcement authorities granted through a section 112(l) approval.

(c) All information required to be submitted to the EPA under this part also shall be submitted to the appropriate State agency of any State to which authority has been delegated under section 112(l) of the Act, provided that each specific delegation may exempt sources from a certain Federal or State reporting requirement. The Administrator may permit all or some of the information to be submitted to the appropriate State agency only, instead of to the EPA and the State agency.

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§63.13 Addresses of State air pollution control agencies and EPA Regional Offices.

(a) All requests, reports, applications, submittals, and other communications to the Administrator pursuant to this part shall be submitted to the appropriate Regional Office of the U.S. Environmental Protection Agency indicated in the following list of EPA Regional Offices.

EPA Region I (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont), Director, Office of Ecosystem Protection, 5 Post Office Square—Suite 100, Boston, MA 02109-3912.

EPA Region II (New Jersey, New York, Puerto Rico, Virgin Islands), Director, Air and Waste Management Division, 26 Federal Plaza, New York, NY 10278.

EPA Region III (Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia), Director, Air Protection Division, 1650 Arch Street, Philadelphia, PA 19103.

EPA Region IV (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee). Director, Air, Pesticides and Toxics Management Division, Atlanta Federal Center, 61 Forsyth Street, Atlanta, GA 30303-3104.

EPA Region V (Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin), Director, Air and Radiation Division, 77 West Jackson Blvd., Chicago, IL 60604-3507.

EPA Region VI (Arkansas, Louisiana, New Mexico, Oklahoma, Texas), Director, Air, Pesticides and Toxics, 1445 Ross Avenue, Dallas, TX 75202-2733.

EPA Region VII (Iowa, Kansas, Missouri, Nebraska), Director, Air and Waste Management Division, 11201 Renner Boulevard, Lenexa, Kansas 66219.

EPA Region VIII (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming) Director, Air and Toxics Technical Enforcement Program, Office of Enforcement, Compliance and Environmental Justice, Mail Code 8ENF-AT, 1595 Wynkoop Street, Denver, CO 80202-1129.

EPA Region IX (Arizona, California, Hawaii, Nevada; the territories of American Samoa and Guam; the Commonwealth of the Northern Mariana Islands; the territories of Baker Island, Howland Island, Jarvis Island, Johnston Atoll, Kingman Reef, Midway Atoll, Palmyra Atoll, and Wake Islands; and certain U.S. Government activities in the freely associated states of the Republic of the Marshall Islands, the Federated States of Micronesia, and the Republic of Palau), Director, Air Division, 75 Hawthorne Street, San Francisco, CA 94105.

EPA Region X (Alaska, Idaho, Oregon, Washington), Director, Office of Air Quality, 1200 Sixth Avenue (OAQ-107), Seattle, WA 98101.

(b) All information required to be submitted to the Administrator under this part also shall be submitted to the appropriate State agency of any State to which authority has been delegated under section 112(l) of the Act. The owner or operator of an affected source may contact the appropriate EPA Regional Office for the mailing addresses for those States whose delegation requests have been approved.

(c) If any State requires a submittal that contains all the information required in an application, notification, request, report, statement, or other communication required in this part, an owner or operator may send the appropriate Regional Office of the EPA a copy of that submittal to satisfy the requirements of this part for that communication.

[59 FR 12430, Mar. 16, 1994, as amended at 63 FR 66061, Dec. 1, 1998; 67 FR 4184, Jan. 29, 2002; 68 FR 32601, May 30, 2003; 68 FR 35792, June 17, 2003; 73 FR 24871, May 6, 2008; 75 FR 69532, Nov. 12, 2010; 76 FR 49673, Aug. 11, 2011; 78 FR 37977, June 25, 2013]

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§63.14 Incorporations by reference.

(a) Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the EPA must publish notice of change in the FEDERAL REGISTER and the material must be available to the public. All approved material is available for inspection at the Air and Radiation Docket and Information Center, U.S. EPA, 401 M St. SW., Washington, DC, telephone number 202-566, and is available from the sources listed below. It is also available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030 or go to *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.*

(b) American Conference of Governmental Industrial Hygienists (ACGIH), Customer Service Department, 1330 Kemper Meadow Drive, Cincinnati, Ohio 45240, telephone number (513) 742-2020.

(1) Industrial Ventilation: A Manual of Recommended Practice, 22nd Edition, 1995, Chapter 3, "Local Exhaust Hoods" and Chapter 5, "Exhaust System Design Procedure." IBR approved for §§63.843(b) and 63.844(b).

(2) Industrial Ventilation: A Manual of Recommended Practice, 23rd Edition, 1998, Chapter 3, "Local Exhaust Hoods" and Chapter 5, "Exhaust System Design Procedure." IBR approved for §§63.1503, 63.1506(c), 63.1512(e), Table 2 to Subpart RRR, Table 3 to Subpart RRR, and Appendix A to Subpart RRR.

(3) Industrial Ventilation: A Manual of Recommended Practice for Design, 27th Edition, 2010. IBR approved for §§63.1503, 63.1506(c), 63.1512(e), Table 2 to Subpart RRR, Table 3 to Subpart RRR, and Appendix A to Subpart RRR.

(c) The Association of Florida Phosphate Chemists, P.O. Box 1645, Bartow, Florida 33830.

(1) Book of Methods Used and Adopted By The Association of Florida Phosphate Chemists, Seventh Edition 1991:

(i) Section IX, Methods of Analysis for Phosphate Rock, No. 1 Preparation of Sample, IBR approved for §63.606(f), §63.626(f).

(ii) Section IX, Methods of Analysis for Phosphate Rock, No. 3 Phosphorus-P2O5 or Ca3(PO4)2, Method A—Volumetric Method, IBR approved for §63.606(f), §63.626(f).

(iii) Section IX, Methods of Analysis for Phosphate Rock, No. 3 Phosphorus-P2O5 or Ca3(PO4)2, Method B—Gravimetric Quimociac Method, IBR approved for §63.606(f), §63.626(f).

(iv) Section IX, Methods of Analysis For Phosphate Rock, No. 3 Phosphorus-P2O5 or Ca3(PO4)2, Method C—Spectrophotometric Method, IBR approved for §63.606(f), §63.626(f).

(v) Section XI, Methods of Analysis for Phosphoric Acid, Superphosphate, Triple Superphosphate, and Ammonium Phosphates, No. 3 Total Phosphorus-P2O5, Method A—Volumetric Method, IBR approved for §63.606(f), §63.626(f), and (g).

(vi) Section XI, Methods of Analysis for Phosphoric Acid, Superphosphate, Triple Superphosphate, and Ammonium Phosphates, No. 3 Total Phosphorus-P2O5, Method B—Gravimetric Quimociac Method, IBR approved for §63.606(f), §63.626(f), and (g).

(vii) Section XI, Methods of Analysis for Phosphoric Acid, Superphosphate, Triple Superphosphate, and Ammonium Phosphates, No. 3 Total Phosphorus-P2O5, Method C—Spectrophotometric Method, IBR approved for §63.606(f), §63.626(f), and (g).

(2) [Reserved]

(d) Association of Official Analytical Chemists (AOAC) International, Customer Services, Suite 400, 2200 Wilson Boulevard, Arlington, Virginia 22201-3301, Telephone (703) 522-3032, Fax (703) 522-5468.

(1) AOAC Official Method 929.01 Sampling of Solid Fertilizers, Sixteenth edition, 1995, IBR approved for §63.626(g).

(2) AOAC Official Method 929.02 Preparation of Fertilizer Sample, Sixteenth edition, 1995, IBR approved for §63.626(g).

(3) AOAC Official Method 957.02 Phosphorus (Total) in Fertilizers, Preparation of Sample Solution, Sixteenth edition, 1995, IBR approved for §63.626(g).

(4) AOAC Official Method 958.01 Phosphorus (Total) in Fertilizers, Spectrophotometric Molybdovanadophosphate Method, Sixteenth edition, 1995, IBR approved for §63.626(g).

(5) AOAC Official Method 962.02 Phosphorus (Total) in Fertilizers, Gravimetric Quinolinium Molybdophosphate Method, Sixteenth edition, 1995, IBR approved for §63.626(g).

(6) AOAC Official Method 969.02 Phosphorus (Total) in Fertilizers, Alkalimetric Quinolinium Molybdophosphate Method, Sixteenth edition, 1995, IBR approved for §63.626(g).

(7) AOAC Official Method 978.01 Phosphorus (Total) in Fertilizers, Automated Method, Sixteenth edition, 1995, IBR approved for §63.626(g).

(e) American Petroleum Institute (API), 1220 L Street NW., Washington, DC 20005.

(1) API Publication 2517, Evaporative Loss from External Floating-Roof Tanks, Third Edition, February 1989, IBR approved for §§63.111 and 63.2406.

(2) API Publication 2518, Evaporative Loss from Fixed-roof Tanks, Second Edition, October 1991, IBR approved for §63.150(g).

(3) API Manual of Petroleum Measurement Specifications (MPMS) Chapter 19.2 (API MPMS 19.2), Evaporative Loss From Floating-Roof Tanks, First Edition, April 1997, IBR approved for §§63.1251 and 63.12005.

(f) American Society of Heating, Refrigerating, and Air-Conditioning Engineers at 1791 Tullie Circle, NE., Atlanta, GA 30329 *orders@ashrae.org.*

(1) American Society of Heating, Refrigerating, and Air Conditioning Engineers Method 52.1, "Gravimetric and Dust-Spot Procedures for Testing Air-Cleaning Devices Used in General Ventilation for Removing Particulate Matter, June 4, 1992," IBR approved for §§63.11173(e) and 63.11516(d).

(2) [Reserved]

(g) American Society of Mechanical Engineers (ASME), Three Park Avenue, New York, NY 10016-5990, Telephone (800) 843-2763, *http://www.asme.org;* also available from HIS, Incorporated, 15 Inverness Way East, Englewood, CO 80112, Telephone (877) 413-5184, *http://global.ihs.com.*

(1) ANSI/ASME PTC 19.10-1981, Flue and Exhaust Gas Analyses [Part 10, Instruments and Apparatus], issued August 31, 1981, IBR approved for §§63.309(k), 63.457(k), 63.772(e) and (h), 63.865(b), 63.1282(d) and (g), 63.1625(b), 63.3166(a), 63.3360(e), 63.3545(a), 63.3555(a), 63.4166(a), 63.4362(a), 63.4766(a), 63.4965(a), 63.5160(d), table 4 to subpart UUUU, 63.9307(c), 63.9323(a), 63.11148(e), 63.11155(e), 63.11162(f), 63.11163(g), 63.11410(j), 63.11551(a), 63.11646(a), and 63.11945, table 5 to subpart DDDDD, table 4 to subpart JJJJJ, table 4 to subpart KKKKK, tables 4 and 5 of subpart UUUUU, table 1 to subpart ZZZZZ, and table 4 to subpart JJJJJJ.

(2) [Reserved]

(h) American Society for Testing and Materials (ASTM), 100 Barr Harbor Drive, Post Office Box C700, West Conshohocken, PA 19428-2959, Telephone (610) 832-9585, *http://www.astm.org;* also available from ProQuest, 789 East Eisenhower Parkway, Ann Arbor, MI 48106-1346, Telephone (734) 761-4700, *http://www.proquest.com.*

(1) ASTM D95-05 (Reapproved 2010), Standard Test Method for Water in Petroleum Products and Bituminous Materials by Distillation, approved May 1, 2010, IBR approved for §63.10005(i) and table 6 to subpart DDDDD.

(2) ASTM D240-09 Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter, approved July 1, 2009, IBR approved for table 6 to subpart DDDDD.

(3) ASTM Method D388-05, Standard Classification of Coals by Rank, approved September 15, 2005, IBR approved for §§63.7575, 63.10042, and 63.11237.

(4) ASTM Method D396-10, Standard Specification for Fuel Oils, including Appendix X1, approved October 1, 2010, IBR approved for §63.10042.

(5) ASTM D396-10, Standard Specification for Fuel Oils, approved October 1, 2010, IBR approved for §§63.7575 and 63.11237.

(6) ASTM D523-89, Standard Test Method for Specular Gloss, IBR approved for §63.782.

(7) ASTM D975-11b, Standard Specification for Diesel Fuel Oils, approved December 1, 2011, IBR approved for §63.7575.

(8) ASTM D1193-77, Standard Specification for Reagent Water, IBR approved for appendix A to part 63: Method 306, Sections 7.1.1 and 7.4.2.

(9) ASTM D1193-91, Standard Specification for Reagent Water, IBR approved for appendix A to part 63: Method 306, Sections 7.1.1 and 7.4.2.

(10) ASTM D1331-89, Standard Test Methods for Surface and Interfacial Tension of Solutions of Surface Active Agents, IBR approved for appendix A to part 63: Method 306B, Sections 6.2, 11.1, and 12.2.2.

(11) ASTM D1475-90, Standard Test Method for Density of Paint, Varnish Lacquer, and Related Products, IBR approved for appendix A to subpart II.

(12) ASTM D1475-98 (Reapproved 2003), "Standard Test Method for Density of Liquid Coatings, Inks, and Related Products," IBR approved for §§63.3151(b), 63.3941(b) and (c), 63.3951(c), 63.4141(b) and (c), and 63.4551(c).

(13) ASTM Method D1835-05, Standard Specification for Liquefied Petroleum (LP) Gases, approved April 1, 2005, IBR approved for §§63.7575 and 63.11237.

(14) ASTM D1945-03 (Reapproved 2010), Standard Test Method for Analysis of Natural Gas by Gas Chromatography, Approved January 1, 2010, IBR approved for §§63.670(j), 63.772(h), and 63.1282(g).

(15) ASTM D1945-14, Standard Test Method for Analysis of Natural Gas by Gas Chromatography, Approved November 1, 2014, IBR approved for §63.670(j).

(16) ASTM D1946-77, Standard Method for Analysis of Reformed Gas by Gas Chromatography, IBR approved for §63.11(b).

(17) ASTM D1946-90 (Reapproved 1994), Standard Method for Analysis of Reformed Gas by Gas Chromatography, IBR approved for §63.11(b).

(18) ASTM D2013/D2013M-09, Standard Practice for Preparing Coal Samples for Analysis, (Approved November 1, 2009), IBR approved for table 6 to subpart DDDDD and table 5 to subpart JJJJJJ.

(19) ASTM D2099-00, Standard Test Method for Dynamic Water Resistance of Shoe Upper Leather by the Maeser Water Penetration Tester, IBR approved for §63.5350.

(20) ASTM D2216-05, Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass, IBR approved for the definition of "Free organic liquids" in §63.10692.

(21) ASTM D2234/D2234M-10, Standard Practice for Collection of a Gross Sample of Coal, approved January 1, 2010, IBR approved for table 6 to subpart DDDDD and table 5 to subpart JJJJJJ .

(22) ASTM D2369-93, Standard Test Method for Volatile Content of Coatings, IBR approved for appendix A to subpart II.

(23) ASTM D2369-95, Standard Test Method for Volatile Content of Coatings, IBR approved for appendix A to subpart II.

(24) ASTM D2382-76, Heat of Combustion of Hydrocarbon Fuels by Bomb Calorimeter (High-Precision Method), IBR approved for §63.11(b).

(25) ASTM D2382-88, Heat of Combustion of Hydrocarbon Fuels by Bomb Calorimeter (High-Precision Method), IBR approved for §63.11(b).

(26) ASTM D2697-86 (Reapproved 1998), Standard Test Method for Volume Nonvolatile Matter in Clear or Pigmented Coatings, IBR approved for §§63.3161(f), 63.3521(b), 63.3941(b), 63.4141(b), 63.4741(b), 63.4941(b), and 63.5160(c).

(27) ASTM D2879-83, Standard Method for Vapor Pressure-Temperature Relationship and Initial Decomposition Temperature of Liquids by Isoteniscope, IBR approved for §§63.111, 63.2406, and 63.12005.

(28) ASTM D2879-96, Test Method for Vapor Pressure-Temperature Relationship and Initial Decomposition Temperature of Liquids by Isoteniscope, (Approved 1996), IBR approved for §§63.111, 63.2406, and 63.12005.

(29) ASTM D2908-74, Standard Practice for Measuring Volatile Organic Matter in Water by Aqueous-Injection Gas Chromatography, Approved June 27, 1974, IBR approved for §63.1329(c).

(30) ASTM D2908-91, Standard Practice for Measuring Volatile Organic Matter in Water by Aqueous-Injection Gas Chromatography, Approved December 15, 1991, IBR approved for §63.1329(c).

(31) ASTM D2908-91(Reapproved 2001), Standard Practice for Measuring Volatile Organic Matter in Water by Aqueous-Injection Gas Chromatography, Approved December 15, 1991, IBR approved for §63.1329(c).

(32) ASTM D2908-91(Reapproved 2005), Standard Practice for Measuring Volatile Organic Matter in Water by Aqueous-Injection Gas Chromatography, Approved December 1, 2005, IBR approved for §63.1329(c)

(33) ASTM D2908-91(Reapproved 2011), Standard Practice for Measuring Volatile Organic Matter in Water by Aqueous-Injection Gas Chromatography, Approved May 1, 2011, IBR approved for §63.1329(c).

(34) ASTM D2986-95A, "Standard Practice for Evaluation of Air Assay Media by the Monodisperse DOP (Dioctyl Phthalate) Smoke Test," approved September 10, 1995, IBR approved for section 7.1.1 of Method 315 in appendix A to this part.

(35) ASTM D3173-03 (Reapproved 2008), Standard Test Method for Moisture in the Analysis Sample of Coal and Coke, (Approved February 1, 2008), IBR approved for table 6 to subpart DDDDD and table 5 to subpart JJJJJJ.

(36) ASTM D3257-93, Standard Test Methods for Aromatics in Mineral Spirits by Gas Chromatography, IBR approved for §63.786(b).

(37) ASTM D3370-76, Standard Practices for Sampling Water, Approved August 27, 1976, IBR approved for §63.1329(c).

(38) ASTM D3370-95a, Standard Practices for Sampling Water from Closed Conduits, Approved September 10, 1995, IBR approved for §63.1329(c).

(39) ASTM D3370-07, Standard Practices for Sampling Water from Closed Conduits, Approved December 1, 2007, IBR approved for §63.1329(c).

(40) ASTM D3370-08, Standard Practices for Sampling Water from Closed Conduits, Approved October 1, 2008, IBR approved for §63.1329(c).

(41) ASTM D3370-10, Standard Practices for Sampling Water from Closed Conduits, Approved December 1, 2010, IBR approved for §63.1329(c).

(42) ASTM D3588-98 (Reapproved 2003), Standard Practice for Calculating Heat Value, Compressibility Factor, and Relative Density of Gaseous Fuels, (Approved May 10, 2003), IBR approved for §§63.772(h) and 63.1282(g).

(43) ASTM D3695-88, Standard Test Method for Volatile Alcohols in Water by Direct Aqueous-Injection Gas Chromatography, IBR approved for §63.365(e).

(44) ASTM D3792-91, Standard Method for Water Content of Water-Reducible Paints by Direct Injection into a Gas Chromatograph, IBR approved for appendix A to subpart II.

(45) ASTM D3912-80, Standard Test Method for Chemical Resistance of Coatings Used in Light-Water Nuclear Power Plants, IBR approved for §63.782.

(46) ASTM D4006-11, Standard Test Method for Water in Crude Oil by Distillation, including Annex A1 and Appendix X1, (Approved June 1, 2011), IBR approved for §63.10005(i) and table 6 to subpart DDDDD.

(47) ASTM D4017-81, Standard Test Method for Water in Paints and Paint Materials by the Karl Fischer Titration Method, IBR approved for appendix A to subpart II.

(48) ASTM D4017-90, Standard Test Method for Water in Paints and Paint Materials by the Karl Fischer Titration Method, IBR approved for appendix A to subpart II.

(49) ASTM D4017-96a, Standard Test Method for Water in Paints and Paint Materials by the Karl Fischer Titration Method, IBR approved for appendix A to subpart II.

(50) ASTM D4057-06 (Reapproved 2011), Standard Practice for Manual Sampling of Petroleum and Petroleum Products, including Annex A1, (Approved June 1, 2011), IBR approved for §63.10005(i) and table 6 to subpart DDDDD.

(51) ASTM D4082-89, Standard Test Method for Effects of Gamma Radiation on Coatings for Use in Light-Water Nuclear Power Plants, IBR approved for §63.782.

(52) ASTM D4084-07, Standard Test Method for Analysis of Hydrogen Sulfide in Gaseous Fuels (Lead Acetate Reaction Rate Method), (Approved June 1, 2007), IBR approved for table 6 to subpart DDDDD.

(53) ASTM D4177-95 (Reapproved 2010), Standard Practice for Automatic Sampling of Petroleum and Petroleum Products, including Annexes A1 through A6 and Appendices X1 and X2, (Approved May 1, 2010), IBR approved for §63.10005(i) and table 6 to subpart DDDDD.

(54) ASTM D4208-02 (Reapproved 2007), Standard Test Method for Total Chlorine in Coal by the Oxygen Bomb Combustion/Ion Selective Electrode Method, approved May 1, 2007, IBR approved for table 6 to subpart DDDDD.

(55) ASTM D4239-14e1, "Standard Test Method for Sulfur in the Analysis Sample of Coal and Coke Using High-Temperature Tube Furnace Combustion," approved March 1, 2014, IBR approved for §63.849(f).

(56) ASTM D4256-89, Standard Test Method for Determination of the Decontaminability of Coatings Used in Light-Water Nuclear Power Plants, IBR approved for §63.782.

(57) ASTM D4256-89 (Reapproved 94), Standard Test Method for Determination of the Decontaminability of Coatings Used in Light-Water Nuclear Power Plants, IBR approved for §63.782.

(58) ASTM D4606-03 (Reapproved 2007), Standard Test Method for Determination of Arsenic and Selenium in Coal by the Hydride Generation/Atomic Absorption Method, (Approved October 1, 2007), IBR approved for table 6 to subpart DDDDD.

(59) ASTM D4809-95, Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter (Precision Method), IBR approved for §63.11(b).

(60) ASTM D4891-89 (Reapproved 2006), Standard Test Method for Heating Value of Gases in Natural Gas Range by Stoichiometric Combustion, (Approved June 1, 2006), IBR approved for §§63.772(h) and 63.1282(g).

(61) ASTM D5066-91 (Reapproved 2001), Standard Test Method for Determination of the Transfer Efficiency Under Production Conditions for Spray Application of Automotive Paints-Weight Basis, IBR approved for §63.3161(g).

(62) ASTM D5087-02, Standard Test Method for Determining Amount of Volatile Organic Compound (VOC) Released from Solventborne Automotive Coatings and Available for Removal in a VOC Control Device (Abatement), IBR approved for §63.3165(e) and appendix A to subpart IIII.

(63) ASTM D5192-09, Standard Practice for Collection of Coal Samples from Core, (Approved June 1, 2009), IBR approved for table 6 to subpart DDDDD.

(64) ASTM D5198-09, Standard Practice for Nitric Acid Digestion of Solid Waste, (Approved February 1, 2009), IBR approved for table 6 to subpart DDDDD and table 5 to subpart JJJJJJ.

(65) ASTM D5228-92, Standard Test Method for Determination of Butane Working Capacity of Activated Carbon, (Reapproved 2005), IBR approved for §63.11092(b).

(66) ASTM D5291-02, Standard Test Methods for Instrumental Determination of Carbon, Hydrogen, and Nitrogen in Petroleum Products and Lubricants, IBR approved for appendix A to subpart MMMM.

(67) ASTM D5790-95, Standard Test Method for Measurement of Purgeable Organic Compounds in Water by Capillary Column Gas Chromatography/Mass Spectrometry, IBR approved for Table 4 to subpart UUUU.

(68) ASTM D5864-11, Standard Test Method for Determining Aerobic Aquatic Biodegradation of Lubricants or Their Components, (Approved March 1, 2011), IBR approved for table 6 to subpart DDDDD.

(69) ASTM D5865-10a, Standard Test Method for Gross Calorific Value of Coal and Coke, (Approved May 1, 2010), IBR approved for table 6 to subpart DDDDD and table 5 to subpart JJJJJJ.

(70) ASTM D5954-98 (Reapproved 2006), Test Method for Mercury Sampling and Measurement in Natural Gas by Atomic Absorption Spectroscopy, (Approved December 1, 2006), IBR approved for table 6 to subpart DDDDD.

(71) ASTM D5965-02, Standard Test Methods for Specific Gravity of Coating Powders, IBR approved for §§63.3151(b) and 63.3951(c).

(72) ASTM D6053-00, Standard Test Method for Determination of Volatile Organic Compound (VOC) Content of Electrical Insulating Varnishes, IBR approved for appendix A to subpart MMMM.

(73 ASTM D6093-97 (Reapproved 2003), Standard Test Method for Percent Volume Nonvolatile Matter in Clear or Pigmented Coatings Using a Helium Gas Pycnometer, IBR approved for §§63.3161, 63.3521, 63.3941, 63.4141, 63.4741(b), 63.4941(b), and 63.5160(c).

(74) ASTM D6196-03 (Reapproved 2009), Standard Practice for Selection of Sorbents, Sampling, and Thermal Desorption Analysis Procedures for Volatile Organic Compounds in Air, Approved March 1, 2009, IBR approved for appendix A to this part: Method 325A and Method 325B.

(75) ASTM D6266-00a, Test Method for Determining the Amount of Volatile Organic Compound (VOC) Released from Waterborne Automotive Coatings and Available for Removal in a VOC Control Device (Abatement), IBR approved for §63.3165(e).

(76) ASTM D6323-98 (Reapproved 2003), Standard Guide for Laboratory Subsampling of Media Related to Waste Management Activities, (Approved August 10, 2003), IBR approved for table 6 to subpart DDDDD and table 5 to subpart JJJJJJ.

(77) ASTM D6348-03, Standard Test Method for Determination of Gaseous Compounds by Extractive Direct Interface Fourier Transform Infrared (FTIR) Spectroscopy, IBR approved for §§63.457(b) and 63.1349, table 4 to subpart DDDD, table 4 to subpart ZZZZ, and table 8 to subpart HHHHHHH.

(78) ASTM D6348-03 (Reapproved 2010), Standard Test Method for Determination of Gaseous Compounds by Extractive Direct Interface Fourier Transform Infrared (FTIR) Spectroscopy, including Annexes A1 through A8, Approved October 1, 2010, IBR approved for §63.1571(a), tables 4 and 5 to subpart JJJJJ, tables 4 and 6 to subpart KKKKK, tables 1, 2, and 5 to subpart UUUUU and appendix B to subpart UUUUU.

(79) ASTM D6348-12e1, Standard Test Method for Determination of Gaseous Compounds by Extractive Direct Interface Fourier Transform Infrared (FTIR) Spectroscopy, Approved February 1, 2012, IBR approved for §63.1571(a).

(80) ASTM D6350-98 (Reapproved 2003), Standard Test Method for Mercury Sampling and Analysis in Natural Gas by Atomic Fluorescence Spectroscopy, (Approved May 10, 2003), IBR approved for table 6 to subpart DDDDD.

(81) ASTM D6357-11, Test Methods for Determination of Trace Elements in Coal, Coke, and Combustion Residues from Coal Utilization Processes by Inductively Coupled Plasma Atomic Emission Spectrometry, (Approved April 1, 2011), IBR approved for table 6 to subpart DDDDD.

(82) ASTM D6376-10, "Standard Test Method for Determination of Trace Metals in Petroleum Coke by Wavelength Dispersive X-Ray Fluorescence Spectroscopy," Approved July 1, 2010, IBR approved for §63.849(f).

(83) ASTM D6420-99, Standard Test Method for Determination of Gaseous Organic Compounds by Direct Interface Gas Chromatography-Mass Spectrometry, IBR approved for §§63.5799, 63.5850, and Table 4 of Subpart UUUU.

(84) ASTM D6420-99 (Reapproved 2004), Standard Test Method for Determination of Gaseous Organic Compounds by Direct Interface Gas Chromatography-Mass Spectrometry, (Approved October 1, 2004), IBR approved for §§63.457(b), 63.485(g), 60.485a(g), 63.772(a), 63.772(e), 63.1282(a) and (d), 63.2351(b), and 63.2354(b), and table 8 to subpart HHHHHHH.

(85) ASTM D6420-99 (Reapproved 2010), Standard Test Method for Determination of Gaseous Organic Compounds by Direct Interface Gas Chromatography-Mass Spectrometry, Approved October 1, 2010, IBR approved for §63.670(j) and appendix A to this part: Method 325B.

(86) ASTM D6522-00, Standard Test Method for Determination of Nitrogen Oxides, Carbon Monoxide, and Oxygen Concentrations in Emissions from Natural Gas Fired Reciprocating Engines, Combustion Turbines, Boilers, and Process Heaters Using Portable Analyzers, IBR approved for §63.9307(c).

(87) ASTM D6522-00 (Reapproved 2005), Standard Test Method for Determination of Nitrogen Oxides, Carbon Monoxide, and Oxygen Concentrations in Emissions from Natural Gas Fired Reciprocating Engines, Combustion Turbines, Boilers, and Process Heaters Using Portable Analyzers, (Approved October 1, 2005), IBR

approved for table 4 to subpart ZZZZ, table 5 to subpart DDDDDD, table 4 to subpart JJJJJJ, and §§63.772(e) and (h)) and 63.1282(d) and (g).

(88) ASTM D6721-01 (Reapproved 2006), Standard Test Method for Determination of Chlorine in Coal by Oxidative Hydrolysis Microcoulometry, (Approved April 1, 2006), IBR approved for table 6 to subpart DDDDD.

(89) ASTM D6722-01 (Reapproved 2006), Standard Test Method for Total Mercury in Coal and Coal Combustion Residues by the Direct Combustion Analysis, (Approved April 1, 2006), IBR approved for Table 6 to subpart DDDDD and Table 5 to subpart JJJJJJ.

(90) ASTM D6735-01 (Reapproved 2009), Standard Test Method for Measurement of Gaseous Chlorides and Fluorides from Mineral Calcining Exhaust Sources—Impinger Method, IBR approved for tables 4 and 5 to subpart JJJJJ and tables 4 and 6 to subpart KKKKK.

(91) ASTM D6751-11b, Standard Specification for Biodiesel Fuel Blend Stock (B100) for Middle Distillate Fuels, (Approved July 15, 2011), IBR approved for §§63.7575 and 63.11237.

(92) ASTM D6784-02 (Reapproved 2008), Standard Test Method for Elemental, Oxidized, Particle-Bound and Total Mercury in Flue Gas Generated from Coal-Fired Stationary Sources (Ontario Hydro Method), (Approved April 1, 2008), IBR approved for §§63.11646(a), 63.11647(a) and (d), tables 1, 2, 5, 11, 12t, and 13 to subpart DDDDD, tables 4 and 5 to subpart JJJJJ, tables 4 and 6 to subpart KKKKK, table 4 to subpart JJJJJJ, table 5 to subpart UUUUU, and appendix A to subpart UUUUU.

(93) ASTM D6883-04, Standard Practice for Manual Sampling of Stationary Coal from Railroad Cars, Barges, Trucks, or Stockpiles, (Approved June 1, 2004), IBR approved for table 6 to subpart DDDDD.

(94) ASTM D7430-11ae1, Standard Practice for Mechanical Sampling of Coal, (Approved October 1, 2011), IBR approved for table 6 to subpart DDDDD.

(95) ASTM D7520-13, Standard Test Method for Determining the Opacity of a Plume in an Outdoor Ambient Atmosphere, approved December 1, 2013. IBR approved for §§63.1510(f), 63.1511(d), 63.1512(a), 63.1517(b) and 63.1625(b).

(96) ASTM D7520-16, Standard Test Method for Determining the Opacity of a Plume in the Outdoor Ambient Atmosphere, approved April 1, 2016, IBR approved for §§63.1625(b).

(97) ASTM E145-94 (Reapproved 2001), Standard Specification for Gravity-Convection and Forced-Ventilation Ovens, IBR approved for appendix A to subpart PPPP.

(98) ASTM E180-93, Standard Practice for Determining the Precision of ASTM Methods for Analysis and Testing of Industrial Chemicals, IBR approved for §63.786(b).

(99) ASTM E260-91, General Practice for Packed Column Gas Chromatography, IBR approved for §§63.750(b) and 63.786(b).

(100) ASTM E260-96, General Practice for Packed Column Gas Chromatography, IBR approved for §§63.750(b) and 63.786(b).

(101) ASTM E515-95 (Reapproved 2000), Standard Test Method for Leaks Using Bubble Emission Techniques, IBR approved for §63.425(i).

(102) ASTM E711-87 (Reapproved 2004), Standard Test Method for Gross Calorific Value of Refuse-Derived Fuel by the Bomb Calorimeter, (Approved August 28, 1987), IBR approved for table 6 to subpart DDDDD and table 5 to subpart JJJJJJ.

(103) ASTM E776-87 (Reapproved 2009), Standard Test Method for Forms of Chlorine in Refuse-Derived Fuel, (Approved July 1, 2009), IBR approved for table 6 to subpart DDDDD.

(104) ASTM E871-82 (Reapproved 2006), Standard Test Method for Moisture Analysis of Particulate Wood Fuels, (Approved November 1, 2006), IBR approved for table 6 to subpart DDDDD and table 5 to subpart JJJJJJ.

(105) ASTM UOP539-12, Refinery Gas Analysis by GC, Copyright 2012 (to UOP), IBR approved for §63.670(j).

(i) Bay Area Air Quality Management District (BAAQMD), 939 Ellis Street, San Francisco, California 94109, *http://www.arb.ca.gov/DRDB/BA/CURHTML/ST/st30.pdf*.

(1) "BAAQMD Source Test Procedure ST-30—Static Pressure Integrity Test, Underground Storage Tanks," adopted November 30, 1983, and amended December 21, 1994, IBR approved for §63.11120(a).

(2) [Reserved]

(j) British Standards Institute, 389 Chiswick High Road, London W4 4AL, United Kingdom.

(1) BS EN 1593:1999, Non-destructive Testing: Leak Testing—Bubble Emission Techniques, IBR approved for §63.425(i).

(2) BS EN 14662-4:2005, Ambient air quality standard method for the measurement of benzene concentrations—Part 4: Diffusive sampling followed by thermal desorption and gas chromatography, Published June 27, 2005, IBR approved for appendix A to this part: Method 325A and Method 325B.

(k) California Air Resources Board (CARB), 1001 I Street, P.O. Box 2815, Sacramento, CA 95812-2815, Telephone (916) 327-0900, *http://www.arb.ca.gov/*.

(1) Method 428, "Determination Of Polychlorinated Dibenzo-P-Dioxin (PCDD), Polychlorinated Dibenzofuran (PCDF), and Polychlorinated Biphenyle Emissions from Stationary Sources," amended September 12, 1990, IBR approved for §63.849(a)(13) and (14).

(2) Method 429, Determination of Polycyclic Aromatic Hydrocarbon (PAH) Emissions from Stationary Sources, Adopted September 12, 1989, Amended July 28, 1997, IBR approved for §63.1625(b).

(3) California Air Resources Board Vapor Recovery Test Procedure TP-201.1—"Volumetric Efficiency for Phase I Vapor Recovery Systems," adopted April 12, 1996, and amended February 1, 2001 and October 8, 2003, IBR approved for §63.11120(b).

(4) California Air Resources Board Vapor Recovery Test Procedure TP-201.1E—"Leak Rate and Cracking Pressure of Pressure/Vacuum Vent Valves," adopted October 8, 2003, IBR approved for §63.11120(a).

(5) California Air Resources Board Vapor Recovery Test Procedure TP-201.3—"Determination of 2-Inch WC Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities," adopted April 12, 1996 and amended March 17, 1999, IBR approved for §63.11120(a).

(l) Environmental Protection Agency. Air and Radiation Docket and Information Center, 1200 Pennsylvania Avenue NW., Washington, DC 20460, telephone number (202) 566-1745.

(1) *California Regulatory Requirements Applicable to the Air Toxics Program*, November 16, 2010, IBR approved for §63.99(a).

(2) New Jersey's *Toxic Catastrophe Prevention Act Program*, (July 20, 1998), IBR approved for §63.99(a).

(3) Delaware Department of Natural Resources and Environmental Control, Division of Air and Waste Management, Accidental Release Prevention Regulation, sections 1 through 5 and sections 7 through 14, effective January 11, 1999, IBR approved for §63.99(a).

(4) State of Delaware Regulations Governing the Control of Air Pollution (October 2000), IBR approved for §63.99(a).

(5) Massachusetts Department of Environmental Protection regulations at 310 CMR 7.26(10)-(16), Air Pollution Control, effective as of September 5, 2008, corrected March 6, 2009, and 310 CMR 70.00, Environmental Results Program Certification, effective as of December 28, 2007. IBR approved for §63.99(a).

(6)(i) New Hampshire Regulations Applicable to Hazardous Air Pollutants, March, 2003. IBR approved for §63.99(a).

(ii) New Hampshire Regulations Applicable to Hazardous Air Pollutants, September 2006. IBR approved for §63.99(a).

(7) Maine Department of Environmental Protection regulations at Chapter 125, Perchloroethylene Dry Cleaner Regulation, effective as of June 2, 1991, last amended on June 24, 2009. IBR approved for §63.99(a).

(8) California South Coast Air Quality Management District's "Spray Equipment Transfer Efficiency Test Procedure for Equipment User, May 24, 1989," IBR approved for §§63.11173(e) and 63.11516(d).

(9) California South Coast Air Quality Management District's "Guidelines for Demonstrating Equivalency with District Approved Transfer Efficient Spray Guns, September 26, 2002," Revision 0, IBR approved for §§63.11173(e) and 63.11516(d).

(10) Rhode Island Department of Environmental Management regulations at Air Pollution Control Regulation No. 36, Control of Emissions from Organic Solvent Cleaning, effective April 8, 1996, last amended October 9, 2008, IBR approved for §63.99(a).

(11) Rhode Island Air Pollution Control, General Definitions Regulation, effective July 19, 2007, last amended October 9, 2008. IBR approved for §63.99(a).

(12) Alaska Statute 42.45.045. Renewable energy grant fund and recommendation program, available at *http://www.legis.state.ak.us/basis/folio.asp*, IBR approved for §63.6675.

(13) Vermont Air Pollution Control Regulations, Chapter 5, Air Pollution Control, section 5-253.11, Perchloroethylene Dry Cleaning, effective as of December 15, 2016. Incorporation by reference approved for §63.99(a).

(m) U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue NW., Washington, DC 20460, (202) 272-0167, *http://www.epa.gov*.

(1) EPA-453/R-01-005, National Emission Standards for Hazardous Air Pollutants (NESHAP) for Integrated Iron and Steel Plants—Background Information for Proposed Standards, Final Report, January 2001, IBR approved for §63.7491(g).

(2) EPA-454/B-08-002, Office of Air Quality Planning and Standards (OAQPS), Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV: Meteorological Measurements, Version 2.0 (Final), March 24, 2008, IBR approved for §63.658(d) and appendix A to this part: Method 325A.

(3) EPA-454/R-98-015, Office of Air Quality Planning and Standards (OAQPS), Fabric Filter Bag Leak Detection Guidance, September 1997, *https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=2000D5T6.PDF*, IBR approved for §§63.548(e), 63.864(e), 63.7525(j), 63.8450(e), 63.8600(e), and 63.11224(f).

(4) EPA-454/R-99-005, Office of Air Quality Planning and Standards (OAQPS), Meteorological Monitoring Guidance for Regulatory Modeling Applications, February 2000, IBR approved for appendix A to this part: Method 325A.

(5) EPA/600/R-12/531, EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards, May 2012, IBR approved for §63.2163(b).

(6) EPA-625/3-89-016, Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and -Dibenzofurans (CDDs and CDFs) and 1989 Update, March 1989. IBR approved for §63.1513(d).

(7) SW-846-3020A, Acid Digestion of Aqueous Samples And Extracts For Total Metals For Analysis By GFAA Spectroscopy, Revision 1, July 1992, in EPA Publication No. SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Third Edition, IBR approved for table 6 to subpart DDDDD and table 5 to subpart JJJJJJ.

(8) SW-846-3050B, Acid Digestion of Sediments, Sludges, and Soils, Revision 2, December 1996, in EPA Publication No. SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Third Edition, IBR approved for table 6 to subpart DDDDD and table 5 to subpart JJJJJJ.

(9) SW-846-7470A, Mercury In Liquid Waste (Manual Cold-Vapor Technique), Revision 1, September 1994, in EPA Publication No. SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Third Edition, IBR approved for table 6 to subpart DDDDD and table 5 to subpart JJJJJJ.

(10) SW-846-7471B, Mercury In Solid Or Semisolid Waste (Manual Cold-Vapor Technique), Revision 2, February 2007, in EPA Publication No. SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Third Edition, IBR approved for table 6 to subpart DDDDD and table 5 to subpart JJJJJJ.

(11) SW-846-8015C, Nonhalogenated Organics by Gas Chromatography, Revision 3, February 2007, in EPA Publication No. SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Third Edition, IBR approved for §§63.11960, 63.11980, and table 10 to subpart HHHHHHH.

(12) SW-846-8260B, Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS), Revision 2, December 1996, in EPA Publication No. SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Third Edition, IBR approved for §§63.11960, 63.11980, and table 10 to subpart HHHHHHH.

(13) SW-846-8270D, Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS), Revision 4, February 2007, in EPA Publication No. SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Third Edition, IBR approved for §§63.11960, 63.11980, and table 10 to subpart HHHHHHH.

(14) SW-846-8315A, Determination of Carbonyl Compounds by High Performance Liquid Chromatography (HPLC), Revision 1, December 1996, in EPA Publication No. SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Third Edition, IBR approved for §§63.11960 and 63.11980, and table 10 to subpart HHHHHHH.

(15) SW-846-5050, Bomb Preparation Method for Solid Waste, Revision 0, September 1994, in EPA Publication No. SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Third Edition IBR approved for table 6 to subpart DDDDD.

(16) SW-846-6010C, Inductively Coupled Plasma-Atomic Emission Spectrometry, Revision 3, February 2007, in EPA Publication No. SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Third Edition, IBR approved for table 6 to subpart DDDDD.

(17) SW-846-6020A, Inductively Coupled Plasma-Mass Spectrometry, Revision 1, February 2007, in EPA Publication No. SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Third Edition, IBR approved for table 6 to subpart DDDDD.

(18) SW-846-7060A, Arsenic (Atomic Absorption, Furnace Technique), Revision 1, September 1994, in EPA Publication No. SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Third Edition, IBR approved for table 6 to subpart DDDDD.

(19) SW-846-7740, Selenium (Atomic Absorption, Furnace Technique), Revision 0, September 1986, in EPA Publication No. SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Third Edition, IBR approved for table 6 to subpart DDDDD.

(20) SW-846-9056, Determination of Inorganic Anions by Ion Chromatography, Revision 1, February 2007, in EPA Publication No. SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Third Edition, IBR approved for table 6 to subpart DDDDD.

(21) SW-846-9076, Test Method for Total Chlorine in New and Used Petroleum Products by Oxidative Combustion and Microcoulometry, Revision 0, September 1994, in EPA Publication No. SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Third Edition, IBR approved for table 6 to subpart DDDDD.

(22) SW-846-9250, Chloride (Colorimetric, Automated Ferricyanide AAI), Revision 0, September 1986, in EPA Publication No. SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Third Edition, IBR approved for table 6 to subpart DDDDD.

(23) Method 200.8, Determination of Trace Elements in Waters and Wastes by Inductively Coupled Plasma—Mass Spectrometry, Revision 5.4, 1994, IBR approved for table 6 to subpart DDDDD.

(24) Method 1631 Revision E, Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Absorption Fluorescence Spectrometry, Revision E, EPA-821-R-02-019, August 2002, IBR approved for table 6 to subpart DDDDD.

(n) International Standards Organization (ISO), 1, ch. de la Voie-Creuse, Case postale 56, CH-1211 Geneva 20, Switzerland, + 41 22 749 01 11, *http://www.iso.org/iso/home.htm.*

(1) ISO 6978-1:2003(E), Natural Gas—Determination of Mercury—Part 1: Sampling of Mercury by Chemisorption on Iodine, First edition, October 15, 2003, IBR approved for table 6 to subpart DDDDD.

(2) ISO 6978-2:2003(E), Natural gas—Determination of Mercury—Part 2: Sampling of Mercury by Amalgamation on Gold/Platinum Alloy, First edition, October 15, 2003, IBR approved for table 6 to subpart DDDDD.

(3) ISO 16017-2:2003(E): Indoor, ambient and workplace air—sampling and analysis of volatile organic compounds by sorbent tube/thermal desorption/capillary gas chromatography—Part 2: Diffusive sampling, May 15, 2003, IBR approved for appendix A to this part: Method 325A and Method 325B.

(o) National Council of the Paper Industry for Air and Stream Improvement, Inc. (NCASI), P.O. Box 133318, Research Triangle Park, NC 27709-3318 or at *http://www.ncasi.org.*

(1) NCASI Method DI/MEOH-94.03, Methanol in Process Liquids and Wastewaters by GC/FID, Issued May 2000, IBR approved for §§63.457 and 63.459.

(2) NCASI Method CI/WP-98.01, Chilled Impinger Method For Use At Wood Products Mills to Measure Formaldehyde, Methanol, and Phenol, 1998, Methods Manual, IBR approved for table 4 to subpart DDDD.

(3) NCASI Method DI/HAPS-99.01, Selected HAPs In Condensates by GC/FID, Issued February 2000, IBR approved for §63.459(b).

(4) NCASI Method IM/CAN/WP-99.02, Impinger/Canister Source Sampling Method for Selected HAPs and Other Compounds at Wood Products Facilities, January 2004, Methods Manual, IBR approved for table 4 to subpart DDDD.

(5) NCASI Method ISS/FP A105.01, Impinger Source Sampling Method for Selected Aldehydes, Ketones, and Polar Compounds, December 2005, Methods Manual, IBR approved for table 4 to subpart DDDD.

(p) National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161, (703) 605-6000 or (800) 553-6847; or for purchase from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, (202) 512-1800.

(1) Handbook 44, Specificiations, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices 1998, IBR approved for §63.1303(e).

(2) "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, Third Edition. (A suffix of "A" in the method number indicates revision one (the method has been revised once). A suffix of "B" in the method number indicates revision two (the method has been revised twice).

(i) Method 0023A, "Sampling Method for Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofuran Emissions from Stationary Sources," dated December 1996, IBR approved for §63.1208(b).

(ii) Method 9071B, "n-Hexane Extractable Material (HEM) for Sludge, Sediment, and Solid Samples," dated April 1998, IBR approved for §63.7824(e).

(iii) Method 9095A, "Paint Filter Liquids Test," dated December 1996, IBR approved for §§63.7700(b) and 63.7765.

(iv) Method 9095B, "Paint Filter Liquids Test," (revision 2), dated November 2004, IBR approved for the definition of "Free organic liquids" in §§63.10692, 63.10885(a), and the definition of "Free liquids" in §63.10906.

(v) SW-846 74741B, Revision 2, "Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique)," February 2007, IBR approved for §63.11647(f).

(3) National Institute of Occupational Safety and Health (NIOSH) test method compendium, "NIOSH Manual of Analytical Methods," NIOSH publication no. 94-113, Fourth Edition, August 15, 1994.

(i) NIOSH Method 2010, "Amines, Aliphatic," Issue 2, August 15, 1994, IBR approved for §63.7732(g).

(ii) [Reserved]

(q) North American Electric Reliability Corporation, 1325 G Street, NW., Suite 600, Washington, DC 20005-3801, *http://www.nerc.com, http://www.nerc.com/files/EOP0002-3_1.pdf*.

(1) North American Electric Reliability Corporation Reliability Standard EOP-002-3, Capacity and Energy Emergencies, adopted August 5, 2010, IBR approved for §63.6640(f).

(2)[Reserved]

(r) Technical Association of the Pulp and Paper Industry (TAPPI), 15 Technology Parkway South, Norcross, GA 30092, (800) 332-8686, *http://www.tappi.org*.

(1) TAPPI T 266, Determination of Sodium, Calcium, Copper, Iron, and Manganese in Pulp and Paper by Atomic Absorption Spectroscopy (Reaffirmation of T 266 om-02), Draft No. 2, July 2006, IBR approved for table 6 to subpart DDDDD.

(2) [Reserved]

(s) Texas Commission on Environmental Quality (TCEQ) Library, Post Office Box 13087, Austin, Texas 78711-3087, telephone number (512) 239-0028, *http://www.tceq.state.tx.us/assets/public/implementation/air/sip/sipdocs/2002-12-HGB/02046sipapp_ado.pdf.*

(1) "Air Stripping Method (Modified El Paso Method) for Determination of Volatile Organic Compound Emissions from Water Sources," Revision Number One, dated January 2003, Sampling Procedures Manual, Appendix P: Cooling Tower Monitoring, January 31, 2003, IBR approved for §§63.654(c) and (g), 63.655(i), and 63.11920.

(2) [Reserved]

[79 FR 11277, Feb. 27, 2014, as amended at 79 FR 17363, Mar. 27, 2014; 80 FR 37389, June 30, 2015; 80 FR 50436, Aug. 19, 2015; 80 FR 56738, Sept. 18, 2015; 80 FR 62414, Oct. 15, 2015; 80 FR 65520, Oct. 26, 2015; 80 FR 75817, Dec. 4, 2015; 80 FR 75236, Dec. 1, 2015; 82 FR 47347, Oct. 11, 2017; 82 FR 48178, Oct. 16, 2017; 83 FR 9218, Mar. 5, 2018]

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§63.15 Availability of information and confidentiality.

(a) *Availability of information.* (1) With the exception of information protected through part 2 of this chapter, all reports, records, and other information collected by the Administrator under this part are available to the public. In addition, a copy of each permit application, compliance plan (including the schedule of compliance), notification of compliance status, excess emissions and continuous monitoring systems performance report, and title V permit is available to the public, consistent with protections recognized in section 503(e) of the Act.

(2) The availability to the public of information provided to or otherwise obtained by the Administrator under this part shall be governed by part 2 of this chapter.

(b) *Confidentiality.* (1) If an owner or operator is required to submit information entitled to protection from disclosure under section 114(c) of the Act, the owner or operator may submit such information separately. The requirements of section 114(c) shall apply to such information.

(2) The contents of a title V permit shall not be entitled to protection under section 114(c) of the Act; however, information submitted as part of an application for a title V permit may be entitled to protection from disclosure.

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§63.16 Performance Track Provisions.

(a) Notwithstanding any other requirements in this part, an affected source at any major source or any area source at a Performance Track member facility, which is subject to regular periodic reporting under any subpart of this part, may submit such periodic reports at an interval that is twice the length of the regular period specified in the applicable subparts; provided, that for sources subject to permits under 40 CFR part 70 or 71 no interval so calculated for any report of the results of any required monitoring may be less frequent than once in every six months.

(b) Notwithstanding any other requirements in this part, the modifications of reporting requirements in paragraph (c) of this section apply to any major source at a Performance Track member facility which is subject to requirements under any of the subparts of this part and which has:

(1) Reduced its total HAP emissions to less than 25 tons per year;

(2) Reduced its emissions of each individual HAP to less than 10 tons per year; and

(3) Reduced emissions of all HAPs covered by each MACT standard to at least the level required for full compliance with the applicable emission standard.

(c) For affected sources at any area source at a Performance Track member facility and which meet the requirements of paragraph (b)(3) of this section, or for affected sources at any major source that meet the requirements of paragraph (b) of this section:

(1) If the emission standard to which the affected source is subject is based on add-on control technology, and the affected source complies by using add-on control technology, then all required reporting elements in the periodic report may be met through an annual certification that the affected source is meeting the emission standard by continuing to use that control technology. The affected source must continue to meet all relevant monitoring and recordkeeping requirements. The compliance certification must meet the requirements delineated in Clean Air Act section 114(a)(3).

(2) If the emission standard to which the affected source is subject is based on add-on control technology, and the affected source complies by using pollution prevention, then all required reporting elements in the periodic report may be met through an annual certification that the affected source is continuing to use pollution prevention to reduce HAP emissions to levels at or below those required by the applicable emission standard. The affected source must maintain records of all calculations that demonstrate the level of HAP emissions required by the emission standard as well as the level of HAP emissions achieved by the affected source. The affected source must continue to meet all relevant monitoring and recordkeeping requirements. The compliance certification must meet the requirements delineated in Clean Air Act section 114(a)(3).

(3) If the emission standard to which the affected source is subject is based on pollution prevention, and the affected source complies by using pollution prevention and reduces emissions by an additional 50 percent or greater than required by the applicable emission standard, then all required reporting elements in the periodic report may be met through an annual certification that the affected source is continuing to use pollution prevention to reduce HAP emissions by an additional 50 percent or greater than required by the applicable emission standard. The affected source must maintain records of all calculations that demonstrate the level of HAP emissions required by the emission standard as well as the level of HAP emissions achieved by the affected source. The affected source must continue to meet all relevant monitoring and recordkeeping requirements. The compliance certification must meet the requirements delineated in Clean Air Act section 114(a)(3).

(4) Notwithstanding the provisions of paragraphs (c)(1) through (3), of this section, for sources subject to permits under 40 CFR part 70 or 71, the results of any required monitoring and recordkeeping must be reported not less frequently than once in every six months.

[69 FR 21753, Apr. 22, 2004]

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Table 1 to Subpart A of Part 63—Detection Sensitivity Levels (grams per hour)

Monitoring frequency per subpart[a]	Detection sensitivity level
Bi-Monthly	60
Semi-Quarterly	85
Monthly	100

[a]When this alternative work practice is used to identify leaking equipment, the owner or operator must choose one of the monitoring frequencies listed in this table, in lieu of the monitoring frequency specified in the applicable subpart. Bi-monthly means every other month. Semi-quarterly means twice per quarter. Monthly means once per month.

[73 FR 78213, Dec. 22, 2008]

PART 70—STATE OPERATING PERMIT PROGRAMS

Contents

AUTHORITY: 42 U.S.C. 7401, *et seq.*

SOURCE: 57 FR 32295, July 21, 1992, unless otherwise noted.

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§70.1 Program overview.

(a) The regulations in this part provide for the establishment of comprehensive State air quality permitting systems consistent with the requirements of title V of the Clean Air Act (Act) (42 U.S.C. 7401, *et seq.*). These regulations define the minimum elements required by the Act for State operating permit programs and the corresponding standards and procedures by which the Administrator will approve, oversee, and withdraw approval of State operating permit programs.

(b) All sources subject to these regulations shall have a permit to operate that assures compliance by the source with all applicable requirements. While title V does not impose substantive new requirements, it does require that fees be imposed on sources and that certain procedural measures be adopted especially with respect to compliance.

(c) Nothing in this part shall prevent a State, or interstate permitting authority, from establishing additional or more stringent requirements not inconsistent with this Act. The EPA will approve State program submittals to the extent that they are not inconsistent with the Act and these regulations. No permit, however, can be less stringent than necessary to meet all applicable requirements. In the case of Federal intervention in the permit process, the Administrator reserves the right to implement the State operating permit program, in whole or in part, or the Federal program contained in regulations promulgated under title V of the Act.

(d) The requirements of part 70, including provisions regarding schedules for submission and approval or disapproval of permit applications, shall apply to the permitting of affected sources under the acid rain program, except as provided herein or modified in regulations promulgated under title IV of the Act (acid rain program).

(e) Issuance of State permits under this part may be coordinated with issuance of permits under the Resource Conservation and Recovery Act and under the Clean Water Act, whether issued by the State, the U.S. Environmental Protection Agency (EPA), or the U.S. Army Corps of Engineers.

(f) States that choose to receive electronic documents must satisfy the requirements of 40 CFR Part 3—(Electronic reporting) in their program.

[57 FR 32295, July 21, 1992, as amended at 70 FR 59887, Oct. 13, 2005]

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§70.2 Definitions.

The following definitions apply to part 70. Except as specifically provided in this section, terms used in this part retain the meaning accorded them under the applicable requirements of the Act.

Act means the Clean Air Act, as amended, 42 U.S.C. 7401, *et seq.*

Affected source shall have the meaning given to it in the regulations promulgated under title IV of the Act.

Affected States are all States:

(1) Whose air quality may be affected and that are contiguous to the State in which a part 70 permit, permit modification or permit renewal is being proposed; or

(2) That are within 50 miles of the permitted source.

Affected unit shall have the meaning given to it in the regulations promulgated under title IV of the Act.

Alternative operating scenario (AOS) means a scenario authorized in a part 70 permit that involves a change at the part 70 source for a particular emissions unit, and that either results in the unit being subject to one or more applicable requirements which differ from those applicable to the emissions unit prior to implementation of the change or renders inapplicable one or more requirements previously applicable to the emissions unit prior to implementation of the change.

Applicable requirement means all of the following as they apply to emissions units in a part 70 source (including requirements that have been promulgated or approved by EPA through rulemaking at the time of issuance but have future-effective compliance dates):

(1) Any standard or other requirement provided for in the applicable implementation plan approved or promulgated by EPA through rulemaking under title I of the Act that implements the relevant requirements of the Act, including any revisions to that plan promulgated in part 52 of this chapter;

(2) Any term or condition of any preconstruction permits issued pursuant to regulations approved or promulgated through rulemaking under title I, including parts C or D, of the Act;

(3) Any standard or other requirement under section 111 of the Act, including section 111(d);

(4) Any standard or other requirement under section 112 of the Act, including any requirement concerning accident prevention under section 112(r)(7) of the Act;

(5) Any standard or other requirement of the acid rain program under title IV of the Act or the regulations promulgated thereunder;

(6) Any requirements established pursuant to section 504(b) or section 114(a)(3) of the Act;

(7) Any standard or other requirement under section 126(a)(1) and (c) of the Act;

(8) Any standard or other requirement governing solid waste incineration, under section 129 of the Act;

(9) Any standard or other requirement for consumer and commercial products, under section 183(e) of the Act;

(10) Any standard or other requirement for tank vessels under section 183(f) of the Act;

(11) Any standard or other requirement of the program to control air pollution from outer continental shelf sources, under section 328 of the Act;

(12) Any standard or other requirement of the regulations promulgated to protect stratospheric ozone under title VI of the Act, unless the Administrator has determined that such requirements need not be contained in a title V permit; and

(13) Any national ambient air quality standard or increment or visibility requirement under part C of title I of the Act, but only as it would apply to temporary sources permitted pursuant to section 504(e) of the Act.

Approved replicable methodology (ARM) means part 70 permit terms that:

(1) Specify a protocol which is consistent with and implements an applicable requirement, or requirement of this part, such that the protocol is based on sound scientific and/or mathematical principles and provides reproducible results using the same inputs; and

(2) Require the results of that protocol to be recorded and used for assuring compliance with such applicable requirement, any other applicable requirement implicated by implementation of the ARM, or requirement of this part, including where an ARM is used for determining applicability of a specific requirement to a particular change.

Designated representative shall have the meaning given to it in section 402(26) of the Act and the regulations promulgated thereunder.

Draft permit means the version of a permit for which the permitting authority offers public participation under §70.7(h) or affected State review under §70.8 of this part.

Emissions allowable under the permit means a federally enforceable permit term or condition determined at issuance to be required by an applicable requirement that establishes an emissions limit (including a work practice standard) or a federally enforceable emissions cap that the source has assumed to avoid an applicable requirement to which the source would otherwise be subject.

Emissions unit means any part or activity of a stationary source that emits or has the potential to emit any regulated air pollutant or any pollutant listed under section 112(b) of the Act. This term is not meant to alter or affect the definition of the term "unit" for purposes of title IV of the Act.

The EPA or the Administrator means the Administrator of the EPA or his designee.

Final permit means the version of a part 70 permit issued by the permitting authority that has completed all review procedures required by §§70.7 and 70.8 of this part.

Fugitive emissions are those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally-equivalent opening.

General permit means a part 70 permit that meets the requirements of §70.6(d).

Major source means any stationary source (or any group of stationary sources that are located on one or more continuous or adjacent properties, and are under common control of the same person (or persons under common control)) belonging to a single major industrial grouping and that are described in paragraph (1), (2), or (3) of this definition. For the purposes of defining "major source," a stationary source or group of stationary sources shall be

considered part of a single industrial grouping if all of the pollutant emitting activities at such source or group of sources on contiguous or adjacent properties belong to the same Major Group (*i.e.*, all have the same two-digit code) as described in the Standard Industrial Classification Manual, 1987. State programs may adopt the following provision: For onshore activities belonging to Standard Industrial Classification (SIC) Major Group 13: Oil and Gas Extraction, pollutant emitting activities shall be considered adjacent if they are located on the same surface site; or if they are located on surface sites that are located within ¼ mile of one another (measured from the center of the equipment on the surface site) and they share equipment. Shared equipment includes, but is not limited to, produced fluids storage tanks, phase separators, natural gas dehydrators or emissions control devices. Surface site, as used in the introductory text of this definition, has the same meaning as in 40 CFR 63.761.

(1) A major source under section 112 of the Act, which is defined as:

(i) For pollutants other than radionuclides, any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit, in the aggregate, 10 tons per year (tpy) or more of any hazardous air pollutant which has been listed pursuant to section 112(b) of the Act, 25 tpy or more of any combination of such hazardous air pollutants, or such lesser quantity as the Administrator may establish by rule. Notwithstanding the preceding sentence, emissions from any oil or gas exploration or production well (with its associated equipment) and emissions from any pipeline compressor or pump station shall not be aggregated with emissions from other similar units, whether or not such units are in a contiguous area or under common control, to determine whether such units or stations are major sources; or

(ii) For radionuclides, "major source" shall have the meaning specified by the Administrator by rule.

(2) A major stationary source of air pollutants, as defined in section 302 of the Act, that directly emits, or has the potential to emit, 100 tpy or more of any air pollutant subject to regulation (including any major source of fugitive emissions of any such pollutant, as determined by rule by the Administrator). The fugitive emissions of a stationary source shall not be considered in determining whether it is a major stationary source for the purposes of section 302(j) of the Act, unless the source belongs to one of the following categories of stationary source:

(i) Coal cleaning plants (with thermal dryers);

(ii) Kraft pulp mills;

(iii) Portland cement plants;

(iv) Primary zinc smelters;

(v) Iron and steel mills;

(vi) Primary aluminum ore reduction plants;

(vii) Primary copper smelters;

(viii) Municipal incinerators capable of charging more than 250 tons of refuse per day;

(ix) Hydrofluoric, sulfuric, or nitric acid plants;

(x) Petroleum refineries;

(xi) Lime plants;

(xii) Phosphate rock processing plants;

(xiii) Coke oven batteries;

(xiv) Sulfur recovery plants;

(xv) Carbon black plants (furnace process);

(xvi) Primary lead smelters;

(xvii) Fuel conversion plants;

(xviii) Sintering plants;

(xix) Secondary metal production plants;

(xx) Chemical process plants—The term chemical processing plant shall not include ethanol production facilities that produce ethanol by natural fermentation included in NAICS codes 325193 or 312140;

(xxi) Fossil-fuel boilers (or combination thereof) totaling more than 250 million British thermal units per hour heat input;

(xxii) Petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels;

(xxiii) Taconite ore processing plants;

(xxiv) Glass fiber processing plants;

(xxv) Charcoal production plants;

(xxvi) Fossil-fuel-fired steam electric plants of more than 250 million British thermal units per hour heat input; or

(xxvii) Any other stationary source category, which as of August 7, 1980 is being regulated under section 111 or 112 of the Act.

(3) A major stationary source as defined in part D of title I of the Act, including:

(i) For ozone nonattainment areas, sources with the potential to emit 100 tpy or more of volatile organic compounds or oxides of nitrogen in areas classified or treated as classified as "Marginal" or "Moderate," 50 tpy or more in areas classified or treated as classified as "Serious," 25 tpy or more in areas classified or treated as classified as "Severe," and 10 tpy or more in areas classified or treated as classified as "Extreme"; except that the references in this paragraph to 100, 50, 25 and 10 tpy of nitrogen oxides shall not apply with respect to any source for which the Administrator has made a finding, under section 182(f)(1) or (2) of the Act, that requirements under section 182(f) of the Act do not apply;

(ii) For ozone transport regions established pursuant to section 184 of the Act, sources with the potential to emit 50 tpy or more of volatile organic compounds;

(iii) For carbon monoxide nonattainment areas:

(A) That are classified or treated as classified as "Serious," and

(B) in which stationary sources contribute significantly to carbon monoxide levels as determined under rules issued by the Administrator, sources with the potential to emit 50 tpy or more of carbon monoxide; and

(iv) For particulate matter (PM-10) nonattainment areas classified or treated as classified as "Serious," sources with the potential to emit 70 tpy or more of PM-10.

Part 70 permit or *permit* (unless the context suggests otherwise) means any permit or group of permits covering a part 70 source that is issued, renewed, amended, or revised pursuant to this part.

Part 70 program or *State program* means a program approved by the Administrator under this part.

Part 70 source means any source subject to the permitting requirements of this part, as provided in §§70.3(a) and 70.3(b) of this part.

Permit modification means a revision to a part 70 permit that meets the requirements of §70.7(e) of this part.

Permit program costs means all reasonable (direct and indirect) costs required to develop and administer a permit program, as set forth in §70.9(b) of this part (whether such costs are incurred by the permitting authority or other State or local agencies that do not issue permits directly, but that support permit issuance or administration).

Permit revision means any permit modification or administrative permit amendment.

Permitting authority means either of the following:

(1) The Administrator, in the case of EPA-implemented programs; or

(2) The State air pollution control agency, local agency, other State agency, or other agency authorized by the Administrator to carry out a permit program under this part.

Potential to emit means the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation is enforceable by the Administrator. This term does not alter or affect the use of this term for any other purposes under the Act, or the term "capacity factor" as used in title IV of the Act or the regulations promulgated thereunder.

Proposed permit means the version of a permit that the permitting authority proposes to issue and forwards to the Administrator for review in compliance with §70.8.

Regulated air pollutant means the following:

(1) Nitrogen oxides or any volatile organic compounds;

(2) Any pollutant for which a national ambient air quality standard has been promulgated;

(3) Any pollutant that is subject to any standard promulgated under section 111 of the Act;

(4) Any Class I or II substance subject to a standard promulgated under or established by title VI of the Act; or

(5) Any pollutant subject to a standard promulgated under section 112 or other requirements established under section 112 of the Act, including sections 112(g), (j), and (r) of the Act, including the following:

(i) Any pollutant subject to requirements under section 112(j) of the Act. If the Administrator fails to promulgate a standard by the date established pursuant to section 112(e) of the Act, any pollutant for which a subject source would be major shall be considered to be regulated on the date 18 months after the applicable date established pursuant to section 112(e) of the Act; and

(ii) Any pollutant for which the requirements of section 112(g)(2) of the Act have been met, but only with respect to the individual source subject to section 112(g)(2) requirement.

Regulated pollutant (for presumptive fee calculation), which is used only for purposes of §70.9(b)(2), means any regulated air pollutant except the following:

(1) Carbon monoxide;

(2) Any pollutant that is a regulated air pollutant solely because it is a Class I or II substance to a standard promulgated under or established by title VI of the Act;

(3) Any pollutant that is a regulated air pollutant solely because it is subject to a standard or regulation under section 112(r) of the Act; or

(4) Greenhouse gases.

Renewal means the process by which a permit is reissued at the end of its term.

Responsible official means one of the following:

(1) For a corporation: a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and either:

(i) The facilities employ more than 250 persons or have gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars); or

(ii) The delegation of authority to such representatives is approved in advance by the permitting authority;

(2) For a partnership or sole proprietorship: a general partner or the proprietor, respectively;

(3) For a municipality, State, Federal, or other public agency: Either a principal executive officer or ranking elected official. For the purposes of this part, a principal executive officer of a Federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of EPA); or

(4) For affected sources:

(i) The designated representative in so far as actions, standards, requirements, or prohibitions under title IV of the Act or the regulations promulgated thereunder are concerned; and

(ii) The designated representative for any other purposes under part 70.

Section 502(b)(10) changes are changes that contravene an express permit term. Such changes do not include changes that would violate applicable requirements or contravene federally enforceable permit terms and conditions that are monitoring (including test methods), recordkeeping, reporting, or compliance certification requirements.

State means any non-Federal permitting authority, including any local agency, interstate association, or statewide program. The term "State" also includes the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands. Where such meaning is clear from the context, "State" shall have its conventional meaning. For purposes of the acid rain program, the term "State" shall be limited to authorities within the 48 contiguous States and the District of Columbia as provided in section 402(14) of the Act.

Stationary source means any building, structure, facility, or installation that emits or may emit any regulated air pollutant or any pollutant listed under section 112(b) of the Act.

Subject to regulation means, for any air pollutant, that the pollutant is subject to either a provision in the Clean Air Act, or a nationally-applicable regulation codified by the Administrator in subchapter C of this chapter, that requires actual control of the quantity of emissions of that pollutant, and that such a control requirement has taken effect and is operative to control, limit or restrict the quantity of emissions of that pollutant released from the regulated activity. Except that:

(1) *Greenhouse gases (GHGs)*, the air pollutant defined in §86.1818-12(a) of this chapter as the aggregate group of six greenhouse gases: carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, shall not be subject to regulation unless, as of July 1, 2011, the GHG emissions are at a stationary source emitting or having the potential to emit 100,000 tpy CO_2 equivalent emissions.

(2) The term *tpy CO_2 equivalent emissions (CO_2e)* shall represent an amount of GHGs emitted, and shall be computed by multiplying the mass amount of emissions (tpy), for each of the six greenhouse gases in the pollutant GHGs, by the gas's associated global warming potential published at Table A-1 to subpart A of part 98 of this chapter—Global Warming Potentials, and summing the resultant value for each to compute a tpy CO_2e. For purposes of this paragraph, prior to July 21, 2014, the mass of the greenhouse gas carbon dioxide shall not include carbon dioxide emissions resulting from the combustion or decomposition of non-fossilized and biodegradable organic material originating from plants, animals, or micro-organisms (including products, by-products, residues and waste from agriculture, forestry and related industries as well as the non-fossilized and biodegradable organic fractions of industrial and municipal wastes, including gases and liquids recovered from the decomposition of non-fossilized and biodegradable organic material).

Whole program means a part 70 permit program, or any combination of partial programs, that meet all the requirements of these regulations and cover all the part 70 sources in the entire State. For the purposes of this definition, the term "State" does not include local permitting authorities, but refers only to the entire State, Commonwealth, or Territory.

[57 FR 32295, July 21, 1992, as amended at 66 FR 59166, Nov. 27, 2001; 69 FR 31505, June 3, 2004; 72 FR 24078, May 1, 2007; 74 FR 51438, Oct. 6, 2009; 75 FR 31607, June 3, 2010; 76 FR 43507, July 20, 2011; 80 FR 12318, Mar. 6, 2015; 80 FR 64659, Oct. 23, 2015; 81 FR 35633, June 3, 2016]

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§70.3 Applicability.

(a) *Part 70 sources.* A State program with whole or partial approval under this part must provide for permitting of the following sources:

(1) Any major source;

(2) Any source, including an area source, subject to a standard, limitation, or other requirement under section 111 of the Act;

(3) Any source, including an area source, subject to a standard or other requirement under section 112 of the Act, except that a source is not required to obtain a permit solely because it is subject to regulations or requirements under section 112(r) of this Act;

(4) Any affected source; and

(5) Any source in a source category designated by the Administrator pursuant to this section.

(b) *Source category exemptions.* (1) All sources listed in paragraph (a) of this section that are not major sources, affected sources, or solid waste incineration units required to obtain a permit pursuant to section 129(e) of the Act, may be exempted by the State from the obligation to obtain a part 70 permit until such time as the Administrator completes a rulemaking to determine how the program should be structured for nonmajor sources and the appropriateness of any permanent exemptions in addition to those provided for in paragraph (b)(4) of this section.

(2) In the case of nonmajor sources subject to a standard or other requirement under either section 111 or section 112 of the Act after July 21, 1992 publication, the Administrator will determine whether to exempt any or all such applicable sources from the requirement to obtain a part 70 permit at the time that the new standard is promulgated.

(3) [Reserved]

(4) The following source categories are exempted from the obligation to obtain a part 70 permit:

(i) All sources and source categories that would be required to obtain a permit solely because they are subject to part 60, subpart AAA—Standards of Performance for New Residential Wood Heaters; and

(ii) All sources and source categories that would be required to obtain a permit solely because they are subject to part 61, subpart M—National Emission Standard for Hazardous Air Pollutants for Asbestos, §61.145, Standard for Demolition and Renovation.

(c) *Emissions units and part 70 sources.* (1) For major sources, the permitting authority shall include in the permit all applicable requirements for all relevant emissions units in the major source.

(2) For any nonmajor source subject to the part 70 program under paragraph (a) or (b) of this section, the permitting authority shall include in the permit all applicable requirements applicable to emissions units that cause the source to be subject to the part 70 program.

(d) *Fugitive emissions.* Fugitive emissions from a part 70 source shall be included in the permit application and the part 70 permit in the same manner as stack emissions, regardless of whether the source category in question is included in the list of sources contained in the definition of major source.

[57 FR 32295, July 21, 1992, as amended at 70 FR 75346, Dec. 19, 2005]

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§70.4 State program submittals and transition.

(a) *Date for submittal.* Not later than November 15, 1993, the Governor of each State shall submit to the Administrator for approval a proposed part 70 program, under State law or under an interstate compact, meeting the requirements of this part. If part 70 is subsequently revised such that the Administrator determines that it is necessary to require a change to an approved State program, the required revisions to the program shall be submitted within 12 months of the final changes to part 70 or within such other period as authorized by the Administrator.

(b) *Elements of the initial program submission.* Any State that seeks to administer a program under this part shall submit to the Administrator a letter of submittal from the Governor or his designee requesting EPA approval of the program and at least three copies of a program submission. The submission shall contain the following:

(1) A complete program description describing how the State intends to carry out its responsibilities under this part.

(2) The regulations that comprise the permitting program, reasonably available evidence of their procedurally correct adoption, (including any notice of public comment and any significant comments received on the proposed part 70 program as requested by the Administrator), and copies of all applicable State or local statutes and regulations including those governing State administrative procedures that either authorize the part 70 program or restrict its implementation. The State shall include with the regulations any criteria used to determine insignificant activities or emission levels for purposes of determining complete applications consistent with §70.5(c) of this part.

(3) A legal opinion from the Attorney General for the State, or the attorney for those State, local, or interstate air pollution control agencies that have independent legal counsel, stating that the laws of the State, locality, or interstate compact provide adequate authority to carry out all aspects of the program. This statement shall include citations to the specific states, administrative regulations, and, where appropriate, judicial decisions that demonstrate adequate authority. State statutes and regulations cited by the State Attorney General or independent legal counsel shall be in the form of lawfully adopted State states and regulations at the time the statement is signed and shall be fully effective by the time the program is approved. To qualify as "independent legal counsel," the attorney signing the statement required by this section shall have full authority to independently represent the State agency in court on all matters pertaining to the State program. The legal opinion shall also include a demonstration of adequate legal authority to carry out the requirements of this part, including authority to carry out each of the following:

(i) Issue permits and assure compliance with each applicable requirement and requirement of this part by all part 70 sources.

(ii) Incorporate monitoring, recordkeeping, reporting, and compliance certification requirements into part 70 permits consistent with §70.6.

(iii) Issue permits for a fixed term of 5 years in the case of permits with acid rain provisions and issue all other permits for a period not to exceed 5 years, except for permits issued for solid waste incineration units combusting municipal waste subject to standards under section 129(e) of the Act.

(iv) Issue permits for solid waste incineration units combusting municipal waste subject to standards under section 129(e) of the Act for a period not to exceed 12 years and review such permits at least every 5 years. No permit for a solid waste incineration unit may be issued by an agency, instrumentality or person that is also responsible, in whole or in part, for the design and construction or operation of the unit.

(v) Incorporate into permits all applicable requirements and requirements of this part.

(vi) Terminate, modify, or revoke and reissue permits for cause.

(vii) Enforce permits, permit fee requirements, and the requirement to obtain a permit, as specified in §70.11.

(viii) Make available to the public any permit application, compliance plan, permit, and monitoring and compliance, certification report pursuant to section 503(e) of the Act, except for information entitled to confidential treatment pursuant to section 114(c) of the Act. The contents of a part 70 permit shall not be entitled to protection under section 115(c) of the Act.

(ix) Not issue a permit if the Administrator timely objects to its issuance pursuant to §70.8(c) of this part or, if the permit has not already been issued, to §70.8(d) of this part.

(x) Provide an opportunity for judicial review in State court of the final permit action by the applicant, any person who participated in the public participation process provided pursuant to §70.7(h) of this part, and any other person who could obtain judicial review of such actions under State laws.

(xi) Provide that, solely for the purposes of obtaining judicial review in State court for failure to take final action, final permit action shall include the failure of the permitting authority to take final action on an application for a permit, permit renewal, or permit revision within the time specified in the State program. If the State program allows sources to make changes subject to post hoc review [as set forth in §§70.7(e)(2) and (3) of this part], the permitting

authority's failure to take final action within 90 days of receipt of an application requesting minor permit modification procedures (or 180 days for modifications subject to group processing requirements) must be subject to judicial review in State court.

(xii) Provide that the opportunity for judicial review described in paragraph (b)(3)(x) of this section shall be the exclusive means for obtaining judicial review of the terms and conditions of permits, and require that such petitions for judicial review must be filed no later than 90 days after the final permit action, or such shorter time as the State shall designate. Notwithstanding the preceding requirement, petitions for judicial review of final permit actions can be filed after the deadline designated by the State, only if they are based solely on grounds arising after the deadline for judicial review. Such petitions shall be filed no later than 90 days after the new grounds for review arise or such shorter time as the State shall designate. If the final permit action being challenged is the permitting authority's failure to take final action, a petition for judicial review may be filed any time before the permitting authority denies the permit or issues the final permit.

(xiii) Ensure that the authority of the State/local permitting Agency is not used to modify the acid rain program requirements.

(4) Relevant permitting program documentation not contained in the State regulations, including the following:

(i) Copies of the permit form(s), application form(s), and reporting form(s) the State intends to employ in its program; and

(ii) Relevant guidance issued by the State to assist in the implementation of its permitting program, including criteria for monitoring source compliance (e.g., inspection strategies).

(5) A complete description of the State's compliance tracking and enforcement program or reference to any agreement the State has with EPA that provides this information.

(6) A showing of adequate authority and procedures to determine within 60 days of receipt whether applications (including renewal applications) are complete, to request such other information as needed to process the application, and to take final action on complete applications within 18 months of the date of their submittal, except for initial permit applications, for which the permitting authority may take up to 3 years from the effective date of the program to take final action on the application, as provided for in the transition plan.

(7) A demonstration, consistent with §70.9, that the permit fees required by the State program are sufficient to cover permit program costs.

(8) A statement that adequate personnel and funding have been made available to develop, administer, and enforce the program. This statement shall include the following:

(i) A description in narrative form of the scope, structure, coverage, and processes of the State program.

(ii) A description of the organization and structure of the agency or agencies that will have responsibility for administering the program, including the information specified in this paragraph. If more than one agency is responsible for administration of a program, the responsibilities of each agency must be delineated, their procedures for coordination must be set forth, and an agency shall be designated as a "lead agency" to facilitate communications between EPA and the other agencies having program responsibility.

(iii) A description of the agency staff who will carry out the State program, including the number, occupation, and general duties of the employees. The State need not submit complete job descriptions for every employee carrying out the State program.

(iv) A description of applicable State procedures, including permitting procedures and any State administrative or judicial review procedures.

(v) An estimate of the permit program costs for the first 4 years after approval, and a description of how the State plans to cover those costs.

(9) A commitment from the State to submit, at least annually to the Administrator, information regarding the State's enforcement activities including, but not limited to, the number of criminal and civil, judicial and administrative enforcement actions either commenced or concluded; the penalties, fines, and sentences obtained in those actions; and the number of administrative orders issued.

(10) A requirement under State law that, if a timely and complete application for a permit renewal is submitted, consistent with §70.5(a)(2), but the State has failed to issue or deny the renewal permit before the end of the term of the previous permit, then:

(i) The permit shall not expire until the renewal permit has been issued or denied and any permit shield that may be granted pursuant to §70.6(f) may extend beyond the original permit term until renewal; or

(ii) All the terms and conditions of the permit including any permit shield that may be granted pursuant to §70.6(f) shall remain in effect until the renewal permit has been issued or denied.

(11) A transition plan providing a schedule for submittal and final action on initial permit applications for all part 70 sources. This plan shall provide that:

(i) Submittal of permit applications by all part 70 sources (including any sources subject to a partial or interim program) shall occur within 1 year after the effective date of the permit program;

(ii) Final action shall be taken on at least one-third of such applications annually over a period not to exceed 3 years after such effective date;

(iii) Any complete permit application containing an early reduction demonstration under section 112(i)(5) of the Act shall be acted on within 9 months of receipt of the complete application; and

(iv) Submittal of permit applications and the permitting of affected sources shall occur in accordance with the deadlines in title IV of the Act and the regulations promulgated thereunder.

(12) Provisions consistent with paragraphs (b)(12)(i) through (iii) of this section to allow changes within a permitted facility without requiring a permit revision, if the changes are not modifications under any provision of title I of the Act and the changes do not exceed the emissions allowable under the permit (whether expressed therein as a rate of emissions or in the terms of total emissions): *Provided*, That the facility provides the Administrator and the permitting authority with written notification as required below in advance of the proposed changes, which shall be a minimum of 7 days, unless the permitting authority provides in its regulations a different time frame for emergencies. The source, permitting authority, and EPA shall attach each such notice to their copy of the relevant permit. The following provisions implement this requirement of an approvable part 70 permit program:

(i) The program shall allow permitted sources to make section 502(b)(10) changes without requiring a permit revision, if the changes are not modifications under any provision of title I of the Act and the changes do not exceed the emissions allowable under the permit (whether expressed therein as a rate of emissions or in terms of total emissions).

(A) For each such change, the written notification required above shall include a brief description of the change within the permitted facility, the date on which the change will occur, any change in emissions, and any permit term or condition that is no longer applicable as a result of the change.

(B) The permit shield described in §70.6(f) of this part shall not apply to any change made pursuant to this paragraph (b)(12)(i) of this section.

(ii) The program may provide for permitted sources to trade increases and decreases in emissions in the permitted facility, where the applicable implementation plan provides for such emissions trades without requiring a permit revision and based on the 7-day notice prescribed in this paragraph (b)(12)(ii) of this section. This provision is available in those cases where the permit does not already provide for such emissions trading.

(A) Under this paragraph (b)(12)(ii) of this section, the written notification required above shall include such information as may be required by the provision in the applicable implementation plan authorizing the emissions trade, including at a minimum, when the proposed change will occur, a description of each such change, any change in emissions, the permit requirements with which the source will comply using the emissions trading provisions of the applicable implementation plan, and the pollutants emitted subject to the emissions trade. The notice shall also refer to the provisions with which the source will comply in the applicable implementation plan and that provide for the emissions trade.

(B) The permit shield described in §70.6(f) of this part shall not extend to any change made under this paragraph (b)(12)(ii) of this section. Compliance with the permit requirements that the source will meet using the emissions trade shall be determined according to requirements of the applicable implementation plan authorizing the emissions trade.

(iii) The program shall require the permitting authority, if a permit applicant requests it, to issue permits that contain terms and conditions, including all terms required under §70.6 (a) and (c) of this part to determine compliance, allowing for the trading of emissions increases and decreases in the permitted facility solely for the purpose of complying with a federally-enforceable emissions cap that is established in the permit independent of otherwise applicable requirements. The permit applicant shall include in its application proposed replicable procedures and permit terms that ensure the emissions trades are quantifiable and enforceable. The permitting authority shall not be required to include in the emissions trading provisions any emissions units for which emissions are not quantifiable or for which there are no replicable procedures to enforce the emissions trades. The permit shall also require compliance with all applicable requirements.

(A) Under this paragraph (b)(12)(iii) of this section, the written notification required above shall state when the change will occur and shall describe the changes in emissions that will result and how these increases and decreases in emissions will comply with the terms and conditions of the permit.

(B) The permit shield described in §70.6(f) of this part may extend to terms and conditions that allow such increases and decreases in emissions.

(13) Provisions for adequate, streamlined, and reasonable procedures for expeditious review of permit revisions or modifications. The program may meet this requirement by using procedures that meet the requirements of §70.7(e) or that are substantially equivalent to those provided in §70.7(e) of this part.

(14) If a State allows changes that are not addressed or prohibited by the permit, other than those described in paragraph (b)(15) of this section, to be made without a permit revision, provisions meeting the requirements of paragraphs (b)(14) (i) through (iii) of this section. Although a State may, as a matter of State law, prohibit sources from making such changes without a permit revision, any such prohibition shall not be enforceable by the Administrator or by citizens under the Act unless the prohibition is required by an applicable requirement. Any State procedures implementing such a State law prohibition must include the requirements of paragraphs (b)(14) (i) through (iii) of this section.

(i) Each such change shall meet all applicable requirements and shall not violate any existing permit term or condition.

(ii) Sources must provide contemporaneous written notice to the permitting authority and EPA of each such change, except for changes that qualify as insignificant under the provisions adopted pursuant to §70.5(c) of this part. Such written notice shall describe each such change, including the date, any change in emissions, pollutants emitted, and any applicable requirement that would apply as a result of the change.

(iii) The change shall not qualify for the shield under §70.6(f) of this part.

(iv) The permittee shall keep a record describing changes made at the source that result in emissions of a regulated air pollutant subject to an applicable requirement, but not otherwise regulated under the permit, and the emissions resulting from those changes.

(15) Provisions prohibiting sources from making, without a permit revision, changes that are not addressed or prohibited by the part 70 permit, if such changes are subject to any requirements under title IV of the Act or are modifications under any provision of title I of the Act.

(16) Provisions requiring the permitting authority to implement the requirements of §§70.6 and 70.7 of this part.

(c) *Partial programs.* (1) The EPA may approve a partial program that applies to all part 70 sources within a limited geographic area (e.g., a local agency program covering all sources within the agency's jurisdiction). To be approvable, any partial program must, at a minimum, ensure compliance with all of the following applicable requirements, as they apply to the sources covered by the partial program:

(i) All requirements of title V of the Act and of part 70;

(ii) All applicable requirements of title IV of the Act and regulations promulgated thereunder which apply to affected sources; and

(iii) All applicable requirements of title I of the Act, including those established under sections 111 and 112 of the Act.

(2) Any partial permitting program, such as that of a local air pollution control agency, providing for the issuance of permits by a permitting authority other than the State, shall be consistent with all the elements required in paragraphs (b) (1) through (16) of this section.

(3) Approval of any partial program does not relieve the State from its obligation to submit a whole program or from application of any sanctions for failure to submit a fully-approvable whole program.

(4) Any partial program may obtain interim approval under paragraph (d) of this section if it substantially meets the requirements of this paragraph (c) of this section.

(d) *Interim approval.* (1) If a program (including a partial permit program) submitted under this part substantially meets the requirements of this part, but is not fully approvable, the Administrator may be rule grant the program interim approval.

(2) Interim approval shall expire on a date set by the Administrator (but not later than 2 years after such approval), and may not be renewed. Sources shall become subject to the program according to the schedule approved in the State program. Permits granted under an interim approval shall expire at the end of their fixed term, unless renewed under a part 70 program.

(3) The EPA may grant interim approval to any program if it meets each of the following minimum requirements and otherwise substantially meets the requirements of this part:

(i) *Adequate fees.* The program must provide for collecting permit fees adequate for it to meet the requirements of §70.9 of this part.

(ii) *Applicable requirements.* (A) The program must provide for adequate authority to issue permits that assure compliance with the requirements of paragraph (c)(1) of this section for those major sources covered by the program.

(B) Notwithstanding paragraph (d)(3)(ii)(A) of this section, where a State or local permitting authority lacks adequate authority to issue or revise permits that assure compliance with applicable requirements established

exclusively through an EPA-approved minor NSR program, EPA may grant interim approval to the program upon a showing by the permitting authority of compelling reasons which support the interim approval.

(C) Any part 70 permit issued during an interim approval granted under paragraph (d)(3)(ii)(B) of this section .nat does not incorporate minor NSR requirements shall:

(*1*) Note this fact in the permit;

(*2*) Indicate how citizens may obtain access to excluded minor NSR permits;

(*3*) Provide a cross reference, such as a listing of the permit number, for each minor NSR permit containing an excluded minor NSR term; and

(*4*) State that the minor NSR requirements which are excluded are not eligible for the permit shield under §70.6(f).

(D) A program receiving interim approval for the reason specified in (d)(3)(ii)(B) of this section must, upon or before granting of full approval, institute proceedings to reopen part 70 permits to incorporate excluded minor NSR permits as terms of the part 70 permits, as required by §70.7(f)(1)(iv). Such reopening need not follow full permit issuance procedures nor the notice requirement of §70.7(f)(3), but may instead follow the permit revision procedure in effect under the State's approved part 70 program for incorporation of minor NSR permits.

(iii) *Fixed term.* The program must provide for fixed permit terms, consistent with paragraphs (b)(3) (iii) and (iv) of this section.

(iv) *Public participation.* The program must provide for adequate public notice of and an opportunity for public comment and a hearing on draft permits and revisions, except for modifications qualifying for minor permit modification procedures under §70.7(e) of this part.

(v) *EPA and affected State review.* The program must allow EPA an opportunity to review each proposed permit, including permit revisions, and to object to its issuance consistent with §70.8(c) of this part. The program must provide for affected State review consistent with §70.8(b) of this part.

(vi) *Permit issuance.* The program must provide that the proposed permit will not be issued if EPA objects to its issuance.

(vii) *Enforcement.* The program must contain authority to enforce permits, including the authority to assess penalties against sources that do not comply with their permits or with the requirement to obtain a permit.

(viii) *Operational flexibility.* The program must allow changes within a permitted facility without requiring a permit revision, if the changes are not modifications under any provision of title I of the act and the changes do not exceed the emissions allowable under the permit, consistent with paragraph (b)(12) of this section.

(ix) *Streamlined procedures.* The program must provide for streamlined procedures for issuing and revising permits and determining expeditiously after receipt of a permit application or application for a permit revision whether such application is complete.

(x) *Permit application.* The program submittal must include copies of the permit application and reporting form(s) that the State will use in implementing the interim program.

(xi) *Approval of AOSs.* The program submittal must include provisions to insure that AOSs requested by the source as approved by the permitting authority are included in the part 70 permit pursuant to §70.6(a)(9).

(e) *EPA review of permit program submittals.* Within 1 year after receiving a program submittal, the Administrator shall approve or disapprove the program, in whole or in part, by publishing a notice in the FEDERAL

REGISTER. Prior to such notice, the Administrator shall provide an opportunity for public comment on such approval or disapproval. Any EPA action disapproving a program, in whole or in part, shall include a statement of the revisions or modifications necessary to obtain full approval. The Administrator shall approve State programs that conform to the requirements of this part.

(1) Within 60 days of receipt by EPA of a State program submission, EPA will notify the State whether its submission is complete enough to warrant review by EPA for either full, partial, or interim approval. If EPA finds that a State's submission is complete, the 1-year review period (i.e., the period of time allotted for formal EPA review of a proposed State program) shall be deemed to have begun on the date of receipt of the State's submission. If EPA finds that a State's submission is incomplete, the 1-year review period shall not begin until all the necessary information is received by EPA.

(2) If the State's submission is materially changed during the 1-year review period, the Administrator may extend the review period for no more than 1 year following receipt of the revised submission.

(3) In any notice granting interim or partial approval, the Administrator shall specify the changes or additions that must be made before the program can receive full approval and the conditions for implementation of the program until that time.

(f) *State response to EPA review of program*—(1) *Disapproval.* The State shall submit to EPA program revisions or modifications required by the Administrator's action disapproving the program, or any part thereof, within 180 days of receiving notification of the disapproval.

(2) *Interim approval.* The State shall submit to EPA changes to the program addressing the deficiencies specified in the interim approval no later than 6 months prior to the expiration of the interim approval.

(g) *Effective date.* The effective date of a part 70 program, including any partial or interim program approved under this part, shall be the effective date of approval by the Administrator.

(h) *Individual permit transition.* Upon approval of a State program, the Administrator shall suspend the issuance of Federal permits for those activities subject to the approved State program, except that the Administrator will continue to issue phase I acid rain permits. After program approval, EPA shall retain jurisdiction over any permit (including any general permit) that it has issued unless arrangements have been made with the State to assume responsibility for these permits. Where EPA retains jurisdiction, it will continue to process permit appeals and modification requests, to conduct inspections, and to receive and review monitoring reports. If any permit appeal or modification request is not finally resolved when the federally-issued permit expires, EPA may, with the consent of the State, retain jurisdiction until the matter is resolved. Upon request by a State, the Administrator may delegate authority to implement all or part of a permit issued by EPA, if a part 70 program has been approved for the State. The delegation may include authorization for the State to collect appropriate fees, consistent with §70.9 of this part.

(i) *Program revisions.* Either EPA or a State with an approved program may initiate a program revision. Program revision may be necessary when the relevant Federal or State statutes or regulations are modified or supplemented. The State shall keep EPA apprised of any proposed modifications to its basic statutory or regulatory authority or procedures.

(1) If the Administrator determines pursuant to §70.10 of this part that a State is not adequately administering the requirements of this part, or that the State's permit program is inadequate in any other way, the State shall revise the program or its means of implementation to correct the inadequacy. The program shall be revised within 180 days, or such other period as the Administrator may specify, following notification by the Administrator, or within 2 years if the State demonstrates that additional legal authority is necessary to make the program revision.

(2) Revision of a State program shall be accomplished as follows:

(i) The State shall submit a modified program description, Attorney General's statement, or such other documents as EPA determines to be necessary.

(ii) After EPA receives a proposed program revision, it will publish in the FEDERAL REGISTER a public notice summarizing the proposed change and provide a public comment period of at least 30 days.

(iii) The Administrator shall approve or disapprove program revisions based on the requirements of this part and of the Act.

(iv) A program revision shall become effective upon the approval of the Administrator. Notice of approval of any substantial revision shall be published in the FEDERAL REGISTER. Notice of approval of nonsubstantial program revisions may be given by a letter from the Administrator to the Governor or a designee.

(v) The Governor of any State with an approved part 70 program shall notify EPA whenever the Governor proposes to transfer all or part of the program to any other agency, and shall identify any new division of responsibilities among the agencies involved. The new agency is not authorized to administer the program until the revision has been approved by the Administrator under this paragraph.

(3) Whenever the Administrator has reason to believe that circumstances have changed with respect to a State program, he may request, and the State shall provide, a supplemental Attorney General's statement, program description, or such other documents or information as he determines are necessary.

(j) *Sharing of information.* (1) Any information obtained or used in the administration of a State program shall be available to EPA upon request without restriction and in a form specified by the Administrator, including computer-readable files to the extent practicable. If the information has been submitted to the State under a claim of confidentiality, the State may require the source to submit this information to the Administrator directly. Where the State submits information to the Administrator under a claim of confidentiality, the State shall submit that claim to EPA when providing information to EPA under this section. Any information obtained from a State or part 70 source accompanied by a claim of confidentiality will be treated in accordance with the regulations in part 2 of this chapter.

(2) The EPA will furnish to States with approved programs the information in its files that the State needs to implement its approved program. Any such information submitted to EPA under a claim of confidentiality will be subject to the regulations in part 2 of this chapter.

(k) *Administration and enforcement.* Any State that fails to adopt a complete, approvable part 70 program, or that EPA determines is not adequately administering or enforcing such program shall be subject to certain Federal sanctions as set forth in §70.10 of this part.

[57 FR 32295, July 21, 1992, as amended at 61 FR 31448, June 20, 1996; 61 FR 56370, Oct. 31, 1996; 66 FR 27010, May 15, 2001; 74 FR 51438, Oct. 6, 2009]

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§70.5 Permit applications.

(a) *Duty to apply.* For each part 70 source, the owner or operator shall submit a timely and complete permit application in accordance with this section.

(1) *Timely application.* (i) A timely application for a source applying for a part 70 permit for the first time is one that is submitted within 12 months after the source becomes subject to the permit program or on or before such earlier date as the permitting authority may establish.

(ii) Part 70 sources required to meet the requirements under section 112(g) of the Act, or to have a permit under the preconstruction review program approved into the applicable implementation plan under part C or D of title I of the Act, shall file a complete application to obtain the part 70 permit or permit revision within 12 months after commencing operation or on or before such earlier date as the permitting authority may establish. Where an existing part 70 permit would prohibit such construction or change in operation, the source must obtain a permit revision before commencing operation.

(iii) For purposes of permit renewal, a timely application is one that is submitted at least 6 months prior to the date of permit expiration, or such other longer time as may be approved by the Administrator that ensures that the term of the permit will not expire before the permit is renewed. In no event shall this time be greater than 18 months.

(iv) Applications for initial phase II acid rain permits shall be submitted to the permitting authority by January 1, 1996 for sulfur dioxide, and by January 1, 1998 for nitrogen oxides.

(2) *Complete application.* The program shall provide criteria and procedures for determining in a timely fashion when applications are complete. To be deemed complete, an application must provide all information required pursuant to paragraph (c) of this section, except that applications for permit revision need supply such information only if it is related to the proposed change. Information required under paragraph (c) of this section must be sufficient to evaluate the subject source and its application and to determine all applicable requirements. The program shall require that a responsible official certify the submitted information consistent with paragraph (d) of this section. Unless the permitting authority determines that an application is not complete within 60 days of receipt of the application, such application shall be deemed to be complete, except as otherwise provided in §70.7(a)(4) of this part. If, while processing an application that has been determined or deemed to be complete, the permitting authority determines that additional information is necessary to evaluate or take final action on that application, it may request such information in writing and set a reasonable deadline for a response. The source's ability to operate without a permit, as set forth in §70.7(b) of this part, shall be in effect from the date the application is determined or deemed to be complete until the final permit is issued, provided that the applicant submits any requested additional information by the deadline specified by the permitting authority.

(3) *Confidential information.* In the case where a source has submitted information to the State under a claim of confidentiality, the permitting authority may also require the source to submit a copy of such information directly to the Administrator.

(b) *Duty to supplement or correct application.* Any applicant who fails to submit any relevant facts or who has submitted incorrect information in a permit application shall, upon becoming aware of such failure or incorrect submittal, promptly submit such supplementary facts or corrected information. In addition, an applicant shall provide additional information as necessary to address any requirements that become applicable to the source after the date it filed a complete application but prior to release of a draft permit.

(c) *Standard application form and required information.* The State program under this part shall provide for a standard application form or forms. Information as described below for each emissions unit at a part 70 source shall be included in the application. The Administrator may approve as part of a State program a list of insignificant activities and emissions levels which need not be included in permit applications. However, for insignificant activities which are exempted because of size or production rate, a list of such insignificant activities must be included in the application. An application may not omit information needed to determine the applicability of, or to impose, any applicable requirement, or to evaluate the fee amount required under the schedule approved pursuant to §70.9 of this part. The permitting authority may use discretion in developing application forms that best meet program needs and administrative efficiency. The forms and attachments chosen, however, shall include the elements specified below:

(1) Identifying information, including company name and address (or plant name and address if different from the company name), owner's name and agent, and telephone number and names of plant site manager/contact.

(2) A description of the source's processes and products (by Standard Industrial Classification (SIC) Code) including those associated with any proposed AOS identified by the source.

(3) The following emission-related information:

(i) All emissions of pollutants for which the source is major, and all emissions of regulated air pollutants. A permit application shall describe all emissions of regulated air pollutants emitted from any emissions unit, except where such units are exempted under this paragraph (c) of this section. The permitting authority shall require additional information related to the emissions of air pollutants sufficient to verify which requirements are applicable

to the source, and other information necessary to collect any permit fees owed under the fee schedule approved pursuant to §70.9(b) of this part.

(ii) Identification and description of all points of emissions described in paragraph (c)(3)(i) of this section in sufficient detail to establish the basis for fees and applicability of requirements of the Act.

(iii) Emissions rate in tpy and in such terms as are necessary to establish compliance consistent with the applicable standard reference test method. For emissions units subject to an annual emissions cap, tpy can be reported as part of the aggregate emissions associated with the cap, except where more specific information is needed, including where necessary to determine and/or assure compliance with an applicable requirement.

(iv) The following information to the extent it is needed to determine or regulate emissions: Fuels, fuel use, raw materials, production rates, and operating schedules.

(v) Identification and description of air pollution control equipment and compliance monitoring devices or activities.

(vi) Limitations on source operation affecting emissions or any work practice standards, where applicable, for all regulated pollutants at the part 70 source.

(vii) Other information required by any applicable requirement (including information related to stack height limitations developed pursuant to section 123 of the Act).

(viii) Calculations on which the information in paragraphs (c)(3)(i) through (vii) of this section is based.

(4) The following air pollution control requirements:

(i) Citation and description of all applicable requirements, and

(ii) Description of or reference to any applicable test method for determining compliance with each applicable requirement.

(5) Other specific information that may be necessary to implement and enforce other applicable requirements of the Act or of this part or to determine the applicability of such requirements.

(6) An explanation of any proposed exemptions from otherwise applicable requirements.

(7) Additional information as determined to be necessary by the permitting authority to define proposed AOSs identified by the source pursuant to §70.6(a)(9) of this part or to define permit terms and conditions implementing any AOS under §70.6(a)(9) or implementing §70.4(b)(12) or §70.6(a)(10) of this part. The permit application shall include documentation demonstrating that the source has obtained all authorization(s) required under the applicable requirements relevant to any proposed AOSs, or a certification that the source has submitted all relevant materials to the appropriate permitting authority for obtaining such authorization(s).

(8) A compliance plan for all part 70 sources that contains all the following:

(i) A description of the compliance status of the source with respect to all applicable requirements.

(ii) A description as follows:

(A) For applicable requirements with which the source is in compliance, a statement that the source will continue to comply with such requirements.

(B) For applicable requirements that will become effective during the permit term, a statement that the source will meet such requirements on a timely basis.

(C) For requirements for which the source is not in compliance at the time or permit issuance, a narrative description of how the source will achieve compliance with such requirements.

(D) For applicable requirements associated with a proposed AOS, a statement that the source will meet such requirements upon implementation of the AOS. If a proposed AOS would implicate an applicable requirement that will become effective during the permit term, a statement that the source will meet such requirements on a timely basis.

(iii) A compliance schedule as follows:

(A) For applicable requirements with which the source is in compliance, a statement that the source will continue to comply with such requirements.

(B) For applicable requirements that will become effective during the permit term, a statement that the source will meet such requirements on a timely basis. A statement that the source will meet in a timely manner applicable requirements that become effective during the permit term shall satisfy this provision, unless a more detailed schedule is expressly required by the applicable requirement.

(C) A schedule of compliance for sources that are not in compliance with all applicable requirements at the time of permit issuance. Such a schedule shall include a schedule of remedial measures, including an enforceable sequence of actions with milestones, leading to compliance with any applicable requirements for which the source will be in noncompliance at the time of permit issuance. This compliance schedule shall resemble and be at least as stringent as that contained in any judicial consent decree or administrative order to which the source is subject. Any such schedule of compliance shall be supplemental to, and shall not sanction noncompliance with, the applicable requirements on which it is based.

(D) For applicable requirements associated with a proposed AOS, a statement that the source will meet such requirements upon implementation of the AOS. If a proposed AOS would implicate an applicable requirement that will become effective during the permit term, a statement that the source will meet such requirements on a timely basis. A statement that the source will meet in a timely manner applicable requirements that become effective during the permit term will satisfy this provision, unless a more detailed schedule is expressly required by the applicable requirement.

(iv) A schedule for submission of certified progress reports no less frequently than every 6 months for sources required to have a schedule of compliance to remedy a violation.

(v) The compliance plan content requirements specified in this paragraph shall apply and be included in the acid rain portion of a compliance plan for an affected source, except as specifically superseded by regulations promulgated under title IV of the Act with regard to the schedule and method(s) the source will use to achieve compliance with the acid rain emissions limitations.

(9) Requirements for compliance certification, including the following:

(i) A certification of compliance with all applicable requirements by a responsible official consistent with paragraph (d) of this section and section 114(a)(3) of the Act;

(ii) A statement of methods used for determining compliance, including a description of monitoring, recordkeeping, and reporting requirements and test methods;

(iii) A schedule for submission of compliance certifications during the permit term, to be submitted no less frequently than annually, or more frequently if specified by the underlying applicable requirement or by the permitting authority; and

(iv) A statement indicating the source's compliance status with any applicable enhanced monitoring and compliance certification requirements of the Act.

(10) The use of nationally-standardized forms for acid rain portions of permit applications and compliance plans, as required by regulations promulgated under title IV of the Act.

(d) Any application form, report, or compliance certification submitted pursuant to these regulations shall contain certification by a responsible official of truth, accuracy, and completeness. This certification and any other certification required under this part shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

[57 FR 32295, July 21, 1992, as amended at 74 FR 51438, Oct. 6, 2009]

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§70.6 Permit content.

(a) *Standard permit requirements.* Each permit issued under this part shall include the following elements:

(1) Emissions limitations and standards, including those operational requirements and limitations that assure compliance with all applicable requirements at the time of permit issuance. Such requirements and limitations may include ARMs identified by the source in its part 70 permit application as approved by the permitting authority, provided that no ARM shall contravene any terms needed to comply with any otherwise applicable requirement or requirement of this part or circumvent any applicable requirement that would apply as a result of implementing the ARM.

(i) The permit shall specify and reference the origin of and authority for each term or condition, and identify any difference in form as compared to the applicable requirement upon which the term or condition is based.

(ii) The permit shall state that, where an applicable requirement of the Act is more stringent than an applicable requirement of regulations promulgated under title IV of the Act, both provisions shall be incorporated into the permit and shall be enforceable by the Administrator.

(iii) If an applicable implementation plan allows a determination of an alternative emission limit at a part 70 source, equivalent to that contained in the plan, to be made in the permit issuance, renewal, or significant modification process, and the State elects to use such process, any permit containing such equivalency determination shall contain provisions to ensure that any resulting emissions limit has been demonstrated to be quantifiable, accountable, enforceable, and based on replicable procedures.

(2) *Permit duration.* The permitting authority shall issue permits for a fixed term of 5 years in the case of affected sources, and for a term not to exceed 5 years in the case of all other sources. Notwithstanding this requirement, the permitting authority shall issue permits for solid waste incineration units combusting municipal waste subject to standards under section 129(e) of the Act for a period not to exceed 12 years and shall review such permits at least every 5 years.

(3) *Monitoring and related recordkeeping and reporting requirements.* (i) Each permit shall contain the following requirements with respect to monitoring:

(A) All monitoring and analysis procedures or test methods required under applicable monitoring and testing requirements, including part 64 of this chapter and any other procedures and methods that may be promulgated pursuant to sections 114(a)(3) or 504(b) of the Act. If more than one monitoring or testing requirement applies, the permit may specify a streamlined set of monitoring or testing provisions provided the specified monitoring or testing is adequate to assure compliance at least to the same extent as the monitoring or testing applicable requirements that are not included in the permit as a result of such streamlining;

(B) Where the applicable requirement does not require periodic testing or instrumental or noninstrumental monitoring (which may consist of recordkeeping designed to serve as monitoring), periodic monitoring sufficient to yield reliable data from the relevant time period that are representative of the source's compliance with the permit,

as reported pursuant to paragraph (a)(3)(iii) of this section. Such monitoring requirements shall assure use of terms, test methods, units, averaging periods, and other statistical conventions consistent with the applicable requirement. Recordkeeping provisions may be sufficient to meet the requirements of this paragraph (a)(3)(i)(B) of this section; and

(C) As necessary, requirements concerning the use, maintenance, and, where appropriate, installation of monitoring equipment or methods.

(ii) With respect to recordkeeping, the permit shall incorporate all applicable recordkeeping requirements and require, where applicable, the following:

(A) Records of required monitoring information that include the following:

(*1*) The date, place as defined in the permit, and time of sampling or measurements;

(*2*) The date(s) analyses were performed;

(*3*) The company or entity that performed the analyses;

(*4*) The analytical techniques or methods used;

(*5*) The results of such analyses; and

(*6*) The operating conditions as existing at the time of sampling or measurement;

(B) Retention of records of all required monitoring data and support information for a period of at least 5 years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by the permit.

(iii) With respect to reporting, the permit shall incorporate all applicable reporting requirements and require the following:

(A) Submittal of reports of any required monitoring at least every 6 months. All instances of deviations from permit requirements must be clearly identified in such reports. All required reports must be certified by a responsible official consistent with §70.5(d) of this part.

(B) Prompt reporting of deviations from permit requirements, including those attributable to upset conditions as defined in the permit, the probable cause of such deviations, and any corrective actions or preventive measures taken. The permitting authority shall define "prompt" in relation to the degree and type of deviation likely to occur and the applicable requirements.

(4) A permit condition prohibiting emissions exceeding any allowances that the source lawfully holds under title IV of the Act or the regulations promulgated thereunder.

(i) No permit revision shall be required for increases in emissions that are authorized by allowances acquired pursuant to the acid rain program, provided that such increases do not require a permit revision under any other applicable requirement.

(ii) No limit shall be placed on the number of allowances held by the source. The source may not, however, use allowances as a defense to noncompliance with any other applicable requirement.

(iii) Any such allowance shall be accounted for according to the procedures established in regulations promulgated under title IV of the Act.

(5) A severability clause to ensure the continued validity of the various permit requirements in the event of a challenge to any portions of the permit.

(6) Provisions stating the following:

(i) The permittee must comply with all conditions of the part 70 permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

(ii) Need to halt or reduce activity not a defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

(iii) The permit may be modified, revoked, reopened, and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition.

(iv) The permit does not convey any property rights of any sort, or any exclusive privilege.

(v) The permittee shall furnish to the permitting authority, within a reasonable time, any information that the permitting authority may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the permitting authority copies of records required to be kept by the permit or, for information claimed to be confidential, the permittee may furnish such records directly to the Administrator along with a claim of confidentiality.

(7) A provision to ensure that a part 70 source pays fees to the permitting authority consistent with the fee schedule approved pursuant to §70.9 of this part.

(8) *Emissions trading.* A provision stating that no permit revision shall be required, under any approved economic incentives, marketable permits, emissions trading and other similar programs or processes for changes that are provided for in the permit.

(9) Terms and conditions for reasonably anticipated AOSs identified by the source in its application as approved by the permitting authority. Such terms and conditions:

(i) Shall require the source, contemporaneously with making a change from one operating scenario to another, to record in a log at the permitted facility a record of the AOS under which it is operating;

(ii) May extend the permit shield described in paragraph (f) of this section to all terms and conditions under each such AOS; and

(iii) Must ensure that the terms and conditions of each AOS meet all applicable requirements and the requirements of this part. The permitting authority shall not approve a proposed AOS into the part 70 permit until the source has obtained all authorizations required under any applicable requirement relevant to that AOS.

(10) Terms and conditions, if the permit applicant requests them, for the trading of emissions increases and decreases in the permitted facility, to the extent that the applicable requirements provide for trading such increases and decreases without a case-by-case approval of each emissions trade. Such terms and conditions:

(i) Shall include all terms required under paragraphs (a) and (c) of this section to determine compliance;

(ii) May extend the permit shield described in paragraph (f) of this section to all terms and conditions that allow such increases and decreases in emissions; and

(iii) Must meet all applicable requirements and requirements of this part.

(b) *Federally-enforceable requirements.* (1) All terms and conditions in a part 70 permit, including any provisions designed to limit a source's potential to emit, are enforceable by the Administrator and citizens under the Act.

(2) Notwithstanding paragraph (b)(1) of this section, the permitting authority shall specifically designate as not being federally enforceable under the Act any terms and conditions included in the permit that are not required under the Act or under any of its applicable requirements. Terms and conditions so designated are not subject to the requirements of §§70.7, 70.8, or of this part, other than those contained in this paragraph (b) of this section.

(c) *Compliance requirements.* All part 70 permits shall contain the following elements with respect to compliance:

(1) Consistent with paragraph (a)(3) of this section, compliance certification, testing, monitoring, reporting, and recordkeeping requirements sufficient to assure compliance with the terms and conditions of the permit. Any document (including reports) required by a part 70 permit shall contain a certification by a responsible official that meets the requirements of §70.5(d) for this part.

(2) Inspection and entry requirements that require that, upon presentation of credentials and other documents as may be required by law, the permittee shall allow the permitting authority or an authorized representative to perform the following:

(i) Enter upon the permittee's premises where a part 70 source is located or emissions-related activity is conducted, or where records must be kept under the conditions of the permit;

(ii) Have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit;

(iii) Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit; and

(iv) As authorized by the Act, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit or applicable requirements.

(3) A schedule of compliance consistent with §70.5(c)(8) of this part.

(4) Progress reports consistent with an applicable schedule of compliance and §70.5(c)(8) of this part to be submitted at least semiannually, or at a more frequent period if specified in the applicable requirement or by the permitting authority. Such progress reports shall contain the following:

(i) Dates for achieving the activities, milestones, or compliance required in the schedule of compliance, and dates when such activities, milestones or compliance were achieved; and

(ii) An explanation of why any dates in the schedule of compliance were not or will not be met, and any preventive or corrective measures adopted.

(5) Requirements for compliance certification with terms and conditions contained in the permit, including emission limitations, standards, or work practices. Permits shall include each of the following:

(i) The frequency (not less than annually or such more frequent periods as specified in the applicable requirement or by the permitting authority) of submissions of compliance certifications;

(ii) In accordance with §70.6(a)(3) of this part, a means for monitoring the compliance of the source with its emissions limitations, standards, and work practices;

(iii) A requirement that the compliance certification include all of the following (provided that the identification of applicable information may cross-reference the permit or previous reports, as applicable):

(A) The identification of each term or condition of the permit that is the basis of the certification;

(B) The identification of the method(s) or other means used by the owner or operator for determining the compliance status with each term and condition during the certification period. Such methods and other means shall include, at a minimum, the methods and means required under paragraph (a)(3) of this section. If necessary, the owner or operator also shall identify any other material information that must be included in the certification to comply with section 113(c)(2) of the Act, which prohibits knowingly making a false certification or omitting material information;

(C) The status of compliance with the terms and conditions of the permit for the period covered by the certification, including whether compliance during the period was continuous or intermittent. The certification shall be based on the method or means designated in paragraph (c)(5)(iii)(B) of this section. The certification shall identify each deviation and take it into account in the compliance certification. The certification shall also identify as possible exceptions to compliance any periods during which compliance is required and in which an excursion or exceedance as defined under part 64 of this chapter occurred; and

(D) Such other facts as the permitting authority may require to determine the compliance status of the source.

(iv) A requirement that all compliance certifications be submitted to the Administrator as well as to the permitting authority.

(6) Such other provisions as the permitting authority may require.

(d) *General permits.* (1) The permitting authority may, after notice and opportunity for public participation provided under §70.7(h) of this part, issue a general permit covering numerous similar sources. Any general permit shall comply with all requirements applicable to other part 70 permits and shall identify criteria by which sources may qualify for the general permit. To sources that qualify, the permitting authority shall grant the conditions and terms of the general permit. Notwithstanding the shield provisions of paragraph (f) of this section, the source shall be subject to enforcement action for operation without a part 70 permit if the source is later determined not to qualify for the conditions and terms of the general permit. General permits shall not be authorized for affected sources under the acid rain program unless otherwise provided in regulations promulgated under title IV of the Act.

(2) Part 70 sources that would qualify for a general permit must apply to the permitting authority for coverage under the terms of the general permit or must apply for a part 70 permit consistent with §70.5 of this part. The permitting authority may, in the general permit, provide for applications which deviate from the requirements of §70.5 of this part, provided that such applications meet the requirements of title V of the Act, and include all information necessary to determine qualification for, and to assure compliance with, the general permit. Without repeating the public participation procedures required under §70.7(h) of this part, the permitting authority may grant a source's request for authorization to operate under a general permit, but such a grant shall not be a final permit action for purposes of judicial review.

(e) *Temporary sources.* The permitting authority may issue a single permit authorizing emissions from similar operations by the same source owner or operator at multiple temporary locations. The operation must be temporary and involve at least one change of location during the term of the permit. No affected source shall be permitted as a temporary source. Permits for temporary sources shall include the following:

(1) Conditions that will assure compliance with all applicable requirements at all authorized locations;

(2) Requirements that the owner or operator notify the permitting authority at least 10 days in advance of each change in location; and

(3) Conditions that assure compliance with all other provisions of this section.

(f) *Permit shield.* (1) Except as provided in this part, the permitting authority may expressly include in a part 70 permit a provision stating that compliance with the conditions of the permit shall be deemed compliance with any applicable requirements as of the date of permit issuance, provided that:

(i) Such applicable requirements are included and are specifically identified in the permit; or

(ii) The permitting authority, in acting on the permit application or revision, determines in writing that other requirements specifically identified are not applicable to the source, and the permit includes the determination or a concise summary thereof.

(2) A part 70 permit that does not expressly state that a permit shield exists shall be presumed not to provide such a shield.

(3) Nothing in this paragraph or in any part 70 permit shall alter or affect the following:

(i) The provisions of section 303 of the Act (emergency orders), including the authority of the Administrator under that section;

(ii) The liability of an owner or operator of a source for any violation of applicable requirements prior to or at the time of permit issuance;

(iii) The applicable requirements of the acid rain program, consistent with section 408(a) of the Act; or

(iv) The ability of EPA to obtain information from a source pursuant to section 114 of the Act.

(g) *Emergency provision*—(1) *Definition.* An "emergency" means any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under the permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

(2) *Effect of an emergency.* An emergency constitutes an affirmative defense to an action brought for noncompliance with such technology-based emission limitations if the conditions of paragraph (g)(3) of this section are met.

(3) The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:

(i) An emergency occurred and that the permittee can identify the cause(s) of the emergency;

(ii) The permitted facility was at the time being properly operated;

(iii) During the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in the permit; and

(iv) The permittee submitted notice of the emergency to the permitting authority within 2 working days of the time when emission limitations were exceeded due to the emergency. This notice fulfills the requirement of paragraph (a)(3)(iii)(B) of this section. This notice must contain a description of the emergency, any steps taken to mitigate emissions, and corrective actions taken.

(4) In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency has the burden of proof.

(5) This provision is in addition to any emergency or upset provision contained in any applicable requirement.

[57 FR 32295, July 21, 1992, as amended at 62 FR 54946, Oct. 22, 1997; 66 FR 12876, Mar. 1, 2001; 66 FR 55884, Nov. 5, 2001; 68 FR 38523, June 27, 2003; 74 FR 51439, Oct. 6, 2009; 79 FR 43667, July 28, 2014]

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§70.7 Permit issuance, renewal, reopenings, and revisions.

(a) *Action on application.* (1) A permit, permit modification, or renewal may be issued only if all of the following condition have been met:

(i) The permitting authority has received a complete application for a permit, permit modification, or permit renewal, except that a complete application need not be received before issuance of a general permit under §70.6(d) of this part;

(ii) Except for modifications qualifying for minor permit modification procedures under paragraphs (e) (2) and (3) of this section, the permitting authority has complied with the requirements for public participation under paragraph (h) of this section;

(iii) The permitting authority has complied with the requirements for notifying and responding to affected States under §70.8(b) of this part;

(iv) The conditions of the permit provide for compliance with all applicable requirements and the requirements of this part; and

(v) The Administrator has received a copy of the proposed permit and any notices required under §§70.8(a) and 70.8(b) of this part, and has not objected to issuance of the permit under §70.8(c) of this part within the time period specified therein.

(2) Except as provided under the initial transition plan provided for under §70.4(b)(11) of this part or under egulations promulgated under title IV of title V of the Act for the permitting of affected sources under the acid rain program, the program shall provide that the permitting authority take final action on each permit application (including a request for permit modification or renewal) within 18 months, or such lesser time approved by the Administrator, after receiving a complete application.

(3) The program shall also contain reasonable procedures to ensure priority is given to taking action on applications for construction or modification under title I, parts C and D of the Act.

(4) The permitting authority shall promptly provide notice to the applicant of whether the application is complete. Unless the permitting authority requests additional information or otherwise notifies the applicant of incompleteness within 60 days of receipt of an application, the application shall be deemed complete. For modifications processed through minor permit modification procedures, such as those in paragraphs (e) (2) and (3) of this section, the State program need not require a completeness determination.

(5) The permitting authority shall provide a statement that sets forth the legal and factual basis for the draft permit conditions (including references to the applicable statutory or regulatory provisions). The permitting authority shall send this statement to EPA and to any other person who requests it.

(6) The submittal of a complete application shall not affect the requirement that any source have a preconstruction permit under title I of the Act.

(b) *Requirement for a permit.* Except as provided in the following sentence, §70.4(b)(12)(i), and paragraphs (e)(2)(v) and (3)(v) of this section, no part 70 source may operate after the time that it is required to submit a timely and complete application under an approved permit program, except in compliance with a permit issued under a part 70 program. The program shall provide that, if a part 70 source submits a timely and complete application for permit issuance (including for renewal), the source's failure to have a part 70 permit is not a violation of this part until the

permitting authority takes final action on the permit application, except as noted in this section. This protection shall cease to apply if, subsequent to the completeness determination made pursuant to paragraph (a)(4) of this section, and as required by §70.5(a)(2) of this part, the applicant fails to submit by the deadline specified in writing by the permitting authority any additional information identified as being needed to process the application.

(c) *Permit renewal and expiration.* (1) The program shall provide that:

(i) Permits being renewed are subject to the same procedural requirements, including those for public participation, affected State and EPA review, that apply to initial permit issuance; and

(ii) Permit expiration terminates the source's right to operate unless a timely and complete renewal application has been submitted consistent with paragraph (b) of this section and §70.5(a)(1)(iii) of this part.

(2) If the permitting authority fails to act in a timely way on a permit renewal, EPA may invoke its authority under section 505(e) of the Act to terminate or revoke and reissue the permit.

(d) *Administrative permit amendments.* (1) An "administrative permit amendment" is a permit revision that:

(i) Corrects typographical errors;

(ii) Identifies a change in the name, address, or phone number of any person identified in the permit, or provides a similar minor administrative change at the source;

(iii) Requires more frequent monitoring or reporting by the permittee;

(iv) Allows for a change in ownership or operational control of a source where the permitting authority determines that no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittee has been submitted to the permitting authority;

(v) Incorporates into the part 70 permit the requirements from preconstruction review permits authorized under an EPA-approved program, provided that such a program meets procedural requirements substantially equivalent to the requirements of §§70.7 and 70.8 of this part that would be applicable to the change if it were subject to review as a permit modification, and compliance requirements substantially equivalent to those contained in §70.6 of this part; or

(vi) Incorporates any other type of change which the Administrator has determined as part of the approved part 70 program to be similar to those in paragraphs (d)(1) (i) through (iv) of this section.

(2) Administrative permit amendments for purposes of the acid rain portion of the permit shall be governed by regulations promulgated under title IV of the Act.

(3) *Administrative permit amendment procedures.* An administrative permit amendment may be made by the permitting authority consistent with the following:

(i) The permitting authority shall take no more than 60 days from receipt of a request for an administrative permit amendment to take final action on such request, and may incorporate such changes without providing notice to the public or affected States provided that it designates any such permit revisions as having been made pursuant to this paragraph.

(ii) The permitting authority shall submit a copy of the revised permit to the Administrator.

(iii) The source may implement the changes addressed in the request for an administrative amendment immediately upon submittal of the request.

(4) The permitting authority may, upon taking final action granting a request for an administrative permit amendment, allow coverage by the permit shield in §70.6(f) for administrative permit amendments made pursuant to paragraph (d)(1)(v) of this section which meet the relevant requirements of §§70.6, 70.7, and 70.8 for significant permit modifications.

(e) *Permit modification.* A permit modification is any revision to a part 70 permit that cannot be accomplished under the program's provisions for administrative permit amendments under paragraph (d) of this section. A permit modification for purposes of the acid rain portion of the permit shall be governed by regulations promulgated under title IV of the Act.

(1) *Program description.* The State shall provide adequate, streamlined, and reasonable procedures for expeditiously processing permit modifications. The State may meet this obligation by adopting the procedures set forth below or ones substantially equivalent. The State may also develop different procedures for different types of modifications depending on the significance and complexity of the requested modification, but EPA will not approve a part 70 program that has modification procedures that provide for less permitting authority, EPA, or affected State review or public participation than is provided for in this part.

(2) *Minor permit modification procedures*—(i) *Criteria.* (A) Minor permit modification procedures may be used only for those permit modifications that:

(*1*) Do not violate any applicable requirement;

(*2*) Do not involve significant changes to existing monitoring, reporting, or recordkeeping requirements in the permit;

(*3*) Do not require or change a case-by-case determination of an emission limitation or other standard, or a source-specific determination for temporary sources of ambient impacts, or a visibility or increment analysis;

(*4*) Do not seek to establish or change a permit term or condition for which there is no corresponding underlying applicable requirement and that the source has assumed to avoid an applicable requirement to which the source would otherwise be subject. Such terms and conditions include:

(*A*) A federally enforceable emissions cap assumed to avoid classification as a modification under any provision of title I; and

(*B*) An alternative emissions limit approved pursuant to regulations promulgated under section 112(i)(5) of the Act;

(*5*) Are not modifications under any provision of title I of the Act; and

(*6*) Are not required by the State program to be processed as a significant modification.

(B) Notwithstanding paragraphs (e)(2)(i)(A) and (e)(3)(i) of this section, minor permit modification procedures may be used for permit modifications involving the use of economic incentives, marketable permits, emissions trading, and other similar approaches, to the extent that such minor permit modification procedures are explicitly provided for in an applicable implementation plan or in applicable requirements promulgated by EPA.

(ii) *Application.* An application requesting the use of minor permit modification procedures shall meet the requirements of §70.5(c) of this part and shall include the following:

(A) A description of the change, the emissions resulting from the change, and any new applicable requirements that will apply if the change occurs;

(B) The source's suggested draft permit;

(C) Certification by a responsible official, consistent with §70.5(d), that the proposed modification meets the criteria for use of minor permit modification procedures and a request that such procedures be used; and

(D) Completed forms for the permitting authority to use to notify the Administrator and affected States as required under §70.8.

(iii) *EPA and affected State notification.* Within 5 working days of receipt of a complete permit modification application, the permitting authority shall meet its obligation under §70.8 (a)(1) and (b)(1) to notify the Administrator and affected States of the requested permit modification. The permitting authority promptly shall send any notice required under §70.8(b)(2) to the Administrator.

(iv) *Timetable for issuance.* The permitting authority may not issue a final permit modification until after EPA's 45-day review period or until EPA has notified the permitting authority that EPA will not object to issuance of the permit modification, whichever is first, although the permitting authority can approve the permit modification prior to that time. Within 90 days of the permitting authority's receipt of an application under minor permit modification procedures or 15 days after the end of the Administrator's 45-day review period under §70.8(c), whichever is later, the permitting authority shall:

(A) Issue the permit modification as proposed;

(B) Deny the permit modification application;

(C) Determine that the requested modification does not meet the minor permit modification criteria and should be reviewed under the significant modification procedures; or

(D) Revise the draft permit modification and transmit to the Administrator the new proposed permit modification as required by §70.8(a) of this part.

(v) *Source's ability to make change.* The State program may allow the source to make the change proposed in its minor permit modification application immediately after it files such application. After the source makes the change allowed by the preceding sentence, and until the permitting authority takes any of the actions specified in paragraphs (e)(2)(v) (A) through (C) of this section, the source must comply with both the applicable requirements governing the change and the proposed permit terms and conditions. During this time period, the source need not comply with the existing permit terms and conditions it seeks to modify. However, if the source fails to comply with its proposed permit terms and conditions during this time period, the existing permit terms and conditions it seeks to modify may be enforced against it.

(vi) *Permit shield.* The permit shield under §70.6(f) of this part may not extend to minor permit modifications.

(3) *Group processing of minor permit modifications.* Consistent with this paragraph, the permitting authority may modify the procedure outlined in paragraph (e)(2) of this section to process groups of a source's applications for certain modifications eligible for minor permit modification processing.

(i) *Criteria.* Group processing of modifications may be used only for those permit modifications:

(A) That meet the criteria for minor permit modification procedures under paragraph (e)(2)(i)(A) of this section; and

(B) That collectively are below the threshold level approved by the Administrator as part of the approved program. Unless the State sets an alternative threshold consistent with the criteria set forth in paragraphs (e)(3)(i)(B)(*1*) and (*2*) of this section, this threshold shall be 10 percent of the emissions allowed by the permit for the emissions unit for which the change is requested, 20 percent of the applicable definition of major source in §70.2 of this part, or 5 tons per year, whichever is least. In establishing any alternative threshold, the State shall consider:

(*1*) Whether group processing of amounts below the threshold levels reasonably alleviates severe administrative burdens that would be imposed by immediate permit modification review, and

(2) Whether individual processing of changes below the threshold levels would result in trivial environmental benefits.

(ii) *Application.* An application requesting the use of group processing procedures shall meet the requirements of §70.5(c) of this part and shall include the following:

(A) A description of the change, the emissions resulting from the change, and any new applicable requirements that will apply if the change occurs.

(B) The source's suggested draft permit.

(C) Certification by a responsible official, consistent with §70.5(d) of this part, that the proposed modification meets the criteria for use of group processing procedures and a request that such procedures be used.

(D) A list of the source's other pending applications awaiting group processing, and a determination of whether the requested modification, aggregated with these other applications, equals or exceeds the threshold set under paragraph (e)(3)(i)(B) of this section.

(E) Certification, consistent with §70.5(d) of this part, that the source has notified EPA of the proposed modification. Such notification need only contain a brief description of the requested modification.

(F) Completed forms for the permitting authority to use to notify the Administrator and affected States as required under §70.8 of this part.

(iii) *EPA and affected State notification.* On a quarterly basis or within 5 business days of receipt of an application demonstrating that the aggregate of a source's pending applications equals or exceeds the threshold level set under paragraph (e)(3)(i)(B) of this section, whichever is earlier, the permitting authority promptly shall meet its obligations under §§70.8 (a)(1) and (b)(1) to notify the Administrator and affected States of the requested permit modifications. The permitting authority shall send any notice required under §70.8(b)(2) of this part to the Administrator.

(iv) *Timetable for issuance.* The provisions of paragraph (e)(2)(iv) of this section shall apply to modifications eligible for group processing, except that the permitting authority shall take one of the actions specified in paragraphs (e)(2)(iv) (A) through (D) of this section within 180 days of receipt of the application or 15 days after the end of the Administrator's 45-day review period under §70.8(c) of this part, whichever is later.

(v) *Source's ability to make change.* The provisions of paragraph (e)(2)(v) of this section shall apply to modifications eligible for group processing.

(vi) *Permit shield.* The provisions of paragraph (e)(2)(vi) of this section shall also apply to modifications eligible for group processing.

(4) *Significant modification procedures*—(i) *Criteria.* Significant modification procedures shall be used for applications requesting permit modifications that do not qualify as minor permit modifications or as administrative amendments. The State program shall contain criteria for determining whether a change is significant. At a minimum, every significant change in existing monitoring permit terms or conditions and every relaxation of reporting or recordkeeping permit terms or conditions shall be considered significant. Nothing herein shall be construed to preclude the permittee from making changes consistent with this part that would render existing permit compliance terms and conditions irrelevant.

(ii) The State program shall provide that significant permit modifications shall meet all requirements of this part, including those for applications, public participation, review by affected States, and review by EPA, as they apply to

permit issuance and permit renewal. The permitting authority shall design and implement this review process to complete review on the majority of significant permit modifications within 9 months after receipt of a complete application.

(f) *Reopening for cause.* (1) Each issued permit shall include provisions specifying the conditions under which the permit will be reopened prior to the expiration of the permit. A permit shall be reopened and revised under any of the following circumstances:

(i) Additional applicable requirements under the Act become applicable to a major part 70 source with a remaining permit term of 3 or more years. Such a reopening shall be completed not later than 18 months after promulgation of the applicable requirement. No such reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions has been extended pursuant to §70.4(b)(10) (i) or (ii) of this part.

(ii) Additional requirements (including excess emissions requirements) become applicable to an affected source under the acid rain program. Upon approval by the Administrator, excess emissions offset plans shall be deemed to be incorporated into the permit.

(iii) The permitting authority or EPA determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit.

(iv) The Administrator or the permitting authority determines that the permit must be revised or revoked to assure compliance with the applicable requirements.

(2) Proceedings to reopen and issue a permit shall follow the same procedures as apply to initial permit issuance and shall affect only those parts of the permit for which cause to reopen exists. Such reopening shall be made as expeditiously as practicable.

(3) Reopenings under paragraph (f)(1) of this section shall not be initiated before a notice of such intent is provided to the part 70 source by the permitting authority at least 30 days in advance of the date that the permit is to be reopened, except that the permitting authority may provide a shorter time period in the case of an emergency.

(g) *Reopenings for cause by EPA.* (1) If the Administrator finds that cause exists to terminate, modify, or revoke and reissue a permit pursuant to paragraph (f) of this section, the Administrator will notify the permitting authority and the permittee of such finding in writing.

(2) The permitting authority shall, within 90 days after receipt of such notification, forward to EPA a proposed determination of termination, modification, or revocation and reissuance, as appropriate. The Administrator may extend this 90-day period for an additional 90 days if he finds that a new or revised permit application is necessary or that the permitting authority must require the permittee to submit additional information.

(3) The Administrator will review the proposed determination from the permitting authority within 90 days of receipt.

(4) The permitting authority shall have 90 days from receipt of an EPA objection to resolve any objection that EPA makes and to terminate, modify, or revoke and reissue the permit in accordance with the Administrator's objection.

(5) If the permitting authority fails to submit a proposed determination pursuant to paragraph (g)(2) of this section or fails to resolve any objection pursuant to paragraph (g)(4) of this section, the Administrator will terminate, modify, or revoke and reissue the permit after taking the following actions:

(i) Providing at least 30 days' notice to the permittee in writing of the reasons for any such action. This notice may be given during the procedures in paragraphs (g) (1) through (4) of this section.

(ii) Providing the permittee an opportunity for comment on the Administrator's proposed action and an opportunity for a hearing.

(h) *Public participation.* Except for modifications qualifying for minor permit modification procedures, all permit proceedings, including initial permit issuance, significant modifications, and renewals, shall provide adequate procedures for public notice including offering an opportunity for public comment and a hearing on the draft permit. These procedures shall include the following:

(1) Notice shall be given by one of the following methods: By publishing the notice in a newspaper of general circulation in the area where the source is located (or in a State publication designed to give general public notice) or by posting the notice, for the duration of the public comment period, on a public Web site identified by the permitting authority, if the permitting authority has selected Web site noticing as its "consistent noticing method." The consistent noticing method shall be used for all draft permits subject to notice under this paragraph. If Web site noticing is selected as the consistent noticing method, the draft permit shall also be posted, for the duration of the public comment period, on a public Web site identified by the permitting authority. In addition, notice shall be given to persons on a mailing list developed by the permitting authority using generally accepted methods (*e.g.*, hyperlink sign-up function or radio button on an agency Web site, sign-up sheet at a public hearing, etc.) that enable interested parties to subscribe to the mailing list. The permitting authority may update the mailing list from time to time by requesting written indication of continued interest from those listed. The permitting authority may delete from the list the name of any person who fails to respond to such a request within a reasonable timeframe. The permitting authority may use other means to provide adequate notice to the affected public;

(2) The notice shall identify the affected facility; the name and address of the permittee; the name and address of the permitting authority processing the permit; the activity or activities involved in the permit action; the emissions change involved in any permit modification; the name, address, and telephone number of a person (or an email or Web site address) from whom interested persons may obtain additional information, including copies of the permit draft, the application, all relevant supporting materials, including those set forth in §70.4(b)(3)(viii) of this part, and all other materials available to the permitting authority (except for publicly-available materials and publications) that are relevant to the permit decision; a brief description of the comment procedures required by this part; and the time and place of any hearing that may be held, including a statement of procedures to request a hearing (unless a hearing has already been scheduled);

(3) The permitting authority shall provide such notice and opportunity for participation by affected States as is provided for by §70.8 of this part;

(4) *Timing.* The permitting authority shall provide at least 30 days for public comment and shall give notice of any public hearing at least 30 days in advance of the hearing.

(5) The permitting authority shall keep a record of the commenters and also of the issues raised during the public participation process so that the Administrator may fulfill his obligation under section 505(b)(2) of the Act to determine whether a citizen petition may be granted, and such records shall be available to the public.

[57 FR 32295, July 21, 1992, as amended at 81 FR 71630, Oct. 18, 2016]

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§70.8 Permit review by EPA and affected States.

(a) *Transmission of information to the Administrator.* (1) The permit program shall require that the permitting authority provide to the Administrator a copy of each permit application (including any application for permit modification), each proposed permit, and each final part 70 permit. The applicant may be required by the permitting authority to provide a copy of the permit application (including the compliance plan) directly to the Administrator. Upon agreement with the Administrator, the permitting authority may submit to the Administrator a permit application summary form and any relevant portion of the permit application and compliance plan, in place of the complete permit application and compliance plan. To the extent practicable, the preceding information shall be provided in computer-readable format compatible with EPA's national database management system.

(2) The Administrator may waive the requirements of paragraphs (a)(1) and (b)(1) of this section for any category of sources (including any class, type, or size within such category) other than major sources according to the following:

(i) By regulation for a category of sources nationwide, or

(ii) At the time of approval of a State program for a category of sources covered by an individual permitting program.

(3) Each State permitting authority shall keep for 5 years such records and submit to the Administrator such information as the Administrator may reasonably require to ascertain whether the State program complies with the requirements of the Act or of this part.

(b) *Review by affected States.* (1) The permit program shall provide that the permitting authority give notice of each draft permit to any affected State on or before the time that the permitting authority provides this notice to the public under §70.7(h) of this part, except to the extent §70.7(e) (2) or (3) of this part requires the timing of the notice to be different.

(2) The permit program shall provide that the permitting authority, as part of the submittal of the proposed permit to the Administrator [or as soon as possible after the submittal for minor permit modification procedures allowed under §70.7(e) (2) or (3) of this part], shall notify the Administrator and any affected State in writing of any refusal by the permitting authority to accept all recommendations for the proposed permit that the affected State submitted during the public or affected State review period. The notice shall include the permitting authority's reasons for not accepting any such recommendation. The permitting authority is not required to accept recommendations that are not based on applicable requirements or the requirements of this part.

(c) *EPA objection.* (1) The Administrator will object to the issuance of any proposed permit determined by the Administrator not to be in compliance with applicable requirements or requirements under this part. No permit for which an application must be transmitted to the Administrator under paragraph (a) of this section shall be issued if the Administrator objects to its issuance in writing within 45 days of receipt of the proposed permit and all necessary supporting information.

(2) Any EPA objection under paragraph (c)(1) of this section shall include a statement of the Administrator's reasons for objection and a description of the terms and conditions that the permit must include to respond to the objections. The Administrator will provide the permit applicant a copy of the objection.

(3) Failure of the permitting authority to do any of the following also shall constitute grounds for an objection:

(i) Comply with paragraphs (a) or (b) of this section;

(ii) Submit any information necessary to review adequately the proposed permit; or

(iii) Process the permit under the procedures approved to meet §70.7(h) of this part except for minor permit modifications.

(4) If the permitting authority fails, within 90 days after the date of an objection under paragraph (c)(1) of this section, to revise and submit a proposed permit in response to the objection, the Administrator will issue or deny the permit in accordance with the requirements of the Federal program promulgated under title V of this Act.

(d) *Public petitions to the Administrator.* The program shall provide that, if the Administrator does not object in writing under paragraph (c) of this section, any person may petition the Administrator within 60 days after the expiration of the Administrator's 45-day review period to make such objection. Any such petition shall be based only on objections to the permit that were raised with reasonable specificity during the public comment period provided for in §70.7(h) of this part, unless the petitioner demonstrates that it was impracticable to raise such objections within such period, or unless the grounds for such objection arose after such period. If the Administrator objects to

the permit as a result of a petition filed under this paragraph, the permitting authority shall not issue the permit until EPA's objection has been resolved, except that a petition for review does not stay the effectiveness of a permit or its requirements if the permit was issued after the end of the 45-day review period and prior to an EPA objection. If the permitting authority has issued a permit prior to receipt of an EPA objection under this paragraph, the Administrator will modify, terminate, or revoke such permit, and shall do so consistent with the procedures in §70.7(g) (4) or (5) (i) and (ii) of this part except in unusual circumstances, and the permitting authority may thereafter issue only a revised permit that satisfies EPA's objection. In any case, the source will not be in violation of the requirement to have submitted a timely and complete application.

(e) *Prohibition on default issuance.* Consistent with §70.4(b)(3)(ix) of this part, for the purposes of Federal law and title V of the Act, no State program may provide that a part 70 permit (including a permit renewal or modification) will issue until affected States and EPA have had an opportunity to review the proposed permit as required under this section. When the program is submitted for EPA review, the State Attorney General or independent legal counsel shall certify that no applicable provision of State law requires that a part 70 permit or renewal be issued after a certain time if the permitting authority has failed to take action on the application (or includes any other similar provision providing for default issuance of a permit), unless EPA has waived such review for EPA and affected States.

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§70.9 Fee determination and certification.

(a) *Fee requirement.* The State program shall require that the owners or operators of part 70 sources pay annual fees, or the equivalent over some other period, that are sufficient to cover the permit program costs and shall ensure that any fee required by this section will be used solely for permit program costs.

(b) *Fee schedule adequacy.* (1) The State program shall establish a fee schedule that results in the collection and retention of revenues sufficient to cover the permit program costs. These costs include, but are not limited to, the costs of the following activities as they relate to the operating permit program for stationary sources:

(i) Preparing generally applicable regulations or guidance regarding the permit program or its implementation or enforcement;

(ii) Reviewing and acting on any application for a permit, permit revision, or permit renewal, including the development of an applicable requirement as part of the processing of a permit, or permit revision or renewal;

(iii) General administrative costs of running the permit program, including the supporting and tracking of permit applications, compliance certification, and related data entry;

(iv) Implementing and enforcing the terms of any part 70 permit (not including any court costs or other costs associated with an enforcement action), including adequate resources to determine which sources are subject to the program;

(v) Emissions and ambient monitoring;

(vi) Modeling, analyses, or demonstrations;

(vii) Preparing inventories and tracking emissions; and

(viii) Providing direct and indirect support to sources under the Small Business Stationary Source Technical and Environmental Compliance Assistance Program contained in section 507 of the Act in determining and meeting their obligations under this part.

(2)(i) The Administrator will presume that the fee schedule meets the requirements of paragraph (b)(1) of this section if it would result in the collection and retention of an amount not less than $25 per year [as adjusted pursuant

to the criteria set forth in paragraph (b)(2)(iv) of this section] times the total tons of the actual emissions of each regulated pollutant (for presumptive fee calculation) emitted from part 70 sources and any GHG cost adjustment required under paragraph (b)(2)(v) of this section.

(ii) The State may exclude from such calculation:

(A) The actual emissions of sources for which no fee is required under paragraph (b)(4) of this section;

(B) The amount of a part 70 source's actual emissions of each regulated pollutant (for presumptive fee calculation) that the source emits in excess of four thousand (4,000) tpy;

(C) A part 70 source's actual emissions of any regulated pollutant (for presumptive fee calculation), the emissions of which are already included in the minimum fees calculation; or

(D) The insignificant quantities of actual emissions not required in a permit application pursuant to §70.5(c).

(iii) "Actual emissions" means the actual rate of emissions in tons per year of any regulated pollutant (for presumptive fee calculation) emitted from a part 70 source over the preceding calendar year or any other period determined by the permitting authority to be representative of normal source operation and consistent with the fee schedule approved pursuant to this section. Actual emissions shall be calculated using the unit's actual operating hours, production rates, and in-place control equipment, types of materials processed, stored, or combusted during the preceding calendar year or such other time period established by the permitting authority pursuant to the preceding sentence.

(iv) The program shall provide that the $25 per ton per year used to calculate the presumptive minimum amount to be collected by the fee schedule, as described in paragraph (b)(2)(i) of this section, shall be increased each year by the percentage, if any, by which the Consumer Price Index for the most recent calendar year ending before the beginning of such year exceeds the Consumer Price Index for the calendar year 1989.

(A) The Consumer Price Index for any calendar year is the average of the Consumer Price Index for all-urban consumers published by the Department of Labor, as of the close of the 12-month period ending on August 31 of each calendar year.

(B) The revision of the Consumer Price Index which is most consistent with the Consumer Price Index for the calendar year 1989 shall be used.

(v) *GHG cost adjustment.* The amount calculated in paragraph (b)(2)(i) of this section shall be increased by the GHG cost adjustment determined as follows: For each activity identified in the following table, multiply the number of activities performed by the permitting authority by the burden hours per activity, and then calculate a total number of burden hours for all activities. Next, multiply the burden hours by the average cost of staff time, including wages, employee benefits and overhead.

Activity	**Burden hours per activity**
GHG completeness determination (for initial permit or updated application)	43
GHG evaluation for a permit modification or related permit action	7
GHG evaluation at permit renewal	10

(3) The State program's fee schedule may include emissions fees, application fees, service-based fees or other types of fees, or any combination thereof, to meet the requirements of paragraph (b)(1) or (b)(2) of this section. Nothing in the provisions of this section shall require a permitting authority to calculate fees on any particular basis or in the same manner for all part 70 sources, all classes or categories of part 70 sources, or all

regulated air pollutants, provided that the permitting authority collects a total amount of fees sufficient to meet the program support requirements of paragraph (b)(1) of this section.

(4) Notwithstanding any other provision of this section, during the years 1995 through 1999 inclusive, no fee for purposes of title V shall be required to be paid with respect to emissions from any affected unit under section 404 of the Act.

(5) The State shall provide a detailed accounting that its fee schedule meets the requirements of paragraph (b)(1) of this section if:

(i) The State sets a fee schedule that would result in the collection and retention of an amount less than that presumed to be adequate under paragraph (b)(2) of this section; or

(ii) The Administrator determines, based on comments rebutting the presumption in paragraph (b)(2) of this section or on his own initiative, that there are serious questions regarding whether the fee schedule is sufficient to cover the permit program costs.

(c) *Fee demonstration.* The permitting authority shall provide a demonstration that the fee schedule selected will result in the collection and retention of fees in an amount sufficient to meet the requirements of this section.

(d) *Use of Required Fee Revenue.* The Administrator will not approve a demonstration as meeting the requirements of this section, unless it contains an initial accounting (and periodic updates as required by the Administrator) of how required fee revenues are used solely to cover the costs of meeting the various functions of the permitting program.

[57 FR 32295, July 21, 1992, as amended at 80 FR 64659, Oct. 23, 2015]

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§70.10 Federal oversight and sanctions.

(a) *Failure to submit an approvable program.* (1) If a State fails to submit a fully-approvable whole part 70 program, or a required revision thereto, in conformance with the provisions of §70.4, or if an interim approval expires and the Administrator has not approved a whole part 70 program:

(i) At any time the Administrator may apply any one of the sanctions specified in section 179(b) of the Act; and

(ii) Eighteen months after the date required for submittal or the date of disapproval by the Administrator, the Administrator will apply such sanctions in the same manner and with the same conditions as are applicable in the case of a determination, disapproval, or finding under section 179(a) of the Act.

(2) If full approval of a whole part 70 program has not taken place within 2 years after the date required for such submission, the Administrator will promulgate, administer, and enforce a whole program or a partial program as appropriate for such State.

(b) *State failure to administer or enforce.* Any State program approved by the Administrator shall at all times be conducted in accordance with the requirements of this part and of any agreement between the State and the Administrator concerning operation of the program.

(1) Whenever the Administrator makes a determination that a permitting authority is not adequately administering or enforcing a part 70 program, or any portion thereof, the Administrator will notify the permitting authority of the determination and the reasons therefore. The Administrator will publish such notice in the FEDERAL REGISTER.

(2) If, 90 days after issuing the notice under paragraph (c)(1) of this section, the permitting authority fails to take significant action to assure adequate administration and enforcement of the program, the Administrator may take one or more of the following actions:

(i) Withdraw approval of the program or portion thereof using procedures consistent with §70.4(e) of this part;

(ii) Apply any of the sanctions specified in section 179(b) of the Act;

(iii) Promulgate, administer, or enforce a Federal program under title V of the Act.

(3) Whenever the Administrator has made the finding and issued the notice under paragraph (c)(1) of this section, the Administrator will apply the sanctions under section 179(b) of the Act 18 months after that notice. These sanctions will be applied in the same manner and subject to the same deadlines and other conditions as are applicable in the case of a determination, disapproval, or finding under section 179(a) of the Act.

(4) Whenever the Administrator has made the finding and issued the notice under paragraph (c)(1) of this section, the Administrator will, unless the State has corrected such deficiency within 18 months after the date of such finding, promulgate, administer, and enforce, a whole or partial program 2 years after the date of such finding.

(5) Nothing in this section shall limit the Administrator's authority to take any enforcement action against a source for violations of the Act or of a permit issued under rules adopted pursuant to this section in a State that has been delegated responsibility by EPA to implement a Federal program promulgated under title V of the Act.

(6) Where a whole State program consists of an aggregate of partial programs, and one or more partial programs fails to be fully approved or implemented, the Administrator may apply sanctions only in those areas for which the State failed to submit or implement an approvable program.

(c) *Criteria for withdrawal of State programs.* (1) The Administrator may, in accordance with the procedures of paragraph (c) of this section, withdraw program approval in whole or in part whenever the approved program no longer complies with the requirements of this part, and the permitting authority fails to take corrective action. Such circumstances, in whole or in part, include any of the following:

(i) Where the permitting authority's legal authority no longer meets the requirements of this part, including the following:

(A) The permitting authority fails to promulgate or enact new authorities when necessary; or

(B) The State legislature or a court strikes down or limits State authorities to administer or enforce the State program.

(ii) Where the operation of the State program fails to comply with the requirements of this part, including the following:

(A) Failure to exercise control over activities required to be regulated under this part, including failure to issue permits;

(B) Repeated issuance of permits that do not conform to the requirements of this part;

(C) Failure to comply with the public participation requirements of §70.7(h) of this part;

(D) Failure to collect, retain, or allocate fee revenue consistent with §70.9 of this part; or

(E) Failure in a timely way to act on any applications for permits including renewals and revisions.

(iii) Where the State fails to enforce the part 70 program consistent with the requirements of this part, including the following:

(A) Failure to act on violations of permits or other program requirements;

(B) Failure to seek adequate enforcement penalties and fines and collect all assessed penalties and fines; or

(C) Failure to inspect and monitor activities subject to regulation.

(d) *Federal collection of fees.* If the Administrator determines that the fee provisions of a part 70 program do not meet the requirements of §70.9 of this part, or if the Administrator makes a determination under paragraph (c)(1) of this section that the permitting authority is not adequately administering or enforcing an approved fee program, the Administrator may, in addition to taking any other action authorized under title V of the Act, collect reasonable fees to cover the Administrator's costs of administering the provisions of the permitting program promulgated by the Administrator, without regard to the requirements of §70.9 of this part.

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§70.11 Requirements for enforcement authority.

All programs to be approved under this part must contain the following provisions:

(a) *Enforcement authority.* Any agency administering a program shall have the following enforcement authority to address violations of program requirements by part 70 sources:

(1) To restrain or enjoin immediately and effectively any person by order or by suit in court from engaging in any activity in violation of a permit that is presenting an imminent and substantial endangerment to the public health or welfare, or the environment.

(2) To seek injunctive relief in court to enjoin any violation of any program requirement, including permit conditions, without the necessity of a prior revocation of the permit.

(3) To assess or sue to recover in court civil penalties and to seek criminal remedies, including fines, according to the following:

(i) Civil penalties shall be recoverable for the violation of any applicable requirement; any permit condition; any fee or filing requirement; any duty to allow or carry out inspection, entry or monitoring activities or, any regulation or orders issued by the permitting authority. These penalties shall be recoverable in a maximum amount of not less than $10,000 per day per violation. State law shall not include mental state as an element of proof for civil violations.

(ii) Criminal fines shall be recoverable against any person who knowingly violates any applicable requirement; any permit condition; or any fee or filing requirement. These fines shall be recoverable in a maximum amount of not less than $10,000 per day per violation.

(iii) Criminal fines shall be recoverable against any person who knowingly makes any false material statement, representation or certification in any form, in any notice or report required by a permit, or who knowingly renders inaccurate any required monitoring device or method. These fines shall be recoverable in a maximum amount of not less than $10,000 per day per violation.

(b) *Burden of proof.* The burden of proof and degree of knowledge or intent required under State law for establishing violations under paragraph (a)(3) of this section shall be no greater than the burden of proof or degree of knowledge or intent required under the Act.

(c) *Appropriateness of penalties and fines.* A civil penalty or criminal fine assessed, sought, or agreed upon by the permitting authority under paragraph (a)(3) of this section shall be appropriate to the violation.

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Appendix A to Part 70—Approval Status of State and Local Operating Permits Programs

This appendix provides information on the approval status of State and Local operating Permit Programs. An approved State part 70 program applies to all part 70 sources, as defined in that approved program, within such State, except for any source of air pollution over which a federally recognized Indian Tribe has jurisdiction.

Alabama

(a) Alabama Department of Environmental Management:

(1) Submitted on December 15, 1993, and supplemented on March 3, 1994; March 18, 1994; June 5, 1995; July 14, 1995; and August 28, 1995; interim approval effective on December 15, 1995; interim approval expires on December 1, 2001.

(2) Revisions submitted on July 19, 1996; April 9, 1997; August 4, 1999; January 10, 2000; and May 11, 2001. The rule revisions contained in the July 19, 1996; January 10, 2000; and May 11, 2001 submittals adequately addressed the conditions of the interim approval which expires on December 1, 2001. The State is hereby granted final full approval effective on November 28, 2001.

(b) City of Huntsville Division of Natural Resources:

(1) Submitted on November 15, 1993, and supplemented on July 20, 1995; interim approval effective on December 15, 1995; interim approval expires on December 1, 2001.

(2) Revisions submitted on March 21, 1997; July 21, 1999; December 4, 2000; February 22, 2001; April 9, 2001; and September 18, 2001. The rule revisions contained in the March 21, 1997; April 9, 2001; and September 18, 2001 submittals adequately addressed the conditions of the interim approval which expires on December 1, 2001. The City is hereby granted final full approval effective on November 28, 2001.

(c) Jefferson County Department of Health:

(1) Submitted on December 14, 1993, and supplemented on July 14, 1995; interim approval effective on December 15, 1995; interim approval expires on December 1, 2001.

(2) Revisions submitted on February 5, 1998; September 20, 1999; August 8, 2000; March 30, 2001; May 18, 2001; and September 11, 2001. The rule revisions contained in the August 8, 2000; May 18, 2001; and September 11, 2001 submittals adequately addressed the conditions of the interim approval which expires on December 1, 2001. The County is hereby granted final full approval effective on November 28, 2001.

(d) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

Alaska

(a) Alaska Department of Environmental Conservation: submitted on May 31, 1995, as supplemented by submittals on August 16, 1995, February 6, 1996, February 27, 1996, July 5, 1996, August 2, 1996, and October 17, 1996; interim approval effective on December 5, 1996; revisions submitted on June 5, 1996, October 3, 1996, August 25, 1998, and May 24, 1999; full approval effective on November 30, 2001.

(b) (Reserved)

Arizona

(a) *Arizona Department of Environmental Quality:*

(1) Submitted on November 15, 1993 and amended on March 14, 1994; May 17, 1994; March 20, 1995; May 4, 1995; July 22, 1996; and August 12, 1996; interim approval effective on November 29, 1996; interim approval expires December 1, 2001.

(2) Revisions submitted on August 11, 1998, May 9, 2001 and September 7, 2001. Full approval is effective on November 30, 2001.

(b) *Maricopa County Environmental Services Department:*

(1) Submitted on November 15, 1993 and amended on December 15, 1993; January 13, 1994; March 9, 1994, and March 21, 1995; July 22, 1996; and August 12, 1996; interim approval effective on November 29, 1996; interim approval expires December 1, 2001.

(2) Revisions submitted on September 7, 2001. Full approval is effective on November 30, 2001.

(c) *Pima County Department of Environmental Quality:*

(1) Submitted on November 15, 1993 and amended on December 15, 1993; January 27, 1994; April 6, 1994; April 8, 1994; August 14, 1995; July 22, 1996; August 12, 1996; interim approval effective on November 29, 1996; interim approval expires December 1, 2001.

(2) Revisions submitted on January 14, 1997; February 26, 1997; July 17, 1997; July 25, 1997; November 7, 1997; approval effective October 23, 1998; interim approval expires December 1, 2001.

(3) Revisions submitted on May 30, 1998 and November 9, 2001. Full approval is effective on November 30, 2001.

(d) *Pinal County Air Quality Control District:*

(1) submitted on November 15, 1993 and amended on August 16, 1994; August 15, 1995; July 22, 1996; and August 12, 1996; interim approval effective on November 29, 1996; interim approval expires December 1, 2001.

(2) revisions submitted on August 15, 1995; interim approval effective on December 30, 1996; interim approval expires December 1, 2001.

(3) revisions submitted on September 18, 2001. Full approval is effective on November 30, 2001.

Arkansas

(a) The ADPCE submitted its Operating Permits program on November 9, 1993, for approval. Interim approval is effective on October 10, 1995. Interim approval will expire December 1, 2001.

(b) The Arkansas Department of Environmental Quality submitted program revisions on August 4, 2000. The rule revisions adequately addressed the conditions of the interim approval effective on October 10, 1995, and which would expire on December 1, 2001. The State is hereby granted final full approval effective on December 10, 2001.

(c) The Arkansas Department of Environmental Quality; submitted its operating permits program revisions on October 24, 2002: the Arkansas Operating Permit Program Regulation 26, effective November 8, 2004.

California

The following district programs were submitted by the California Air Resources Board on behalf of:

(a) Amador County Air Pollution Control District (APCD):

(1) Complete submittal received on September 30, 1994; interim approval effective on June 2, 1995; interim approval expires December 1, 2001.

(2) Revisions were submitted on April 10, 2001. Amador County Air Pollution Control District was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(b) *Bay Area Air Quality Management District (AQMD):*

(1) Submitted on November 16, 1993, amended on October 27, 1994, and effective as an interim program on July 24, 1995. Revisions to interim program submitted on March 23, 1995, and effective on August 22, 1995, unless adverse or critical comments are received by July 24, 1995. Approval of interim program, including March 23, 1995, revisions, expires December 1, 2001.

(2) Revisions were submitted on May 30, 2001. Bay Area Air Quality Management District was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(c) *Butte County APCD:*

(1) Complete submittal received on December 16, 1993; interim approval effective on June 2, 1995; interim approval expires December 1, 2001.

(2) Revisions were submitted on May 17, 2001. Butte County APCD was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(d) *Calaveras County APCD:*

(1) Complete submittal received on October 31, 1994; interim approval effective on June 2, 1995; interim approval expires December 1, 2001.

(2) Revisions were submitted on July 27, 2001. Calaveras County APCD was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revisions submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(e) *Colusa County APCD:*

(1) Complete submittal received on February 24, 1994; interim approval effective on June 2, 1995; interim approval expires December 1, 2001.

(2) Revisions were submitted on August 22, 2001 and October 10, 2001. Colusa County APCD was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(f) *El Dorado County APCD:*

(1) Complete submittal received on November 16, 1993; interim approval effective on June 2, 1995; interim approval expires December 1, 2001.

(2) Revisions were submitted on August 16, 2001. El Dorado County APCD was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(g) *Feather River AQMD:*

(1) Complete submittal received on December 27, 1993; interim approval effective on June 2, 1995; interim approval expires December 1, 2001.

(2) Revisions were submitted on May 22, 2001. Feather River AQMD was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(h) *Glenn County APCD:*

(1) Complete submittal received on December 27, 1993; interim approval effective on August 14, 1995; interim approval expires December 1, 2001.

(2) Revisions were submitted on September 13, 2001. Glenn County APCD was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(i) *Great Basin Unified APCD:*

(1) Complete submittal received on January 12, 1994; interim approval effective on June 2, 1995; interim approval expires December 1, 2001.

(2) Revisions were submitted on May 18, 2001. Great Basin Unified APCD was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(j) *Imperial County APCD:*

(1) Complete submittal received on March 24, 1994; interim approval effective on June 2, 1995; interim approval expires December 1, 2001.

(2) Revisions were submitted on August 2, 2001. Imperial County APCD was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(k) *Kern County APCD:*

(1) Complete submittal received on November 16, 1993; interim approval effective on June 2, 1995; interim approval expires December 1, 2001.

(2) Revisions were submitted on May 24, 2001. Kern County APCD was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(l) *Lake County AQMD:*

(1) Complete submittal received on March 15, 1994; interim approval effective on August 14, 1995; interim approval expires December 1, 2001.

(2) Revisions were submitted on June 1, 2001. Lake County AQMD was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(m) *Lassen County APCD:*

(1) Complete submittal received on January 12, 1994; interim approval effective on June 2, 1995; interim approval expires December 1, 2001.

(2) Revisions were submitted on August 2, 2001. Lassen County APCD was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(n) *Mariposa County APCD:*

(1) Submitted on March 8, 1995; approval effective on February 5, 1996 unless adverse or critical comments are received by January 8, 1996. Interim approval expires on December 1, 2001.

(2) Revisions were submitted on September 20, 2001. Mariposa County APCD was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(o) *Mendocino County APCD:*

(1) Complete submittal received on December 27, 1993; interim approval effective on June 2, 1995; interim approval expires December 1, 2001.

(2) Revisions were submitted on April 13, 2001. Mendocino County APCD was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(p) *Modoc County APCD:*

(1) Complete submittal received on December 27, 1993; interim approval effective on June 2, 1995; interim approval expires December 1, 2001.

(2) Revisions were submitted on September 12, 2001. Modoc County APCD was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(q) *Mojave Desert AQMD:*

(1) Complete submittal received on March 10, 1995; interim approval effective on March 6, 1996; interim approval expires December 1, 2001.

(2) Revisions were submitted on June 4, 2001 and July 11, 2001. Mojave Desert AQMD was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(r) *Monterey Bay Unified Air Pollution Control District:*

(1) Submitted on December 6, 1993, supplemented on February 2, 1994 and April 7, 1994, and revised by the submittal made on October 13, 1994; interim approval effective on November 6, 1995; interim approval expires December 1, 2001.

(2) Revisions were submitted on May 9, 2001. Monterey Bay Unified Air Pollution Control District was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(5) Revisions were submitted on November 7, 2011. Approval became effective on October 5, 2012.

(s) *North Coast Unified AQMD:*

(1) Complete submittal received on February 24, 1994; interim approval effective on June 2, 1995; interim approval expires December 1, 2001.

(2) Revisions were submitted on May 24, 2001. North Coast Unified AQMD was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(t) *Northern Sierra AQMD:*

(1) Complete submittal received on June 6, 1994; interim approval effective on June 2, 1995; interim approval expires December 1, 2001.

(2) Revisions were submitted on May 24, 2001. Northern Sierra AQMD was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(u) *Northern Sonoma County APCD:*

(1) Complete submittal received on January 12, 1994; interim approval effective on June 2, 1995; interim approval expires December 1, 2001.

(2) Revisions were submitted on May 21, 2001. Northern Sonoma APCD was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(v) *Placer County APCD:*

(1) Complete submittal received on December 27, 1993; interim approval effective on June 2, 1995; interim approval expires December 1, 2001.

(2) Revisions were submitted on May 4, 2001. Placer County APCD was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(w) *The Sacramento Metropolitan Air Quality Management District:*

(1) Complete submittal received on August 1, 1994; interim approval effective on September 5, 1995; interim approval expires December 1, 2001.

(2) Revisions were submitted on June 1, 2001. The Sacramento Metropolitan Air Quality Management District was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(x) *San Diego County Air Pollution Control District:*

(1) Submitted on April 22, 1994 and amended on April 4, 1995 and October 10, 1995; approval effective on February 5, 1996, unless adverse or critical comments are received by January 8, 1996. Interim approval expires on December 1, 2001.

(2) Revisions were submitted on June 4, 2001. The San Diego County Air Pollution Control District was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(5) Revisions were submitted on August 19, 2003, effective February 27, 2004.

(y) *San Joaquin Valley Unified APCD:*

(1) Complete submittal received on July 5 and August 18, 1995; interim approval effective on May 24, 1996; nterim approval expires May 25, 1998. Interim approval expires on December 1, 2001.

(2) Revisions were submitted on June 29, 2001. San Joaquin Valley Unified APCD was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(z) *San Luis Obispo County APCD:*

(1) Complete submittal received on November 16, 1995; interim approval effective on December 1, 1995; interim approval expires December 1, 2001.

(2) Revisions were submitted on May 18, 2001. San Luis Obispo County APCD was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(5) Revisions were submitted on August 19, 2011. Approval became effective on October 5, 2012.

(aa) *Santa Barbara County APCD:*

(1) Submitted on November 15, 1993, as amended March 2, 1994, August 8, 1994, December 8, 1994, June 15, 1995, and September 18, 1997; interim approval effective on December 1, 1995; interim approval expires on December 1, 2001.

(2) Revisions were submitted on April 5, 2001. Santa Barbara County APCD was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(5) Revisions were submitted on April 21, 2011. Approval became effective on October 5, 2012.

(bb) *Shasta County AQMD:*

(1) Complete submittal received on November 16, 1993; interim approval effective on August 14, 1995; interim approval expires December 1, 2001.

(2) Revisions were submitted on May 18, 2001. Shasta County AQMD was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(cc) *Siskiyou County APCD:*

(1) Complete submittal received on December 6, 1993; interim approval effective on June 2, 1995; interim approval expires December 1, 2001.

(2) Revisions were submitted on September 28, 2001. Siskiyou County APCD was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(dd) *South Coast Air Quality Management District:*

(1) Submitted on December 27, 1993 and amended on March 6, 1995, April 11, 1995, September 26, 1995, April 24, 1996, May 6, 1996, May 23, 1996, June 5, 1996 and July 29, 1996; approval effective on March 31, 1997. Interim approval expires on December 1, 2001.

(2) Revisions were submitted on August 2, 2001 and October 2, 2001. South Coast AQMD was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(5) Revisions were submitted on November 5, 2010. Approval became effective on October 5, 2012.

(ee) *Tehama County APCD:*

(1) Complete submittal received on December 6, 1993; interim approval effective on August 14, 1995; interim approval expires December 1, 2001.

(2) Revisions were submitted on June 4, 2001. Tehama County APCD was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(ff) *Tuolumne County APCD:*

(1) Complete submittal received on November 16, 1993; interim approval effective on June 2, 1995; interim approval expires December 1, 2001.

(2) Revisions were submitted on July 18, 2001. Tuolumne County APCD was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(gg) *Ventura County APCD:*

(1) Submitted on November 16, 1993, as amended December 6, 1993; interim approval effective on December 1, 1995; interim approval expires December 1, 2001.

(2) Revisions were submitted on May 21, 2001. Ventura County APCD was granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(5) Revisions were submitted on August 19, 2011. Approval became effective on October 5, 2012.

(hh) *Yolo-Solano AQMD:*

(1) Complete submittal received on October 14, 1994; interim approval effective on June 2, 1995; interim approval expires December 1, 2001.

(2) Revisions were submitted on May 9, 2001. Yolo-Solano AQMD is hereby granted final full approval effective on November 30, 2001.

(3) Approval is withdrawn for state-exempt major stationary agricultural sources, effective on November 14, 2002.

(4) Revision submitted on November 7, 2003 containing approved program for major stationary agricultural sources, effective on January 1, 2004.

(ii) Antelope Valley APCD:

(1) Complete submittal received on January 26, 1999; interim approval effective January 18, 2001; interim approval expires January 21, 2003.

(2) Revisions were submitted on October 22, 2001 and June 17, 2002. Due to unresolved deficiency of state-exempt major stationary agricultural sources, interim approval expired for all major stationary sources, effective January 21, 2003.

(3) Revision submitted on November 7, 2003 containing program for major stationary agricultural sources, effective on January 1, 2004.

(jj) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

Colorado

(a) Colorado Department Health-Air Pollution Control Division: submitted on November 5, 1993; effective on February 23, 1995; interim approval expires December 1, 2001.

(b) The Colorado Department of Public Health and Environment—Air Pollution Control Division submitted an operating permits program on November 5, 1993; interim approval effective on February 23, 1995; revised June 24, 1997; full approval effective on October 16, 2000.

(c) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

Connecticut

(a) Department of Environmental Protection: submitted on September 28, 1995; interim approval effective on April 23, 1997; revised program submitted on January 11, 2002; full approval effective May 31, 2002.

(b) [Reserved]

Delaware

(a) Department of Natural Resources and Environmental Control: submitted on November 15, 1993 and amended on November 22, 1993, February 9, 1994, May 15, 1995 and September 5, 1995; interim approval effective on January 3, 1996; interim approval expires December 1, 2001.

(b) The Delaware Department of Natural Resources and Environmental Control submitted program amendments on November 14, 2000 and November 20, 2000. The rule amendments contained in the November 14, 2000 and November 20, 2000 submittals adequately addressed the conditions of the interim approval effective on January 3, 1996. The State is hereby granted final full approval effective on November 19, 2001.

(c) The Delaware Department of Natural Resources and Environmental Control submitted program amendment on May 18, 2004. This rule amendment contained in the May 18, 2004 submittal is necessary to make the current definition as stringent as the corresponding provision of 40 CFR part 70, which went into effect on November 27, 2001. The State is hereby granted approval effective on February 5, 2007.

District of Columbia

(a) Environmental Regulation Administration: submitted on January 13, 1994 and March 11, 1994; interim approval effective on September 6, 1995; interim approval expires December 1, 2001.

(b) The District of Columbia Department of Health submitted operating permit program amendments on May 21, 2001, August 30, 2001, and September 26, 2001. The rule amendments contained in the May 21, 2001, August 30, 2001, and September 26, 2001 submittals adequately addressed the conditions of the interim approval effective on September 6, 1995. The District of Columbia is hereby granted final full approval effective on November 30, 2001.

(c) The District of Columbia Department of Health submitted program amendments on April 4, 2003. The rule amendments contained in the April 4, 2003 submittal adequately addressed the deficiency identified in the Notice of Deficiency effective on December 13, 2001. The District of Columbia hereby maintains final full approval effective on June 2, 2003.

(d) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

Florida

(a) Florida Department of Environmental Protection: submitted on November 16, 1993, and supplemented on July 8, 1994, November 28, 1994, December 21, 1994, December 22, 1994, and January 11, 1995; interim approval effective on October 25, 1995; interim approval expires December 1, 2001.

(b) The Florida Department of Environmental Protection submitted program revisions on April 29, 1996, February 11, 1998, June 11, 1998, April 9, 1999 (two submittals), July 1, 1999, and October 1, 1999. The rule revisions contained in the April 29, 1996, February 11, 1998, June 11, 1998, April 9, 1999, July 1, 1999, and October 1, 1999 submittals adequately addressed the conditions of the interim approval effective on October 25, 1995, and which would expire on December 1, 2001. The State's operating permits program is hereby granted final full approval effective on October 31, 2001.

Georgia

(a) The Georgia Department of Natural Resources submitted on November 12, 1993, and supplemented on June 24, 1994; November 14, 1994; and June 5, 1995; interim approval effective on December 22, 1995; interim approval expires December 1, 2001.

(b) The Georgia Department of Natural Resources submitted program revisions on March 10, 1997, February 11, 1998, September 30, 1999, November 15, 1999, and January 11, 2000. The rule revisions contained in the February 11, 1998 submittal adequately addressed the conditions of the interim approval effective on December 22, 1995, and which would expire on June 1, 2000. The State is hereby granted final full approval effective on August 7, 2000.

(c) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

Hawaii

(a) Department of Health; submitted on December 20, 1993; effective on December 1, 1994; interim approval expires December 1, 2001.

(b) Revisions were submitted on September 21, 2001. The rule amendments contained in the September 21, 2001 submittal adequately addressed the conditions of the interim approval effective on December 1, 1994. The Department of Health, State of Hawaii, is hereby granted final full approval effective on November 30, 2001.

(c) Department of Health: Program revisions submitted on November 14, 2003; submittal corrects the deficiency outlined in an April 1, 2002 Notice of Deficiency. These revisions are hereby granted full approval effective June 19, 2007.

(d) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

'daho

(a) Idaho Division of Environmental Quality: submitted on January 20, 1995, and supplemented on July 14, 1995, September 15, 1995, and January 12, 1996; interim approval effective on January 6, 1997; revisions submitted on July 9, 1998, May 25, 1999, and March 15, 2001; full approval effective on November 5, 2001.

(b) Reserved.

Illinois

(a) The Illinois Environmental Protection Agency: submitted on November 15, 1993; interim approval effective on March 7, 1995; interim approval expires December 1, 2001.

(b) The Illinois Environmental Protection Agency: program revisions submitted on May 31, 2001; submittal adequately addressed the conditions of the interim approval which expires on December 1, 2001. Illinois is hereby granted final full approval effective November 30, 2001.

(c) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

Indiana

(a) The Indiana Department of Environmental Management: submitted on August 10, 1994; interim approval effective on December 14, 1995; interim approval expires December 1, 2001.

(b) The Indiana Department of Environmental Management: Program revisions submitted on May 22, 1996; submittal adequately addressed the conditions of the interim approval which expires on December 1, 2001. Indiana is hereby granted final full approval effective November 30, 2001.

(c) The Indiana Department of Environmental Management: program revisions submitted on February 7, 2002. These revisions are hereby granted final approval effective June 17, 2002.

Iowa

(a) The Iowa Department of Natural Resources submitted on November 15, 1993, and supplemented by correspondence dated March 15, 1994; August 8, 1994; October 5, 1994; December 6, 1994; December 15, 1994; February 6, 1995; March 1, 1995; March 23, 1995; and May 26, 1995. Interim approval effective on October 2, 1995; interim approval expires October 1, 1998.

(b) The Iowa Department of Natural Resources submitted a revised workload analysis dated April 3, 1997. This fulfills the final condition of the interim approval effective on October 2, 1995, and which would expire on October 1, 1997. The state is hereby granted final full approval effective September 12, 1997.

(c) The Iowa Department of Natural Resources submitted for program approval rules 567-22.100 through 567-22.116 and 567-22.300 on August 7, 2000, rules 567-22.201, 567-22.203, and 567-22.300 (except 22.300(7)("c")) on January 29, 2001, and 567-22.100 and 567-22.106 on July 18, 2001. These revisions to the Iowa program are approved effective May 3, 2002.

(d) The Iowa Department of Natural Resources (IDNR) submitted amendments to Iowa Rule, 567 Iowa Administrative Code (IAC) 22.108(3), as a revision to the Iowa Title V operating permits program on August 31, 2001, effective August 15, 2001. The amendments incorporate existing periodic monitoring guidance and adopt by reference compliance assurance monitoring requirements. The IDNR submitted a supplement regarding these amendments on November 7, 2001, clarifying IDNR's authority to establish periodic monitoring on a case-by-case basis. This revision to the Iowa program is effective April 15, 2002.

(e) The Iowa Department of Natural Resources submitted for program approval rules "567-22.100," "567-22.101," "567-22.201," and "567-22.300" on April 25, 2002. The state effective date of these rules is April 24, 2002. These revisions to the Iowa program are approved effective May 6, 2003.

(f) The Iowa Department of Natural Resources submitted for program approval rules 567-22.100, 567-22.103 on July 17, 2002, and rules 567-22.105, 567-22.113, on March 11, 2002. These revisions to the Iowa program are approved effective November 17, 2003.

(g) The Iowa Department of Natural Resources submitted for program approval rule 567-22.100(455B) on April 20, 2004. The state effective date is January 15, 2003. We are approving this program revision effective September 27, 2004.

(h) The Iowa Department of Natural Resources submitted for program approval rules 567-22.100, 567-22.101(2), 567-22.102, 567-22.105(1), 567-22.108(17)"a"(2), 567-22.209 and 567-22.300(12) on July 18, 2005. The state effective date was July 13, 2005. These revisions to the Iowa program are approved effective February 21, 2006.

(i) The Iowa Department of Natural Resources submitted for program approval rules 567-22.105(2), 567-22.106(6), 567-22.201(2), 567-22.300(3) on April 19, 2007. The state effective date was April 4, 2007. These revisions to the Iowa program are approved effective December 17, 2007.

(j) The Iowa Department of Natural Resources submitted for program approval rule 567-22.100(455B) on April 8, 2008. The state effective date was March 19, 2008. These revisions to the Iowa program are approved effective October 24, 2008.

(k) The Iowa Department of Natural Resources submitted for program approval rules 567-22.100, 567-22.105(1)"a", except subparagraph (9); new subrules 567-22.105(5) and 567-22.106(8); 567-22.110, and 567-22.116 on November 18, 2008. The state effective dates were October 15, 2008. These revisions to the Iowa program are approved effective March 1, 2010.

(l) The Iowa Department of Natural Resources submitted for program approval a revision to rule 567-22.106(1) on February 20, 2009. The State effective date was February 4, 2009. This revision to the Iowa program is approved effective April 30, 2010.

(m) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

(n) The Iowa Department of Natural Resources submitted for program approval a revision to 567-22.105(1) on January 11, 2010. The State effective date was November 11, 2009. These revisions to the Iowa program, are approved effective December 24, 2013.

(o) The Iowa Department of Natural Resources submitted for program approval revisions to 567-22.100(455B) to adopt by reference the definition of "EPA reference method". Also adopted by reference is the revised version of the Title V "Periodic Monitoring Guidance" at 567-22.108. These revisions to the Iowa program are approved effective *March 17, 2014.*

(p) The Iowa Department of Natural Resources submitted for program approval revisions to 567-22.103(455B) revised insignificant activities which must be included in Title V Operating permit applications. These revisions to the Iowa program are approved effective July 14, 2014.

(q) The Iowa Department of Natural Resources submitted for program approval a revision to rules 567-22.100, 567-22.101, 567-22.103, 567-22.105, 567-22.106, 567-22.108, and added 567.30.4(2) on December 16, 2015. This revision to the Iowa program is approved effective on November 8, 2016.

(r) The Iowa Department of Natural Resources submitted for program approval revisions to rules 567-22.100, 567-22.103, 567-22.105, and 567-22.108. The state effective date was March 22, 2017. This revision is effective August 7, 2018.

Kansas

(a) The Kansas Department of Health and Environment program submitted on December 12, 1994; April 7 and 17, 1995; November 14, 1995; and December 13, 1995. Full approval effective on February 29, 1996.

(b) The Kansas Department of Health and the Environment approved revisions to the Kansas Administrative Record (K.A.R.), 28-19-202 and 28-19-517, which became effective on March 23, 2001, and February 28, 1998, respectively. These revisions were submitted on June 25, 2001. We are approving these program revisions effective October 6, 2003.

(c) The Kansas Department of Health and Environment approved this revision to the Kansas Administrative Regulations, 28-19-202, as a revision to the Kansas Title V Operating Permits Program, which became effective on January 30, 2004. This revision was submitted on April 22, 2004. We are approving this program revision effective September 27, 2004.

(d) The Kansas Department of Health and Environment submitted for program approval rule K.A.R. 28-19-517 on January 27, 2006. The state effective date was September 23, 2005. This revision to the Kansas program is approved effective April 8, 2008

(e) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

(f) The Kansas Department of Health and Environment submitted revisions to Kansas Administrative Record (KAR) 28-19-202 and 28-19-517 on April 15, 2011; effective March 28, 2014.

Kentucky

(a)(1) Kentucky Natural Resources and Environmental Protection Cabinet: Submitted on December 27, 1993, and supplemented on November 15, 1994, April 14, 1995, May 3, 1995, and May 22, 1995; interim approval expires on December 1, 2001.

(2) Revision submitted on February 13, 2001. Rule revisions contained in the February 13, 2001 submittal adequately addressed the conditions of the interim approval which expires on December 1, 2001. The Commonwealth is hereby granted final full approval effective on November 30, 2001.

(b)(1) Air Pollution Control District of Jefferson County: submitted on January 31, 1994, and supplemented on March 9, 1994, June 15, 1994, July 15, 1994, July 14, 1995, August 9, 1995, August 10, 1995, and February 16, 1996; full approval effective on April 22, 1996.

(2) Revisions submitted on February 20, 1998, January 11, 1999, September 30, 1999, March 17, 2000, March 21, 2001, and October 23, 2001; full approval of revisions effective on April 22, 2002.

Louisiana

(a) The Louisiana Department of Environmental Quality, Air Quality Division submitted an Operating Permits program on November 15, 1993, which was revised November 10, 1994, and became effective on October 12, 1995.

(b) [Reserved]

(c) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

Maine

(a) Department of Environmental Protection: submitted on October 23, 1995; source-category limited interim approval effective on March 24, 1997; full approval effective December 17, 2001.

(b) [Reserved]

(c) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

Maryland

(a) Maryland Department of the Environment: submitted on May 9, 1995; interim approval effective on August 2, 1996; interim approval expires December 1, 2001.

(b) The Maryland Department of Environmental Quality submitted operating permit program amendments on July 15, 2002. The program amendments contained in the July 15, 2002 submittal adequately addressed the conditions of the interim approval effective on August 2, 1996. The State is hereby granted final full approval effective on February 14, 2003.

(c) The Maryland Department of the Environment submitted an operating permit program amendment on February 13, 2007. The program amendment contained in the February 13, 2007 submittal will update Maryland's existing incorporation by reference citations to the Federal Acid Rain Program. The state is hereby granted approval effective on June 25, 2007.

(d) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

Massachusetts

(a) Department of Environmental Protection: submitted on April 28, 1995; interim approval effective on May 15, 1996; interim approval expires December 1, 2001.

(b) The Massachusetts Department of Environmental Services submitted program revisions on November, 19, 1996 and May 11, 2001. EPA is hereby granting Massachusetts full approval effective on November 27, 2001.

Michigan

(a)(1) Department of Environmental Quality: received on May 16, 1995, July 20, 1995, October 6, 1995, November 7, 1995, and January 8, 1996; interim approval effective on February 10, 1997; interim approval expires December 1, 2001.

(2) Interim approval revised to provide for a 4 year initial permit issuance schedule under source category limited (SCL) interim approval, pursuant to the Department of Environmental Quality's request received on April 18, 1997. SCL interim approval effective on July 18, 1997.

(3) Department of Environmental Quality: interim approval corrections submitted on June 1, 2001 and September 20, 2001; submittals adequately address the conditions of the interim approval which expires on December 1, 2001. Based on these corrections, Michigan is hereby granted final full approval effective on November 30, 2001.

(4) Department of Environmental Quality: Program revisions submitted on May 7, 2003, May 21, 2003, and August 18, 2003, including Michigan Administrative Rule 336.1216; submittals satisfactorily address EPA's Notice of Program Deficiency, published on December 11, 2001 (66 FR 64038). Final full approval of these revisions is effective December 10, 2003.

(b) (Reserved)

Minnesota

(a) The Minnesota Pollution Control Agency: submitted on November 15, 1993; interim approval effective on July 16, 1995; interim approval expires December 1, 2001.

(b) The Minnesota Pollution Control Agency: Program revisions submitted on June 9, 2000, July 21, 2000, June 12, 2001; Rule revisions contained in the submittals adequately addressed the conditions of the interim approval which expires on December 1, 2001. Minnesota is hereby granted final full approval effective November 30, 2001.

(c) [Reserved]

(d) For any permitting program located in the State, insofar as the permitting threshold provisions concern the reatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

Mississippi

(a) Department of Environmental Quality: submitted on November 15, 1993; full approval effective on January 27, 1995.

(b) [Reserved]

(c) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

Missouri

(a) The Missouri Department of Natural Resources program submitted on January 13, 1995; August 14, 1995; September 19, 1995; and October 16, 1995. Interim approval effective on May 13, 1996. Interim approval expires on September 13, 1998.

(b) The Missouri Department of Natural Resources program submitted on January 13, 1995; August 14, 1995; September 19, 1995; October 16, 1995; and August 6, 1996.

Full approval effective June 13, 1997.

(c) The Missouri Department of Natural Resources submitted Missouri rule 10 CSR 10-6.110, "Submission of Emission Data, Emission Fees, and Process Information," on February 1, 1996, approval effective September 25, 1997.

(d) The Missouri Department of Natural Resources submitted on May 28, 1998, revisions to Missouri Rules 10 CSR 10-6.020, "Definitions and Common Reference Tables," and 10 CSR 10-6.065, "Operating Permits." Effective date was April 30, 1998.

(e) The Missouri Department of Natural Resources submitted on July 8, 1999, revisions to Missouri rules 10 CSR 10-6.110, "Submission of Emission Data, Emission Fees, and Process Information," effective on December 30, 1998.

(f) The Missouri Department of Natural Resources submitted Missouri rule 10 CSR 10-6.020, "Definitions and Common Reference Tables," on September 30, 1999, approval effective May 30, 1999.

(g) The Missouri Department of Natural Resources submitted Missouri rule 10 CSR 10-6.110, Submission of Emission Data, Emission Fees, and Process Information on May 22, 2000, approval effective December 26, 2000.

(h) The Missouri Department of Natural Resources submitted Missouri rule 10 CSR 10-6.065, "Operating Permits," on June 8, 2000, approval effective May 22, 2001.

(i) The Missouri Department of Natural Resources submitted Missouri rule 10 CSR 10-6.020, "Definitions and Common Reference Tables," on July 31, 2000, approval effective May 22, 2001.

(j) The Missouri Department of Natural Resources submitted Missouri rule 10 CSR 10-6.110, "Submission of Emission Data, Emission Fees, and Process Information" on November 27, 2000, approval effective October 5, 2001.

(k) The Missouri Department of Natural Resources submitted Missouri rule 10 CSR 10-6.110, "Submission of Emission Data, Emission Fees, and Process Information" on December 27, 2001, approval effective April 22, 2002.

(l) The Missouri Department of Natural Resources submitted Missouri rule 10 CSR 10-6.065, "Operating Permits" on May 30, 2002, approval effective October 28, 2002.

(m) The Missouri Department of Natural Resources submitted Missouri rule 10 CSR 10-6.110, "Submission of Emission Data, Emission Fees, and Process Information" on September 9, 2002, approval effective January 21, 2003.

(n) The Missouri Department of Natural Resources submitted Missouri rule 10 CSR 10-6.065, "Operating Permits," on May 6, 2003, approval effective November 17, 2003.

(o) The Missouri Department of Natural Resources submitted revisions to Missouri rule 10 CSR 10-6.110, "Submission of Emission Data, Emission Fees, and Process Information" on December 16, 2003, approval of section (3)(D) effective February 15, 2005.

(p) The Missouri Department of Natural Resources submitted revisions to Missouri rule 10 CSR 10-6.110, "Submission of Emission Data, Emission Fees, and Process Information" on December 8, 2004, approval of section (3)(D) effective July 1, 2005.

(q) The Missouri Department of Natural Resources submitted revisions to Missouri rule 10 CSR 10-6.110, "Submission of Emission Data, Emission Fees, and Process Information" on January 5, 2006, approval of section (3)(D) effective July 11, 2006.

(r) The Missouri Department of Natural Resources submitted revisions to Missouri rule 10 CSR 10-6.020, "Definitions and Common Reference Tables," on June 30, 2004, approval effective August 10, 2006.

(s) The Missouri Department of Natural Resources submitted revisions to Missouri rule 10 CSR 10-6.020, "Definitions and Common Reference Tables," on March 13, 2006, approval effective January 4, 2007.

(t) The Missouri Department of Natural Resources submitted revisions to Missouri rule 10 CSR 10-6.065, "Operating Permits" on January 3, 2006. We are approving this rule except for Section (4) which relates to the State Basic Operating Permits. This approval is effective April 23, 2007.

(u) The Missouri Department of Natural Resources submitted revisions to Missouri rule 10 CSR 10-6.110, "Submission of Emission Data, Emission Fees, and Process Information" on December 11, 2006; approval of sections (3)(D)1., (3)(D)2.E., and (3)(D)2.F. effective May 8, 2007.

(v) The Missouri Department of Natural Resources submitted revisions to Missouri rule 10 CSR 10-6.110, "Submission of Emission Data, Emission Fees, and Process Information" on December 21, 2007; approval of section (3)(D) effective November 14, 2008.

(w) The Missouri Department of Natural Resources submitted revisions to Missouri rule 10 CSR 10-6.020, "Definitions and Common Reference Tables," on September 5, 2008, approval effective May 14, 2009.

(x) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

(y) The Missouri Department of Natural Resources submitted revisions to Missouri rule 10 CSR 10-6.110, "Submission of Emission Data, Emission Fees, and Process Information" on December 30, 2008; approval of section (3)(D) effective March 25, 2011.

(z) The Missouri Department of Natural Resources submitted revisions to Missouri rule 10 CSR 10-6.110, "Submission of Emission Data, Emission Fees, and Process Information" on August 31, 2010; approval of section (3)(A) effective February 13, 2012.

(aa) The Missouri Department of Natural Resources submitted revisions to Missouri rule 10 CSR 10-6.020, "Definitions and Common Reference Tables" on December 15, 2010. The state effective date is December 30, 2010. This revision is effective June 3, 2013.

(bb) The Missouri Department of Natural Resources submitted revisions to Missouri rule 10 CSR 10-6.020, "Definitions and Common Reference Tables" on February 11, 2013. The state effective date is February 28, 2013. This revision is effective May 16, 2014.

(cc) The Missouri Department of Natural Resources submitted revisions to Missouri rule 10 CSR 10-6.020, "Definitions and Common Reference Tables" on March 27, 2014. The state effective date is March 30, 2014. This revision is effective May 4, 2015.

(dd) The Missouri Department of Natural Resources submitted revisions to Missouri rule 10 CSR 10-6.110, "Reporting Emission Data, Emission Fees, and Process Information" on October 2, 2013. The state effective date is October 30, 2013. This revision is effective May 18, 2015.

(ee) The Missouri Department of Natural Resources submitted revisions to Missouri rule 10 CSR 10-6.110, "Reporting Emission Data, Emission Fees, and Process Information" on March 16, 2015. The state effective date is March 30, 2015. This revision is effective July 31, 2017.

(ff) The Missouri Department of Natural Resources submitted revisions to CSR on April 28, 2011. We are approving this rule except for Section (4) which relates to the State Basic Operating permits, and we are not approving in paragraph (2)(A)2 the words, "except that" and are not approving subparagraphs (2) (A)2.A. and (2)(A)2.B. This approval is effective December 2, 2016.

(gg) The Missouri Department of Natural Resources submitted revisions to Missouri rule 10 CSR 10-6.065, "Operating Permits" on April 6, 2016. We are approving this rule except for Section (4) which relates to the State Basic Operating Permits; Subparagraph (2)(A)2.A.; Subparagraph(2)(A)2.B.; and the words "except that" in Paragraph (2)(A)2. The state effective date is March 30, 2016. This revision is effective December 12, 2016.

Montana

(a) Montana Department of Health and Environmental Sciences—Air Quality Division: submitted on March 29, 1994; effective on June 12, 1995; interim approval expires December 1, 2001.

(b) The Montana Department of Environmental Quality submitted an operating permits program on March 29, 1994; effective on June 12, 1995; revised January 15, 1998, and March 17, 2000; full approval effective on January 22, 2001.

Nebraska; City of Omaha; Lincoln-Lancaster County Health Department

(a) The Nebraska Department of Environmental Quality submitted on November 15, 1993, supplemented by correspondence dated November 2, 1994, and August 29, 1995, and amended Title V rules submitted June 14, 1995.

(b) Omaha Public Works Department submitted on November 15, 1993, supplemented by correspondence dated April 18, 1994; April 19, 1994; May 13, 1994; August 12, 1994; and April 13, 1995. A delegation contract between the state and the city of Omaha became effective on June 6, 1995.

(c) Lincoln-Lancaster County Health Department submitted on November 12, 1993, supplemented by correspondence dated June 23, 1994. Full approval effective on November 17, 1995.

(d) The Nebraska Department of Environmental Quality submitted the following program revisions on August 20, 1999; NDEQ Title 129, Chapters 1, 2, 5, 6, 7, 8, 10, 29, and 41; City of Omaha Ordinance No. 34492, amended section 41-2, and LLCHD Articles 2-1, 2-2, 2-5, 2-6, 2-7, 2-8, and 2-15, effective February 22, 2000.

(e) The Nebraska Department of Environmental Quality submitted the following program revisions on June 29, 2001; NDEQ Title 129, Chapters 1 and 41, effective December 15, 1998; and NDEQ Title 129, Chapters 1, 7, 8, and 31, effective on August 22, 2000.

(f) The Nebraska Department of Environmental Quality submitted the following program revisions on May 10, 2002, NDEQ Title 129, Chapters 1, 5, 6, and 29; and on November 5, 2002, NDEQ Title 129, Chapters 1, 2, 5, 6, and 31, approval effective September 8, 2003.

(g) The Nebraska Department of Environmental Quality approved revisions to NDEQ Title 129, chapters 1, 5, 6, and appendix III (which codifies its prior Federally approved Insignificant Activities List) on September 5, 2002, which became effective on November 20, 2002. These revisions were submitted on May 1, 2003. We are approving these program revisions effective November 4, 2003.

(h) The Nebraska Department of Environmental Quality approved a revision to NDEQ Title 129, appendix III, on November 19, 2003, which became effective November 24, 2003. This revision was submitted on June 4, 2004. We are approving this program revision effective May 31, 2005.

(i) The Nebraska Department of Environmental Quality approved a revision to NDEQ Title 129, Appendix III on May 2, 2005, which became effective May 7, 2005. This revision was submitted on October 20, 2005. We are approving this program revision effective September 8, 2006.

(j) The Nebraska Department of Environmental Quality approved a revision to NDEQ Title 129, Chapter 1 on June 2, 2005, which became effective September 25, 2005. This revision was submitted on May 27, 2009. We are approving this program revision effective October 12, 2010.

(k) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

(l) The Nebraska Department of Environmental Quality approved a revision to NDEQ Title 129, Chapter 1 on December 1, 2011, which became effective April 1, 2012. This revision was submitted on February 13, 2013. We are approving this program revision effective October 3, 2014.

(m) The Nebraska Department of Environmental Quality approved revisions to Nebraska Air Quality Regulations, Title 129, Chapter 5, "Operating Permits—When Required", and Chapter 9, "General Operating Permits for Class I and II Sources", on September 5, 2002. The State's effective date is November 20, 2002. The revisions were submitted to EPA on May 1, 2003. This revision is effective on December 6, 2016.

(n) The Nebraska Department of Environmental Quality approved revisions to Nebraska Air Quality Regulations, Title 129, Chapter 5, "Operating Permits—When Required", on December 7, 2007. The State's effective date is February 16, 2008. The revisions were submitted to EPA on November 8, 2011. This revision is effective on December 6, 2016.

(o) The Nebraska Department of Environmental Quality submitted revisions to the Nebraska Administrative Code, title 129, chapter 1, "Definitions" and chapter 15, "Operating Permit Modifications; Reopening for Cause" on July 14, 2014. The state effective date is May 13, 2014. This revision is effective June 5, 2018.

Nevada

The following district program was submitted by the Nevada Division of Environmental Protection on behalf of:

(a) Nevada Division of Environmental Protection:

(1) Submitted on February 8, 1995; interim approval effective on January 11, 1996; interim approval expires December 1, 2001.

(2) Revisions submitted on May 30, 2001. Full approval is effective on November 30, 2001.

(b) Washoe County District Health Department:

(1) Submitted on November 18, 1993; interim approval effective on March 6, 1995; interim approval expires December 1, 2001.

(2) Revisions submitted on May 8, 2001. Full approval is effective on November 30, 2001.

(c) Clark County Department of Air Quality Management:

(1) Submitted on January 12, 1994 and amended on July 18 and September 21, 1994; interim approval effective on August 14, 1995; interim approval expires on December 1, 2001.

(2) Revisions submitted on June 1, 2001. Full approval is effective on November 30, 2001.

(3) Revisions were submitted on February 23, 2004, effective October 1, 2004.

(d) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

New Hampshire

(a) Department of Environmental Services: submitted on October 26, 1995; interim approval effective on December 1, 2001.

(b) The New Hampshire Department of Environmental Services submitted program revisions on May 14, 2001. EPA is hereby granting New Hampshire full approval effective on November 23, 2001.

(c) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

New Jersey

(a) The New Jersey Department of Environmental Protection submitted an operating permit program on November 15, 1993, revised on August 10, 1995, with supplements on August 28, 1995, November 15, 1995,

December 4, 1995, and December 6, 1995; interim approval effective on June 17, 1996; interim approval expires December 1, 2001.

(b) The New Jersey State Department of Environmental Protection submitted an operating permits program revision request on June 11, 1998; interim program revision approval effective on July 6, 1999.

(c) The New Jersey Department of Environmental Protection submitted program revisions on September 17, 1999 and May 31, 2001. The rule revisions contained in the September 17, 1999 and May 31, 2001 submittals adequately addressed the conditions of the interim approval effective on June 17, 1996, and which would expire on December 1, 2001. The State is hereby granted final full approval effective on November 30, 2001.

(d) The New Jersey Department of Environmental Protection submitted program revisions on October 4, 2006; approval effective August 27, 2007.

(e) The New Jersey Department of Environmental Protection submitted program revisions on May 15, 2015; the revisions related to fees imposed in connection with the permitting of major sources are approved effective November 28, 2016.

New Mexico

(a) Environment Department; submitted on November 15, 1993; effective date on December 19, 1994; interim approval expires on October 19, 1997.

(b) City of Albuquerque Environmental Health Department, Air Pollution Control Division: submitted on April 4, 1994; effective on March 13, 1995; interim approval expires June 10, 1997.

(c) The New Mexico Environment Department, Air Pollution Control Bureau submitted an operating permits program on November 15, 1993, which was revised July 31, 1996, and became effective on December 26, 1996.

(d) The City of Albuquerque, Environmental Health Department, submitted an operating permits program on April 4, 1994, which was revised July 31, 1996, and became effective on December 26, 1996.

(e) The Environmental Department; submitted the following program revisions on November 5, 2002: NMAC 20.2.70, effective November 8, 2004.

(f) Albuquerque/Bernalillo County Air Quality Control Board; submitted the following program revisions on May 2, 2003: NMAC 20.11.42.7, effective November 8, 2004.

New York

(a) The New York State Department of Environmental Conservation submitted an operating permits program on November 12, 1993, supplemented on June 17, 1996 and June 27, 1996; interim program approval effective on December 9, 1996; interim program approval expires December 1, 2001.

(b) [Reserved]

(c) The New York State Department of Environmental Conservation submitted program revisions on June 8, 1998 and October 5, 2001. The rule revisions contained in the June 8, 1998 and October 5, 2001 submittals adequately addressed the conditions of the interim approval effective on December 9, 1996, and which would expire on December 1, 2001. The October 5, 2001 submission consists of rules adopted pursuant to New York's emergency rulemaking procedures. The State is hereby granted final full approval effective on November 30, 2001.

(d) The New York State Department of Environmental Conservation submitted program revisions on June 8, 1998 and January 2, 2002. The rule revisions contained in the June 8, 1998 and January 2, 2002 submittals

adequately addressed the conditions of the interim approval effective on December 9, 1996. The State is hereby granted final full approval effective on January 31, 2002.

(e) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

North Carolina

(a)(1) Department of Environment and Natural Resources: submitted on November 12, 1993, and supplemented on December 17, 1993, May 31, 1994, and August 3, 1994, March 23, 1995, and August 9, 1995; interim approval effective on December 15, 1995; interim approval expires June 1, 2000.

(2) North Carolina Department of Environment and Natural Resources submitted program revisions on March 23, 1995, August 16, 1996, March 19, 1997, July 29, 1998, November 15, 1999, January 21, 2000, June 14, 2000, and August 28, 2000. The rule revisions contained in the March 23, 1995, March 19, 1997, January 21, 2000, and August 28, 2000 submittals adequately addressed the conditions of the interim approval which would expire on December 1, 2001. The State is hereby granted final full approval effective on October 1, 2001.

(b)(1) Forsyth County Environmental Affairs Department: submitted on November 12, 1993, and supplemented on May 31, 1994 and November 28, 1994; interim approval effective on December 15, 1995; interim approval expires June 1, 2000.

(2) Forsyth County submitted program revisions on September 25, 1995, January 16, 1997, August 1, 1997, April 22, 1998, October 2, 1998, February 18, 1999, September 29, 1999, October 26, 1999, and February 24, 2000. The rule revisions contained in the September 25, 1995, August 1, 1997, and October 26, 1999 submittals adequately addressed the conditions of the interim approval which would expire on June 1, 2000. The County is hereby granted final full approval effective on August 21, 2000.

(3) [Reserved]

(c)(1) Mecklenburg County Department of Environmental Protection: submitted on November 12, 1993, and supplemented on June 5, 1995; interim approval effective on December 15, 1995; interim approval expires June 1, 2000.

(2) Mecklenburg County Department of Environmental Protection submitted program revisions on October 11, 1999, November 2, 1999, December 8, 1999, December 28, 1999, and July 26, 2000. The rule revisions contained in the October 11, 1999, December 8, 1999, December 28, 1999, and July 26, 2000 submittals adequately addressed the conditions of the interim approval which would expire on December 1, 2001. Mecklenburg County is hereby granted final full approval effective on October 1, 2001.

(d)(1) Western North Carolina Regional Air Pollution Control Agency: submitted on November 12, 1993, and supplemented on January 12, 1994, September 16, 1994, October 11, 1994, and May 17, 1995; interim approval effective on December 15, 1995; interim approval expires June 1, 2000.

(2) Western North Carolina Regional Air Quality Agency submitted program revisions on January 23, 1997, September 29, 1999, November 10, 1999, January 5, 2000, and August 17, 2000. The rule revisions contained in the January 23, 1997, January 5, 2000, and August 17, 2000 submittals adequately addressed the conditions of the interim approval which would expire on December 1, 2001. Western North Carolina is hereby granted final full approval effective on October 1, 2001.

North Dakota

(a) North Dakota State Department of Health and Consolidated Laboratories—Environmental Health Section: submitted on May 11, 1994; effective on August 7, 1995; interim approval expires June 1, 2000.

(b) The North Dakota Department of Health, Environmental Health Section, submitted an operating permits program on May 11, 1994; interim approval effective on August 7, 1995; revised January 1, 1996, September 1, 1997, September 1, 1998, and August 1, 1999; full approval effective on August 16, 1999.

(c) The North Dakota Department of Health, Environmental Health Section submitted the following program revisions on May 1, 2003: NDAC 33-15-14-06.1(o)(2)(aa), effective November 17, 2003.

Ohio

(a) Ohio Environmental Protection Agency (OEPA): Submitted on November 1, 1993; interim approval effective on December 9, 1994; revisions submitted on June 5, 1996, October 3, 1996, August 25, 1998, and May 24, 1999; full approval effective on September 12, 2001; revision submitted on September 16, 2003; revision approved December 22, 2003.

(b) [Reserved]

(c) The Ohio Environmental Protection Agency submitted an operating permits program amendment on March 23, 2007. The program amendment contained in the March 23, 2007 submittal will update Ohio's existing Acid Rain program. The state is hereby granted approval effective on March 25, 2008.

(d) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

Oklahoma

(a) The Oklahoma Department of Environmental Quality submitted its operating permits program on January 12, 1994, for approval. Source category—limited interim approval is effective on March 6, 1996. Interim approval will expire December 1, 2001.

(b) The Oklahoma Department of Environmental Quality submitted program revisions on July 27, 1998. The rule revisions adequately addressed the conditions of the interim approval effective on March 6, 1996, and which will expire on December 1, 2001. The State is hereby granted final full approval effective on November 30, 2001.

(c) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

Oregon

(a) Oregon Department of Environmental Quality: submitted on November 15, 1993, as amended on November 15, 1994 and June 30 1995; full approval effective on November 27, 1995; revisions submitted on March 15, 2000; approval of revisions effective on August 9, 2002.

(b) Lane Regional Air Pollution Authority: submitted on November 15, 1993, as amended on November 15, 1994, and June 30, 1995; full approval effective on November 27, 1995.

Pennsylvania

(a) Pennsylvania Department of Environmental Resources [now known as the Pennsylvania Department of Environmental Protection]: submitted on May 18, 1995; full approval effective on August 29, 1996.

(b) The Pennsylvania Department of Environmental Protection submitted a request on behalf of the Allegheny County Health Department pertaining to operating permit programs in the Commonwealth of Pennsylvania. The submission, dated November 9, 1998 and amended March 1, 2001, includes a request for approval of a partial operating program pursuant to 40 CFR part 70 for Allegheny County. The Allegheny County Health Department's partial operating permit program is hereby granted full approval effective on December 17, 2001.

(c) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

(d) The Pennsylvania Department of Environmental Protection submitted a program revision on February 11, 2014; approval effective on July 14, 2015.

Puerto Rico

(a) The Puerto Rico Environmental Quality Board submitted an operating permits program on November 15, 1993 with supplements on March 22, 1994 and April 11, 1994 and revised on September 29, 1995; full approval effective on March 27, 1996.

(b) [Reserved]

(c) The Puerto Rico Environmental Quality Board submitted a revision to its operating permits program on July 13, 2011. The revision includes a change to the Puerto Regulations for the Control of Atmospheric Pollution, Rule 609(g), "Confidential Information," effective on February 18, 2011. The reference to Puerto Rico's Environmental Public Policy Act, Law No. 9 of June 18, 1970, is replaced with Law 416 of September 22, 2004.

Rhode Island

(a) Department of Environmental Management: submitted on June 20, 1995; interim approval effective on July 5, 1996; interim approval expires December 1, 2001.

(b) The Rhode Island Department of Environmental Management submitted program revisions on October 1, 1996, January 21, 1999 and October 26, 2000. EPA is hereby granting Rhode Island full approval effective on November 30, 2001.

(c) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

South Carolina

(a) Department of Health and Environmental Control: submitted on November 12, 1993; full approval effective on July 26, 1995.

(b) [Reserved]

(c) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

South Dakota

(a) South Dakota Department of Environment and Natural Resources Division of Environmental Regulation: submitted on November 12, 1993; effective on April 21, 1995; interim approval expires April 22, 1997.

(b) [Reserved]

(c) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

EDITORIAL NOTE: At 61 FR 2722, Jan. 29, 1996, appendix A to part 70 was amended by adding an entry for South Dakota. An entry already exists for South Dakota in the 1995 edition of this volume.

Southern Ute Indian Tribe

(a) The Southern Ute Indian Tribe submitted an operating permits program on January 20, 2009 with supplements on September 28, 2010 and January 30, 2012; full approval effective on March 2, 2012.

(b) [Reserved]

Tennessee

(a)(1) Tennessee Department of Environment and Conservation: submitted on November 10, 1994, and supplemented on December 5, 1994, August 8, 1995, January 17, 1996, January 30, 1996, February 13, 1996, April 9, 1996, June 4, 1996, June 12, 1996, July 3, 1996, and July 15, 1996; interim approval effective on August 28, 1996; interim approval expires on December 1, 2001.

(2) Revisions submitted on July 15, 1997, June 16, 1998, February 5, 1999, February 24, 1999, March 5, 1999, June 16, 1999, July 2, 1999, November 30, 1999, December 30, 1999, August 21, 2000, and October 16, 2001. The rule revisions contained in the February 5, 1999, February 24, 1999, March 5, 1999, June 16, 1999, and December 30, 1999, submittals adequately addressed the conditions of the interim approval effective on August 28, 1996, and which would expire on December 1, 2001. The State's operating permit program is hereby granted final full approval effective on November 30, 2001.

(b)(1) Chattanooga-Hamilton County Air Pollution Control Bureau: submitted on November 22, 1993, and supplemented on January 23, 1995, February 24, 1995, October 13, 1995, and March 14, 1996; full approval effective on April 25, 1996.

(2) [Reserved]

(c)(1) Knox County Department of Air Quality Management: submitted on November 12, 1993, and supplemented on August 24, 1994, January 6, 1995, January 19, 1995, February 6, 1995, May 23, 1995, September 18, 1995, September 25, 1995, and March 6, 1996; full approval effective on May 30, 1996.

(2) [Reserved]

(d)(1) Memphis-Shelby County Health Department: submitted on June 26, 1995, and supplemented on August 22, 1995, August 23, 1995, August 24, 1995, January 29, 1996, February 7, 1996, February 14, 1996, March 5, 1996, and April 10, 1996; interim approval effective on August 28, 1996; interim approval expires December 1, 2001.

(2) Revisions submitted on October 11, 1999 and May 2, 2000. The rule revisions contained in the May 2, 2000, submittal adequately addressed the conditions of the interim approval effective on August 28, 1996, and

which would expire on December 1, 2001. The County's operating permit program is hereby granted final full approval effective on November 30, 2001.

(e)(1) Metropolitan Health Department of Nashville-Davidson County: submitted on November 13, 1993, and supplemented on April 19, 1994, September 27, 1994, December 28, 1994, and December 28, 1995; full approval effective on March 15, 1996.

(2) Revisions submitted on December 10, 1996, August 27, 1999, and December 6, 1999.

Revised approval effective on August 7, 2000.

(f) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

Texas

(a) The TNRCC submitted its Operating Permits program on September 17, 1993, and supplemental submittals on October 28, 1993, and November 12, 1993, for approval. Source category-limited interim approval is effective on July 25, 1996. Interim approval will expire December 1, 2001. The scope of the approval of the Texas part 70 program excludes all sources of air pollution over which an Indian Tribe has jurisdiction.

(b) The Texas Natural Resource Conservation Commission submitted program revisions on June 12, 1998, and June 1, 2001, and supplementary information on August 22, 2001; August 23, 2001; September 20, 2001; and November 5, 2001. The rule revisions adequately addressed the conditions of the IA effective on July 25, 1996, and which will expire on December 1, 2001. The State is hereby granted final full approval effective on November 30, 2001.

(c) The Texas Commission on Environmental Quality: program revisions submitted on December 9, 2002, and supplementary information submitted on December 10, 2003, effective on April 29, 2005. The rule amendments contained in the submissions adequately addressed the deficiencies identified in the notice of deficiency published on January 7, 2002.

Utah

(a) Utah Department of Environmental Quality—Division of Air Quality: submitted on April 14, 1994; effective on July 10, 1995.

(b) [Reserved]

(c) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

Vermont

(a) Department of Environmental Conservation: submitted on April 28, 1995; interim approval effective on November 1, 1996; revised program submitted on November 15, 2001; full approval effective November 30, 2001.

(b) [Reserved]

(c) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only

to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

Virgin Islands

(a) The Virgin Islands Department of Natural Resources submitted an operating permits program on November 18, 1993 with supplements through August 25, 2000; full approval effective on January 16, 2001.

(b) (Reserved)

(c) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

Virginia

(a) The Commonwealth of Virginia's Title V operating permit and fee program regulations submitted on September 10, 1996, the acid rain operating permit regulations submitted on September 12, 1996, and the non-regulatory operating permit program provisions submitted on November 12, 1993, January 14, 1994, January 9, 1995, May 17, 1995, February 6, 1997, and February 27, 1997; interim approval effective on March 12, 1998; interim approval expires on December 1, 2001.

(b) The Virginia Department of Environmental Quality submitted operating permit program amendments on November 20, 2000. The rule revisions contained in the November 20, 2000 submittal adequately addressed the conditions of the interim approval effective on March 12, 1998. The Commonwealth is hereby granted final full approval effective on November 30, 2001.

(c) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

Washington

(a) Department of Ecology (Ecology): Submitted on November 1, 1993; interim approval effective on December 9, 1994; revisions submitted on June 5, 1996, October 3, 1996, August 25, 1998, and May 24, 1999; full approval effective on September 12, 2001; revision submitted on September 26, 2002; revision approved January 2, 2003.

(b) Energy Facility Site Evaluation Council (EFSEC): Submitted on November 1, 1993; interim approval effective on December 9, 1994; revisions submitted on June 5, 1996, October 3, 1996, August 25, 1998, and May 24, 1999; full approval effective on September 12, 2001; revision submitted on September 26, 2002; revision approved January 2, 2003.

(c) Benton Clean Air Authority (BCAA): Submitted on November 1, 1993; interim approval effective on December 9, 1994; revisions submitted on June 5, 1996, October 3, 1996, August 25, 1998, and May 24, 1999; full approval effective on September 12, 2001; revision submitted on September 26, 2002; revision approved January 2, 2003.

(d) Northwest Air Pollution Authority (NWAPA): Submitted on November 1, 1993; interim approval effective on December 9, 1994; revisions submitted on June 5, 1996, October 3, 1996, August 25, 1998, and May 24, 1999; full approval effective on September 12, 2001; revision submitted on September 26, 2002; revision approved January 2, 2003.

(e) Olympic Regional Clean Air Authority (ORCAA): Submitted on November 1, 1993; interim approval effective on December 9, 1994; revisions submitted on June 5, 1996, October 3, 1996, August 25, 1998, and May 24, 1999; full approval effective on September 12, 2001; revision submitted on September 26, 2002; revision approved January 2, 2003.

(f) Puget Sound Clean Air Agency (PSCAA): Submitted on November 1, 1993; interim approval effective on December 9, 1994; revisions submitted on June 5, 1996, October 3, 1996, August 25, 1998, and May 24, 1999; full approval effective on September 12, 2001; revision submitted on September 26, 2002; revision approved January 2, 2003.

(g) Spokane County Air Pollution Control Authority (SCAPCA): Submitted on November 1, 1993; interim approval effective on December 9, 1994; revisions submitted on June 5, 1996, October 3, 1996, August 25, 1998, and May 24, 1999; full approval effective on September 12, 2001; revision submitted on September 26, 2002; revision approved January 2, 2003.

(h) Southwest Clean Air Agency (SWCAA): Submitted on November 1, 1993; interim approval effective on December 9, 1994; revisions submitted on June 5, 1996, October 3, 1996, August 25, 1998, and May 24, 1999; full approval effective on September 12, 2001; revision submitted on September 26, 2002; revision approved January 2, 2003.

(i) Yakima Regional Clean Air Authority (YRCAA): Submitted on November 1, 1993; interim approval effective on December 9, 1994; revisions submitted on June 5, 1996, October 3, 1996, August 25, 1998, and May 24, 1999; full approval effective on September 12, 2001; revision submitted on September 26, 2002; revision approved January 2, 2003.

(j) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

West Virginia

(a) Department of Commerce, Labor and Environmental Resources; submitted on November 12, 1993, and supplemented by the Division of Environmental Protection on August 26 and September 29, 1994; interim approval effective on December 15, 1995; interim approval expires December 1, 2001.

(b) The West Virginia Department of Environmental Protection submitted nonsubstantial program revisions to its program on February 11, 1997. The revisions involved additions to West Virginia's "insignificant activity" list. The revisions were approved on October 6, 1997 by letter from W. Michael McCabe, Regional Administrator, EPA Region III.

(c) The West Virginia Department of Environmental Protection submitted program amendments on June 1, 2001. The rule revisions contained in the June 1, 2001 submittal adequately addressed the conditions of the interim approval effective on December 15, 1995. The State is hereby granted final full approval effective on November 19, 2001.

(d) The West Virginia Department of Environmental Protection submitted program revisions on June 1, 2001. The rule revisions contained in the June 1, 2001 submittal revise West Virginia's existing approved program. The State is hereby granted revised approval effective on November 23, 2001.

(e) The West Virginia Department of Natural Resources and Environmental Control submitted program amendment on September 10, 2003. This rule amendment contained in the September 10, 2003 submittal is necessary to make the current definitions of a "major source" and "volatile organic compound" consistent with the corresponding provisions of 40 CFR part 70, which went into effect on November 27, 2001. The State is hereby granted approval effective on April 27, 2007.

(f) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

(g) The West Virginia Department of Environmental Protection submitted a program revision on June 17, 2015, approval effective on May 1, 2015.

Wisconsin

(a)(1) Department of Natural Resources: Submitted on January 27, 1994; interim approval effective on April 5, 1995; interim approval expires December 1, 2001.

(2) Department of Natural Resources: Interim approval corrections submitted on March 28, 2001, September 5, 2001, and September 17, 2001; submittals adequately address the conditions of the interim approval which expires on December 1, 2001. Based on these corrections, Wisconsin is hereby granted final full approval effective on November 30, 2001.

(b) [Reserved]

(c) For any permitting program located in the State, insofar as the permitting threshold provisions concern the treatment of sources of GHG emissions as major sources for purposes of title V, EPA approves such provisions only to the extent they require permits for such sources where the source emits or has the potential to emit at least 100,000 tpy CO_2e, as well as 100 tpy on a mass basis, as of July 1, 2011.

Wyoming

(a) Department of Environmental Quality: submitted on November 19, 1993; effective on February 21, 1995; interim approval expires June 1, 2000.

(b) The Wyoming Department of Environmental Quality submitted an operating permits program on November 19, 1993; interim approval effective on February 21, 1995; revised August 19, 1997; full approval effective on April 23, 1999.

[59 FR 55820, Nov. 9, 1994]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting appendix A to part 70, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at *www.fdsys.gov*.

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Attachment B

Updated Potential Mercury Emissions Calculation and Air Toxics Screening Assessment

Attachment B-1

Table 1. Mercury Potential-to-Emit Emissions Calculation

Stack/Source =>	PT-5A	PT-5B	PT-6		
Parameter	Carbon Kiln (Wet Scrubber)	Electrowinning Cells and Pregnant Solution Tank (Wet Scrubber)	Melt Furnace (Product Recovery Filter)	Totals	Comments
Stack Test Data					
E = Hg Emission Rate (lb/hr)	1.13E-04	1.72E-05	1.04E-03	--	From Montrose Stack Test Report, September 2018
Operational Data (10/04/2017 - 08/07/2018)					
Operating Hours	5,959	7,392	451	--	From HGM operating records
Concentrate Processed (tons of wet concentrate)	--	--	--	12.23	From HGM operating records
Period Calculations (10/04/2017 - 08/07/2018)					
Hg Emissions for Period (pounds)	0.67	0.13	0.47	1.27	= E x Operating Hours
Hg Emissions for Period (lb/ton)	0.05	0.01	0.04	0.10	pounds of Hg per wet ton of concentrate
Allowable Emissions Calculation					
40 CFR 63 Subpart EEEEEEE Limit (lb/ton)	--	--	--	0.14	
Maximum Annual Wet Concentrate Produced (ton/yr)	--	--	--	26.4	
Hg Emissions Based on Stack Test Results (lb/ton)	0.074	0.014	0.052	0.14	applied proportional stack test results to limit
Hg Emissions (lb/hr)	2.23E-04	4.24E-05	5.48E-04	8.14E-04	
Hg Emissions (lb/day)	5.36E-03	1.02E-03	3.75E-03	1.01E-02	
Hg Emissions (lb/yr)	1.96	0.37	1.37	3.70	
Hg Emissions (ton/yr)	9.78E-04	1.86E-04	6.84E-04	1.85E-03	

Units:

hr = hour

lb = pound

ton = short ton (2,000 pounds)

Attachment B-2
Air Toxics Screening Assessment

SCDHEC Modeling Guidelines Air Toxic Modeling Procedures (Appendix D)				
Chemical Name	**CAS Number**	**MAAC ($\mu g/m^3$)**	**De Minimis Level (lb/day)**	**Level I Formula 1 Threshold**
Mercury (Hg)	7439-97-6	0.25	0.003	5.0E-04

SCDHEC - First Level (Level I) Analysis

Hg emissions		
Carbon Kiln (PT-5A) =	5.36E-03	lb/day
Electrowinning Cells and Pregnant Solution Tank (PT-5B) =	1.02E-03	lb/day
Melt Furnace (PT-6) =	3.75E-03	lb/day
Natural Gas Fired Thermal Fluid Heater (PT-16) =	7.78E-05	lb/day
Total =	0.0102	lb/day

Total Plant-Wide Hg emissions > Hg de minimis level
Additional Screening Analysis Required.

Attachment B-2
Air Toxics Screening Assessment - Continued

SCDHEC Modeling Guidelines Air Toxic Modeling Procedures (Appendix D)				
Chemical Name	**CAS Number**	**MAAC ($\mu g/m^3$)**	**De Minimis Level (lb/day)**	**Level I Formula 1 Threshold**
Mercury (Hg)	7439-97-6	0.25	0.003	5.0E-04

SCDHEC - Level I Alternate Approach Analysis - Formula 1

Hg emissions

Carbon Kiln (PT-5A) =	2.23E-04	lb/hr
Electrowinning Cells and Pregnant Solution Tank (PT-5B) =	4.24E-05	lb/hr
Melt Furnace (PT-6) =	5.48E-04	lb/hr
Natural Gas Fired Thermal Fluid Heater (PT-16) =	3.25E-06	lb/hr
Total =	8.17E-04	lb/hr
	= 8.17E-04 / 0.25	
	= 3.27E-03	

Formula 1 Hg Calculation > Hg Formula 1 Threshold
Additional Screening Analysis Required.

Attachment B-2
Air Toxics Screening Assessment - Continued

SCDHEC Modeling Guidelines Air Toxic Modeling Procedures (Appendix D)				
Chemical Name	CAS Number	MAAC ($\mu g/m^3$)	De Minimis Level (lb/day)	Level I Formula 1 Threshold
Mercury (Hg)	7439-97-6	0.25	0.003	5.0E-04

SCDHEC - Second Level (Level II) Analysis

									From Table 3				
Hg emissions	Source Description	Source ID	Emissions	Emissions Units	Source Type	Height (ft)	Maximum Horizontal Distance (ft)	Distance to Closest Property Line (ft)	Side Length (ft)	Emission Height (ft)	Nearest Distance (ft)	Table 3 Max Predicted 24-hr Concentration	Max Predicted Off-site 24-hr Conc ($\mu g/m^3$)
	Carbon Kiln	PT-5A	0.005361	lb/day	Point	30	--	2,726	--	16	1,640	3.78	2.03E-02
	Electrowinning Cells and Pregnant Solution Tank	PT-5B	0.001017	lb/day	Point	35	--	2,658	--	33	1,640	2.10	2.14E-03
	Melt Furnace	PT-6	0.003747	lb/day	Point	14	--	2,500	--	6	1,640	4.35	1.63E-02
	Natural Gas Fired Thermal Fluid Heater	PT-16	0.000078	lb/day	Point	12	--	2,500		6	1,640	4.35	3.39E-04
												Total ($\mu g/m^3$) =	0.039
												Hg MAAC ($\mu g/m^3$) =	0.25

Total Plant-Wide Maximum Predicted Hg Concentration < Hg Maximum Allowable Ambient Concentration (MAAC)
No Additional Modeling Required.

Attachment C

2018 Compliance Test Report

2018 Compliance Test Report

Haile Gold Mine
Kershaw, South Carolina

September 2018

Prepared for:

OCEANAGOLD
HAILE OPERATION

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For Submittal to:

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APPENDICES

1.0 PURPOSE

OceanaGold – Haile Operation (Haile) is required to perform initial compliance testing of emissions sources located at the Haile Gold Mine in Kershaw, South Carolina. This report summarizes the results of stack testing and calculations performed in accordance with annual compliance test requirements of the National Emissions Standards for Hazardous Air Pollutants (NESHAP) at 40 CFR Part 63 Subpart EEEEEEE. The NESHAP standards apply to carbon processes and impose a limit on mercury emissions.

2.0 MERCURY EMISSIONS, 40 CFR PART 63 SUBPART EEEEEEE

The following emissions sources located at the Haile Gold Mine are subject to 40 CFR Part 63 Subpart EEEEEEE, National Emission Standards for Hazardous Air Pollutants: Gold Mine Ore Processing and Production Area Source Category:

- PT-5A – Carbon Regeneration Kiln;
- PT-5B – Electrowinning Cells and Pregnant Solution Tank; and
- PT-6 – Melt Furnace.

2.1 MERCURY EMISSIONS COMPLIANCE TEST RESULTS

§63.11646 of the rule identifies the procedures to be followed to quantify mercury emissions for comparison to the emissions standard stated in §63.11645. The Haile operations are classified as carbon processes without mercury retorts, and hence the emissions standard of 0.14 pounds of mercury per ton of concentrate processed applies.

A stack test was performed by Montrose Air Quality Services (Montrose) on each of the sources on July 31, August 1, and August 7, 2018. The following reference methods were used during the testing per §63.11646(a)(1)-(4) of the rule:

- Method 1 (40 CFR part 60, appendix A–1) to select sampling port locations and the number of traverse points in each stack or duct;
- Method 2 (40 CFR part 60, appendix A–1) to determine the volumetric flow rate of the stack gas;
- Method 3 (40 CFR part 60, appendix A–2) to determine the dry molecular weight of the stack gas;
- Method 4 (40 CFR part 60, appendix A–3) to determine the moisture content of the stack gas; and
- Method 29 (40 CFR part 60, appendix A–8) to determine the concentration of mercury in the stack gas.

Details of the testing procedures are provided in Montrose's test report, included as Appendix B. Testing was performed under conditions considered representative of the period from initial startup (October 4, 2017) through the last date of the stack testing (August 7, 2018). A summary of the test results is provided in Table 1, including stack gas concentration of mercury, volumetric flow rate of stack gas, and mercury emission rate.

Operating hours for each of the three emissions sources were recorded by Haile as required by §63.11646(a)(5) of the rule. For the Carbon Regeneration Kiln, the hours of operation are determined by the on/off times of the kiln exhaust fan as recorded in the facility process data recordkeeping system. For the Electrowinning Cells and Pregnant Solution Tank, the operation runs 24 hours per day. For the Melt Furnace, the hours of operation are recorded in logbooks by facility personnel. A summary of the operating hours by month for each emissions source is provided in Table 2.

The monthly mercury emissions for each emissions source is calculated by multiplying the stack test result (pounds per hour) by the operating hours for the month as required by §63.11646(a)(7) for annual compliance tests (note that the similar §63.11646(a)(6) requirement is for the initial compliance test and does not apply for the reporting of the annual compliance tests). A summary of the mercury emissions by month for each emissions source is provided in Table 2.

The concentrate produced by electrowinning is collected from the Electrowinning Cells, dewatered in a Filter Press, and occasionally[1] dried in a Drying Oven before introduction to the Melt Furnace. The concentrate weight is

[1] Haile has been introducing concentrate to the Melt Furnace directly from the Filter Press since June 2018. Prior to that, the Drying Oven was used to dry the concentrate before introduction to the Melt Furnace.

measured upon removal from the Filter Press as of June 1, 2018. Prior to that, the concentrate weight was measured upon removal from the Drying Oven. To quantify concentrate weight in units of the standard prior to June 1, the moisture content of the concentrate after dewatering in the filter press (15%) is applied to the dried concentrate weight. A summary of monthly and daily concentrate weights are provided in Tables 2 and 3, respectively.

The mercury emissions relative to the weight of concentrate processed, expressed as pounds of mercury per ton of concentrate processed, is calculated on a monthly basis for each emissions source as required by §63.11646(a)(13) of the rule (note that the similar §63.11646(a)(12) requirement is for the initial compliance test and does not apply for the reporting of the annual compliance tests). A summary of the mercury emissions relative to concentrate weight by month for each emissions source is provided in Table 2.

Summaries of all test results and calculations are provided in Table 1 for the reporting period. The result shows compliance with the emission standard.

Since June 2018, Haile has been introducing METALSORB™, a sulfur-based chelating agent, in the reclaim water to remove mercury from the carbon regeneration cycle prior to the carbon introduction to the carbon regeneration kiln. The chelating agent complexes and precipitates the dissolved mercury to form a stable sulfide precipitate. The stack test result for mercury emissions from the carbon regeneration kiln is considerably less than the previous stack test result before the METALSORB™ addition.

2.2 WET SCRUBBER MONITORING

§63.11647(h) requires monitoring of PT-5A and PT-5B wet scrubber parameters, specifically the water flow rate (or line pressure) and pressure drop. Minimum values of these parameters must be established as an operating limit, and may be based on each scrubber manufacturer's specifications or on compliance tests. The water flow rate (or line pressure) and pressure drop must be recorded once each shift, and corrective action must be taken within 24 hours if any daily average is less than the operating limit.

The operating limits for the PT-5A and PT-5B wet scrubbers are as follows:

Table 4. Wet Scrubber Operating Limits

Scrubber	Water Flow Rate (gpm)	Pressure Drop (in. H_2O)
PT-5A (Lochhead Haggerty D-30)	7.1	0.83
PT-5B (Bionomic Industries 5000 Series, Model 46)	15.6	2.3

Haile continuously records these parameters for the Carbon Regen Kiln Scrubber (PT-5A), which meets the requirement of recording the parameters during each shift. Haile manually records data for the Electrowinning Cells Scrubber (PT-5B) once each shift. Both scrubbers have performed according to the proposed operating limits. Haile maintains records of these measurements in accordance with 63.11648(e)(2).

APPENDIX A: TABLES

Table 1. Summary Data for 40 CFR 63 Subpart EEEEEEE Reporting

Stack/Source =>	PT-5A	PT-5B	PT-6		
Parameter	**Carbon Regen Kiln (Wet Scrubber)**	**EW Cells, Pregnant and Barren Tanks (Wet Scrubber)**	**Electric Melting Furance - Refinery (Product Recovery Filter)**	**Totals**	**Comments**
Stack Test Data					
Stack Gas Concentration of Hg (ug/dscm)	24.7	1.2	78.3	--	Average results from three test runs
Stack Gas Concentration of Hg (ug/dscf)	0.70	0.03	2.22	--	unit conversion
Cs = Stack Gas Concentration of Hg (gr/dscf)	1.08E-05	5.38E-07	3.42E-05	--	unit conversion
Volumetric Flow Rate of Stack Gas (dscf/min)	1,219	3,729	3,550	--	Measured flow rate during stack test
Qs = Volumetric Flow Rate of Stack Gas (dscf/hr)	73,160	223,760	212,980	--	unit conversion
E = Hg Emission Rate (lb/hr)	1.13E-04	1.72E-05	1.04E-03	--	E = Cs x Qs x K
Operational Data (10/04/2017 - 08/07/2018)					
Operating Hours	5,959	7,392	451	--	From HGM operating records (See Tables 2 & 3)
Concentrate Processed (tons of wet concentrate)	--	--	--	12.23	From HGM operating records (See Tables 2 & 3)
Period Calculations (10/04/2017 - 08/07/2018)					
Hg Emissions for Period (pounds)	0.67	0.13	0.47	1.27	= E x Operating Hours
Hg Emissions for Period (lb/ton)	0.05	0.01	0.04	0.10	pounds of Hg per wet ton of concentrate

Units:

ug = micrograms
gr = grains (7,000 grains/lb)
dscm = dry standard cubic meters
dscf = dry standard cubic feet
min = minute
hr = hour
lb = pound
ton = short ton (2,000 pounds)
$K = 1.43 \times 10^{-4}$ lb/grain

Table 2. Monthly Data for 40 CFR 63 Subpart EEEEEEE Reporting

Month	Concentrate Processed (tons)	PT-5A			PT-5B			PT-6			Total	
		Operating Hours	Hg Emissions (pounds)	Hg Emissions (lb/ton)	Operating Hours	Hg Emissions (pounds)	Hg Emissions (lb/ton)	Operating Hours	Hg Emissions (pounds)	Hg Emissions (lb/ton)	Hg Emissions (pounds)	Hg Emissions (lb/ton)
Oct-17	0.62	435	0.05	0.08	672	0.012	0.019	22	0.023	0.037	0.08	0.13
Nov-17	1.57	610	0.07	0.04	720	0.012	0.008	57	0.059	0.037	0.14	0.09
Dec-17	1.72	624	0.07	0.04	744	0.013	0.007	62	0.064	0.037	0.15	0.09
Jan-18	1.08	467	0.05	0.05	744	0.013	0.012	39	0.041	0.037	0.11	0.10
Feb-18	1.06	589	0.07	0.06	672	0.012	0.011	41	0.043	0.040	0.12	0.11
Mar-18	1.42	643	0.07	0.05	744	0.013	0.009	64	0.066	0.047	0.15	0.11
Apr-18	1.79	683	0.08	0.04	720	0.012	0.007	60	0.063	0.035	0.15	0.08
May-18	1.22	705	0.08	0.07	744	0.013	0.011	36	0.037	0.030	0.13	0.11
Jun-18	1.06	612	0.07	0.07	720	0.012	0.012	40	0.041	0.039	0.12	0.12
Jul-18	0.67	433	0.05	0.07	744	0.013	0.019	31	0.032	0.047	0.09	0.14
Aug-18	0.00	157	0.02		168	0.003		0	0.000		0.02	
Total	**12.23**	**5,959**	**0.67**	**0.05**	**7,392**	**0.127**	**0.010**	**451**	**0.469**	**0.038**	**1.27**	**0.10**

Note: Data for August 2018 are through August 7. The Melt Furnace was not operated during August, and therefore, no concentrate was processed during that time.

Table 3. Daily Data for 40 CFR 63 Subpart EEEEEEE Reporting

Date	Concentrate Processed (tons)	Operating Hours		
		PT-5A	PT-5B	PT-6
10/4/2017	0.00	8.5	24.0	0.0
10/5/2017	0.00	24.0	24.0	0.0
10/6/2017	0.00	12.8	24.0	0.0
10/7/2017	0.00	24.0	24.0	0.0
10/8/2017	0.00	24.0	24.0	0.0
10/9/2017	0.00	24.0	24.0	0.0
10/10/2017	0.00	13.3	24.0	0.0
10/11/2017	0.27	0.0	24.0	9.6
10/12/2017	0.00	0.0	24.0	0.0
10/13/2017	0.00	0.0	24.0	0.0
10/14/2017	0.00	0.0	24.0	0.0
10/15/2017	0.00	0.0	24.0	0.0
10/16/2017	0.00	0.0	24.0	0.0
10/17/2017	0.00	8.6	24.0	0.0
10/18/2017	0.07	23.1	24.0	2.7
10/19/2017	0.00	24.0	24.0	0.0
10/20/2017	0.00	22.2	24.0	0.0
10/21/2017	0.00	20.2	24.0	0.0
10/22/2017	0.00	24.0	24.0	0.0
10/23/2017	0.00	19.4	24.0	0.0
10/24/2017	0.00	10.2	24.0	0.0
10/25/2017	0.28	9.2	24.0	10.1
10/26/2017	0.00	24.0	24.0	0.0
10/27/2017	0.00	24.0	24.0	0.0
10/28/2017	0.00	24.0	24.0	0.0
10/29/2017	0.00	24.0	24.0	0.0
10/30/2017	0.00	24.0	24.0	0.0
10/31/2017	0.00	24.0	24.0	0.0
11/1/2017	0.23	7.3	24.0	8.4
11/2/2017	0.18	0.0	24.0	6.5
11/3/2017	0.00	10.3	24.0	0.0
11/4/2017	0.00	24.0	24.0	0.0
11/5/2017	0.00	20.0	24.0	0.0
11/6/2017	0.00	24.0	24.0	0.0
11/7/2017	0.00	24.0	24.0	0.0
11/8/2017	0.15	24.0	24.0	5.5
11/9/2017	0.00	24.0	24.0	0.0
11/10/2017	0.00	24.0	24.0	0.0
11/11/2017	0.00	24.0	24.0	0.0
11/12/2017	0.00	23.4	24.0	0.0
11/13/2017	0.00	24.0	24.0	0.0
11/14/2017	0.00	24.0	24.0	0.0
11/15/2017	0.32	24.0	24.0	11.5
11/16/2017	0.00	21.1	24.0	0.0
11/17/2017	0.00	8.1	24.0	0.0

Table 3. Daily Data for 40 CFR 63 Subpart EEEEEEE Reporting

Date	Concentrate Processed (tons)	Operating Hours		
		PT-5A	PT-5B	PT-6
11/18/2017	0.00	22.7	24.0	0.0
11/19/2017	0.00	21.0	24.0	0.0
11/20/2017	0.00	24.0	24.0	0.0
11/21/2017	0.26	24.0	24.0	9.4
11/22/2017	0.00	21.4	24.0	0.0
11/23/2017	0.00	24.0	24.0	0.0
11/24/2017	0.00	24.0	24.0	0.0
11/25/2017	0.00	21.3	24.0	0.0
11/26/2017	0.00	19.1	24.0	0.0
11/27/2017	0.00	24.0	24.0	0.0
11/28/2017	0.00	17.3	24.0	0.0
11/29/2017	0.18	24.0	24.0	6.6
11/30/2017	0.24	12.9	24.0	8.6
12/1/2017	0.00	21.0	24.0	0.0
12/2/2017	0.00	13.0	24.0	0.0
12/3/2017	0.00	24.0	24.0	0.0
12/4/2017	0.00	24.0	24.0	0.0
12/5/2017	0.00	24.0	24.0	0.0
12/6/2017	0.31	24.0	24.0	11.2
12/7/2017	0.00	24.0	24.0	0.0
12/8/2017	0.00	24.0	24.0	0.0
12/9/2017	0.00	24.0	24.0	0.0
12/10/2017	0.00	24.0	24.0	0.0
12/11/2017	0.00	24.0	24.0	0.0
12/12/2017	0.25	24.0	24.0	9.0
12/13/2017	0.32	24.0	24.0	11.3
12/14/2017	0.00	24.0	24.0	0.0
12/15/2017	0.00	14.5	24.0	0.0
12/16/2017	0.00	24.0	24.0	0.0
12/17/2017	0.00	8.3	24.0	0.0
12/18/2017	0.00	0.0	24.0	0.0
12/19/2017	0.00	0.0	24.0	0.0
12/20/2017	0.56	0.0	24.0	20.1
12/21/2017	0.00	17.9	24.0	0.0
12/22/2017	0.00	24.0	24.0	0.0
12/23/2017	0.00	24.0	24.0	0.0
12/24/2017	0.00	24.0	24.0	0.0
12/25/2017	0.13	24.0	24.0	4.7
12/26/2017	0.15	24.0	24.0	5.4
12/27/2017	0.00	24.0	24.0	0.0
12/28/2017	0.00	24.0	24.0	0.0
12/29/2017	0.00	24.0	24.0	0.0
12/30/2017	0.00	21.3	24.0	0.0
12/31/2017	0.00	24.0	24.0	0.0
1/1/2018	0.24	24.0	24.0	8.8

Table 3. Daily Data for 40 CFR 63 Subpart EEEEEEE Reporting

Date	Concentrate Processed (tons)	Operating Hours		
		PT-5A	PT-5B	PT-6
1/2/2018	0.17	12.3	24.0	6.2
1/3/2018	0.00	0.1	24.0	0.0
1/4/2018	0.00	0.0	24.0	0.0
1/5/2018	0.00	0.0	24.0	0.0
1/6/2018	0.00	0.0	24.0	0.0
1/7/2018	0.00	0.0	24.0	0.0
1/8/2018	0.00	0.0	24.0	0.0
1/9/2018	0.00	0.0	24.0	0.0
1/10/2018	0.00	0.0	24.0	0.0
1/11/2018	0.00	7.3	24.0	0.0
1/12/2018	0.00	24.0	24.0	0.0
1/13/2018	0.00	24.0	24.0	0.0
1/14/2018	0.00	24.0	24.0	0.0
1/15/2018	0.00	24.0	24.0	0.0
1/16/2018	0.00	15.5	24.0	0.0
1/17/2018	0.11	24.0	24.0	4.0
1/18/2018	0.00	24.0	24.0	0.0
1/19/2018	0.16	24.0	24.0	5.9
1/20/2018	0.00	24.0	24.0	0.0
1/21/2018	0.00	24.0	24.0	0.0
1/22/2018	0.00	24.0	24.0	0.0
1/23/2018	0.00	24.0	24.0	0.0
1/24/2018	0.18	24.0	24.0	6.4
1/25/2018	0.00	1.0	24.0	0.0
1/26/2018	0.00	0.0	24.0	0.0
1/27/2018	0.00	23.0	24.0	0.0
1/28/2018	0.00	24.0	24.0	0.0
1/29/2018	0.00	24.0	24.0	0.0
1/30/2018	0.08	24.0	24.0	2.8
1/31/2018	0.14	24.0	24.0	5.1
2/1/2018	0.00	24.0	24.0	0.0
2/2/2018	0.00	24.0	24.0	0.0
2/3/2018	0.00	10.3	24.0	0.0
2/4/2018	0.00	0.0	24.0	0.0
2/5/2018	0.00	10.8	24.0	0.0
2/6/2018	0.00	15.7	24.0	0.0
2/7/2018	0.12	24.0	24.0	4.3
2/8/2018	0.08	24.0	24.0	2.8
2/9/2018	0.00	24.0	24.0	0.0
2/10/2018	0.00	24.0	24.0	0.0
2/11/2018	0.00	24.0	24.0	0.0
2/12/2018	0.00	24.0	24.0	0.0
2/13/2018	0.00	14.7	24.0	0.0
2/14/2018	0.24	13.2	24.0	8.7
2/15/2018	0.11	24.0	24.0	4.0

Table 3. Daily Data for 40 CFR 63 Subpart EEEEEEE Reporting

Date	Concentrate Processed (tons)	Operating Hours		
		PT-5A	PT-5B	PT-6
2/16/2018	0.00	24.0	24.0	0.0
2/17/2018	0.00	24.0	24.0	0.0
2/18/2018	0.00	24.0	24.0	0.0
2/19/2018	0.00	24.0	24.0	0.0
2/20/2018	0.18	24.0	24.0	6.3
2/21/2018	0.17	24.0	24.0	6.2
2/22/2018	0.16	24.0	24.0	5.7
2/23/2018	0.00	24.0	24.0	0.0
2/24/2018	0.00	22.2	24.0	0.0
2/25/2018	0.00	24.0	24.0	0.0
2/26/2018	0.00	24.0	24.0	0.0
2/27/2018	0.00	22.0	24.0	0.0
2/28/2018	0.00	24.0	24.0	3.1
3/1/2018	0.31	24.0	24.0	9.6
3/2/2018	0.00	24.0	24.0	7.0
3/3/2018	0.00	24.0	24.0	0.0
3/4/2018	0.00	24.0	24.0	0.0
3/5/2018	0.00	19.0	24.0	0.0
3/6/2018	0.00	9.9	24.0	0.0
3/7/2018	0.16	3.9	24.0	6.7
3/8/2018	0.12	24.0	24.0	3.2
3/9/2018	0.00	24.0	24.0	0.0
3/10/2018	0.00	24.0	24.0	0.0
3/11/2018	0.00	24.0	24.0	0.0
3/12/2018	0.00	24.0	24.0	0.0
3/13/2018	0.00	0.5	24.0	0.0
3/14/2018	0.00	24.0	24.0	0.0
3/15/2018	0.22	5.7	24.0	7.7
3/16/2018	0.04	15.0	24.0	6.9
3/17/2018	0.00	24.0	24.0	0.0
3/18/2018	0.00	24.0	24.0	0.0
3/19/2018	0.00	24.0	24.0	0.0
3/20/2018	0.12	24.0	24.0	5.3
3/21/2018	0.19	24.0	24.0	5.9
3/22/2018	0.00	24.0	24.0	0.0
3/23/2018	0.00	24.0	24.0	0.0
3/24/2018	0.00	24.0	24.0	0.0
3/25/2018	0.00	24.0	24.0	0.0
3/26/2018	0.00	24.0	24.0	0.0
3/27/2018	0.12	24.0	24.0	5.5
3/28/2018	0.14	24.0	24.0	6.0
3/29/2018	0.00	24.0	24.0	0.0
3/30/2018	0.00	16.4	24.0	0.0
3/31/2018	0.00	20.9	24.0	0.0
4/1/2018	0.00	20.8	24.0	0.0

Table 3. Daily Data for 40 CFR 63 Subpart EEEEEEE Reporting

Date	Concentrate Processed (tons)	Operating Hours		
		PT-5A	PT-5B	PT-6
4/2/2018	0.20	24.0	24.0	7.1
4/3/2018	0.13	24.0	24.0	8.6
4/4/2018	0.00	18.6	24.0	0.0
4/5/2018	0.00	24.0	24.0	0.0
4/6/2018	0.00	24.0	24.0	0.0
4/7/2018	0.00	24.0	24.0	0.0
4/8/2018	0.00	24.0	24.0	0.0
4/9/2018	0.21	4.6	24.0	4.9
4/10/2018	0.31	21.6	24.0	8.6
4/11/2018	0.00	20.2	24.0	0.0
4/12/2018	0.00	24.0	24.0	0.0
4/13/2018	0.00	24.0	24.0	0.0
4/14/2018	0.00	20.9	24.0	0.0
4/15/2018	0.00	24.0	24.0	0.0
4/16/2018	0.00	24.0	24.0	0.0
4/17/2018	0.00	24.0	24.0	0.0
4/18/2018	0.00	24.0	24.0	0.0
4/19/2018	0.00	24.0	24.0	0.0
4/20/2018	0.00	24.0	24.0	0.0
4/21/2018	0.00	24.0	24.0	0.0
4/22/2018	0.00	24.0	24.0	0.0
4/23/2018	0.19	24.0	24.0	8.5
4/24/2018	0.19	24.0	24.0	8.0
4/25/2018	0.19	24.0	24.0	8.0
4/26/2018	0.00	24.0	24.0	0.0
4/27/2018	0.00	24.0	24.0	0.0
4/28/2018	0.00	24.0	24.0	0.0
4/29/2018	0.00	24.0	24.0	0.0
4/30/2018	0.37	24.0	24.0	6.4
5/1/2018	0.15	19.4	24.0	6.7
5/2/2018	0.00	1.8	24.0	0.0
5/3/2018	0.00	24.0	24.0	0.0
5/4/2018	0.00	24.0	24.0	0.0
5/5/2018	0.00	24.0	24.0	0.0
5/6/2018	0.00	22.2	24.0	0.0
5/7/2018	0.00	24.0	24.0	0.0
5/8/2018	0.00	24.0	24.0	0.0
5/9/2018	0.28	24.0	24.0	7.5
5/10/2018	0.00	24.0	24.0	0.0
5/11/2018	0.00	21.1	24.0	0.0
5/12/2018	0.00	23.8	24.0	0.0
5/13/2018	0.00	24.0	24.0	0.0
5/14/2018	0.00	24.0	24.0	0.0
5/15/2018	0.19	17.7	24.0	5.2
5/16/2018	0.00	24.0	24.0	0.0

Table 3. Daily Data for 40 CFR 63 Subpart EEEEEEE Reporting

Date	Concentrate Processed (tons)	Operating Hours		
		PT-5A	PT-5B	PT-6
5/17/2018	0.00	24.0	24.0	0.0
5/18/2018	0.00	24.0	24.0	0.0
5/19/2018	0.00	24.0	24.0	0.0
5/20/2018	0.00	23.2	24.0	0.0
5/21/2018	0.00	24.0	24.0	0.0
5/22/2018	0.00	24.0	24.0	0.0
5/23/2018	0.25	24.0	24.0	8.6
5/24/2018	0.00	24.0	24.0	0.0
5/25/2018	0.00	24.0	24.0	0.0
5/26/2018	0.00	24.0	24.0	0.0
5/27/2018	0.00	24.0	24.0	0.0
5/28/2018	0.00	24.0	24.0	0.0
5/29/2018	0.00	24.0	24.0	0.0
5/30/2018	0.35	24.0	24.0	7.8
5/31/2018	0.00	24.0	24.0	0.0
6/1/2018	0.16	22.0	24.0	8.0
6/2/2018	0.00	20.3	24.0	0.0
6/3/2018	0.00	24.0	24.0	0.0
6/4/2018	0.00	24.0	24.0	0.0
6/5/2018	0.00	24.0	24.0	0.0
6/6/2018	0.00	24.0	24.0	0.0
6/7/2018	0.00	24.0	24.0	0.0
6/8/2018	0.00	24.0	24.0	0.0
6/9/2018	0.00	24.0	24.0	0.0
6/10/2018	0.00	24.0	24.0	0.0
6/11/2018	0.31	24.0	24.0	8.3
6/12/2018	0.00	24.0	24.0	4.0
6/13/2018	0.10	24.0	24.0	4.0
6/14/2018	0.00	22.5	24.0	0.0
6/15/2018	0.00	24.0	24.0	0.0
6/16/2018	0.00	24.0	24.0	0.0
6/17/2018	0.00	23.2	24.0	0.0
6/18/2018	0.25	24.0	24.0	6.5
6/19/2018	0.00	23.5	24.0	0.0
6/20/2018	0.00	24.0	24.0	0.0
6/21/2018	0.00	24.0	24.0	0.0
6/22/2018	0.00	24.0	24.0	0.0
6/23/2018	0.00	24.0	24.0	0.0
6/24/2018	0.00	23.8	24.0	0.0
6/25/2018	0.23	0.0	24.0	9.0
6/26/2018	0.00	9.1	24.0	0.0
6/27/2018	0.00	23.0	24.0	0.0
6/28/2018	0.00	13.1	24.0	0.0
6/29/2018	0.00	0.0	24.0	0.0
6/30/2018	0.00	0.0	24.0	0.0

Table 3. Daily Data for 40 CFR 63 Subpart EEEEEEE Reporting

Date	Concentrate Processed (tons)	Operating Hours		
		PT-5A	PT-5B	PT-6
7/1/2018	0.00	14.4	24.0	0.0
7/2/2018	0.13	24.0	24.0	7.8
7/3/2018	0.00	24.0	24.0	0.0
7/4/2018	0.00	24.0	24.0	0.0
7/5/2018	0.00	24.0	24.0	0.0
7/6/2018	0.00	24.0	24.0	0.0
7/7/2018	0.00	14.7	24.0	0.0
7/8/2018	0.00	0.0	24.0	0.0
7/9/2018	0.00	0.0	24.0	0.0
7/10/2018	0.20	0.0	24.0	8.8
7/11/2018	0.00	0.0	24.0	0.0
7/12/2018	0.00	22.3	24.0	0.0
7/13/2018	0.00	24.0	24.0	0.0
7/14/2018	0.00	24.0	24.0	0.0
7/15/2018	0.00	24.0	24.0	0.0
7/16/2018	0.00	24.0	24.0	0.0
7/17/2018	0.00	24.0	24.0	0.0
7/18/2018	0.21	8.3	24.0	8.6
7/19/2018	0.00	0.0	24.0	0.0
7/20/2018	0.00	0.0	24.0	0.0
7/21/2018	0.00	0.0	24.0	0.0
7/22/2018	0.00	0.0	24.0	0.0
7/23/2018	0.00	1.4	24.0	0.0
7/24/2018	0.00	24.0	24.0	0.0
7/25/2018	0.00	16.6	24.0	0.0
7/26/2018	0.00	17.4	24.0	0.0
7/27/2018	0.00	3.8	24.0	0.0
7/28/2018	0.00	20.2	24.0	0.0
7/29/2018	0.00	18.0	24.0	0.0
7/30/2018	0.00	8.3	24.0	0.0
7/31/2018	0.14	24.0	24.0	5.5
8/1/2018	0.00	24.0	24.0	0.0
8/2/2018	0.00	18.2	24.0	0.0
8/3/2018	0.00	24.0	24.0	0.0
8/4/2018	0.00	18.4	24.0	0.0
8/5/2018	0.00	24.0	24.0	0.0
8/6/2018	0.00	24.0	24.0	0.0
8/7/2018	0.00	24.0	24.0	0.0
Totals	**12.23**	**5,958.9**	**7,392.0**	**450.7**

APPENDIX B: MONTROSE STACK TEST REPORT

TEST REPORT
OceanaGold – Haile Operation
Wet Scrubber (PT-5A), Wet Scrubber (PT-5B), Baghouse (PT-6)
Kershaw, South Carolina

Prepared For:

OceanaGold – Haile Operation
6911 Snowy Owl Rd
Kershaw, SC 29067

Prepared By:

Montrose Air Quality Services, LLC
301 Brookdale St
Kannapolis, NC 28083

Document Number: **009AS-451092-RT-41**
Test Dates: **July 31, August 1 & 7, 2018**

STAC STACK TESTING ACCREDITATION COUNCIL

A2LA ACCREDITED TO ASTM D7036 ONLY CERT #3925.01

MONTROSE AIR QUALITY SERVICES

REVIEW AND CERTIFICATION

All work, calculations, and other activities and tasks performed and presented in this document were carried out by me or under my direction and supervision. I hereby certify that, to the best of my knowledge, Montrose operated in conformance with the requirements of the Montrose Quality Management System and ASTM D7036-04 during this test project.

Signature: C P Sneeringer Date: 9/12/2018

Name: Chuck Sneeringer Title: Client Project Manager

I have reviewed, technically and editorially, details, calculations, results, conclusions, and other appropriate written materials contained herein. I hereby certify that, to the best of my knowledge, the presented material is authentic, accurate, and conforms to the requirements of the Montrose Quality Management System and ASTM D7036-04.

Signature: Date: 9/12/2018

Name: Matt Brooks Title: QA/QC Scientist

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1.0 EXECUTIVE SUMMARY

OceanaGold – Haile Operation (Haile) contracted Montrose Air Quality Services (Montrose) of Kannapolis, North Carolina to conduct stack emissions testing on three (3) emissions sources at the Haile Gold Mine in Kershaw, South Carolina. This test event was performed at the facility on July 31, August 1, and August 7, 2018.

2.0 SUMMARY OF TEST RESULTS

Testing was performed on inlet and outlet ducts of the identified units. No difficulties or irregularities were encountered during the sampling. The emissions test tables on the following pages give detailed summaries of each test run.

Source ID(s): PT-5A, PT-5B, PT-6
Analytes of Interest: Mercury (Hg)
Test Methods: EPA Method 1-4
EPA Method 3A
EPA Method 29
Test Notes: None

Table 2-1
Emissions Summary

Test Performed For:	**Haile Gold Mine**	**Testing Performed By:**	
	Kershaw SC	**Montrose Air Quality Services**	
Source(s) Tested:	**PT-5A**	**Project Manager:**	
Test Condition:	**Compliance**	**Chuck Sneeringer**	
Test(s) Performed:	**Metals (Mercury) and O2/CO2**		

Run Number		Run 1	Run 2	Run 3	Average	
Date of Run		8/7/18	8/7/18	8/7/18	-	
Emission Test Run Time Began - Ended		0932-1035	1130-1232	1342-1445	-	
Oxygen Concentration	%(dry)	16.2	16.2	16.1	16.2	
Carbon Dioxide Concentration	%(dry)	2.4	2.6	2.6	2.5	
Isokinetic Sampling Rate	%	107.33	109.08	108.39	108.27	
Stack Temperature	°F	165	164	165	165	
Stack Temperature	°C	74	73	74	74	
Moisture Content	% volume	22.68	23.31	23.65	23.21	
Stack Gas Velocity	f/s	46.18	46.98	47.36	46.84	
Stack Gas Flow @ Actual Conditions	acfm	1,874	1,906	1,922	1,900	
Stack Gas Flow @ Standard Conditions	scfm	1,563	1,595	1,605	1,588	
Stack Gas Flow @ Dry Standard Conditions	dscfm	1,209	1,223	1,226	1,219	**Permit Limits**
Mercury Concentration	**µg/dscm**	**< 34.4**	**< 32.6**	**< 7.0**	**< 24.7**	
Mercury Emissions	**lb/hr**	**< 1.56E-04**	**< 1.49E-04**	**< 3.20E-05**	**< 1.12E-04**	

Table 2-2

Emissions Summary

Test Performed For:	**Haile Gold Mine**	**Testing Performed By:**	
	Kershaw SC	**Montrose Air Quality Services**	
Source(s) Tested:	**PT-5B**	**Project Manager:**	
Test Condition:	**Compliance**	**Chuck Sneeringer**	
Test(s) Performed:	**Metals (Mercury) and O2/CO2**		

Run Number		Run 1	Run 2	Run 3	Average	
Date of Run		8/1/18	8/1/18	8/1/18	-	
Emission Test Run Time Began - Ended		0955-1106	1215-1325	1415-1525	-	
Oxygen Concentration	%(dry)	20.9	20.9	20.9	20.9	
Carbon Dioxide Concentration	%(dry)	0.2	0.2	0.1	0.1	
Isokinetic Sampling Rate	%	97.64	101.67	102.44	100.58	
Stack Temperature	°F	87	95	96	93	
Stack Temperature	°C	31	35	36	34	
Moisture Content	% volume	4.34	4.50	5.54	4.79	
Stack Gas Velocity	f/s	22.78	22.48	21.75	22.34	
Stack Gas Flow @ Actual Conditions	acfm	4,151	4,096	3,962	4,069	
Stack Gas Flow @ Standard Conditions	scfm	4,034	3,929	3,787	3,917	
Stack Gas Flow @ Dry Standard Conditions	dscfm	3,859	3,752	3,577	3,730	**Permit Limits**
Mercury Concentration	**µg/dscm**	**< 0.9**	**< 1.6**	**< 1.2**	**< 1.3**	
Mercury Emissions	**lb/hr**	**< 1.33E-05**	**< 2.30E-05**	**< 1.65E-05**	**< 1.76E-05**	

Table 2-3

Emissions Summary

Test Performed For:	**Haile Gold Mine**	**Testing Performed By:**	
	Kershaw SC	**Montrose Air Quality Services**	
Source(s) Tested:	**PT-6**	**Project Manager:**	
Test Condition:	**Compliance**	**Chuck Sneeringer**	
Test(s) Performed:	**Metals (Mercury) and O2/CO2**		

Run Number		Run 1	Run 2	Run 3	Average	
Date of Run		7/31/18	7/31/18	7/31/18	-	
Emission Test Run Time Began - Ended		1037-1144	1222-1331	1354-1501	-	
Oxygen Concentration	%(dry)	20.9	20.9	20.9	20.9	
Carbon Dioxide Concentration	%(dry)	0.0	0.2	0.0	0.1	
Isokinetic Sampling Rate	%	99.99	100.43	100.31	100.25	
Stack Temperature	°F	89	96	101	95	
Stack Temperature	°C	32	35	38	35	
Moisture Content	% volume	3.72	3.74	3.60	3.68	
Stack Gas Velocity	f/s	60.44	61.15	61.42	61.00	
Stack Gas Flow @ Actual Conditions	acfm	3,877	3,922	3,939	3,913	
Stack Gas Flow @ Standard Conditions	scfm	3,693	3,690	3,674	3,686	
Stack Gas Flow @ Dry Standard Conditions	dscfm	3,555	3,552	3,542	3,550	**Permit Limits**
Mercury Concentration	**µg/dscm**	**< 67.1**	**< 107.1**	**< 60.7**	**< 78.3**	
Mercury Emissions	**lb/hr**	**< 8.94E-04**	**< 1.42E-03**	**< 8.05E-04**	**< 1.04E-03**	

3.0 PROCESS DESCRIPTION

OceanaGold operates the Haile Gold Mine in accordance with the facility's South Carolina construction permit. The mining operation delivers sulfide ore to the ore processing facility, also known as The Mill, which includes crushing, grinding, flotation, leaching, carbon handling, and refining operations. The tested air emissions sources are all located at the ore processing facility.

Montrose Air Quality Services
Figure 4-1

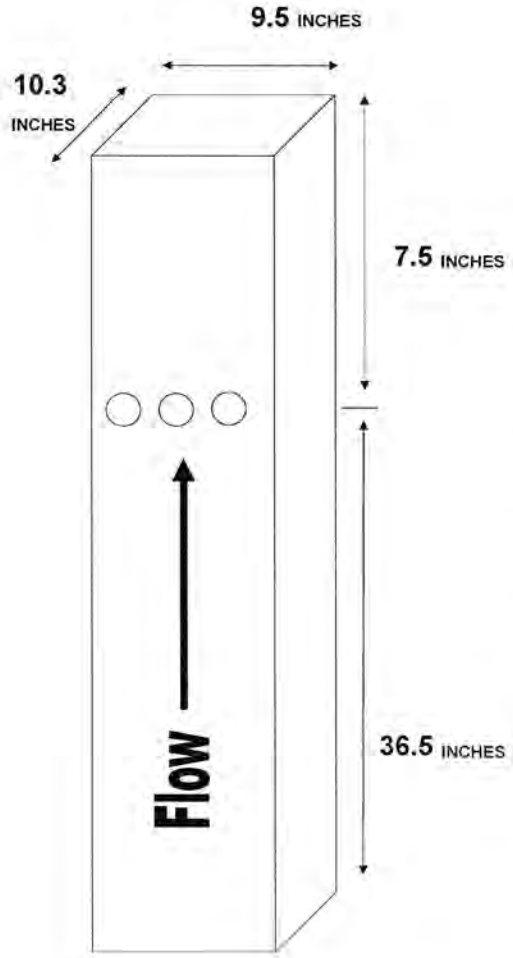
30 Monroe Drive, Pelham, AL 35124

STACK DRAWING & TRAVERSE POINT LOCATION

Client: **Haile Gold Mine** Job No. : **009AS-451092**

Source: **PT-5A** Input By: **Chuck Sneeringer**

Equivalent Diameter, inches:	9.86			Stack Area, Ft^2:	0.676
Type of Traverse: Velocity (V) or Particulate (P)		P		Length of Port, inches:	0
Length (Side with ports):	9.5			Total Number of Traverse Points:	NA
Width (Depth of port):	10.25			Required Minimum Matrix:	#N/A
Port Type:	Port Diameter			Number of Points per port:	#N/A
Stack Properties:		Inches	Duct Diameters	Ports Available:	5
Upstream From Flow Disturbance (A):		7.5	0.76	Matrix Used (Ports x Points):	5 X 5
Downstream From Flow Disturbance (B):		36.5	3.70	Number of Points per port:	5



Point No.	Inside Stack Diameter; Inches	Outside Nipple Diameter; Inches
1	1.03	1.03
2	3.08	3.08
3	5.13	5.13
4	7.18	7.18
5	9.23	9.23

* Adjusted points diameter > 24" no point closer than 1.0 inch

* Adjusted points diameter ≤ 24" no point closer than 0.5 inch

Stack Diameters between 12-24 inches minimum points are 9 ; if the 8 / 2 diameters downstream and upstream criteria is met.

Montrose Air Quality Services
Figure 4-2

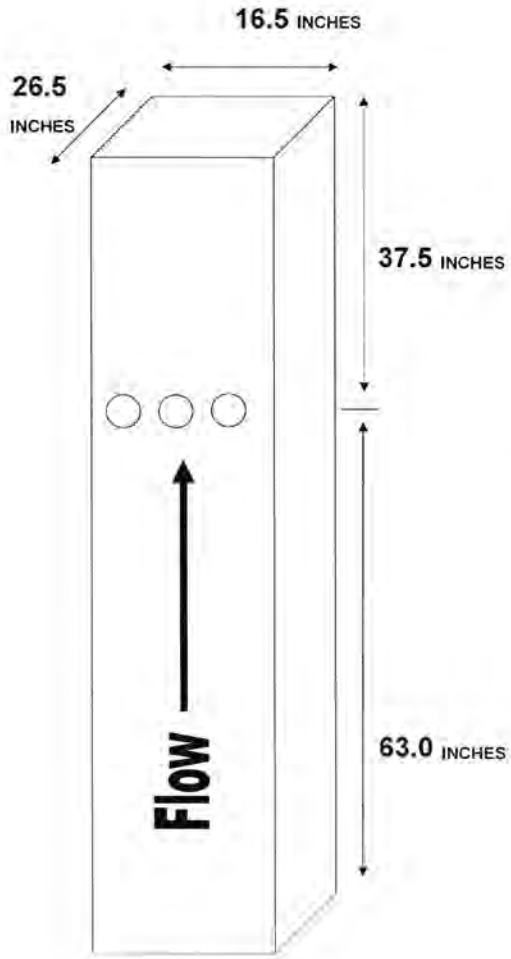
30 Monroe Drive, Pelham, AL 35124

STACK DRAWING & TRAVERSE POINT LOCATION

Client: **Haile Gold Mine** Job No.: **009AS-451092**

Source: **PT-5B** Input By: **Chuck Sneeringer**

Equivalent Diameter, inches:	20.34			Stack Area, Ft^2:	3.036
Type of Traverse: Velocity (V) or Particulate (P)			P	Length of Port, inches:	0
Length (Side with ports):	16.5			Total Number of Traverse Points:	25
Width (Depth of port):	26.5			Required Minimum Matrix:	5 x 5
Port Type:	Port Diameter			Number of Points per port:	5
Stack Properties:		Inches	Duct Diameters	Ports Available:	3
Upstream From Flow Disturbance (A):		37.5	1.84	Matrix Used (Ports x Points):	3 x 9
Downstream From Flow Disturbance (B):		63.0	3.10	Number of Points per port:	9



Point No.	Inside Stack Diameter; Inches	Outside Nipple Diameter; Inches
1	1.47	1.47
2	4.42	4.42
3	7.36	7.36
4	10.31	10.31
5	13.25	13.25
6	16.2	16.2
7	19.1	19.1
8	22.1	22.1
9	25.0	25.0

* Adjusted points diameter > 24" no point closer than 1.0 inch

* Adjusted points diameter ≤ 24" no point closer than 0.5 inch

Stack Diameters between 12-24 inches minimum points are 9 ; if the 8 / 2 diameters downstream and upstream criteria is met.

Montrose Air Quality Services
Figure 4-3

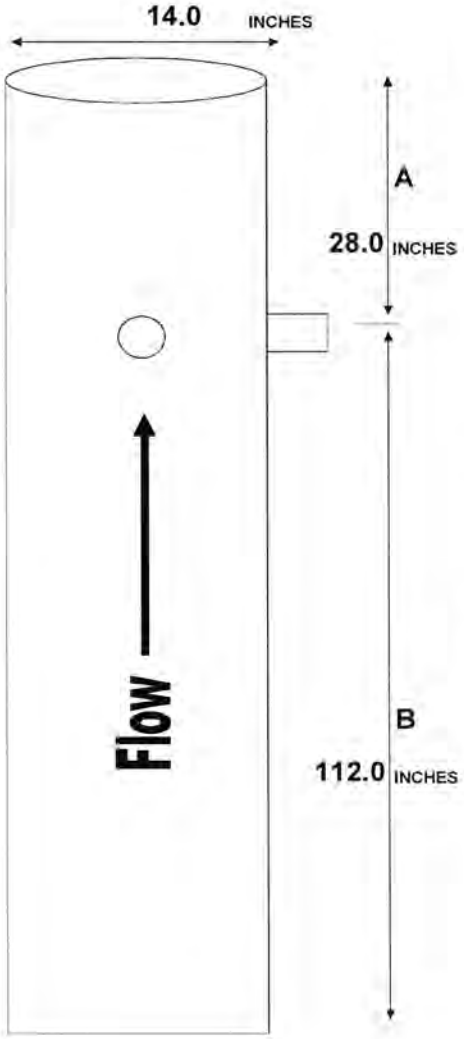
30 Monroe Drive, Pelham, AL 35124

STACK DRAWING & TRAVERSE POINT LOCATION

Client: **Haile Gold Mine** Job No. : **009AS-451092**

Source: **PT-6** Input By: **Chuck Sneeringer**

Type of Traverse: Velocity (V) or Particulate (P):		P	Port Type	Port Diameter	3
Stack Diameter, inches:	14		Stack Area, Ft^2:		1.069
Stack Height, feet:	20		Number of Ports:		2
Stack Properties:	Inches	Duct Diameters	Length of Port, inches:		1.50
Upstream From Flow Disturbance (A):	28.0	2.00	Total Number of Traverse Points:		8
Downstream From Flow Disturbance (B):	112.0	8.00	Number of Points per port / traverse:	4	4



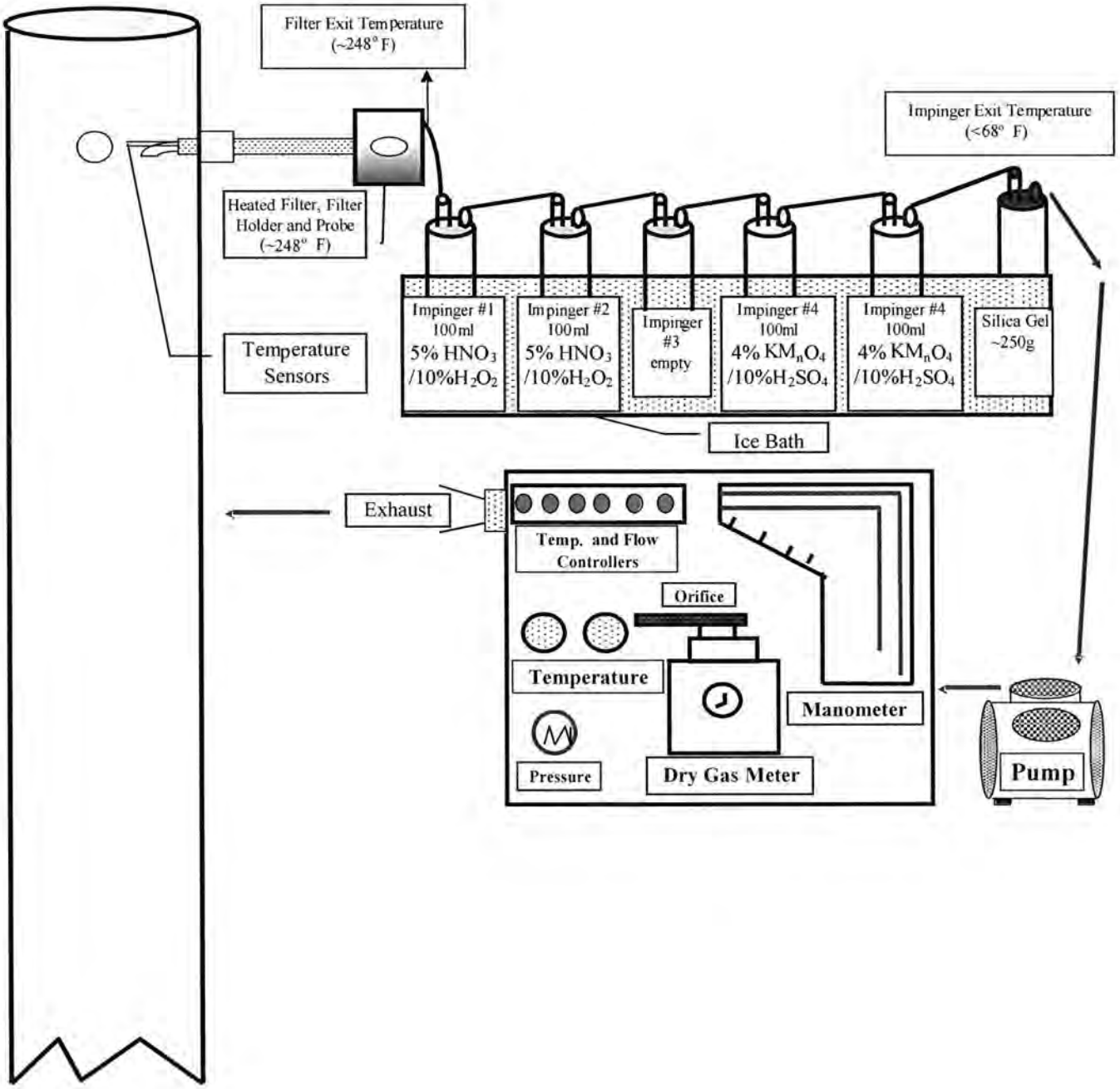
Point No.	Inside Stack Inches	Outside Nipple Inches
1	0.9	2.4
2	3.5	5.0
3	10.5	12.0
4	13.1	14.6

* Adjusted points diameter > 24" no point closer than 1.0 inch

* Adjusted points diameter ≤ 24" no point closer than 0.5 inch

Stack Diameters between 12-24 inches minimum points are 8 ; 4 points per port if the 8 / 2 diameters downstream and upstream criteria is met.

Figure 4-4
Method 29 Sampling Train



4.0 REFERENCE METHOD TEST PROCEDURES

EPA's calibration and quality assurance procedures of 40 CFR Part 60, Appendix A were utilized for all methods, and EPA's *Quality Assurance Handbook for Air Pollution Measurement Systems, Vol. 3, Stationary Source-Specific Methods* was followed throughout the duration of the field and laboratory testing. The most current version of each method (as described in the Federal Register) was used. All field data collected during testing are included in the attached **Appendix** of this report.

4.1 EPA METHOD 1 - TRAVERSE POINT LAYOUT

For Information on stack dimensions, traverse points, distance to disturbance and other relevant data, refer to the attached **Appendix** to this report.

4.2 EPA METHOD 2 - VELOCITY

The velocity of the gas stream was determined according to EPA Reference Method 2 by reading the instantaneous velocity head with an inclined manometer at each sampling point with a calibrated S-type pitot. The stack pressure was measured with the static side of an S-type pitot tube. A calibrated pyrometer was used to measure stack temperature at each sampling point. In accordance with EPA Method 2 Section 8.6, an assumed molecular weight of 29.0 for ambient air was assigned to sources where required. All test data, worksheets, and spreadsheets presenting the calculations are included in **Appendix A** of this report. Pitot tube, thermocouple, and other measurement device calibration worksheets used for the test series are presented in **Appendix C**.

4.3 EPA METHOD 3A - STACK GAS MOLECULAR WEIGHT

Oxygen & carbon dioxide concentrations were continuously measured with a Thermo 410i non-dispersive infrared (NDIR) analyzer. The industry proven Model 410i Carbon Dioxide (CO_2) analyzer is also equipped with an O_2 sensor for the measurement and correction of oxygen concentrations. The advanced non-dispersive infrared technology, utilized in the standard Model 410*i*, combined with the paramagnetic oxygen sensor offers unsurpassed detection specificity and long-term stability. The oxygen full-scale was set at a **21.98%** measurement range. The carbon dioxide full-scale was set at a **19.01%** measurement range.

Table 4-3 gives a detailed technical specification list for the Thermo 410i continuous emission monitor.

TABLE 4-3

TECHNICAL SPECIFICATIONS OF THERMO 410i OXYGEN MONITOR

Manufacturer	Thermo
Model Number	410i
Detection Principle	Paramagnetic
Range	0-25%
Linearity	+/- 0.1%
Repeatability	+/- 0.1%
Response	< 2.5 seconds to 90% FS
Zero Drift	+/- 0.1% over 24 hours
Span Drift	+/- 0.1% over 24 hours

Source: Thermo

4.4 EPA METHOD 4 - MOISTURE CONTENT

The moisture content of the vent gas stream was determined by extracting a gaseous sample at a known and regulated rate through a glass impinger condenser train connected in series with leak free glass u-tube connectors. The gas sample was extracted through the impinger train (maintained below 68° F in an ice bath) with a vacuum pump and the volume of gas sampled was measured with a calibrated dry gas meter. The moisture collected during the test run was measured gravimetrically with an analytical balance with a tolerance of 0.1 g. The volume of gas drawn was corrected to dry standard conditions.

4.5 EPA METHOD 29 – MERCURY

The mercury sample train consisted of a heated stainless-steel sample probe with a glass liner equipped with a S-type Pitot tube and thermocouple. The glass nozzle was calibrated before and after the test using a micrometer and was recorded on the field data sheets. The probe was attached to a sample module consisting of a heated filter compartment which housed the in-line filter holder equipped with a pre-weighed quartz filter for the collection of particulate and a series of glass impingers to collect mercury and determine moisture. The sample module was connected to a control module by means of an umbilical cord. The control module consisted of a dry gas meter, calibrated orifice, leak free pump, two inclined manometers, and temperature controllers for the heated filter compartment, the probe, and a thermocouple indicator to monitor the required temperatures.

Gas samples were collected as follows: the sample gas was drawn through the sampling probe isokinetically and passed through a 3-inch tared quartz filter on to which particulate matter was deposited. The sample gas then passed through a series of ice-cooled impingers. The first impinger is optional and, if needed, was of the modified Greenburg-Smith design and served as a moisture trap. The second impinger was of the modified Greenburg-Smith design and contained approximately 100 ml of (5% HNO_3/10% H_2O_2) absorbing solution. The third impinger was of the Greenburg-Smith design (with tip) and contained approximately 100 ml of (5% HNO_3/10% H_2O_2) absorbing solution. The fourth impinger was empty. The fifth and sixth impingers were both of the modified Greenburg-Smith design and contained approximately 100 ml each of acidic potassium permanganate ($KMnO_4$) absorbing solution. The seventh impinger contained approximately 250 g of silica gel, which absorbed any remaining moisture. These

impingers were placed in an ice-bath to maintain a maximum exit temperature of <68° F. The sample gas then passed through a vacuum pump followed by a dry gas meter. The dry gas meter integrated the sample gas flow throughout the duration of the test. A calibrated orifice attached to the outlet of the dry gas meter provided real time flow rate data.

A representative gas sample was acquired by sampling for equal periods of time at the centroid of a number of equal area regions in the exhaust stack. The sampling rate was adjusted at each test point maintaining an isokinetic sampling condition.

After the sampling was complete and post leak checks performed the filter was removed and placed in a storage container (Container 1) for analysis. The nozzle, probe liner, and inlet side of the filter holder were quantitatively washed with reagent grade acetone and stored in a marked and sealed container (Container 2). The nozzle, probe liner, and inlet side of the filter holder were rinsed again with 100ml of 0.1N nitric acid (HNO_3) and placed into another marked and sealed container (Container 3). The liquids from the first, second, and third impingers were weighed and added to a fourth marked and sealed container. The back half of the filter holder and these three impingers were rinsed with 100ml 0.1N HNO_3 and the rinses were added to the same container (Container 4). The contents of the fourth impinger were weighed and then rinsed with 100ml of 0.1N HNO_3 and the rinse was placed in a fifth marked and sealed container (Container 5A). The liquids from the fifth and sixth impingers were weighed and added to a sixth marked and sealed container (Container 5B). These impingers were first rinsed three times with a total of 100ml $KMnO_4$ (approximately 33ml per rinse) and then 100ml of distilled water (approximately 33ml per rinse) and the rinses were added to Container 5B. The fifth and sixth impingers were then rinsed with a total of 25ml of 8NHCl; this was added to 200ml of DI water in a seventh marked container (Container 5C). The seventh impinger was weighed to determine the moisture catch of the silica gel.

5.0 QA / QC PROCEDURES

Qualitative and quantitative factors contribute to field measurement uncertainty and should be taken into consideration when interpreting the results contained within this report. Whenever possible, Montrose Air Quality Services, LLC, (MAQS) personnel reduce the impact of these uncertainty factors through the use of approved and validated test methods. In addition, MAQS personnel perform routine instrument and equipment calibrations and ensure that the calibration standards, instruments, and equipment used during test events meet, at a minimum, test method specifications as well as the specifications of our Quality Manual and ASTM D 7036-04. The limitations of the various methods, instruments, equipment, and materials utilized during this test have been reasonably considered, but the ultimate impact of the cumulative uncertainty of this project is not fully identified within the results of this report.

6.0 CALIBRATION PROCEDURES

All of the emission testing equipment used was calibrated according to EPA's procedures outlined in 40 CFR Part 60 Appendix "A" and EPA's *Quality Assurance Handbook for Air Pollution Measurement Systems, Vol. 3*. All calibration records can be found in **Appendix C** of this report.

APPENDIX A

TEST DATA AND EMISSION CALCULATIONS

A.1

UNIT PT-5A

Montrose Air Quality Services

SOURCE OVERVIEW

SOURCE OWNER:	Haile Gold Mine		
PLANT LOCATION (CITY / STATE):	Kershaw SC		
SOURCE(S) NAME(S):	PT-5A		
SOURCE(S) CONDITION:	Compliance		
SOURCE(S) SHAPE:	Rectangular		
PROBE WASH CHEMICAL:	.1 N HNO3		
TEST PERFORMED:	Metals (Mercury) and O2/CO2		
REFERENCE METHOD TESTS:	Sample Location	US EPA Method	1
	Volumetric Flow	US EPA Method	2
	Molecular Weight	US EPA Method	3A
	Moisture Content	US EPA Method	4
	Total Metals	US EPA Method	29
PROJECT MANAGER	Chuck Sneeringer		
ENVIRONMENTAL ANALYST - PROJECT LEADER	Chuck Sneeringer		
ENVIRONMENTAL ANALYST - ASSISTANT	Kent Childers, Justin Watson		
RULING AGENCY :	SCDHEC		
RULING AGENCY REPRESENTATIVE:	Derek Williams		
DATE(S) TEST CONDUCTED:	08/07/18		
MONTROSE PROJECT NUMBER:	009AS-451092		

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

INPUT TEST DATA

Client: **Haile Gold Mine** Job No.: **009AS-451092**

Source: **PT-5A** Data Input By: **Chuck Sneeringer**

Field Data	Symbol	Units	Test Data			
Run Number	-	-	1	2	3	AVERAGE
Test Date	-	-	08/07/18	08/07/18	08/07/18	-
Emission Test Run Time Began - Ended	-	Military Time	0932-1035	1130-1232	1342-1445	-
Sampling Time	θ	minutes	63	63	63	63
Stack Area	A_s	Ft^2	0.676	0.676	0.676	-
Barometric Pressure	P_{bar}	in. Hg	29.48	29.48	29.48	29.48
Stack Static Pressure	P_g	in. H_20	1.20	1.20	1.20	1.20
Pitot Tube Correction factor	C_p	-	0.99	0.99	0.99	0.99
Meter Calibration Factor	Y	-	0.982	0.982	0.982	0.982
Meter Delta H @	$\Delta H@$	in. H_20	2.034	2.034	2.034	2.034
Nozzle Diameter	D_n	inches	0.255	0.255	0.255	0.255
Initial Meter Volume	V_{mi}	dcf	59.300	105.100	152.560	-
Final Meter Volume	V_{mf}	dcf	104.790	152.290	200.075	-
Total Leak Check Meter Volume During Test (If Applicable)	V_{mlc}	dcf	0.000	0.000	0.000	-
Total Meter Volume	V_m	dcf	45.490	47.190	47.515	46.732
Meter Temperature	t_m	°F	88.9	93.9	100.0	94.28
Avg. Orifice Delta H	ΔH	in. H_20	1.92	1.97	1.99	1.96
Impingers Weight Gain (Moisture)	W_{imp}	grams	253.3	271.2	273.5	266.0
Silica Gel Impinger Weight Gain (Moisture)	W_{sg}	grams	11.4	10.7	12.7	11.6
Oxygen Concentration, dry basis	O_2	% (d)	16.20	16.16	16.13	16.16
Carbon Dioxide Concentration, dry basis	CO_2	% (d)	2.43	2.63	2.58	2.55
Avg. Sq. Rt. of Delta P	$(sqrt\ \Delta P)_{avg}$	$(in.\ H_20)^{1/2}$	0.611	0.622	0.626	0.620
Stack Temperature	t_s	°F	165.4	163.8	164.5	165
Mercury	Hg	mg_{Hg}	0.04	0.04	0.01	0.030

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

CALCULATED TEST DATA

Client: **Haile Gold Mine** Job No.: **009AS-451092**

Source: **PT-5A** Data Input By: **Chuck Sneeringer**

Description	Formulas	Symbol	Units	Calculated Data			
Run Number		-	-	1	2	3	AVERAGE
Test Date		-	-	08/07/18	08/07/18	08/07/18	-
Emission Test Run Time Began - Ended		-	Military Time	0932-1035	1130-1232	1342-1445	-
1. Stack Pressure	$= P_{bar} + P_g / 13.6$	P_s	in. Hg	29.57	29.57	29.57	29.57
2. Meter Pressure	$= P_{bar} + \Delta H / 13.6$	P_m	in. Hg	29.62	29.62	29.63	29.62
3. Standard Meter Volume	$= (T_{std}/P_{std})^* Y^* (V_m/T_m)^* (P_{bar} + \Delta H / 13.6)$	$V_{m(std)}$	dscf	42.539	43.736	43.562	43.279
4. Standard Volume of Water Vapor Condensed	$=0.04715^*W_{wc}$	$V_{wc(std)}$	scf	11.943	12.787	12.896	12.542
4a. Standard Volume of Water Collected in Silica Gel	$=0.04715^*W_{sg}$	$V_{wsg(std)}$	scf	0.538	0.505	0.600	0.547
4b. Total Standard Volume of Water Collected	$=V_{wc(std)imp} + V_{wsg(std)sg}$	$V_{w(std)}$	scf	12.481	13.292	13.496	13.089
5. Moisture Fraction	$=(V_{w(std)})/(V_{w(std)} + V_{m(std)})$	B_{ws}	fraction	0.2268	0.2331	0.2365	0.2321
9. Molecular Weight Of Stack Gas, dry basis	$= 0.32^*(O_2)+ 0.44^*(CO_2)+0.28^*(100-(O_2)-(CO_2))$	M_d	lb/lb-mole	29.037	29.067	29.058	29.054
10. Molecular Weight Of Stack Gas, wet basis	$= M_d^*(1-B_{ws})+18.0^*(B_{ws})$	M_s	lb/lb-mole	26.533	26.488	26.442	26.488
11. Average Stack Gas Velocity	$= 85.49^*C_p^*(\text{sqrt }\Delta P)_{avg}^*SQRT((T_s) / (P_s^*M_s))$	v_s	ft/s	46.18	46.98	47.36	46.841
12. Stack Gas Flow @ Actual Conditions	$= 60^*v_s^*A_n$	Q_a	acfm	1,874	1,906	1,922	1,900
13. Stack Gas Flow @ Standard Conditions	$= Q_a^*(T_{std}/T_s)^*(P_s/P_{std})$	Q_s	scfm	1,563	1,595	1,605	1,588
14. Stack Gas Flow @ Dry Standard Conditions	$= Q_a^*(1-B_{ws})^*(T_{std}/T_s)^*(P_s/P_{std})$	Q_{std}	dscfm	1,209	1,223	1,226	1,219
24. Volume collected through nozzle	$=T_s/P_s^*[0.002669^*V_{lc} + V_m^*Y^*P_m/T_m]$	V_n	acf	65.924	68.155	68.274	67.451
26. Isokinetic Sampling Rate, Percent	$= 100^*Vn / (60^*v_s^*A_n^*\theta)$	I	%	107.33	109.08	108.39	108.27
Post Meter Orifice Cal. (EMC ALT-009 Yqa)		Y_{qa}	-	1.0247	1.0055	1.0100	1.0134
% Difference, (Calibration must be within 5% of original Y-factor)							-3.20%
27j.Mercury Concentration	$=\mu g_{total}/V_{mmercury@std}$	C_{Hg}	µg/dscm	34.37	32.62	6.97	24.65

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: **Haile Gold Mine** Test Date: **8/7/2018**

Source: **PT-5A** Run Number: **1**

METALS FIELD DATA, US EPA METHODS 1-4 29

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H	Stack Temp. (°F)	Meter Temp. (°F)
1-1	0.65	0.8062	4.80	3.12	167	80
1-2	0.51	0.7141	4.80	2.45	168	81
1-3	0.47	0.6856	4.80	2.26	167	84
1-4	0.26	0.5099	4.80	1.25	167	85
1-5	0.22	0.4690	4.80	1.06	167	86
2-1	0.70	0.8367	4.80	3.36	166	86
2-2	0.60	0.7746	4.80	2.88	166	88
2-3	0.61	0.7810	4.80	2.93	166	89
2-4	0.30	0.5477	4.80	1.44	166	89
2-5	0.18	0.4243	4.80	0.86	165	89
3-1	0.66	0.8124	4.80	3.17	166	90
3-2	0.56	0.7483	4.80	2.69	166	91
3-3	0.32	0.5657	4.80	1.54	165	91
3-4	0.16	0.4000	4.80	0.77	165	91
3-5	0.11	0.3317	4.80	0.53	165	90
4-1	0.35	0.5916	4.80	1.68	165	90
4-2	0.67	0.8185	4.80	3.22	165	91
4-3	0.35	0.5916	4.80	1.68	164	91
4-4	0.23	0.4796	4.80	1.10	164	92
4-5	0.15	0.3873	4.80	0.72	164	91
5-1	0.37	0.6083	4.80	1.78	164	91
5-2	0.62	0.7874	4.80	2.98	164	91
5-3	0.55	0.7416	4.80	2.64	164	92
5-4	0.23	0.4796	4.80	1.10	164	92
5-5	0.15	0.3873	4.80	0.72	164	92
Average:	**0.40**	**0.6112**	**4.80**	**1.92**	**165.4**	**88.9**

Montrose Air Quality Services

Facility: H6M

City/State: KERSHAW SC

Source: PT 5A

Date: 8/7/18

Run No.: 1

Start Time: 0932

Stop Time: 1035

Moisture	Initial	Final	Totals
Impinger No. 1			
Impinger No. 2			
Impinger No. 3			
Silica Gel	SEE RECOVERY SHEET		

Analyst: KC

Assistant: JW

Fyrite / Instrumental - Gas Analysis — Average:

O_2 %: SEE CEMS DATA

CO_2 %:

EPA M. 3 § 11.2 - when using Fyrite repeat sampling until any 3 grab samples dry molecular weight differ from their mean by no more than 0.3 lb/lb-mole.

Field Balance ID: NC SCALE 1

Calibration Wt. ID / Mass: 1

Response:

EPA M.4 § 10.3 - Balance must be within ± 0.5g of certified weight.

Job Number: 475060

Barometric Pressure: 30.09

Stack Pressure: 1.2

Stack Diameter: 9.5 x 10.25

K Factor: 4.8

Nozzle Calibrations

	Pre-Test:	Post-Test:
Measurement 1:	.255	.255
Measurement 2:	.255	.255
Measurement 3:	.255	.255
Average:	.255	.255

EPA M. 5 § 10.1 - The difference between the high and low nozzle measurements shall not exceed 0.004 inches.

Sample Train Leak Checks

Sample Train Pre-Test:

Volume (cfm)	Vacuum
0.001	14

Sample Train Post-Test:

Volume (cfm)	Vacuum
0.001	9

Pitot Leak Checks

Pre- Pitot Check

Positive	Negative
4.6	3.2

Post-Pitot Check

Positive	Negative
4.8	5.0

Dry Gas Meter Readings (Cubic Feet):

	1	2	3	4	Total Cubic Feet:
Final:	104.790				
Initial:	59.300				
Net:					

Equipment Checklist

NIST Kit ID:
Meter Box ID: NC M5-2
Delta H @: 2.034
Y-Factor 0.982
Probe ID:
C_p Value: 0.99
Liner Material: GLASS
Nozzle ID:
Hot Box ID: NCHB 3
Filter Exit ID:
Impinger Outlet ID: NC GN 11
Filter ID:
Fyrite ID:
Acetone Lot No.

Port / Point	Time (min.)	Meter Reading (ft^3)	Delta P (in. H_2O)	Delta H (in. H_2O)	Stack (°F)	Probe (°F)	Oven (°F)	Impinger (°F)	Filter Outlet (°F)	Meter Avg. (°F)	Vacuum (in. Hg)	Other
1 / 1	0	59.300	0.65	3.12	167	247	245	62		80	4.0	
1 2	2.5	61.680	0.51	2.45	168	246	245	59		81	4.0	
1 3	5	63.840	0.49	2.26	167	246	249	55		84	4.0	
1 4	7.5	65.820	0.26	1.25	167	248	242	55		85	2.0	
1 5	10	67.320	0.22	1.06	167	247	244	57		86	2.0	
2 / 1	12.5	68.920	0.70	3.36	166	248	251	57		86	4.0	
1 2	15	70.825	0.60	2.88	166	248	250	57		88	2.0	
1 3	17.5	73.070	0.61	2.93	166	250	248	58		89	2.0	
1 4	20	75.260	0.30	1.44	166	249	246	59		89	3.0	
1 5	22.5	76.980	0.18	0.86	165	246	247	60		89	3.0	
3 / 1	25	78.365	0.66	3.17	166	245	253	58		90	5.0	
1 2	27.5	80.575	0.56	2.69	166	250	260	54		91	5.0	
1 3	30	82.850	0.32	1.54	165	248	246	53		91	4.0	
1 4	32.5	84.620	0.16	0.77	165	247	255	54		91	2.0	
1 5	35	86.020	0.11	0.53	165	248	247	55		90	2.0	
4 / 1	37.5	87.015	0.35	1.68	165	248	242	55		90	2.0	
1 2	40	88.075	0.67	3.22	165	248	244	53		91	2.0	
1 3	42.5	91.040	0.35	1.68	164	245	248	54		91	2.0	
1 4	45	93.320	0.23	1.10	164	248	256	54		92	2.0	
1 5	47.5	94.720	0.15	0.72	164	248	255	55		91	2.0	
5 / 1	50	96.140	0.37	1.78	164	249	251	55		91	4.0	
1 2	52.5	97.760	0.62	2.98	164	249	246	55		91	5.0	
1 3	55	99.345	0.55	2.64	164	244	254	55		92	5.0	
1 4	57.5	102.105	0.23	1.10	164	249	247	56		92	5.0	
1 5	60	103.740	0.15	0.72	164	246	247	57		92	3.0	
	62.5											

Field Notes:

Method(s) 29 Field Data Sheet

Field Technician Signature: Kurt Calder

Date: 8/7/18

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: **Haile Gold Mine** Test Date: **8/7/2018**

Source: **PT-5A** Run Number: **2**

METALS FIELD DATA, US EPA METHODS 1-4 29

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H	Stack Temp. (°F)	Meter Temp. (°F)
1-1	0.64	0.8000	4.80	3.07	165	88
1-2	0.53	0.7280	4.80	2.54	165	90
1-3	0.50	0.7071	4.80	2.40	165	92
1-4	0.28	0.5292	4.80	1.34	165	92
1-5	0.24	0.4899	4.80	1.15	165	93
2-1	0.71	0.8426	4.80	3.41	165	93
2-2	0.62	0.7874	4.80	2.98	165	93
2-3	0.60	0.7746	4.80	2.88	165	94
2-4	0.32	0.5657	4.80	1.54	164	95
2-5	0.20	0.4472	4.80	0.96	164	94
3-1	0.67	0.8185	4.80	3.22	165	94
3-2	0.54	0.7348	4.80	2.59	165	94
3-3	0.30	0.5477	4.80	1.44	165	95
3-4	0.17	0.4123	4.80	0.82	165	94
3-5	0.13	0.3606	4.80	0.62	165	94
4-1	0.38	0.6164	4.80	1.82	163	94
4-2	0.68	0.8246	4.80	3.26	163	94
4-3	0.38	0.6164	4.80	1.82	163	95
4-4	0.24	0.4899	4.80	1.15	163	95
4-5	0.16	0.4000	4.80	0.77	163	95
5-1	0.38	0.6164	4.80	1.82	162	95
5-2	0.64	0.8000	4.80	3.07	161	95
5-3	0.53	0.7280	4.80	2.54	161	96
5-4	0.25	0.5000	4.80	1.20	161	97
5-5	0.17	0.4123	4.80	0.82	161	97
Average:	**0.41**	**0.6220**	**4.80**	**1.97**	**163.8**	**93.9**

Montrose Air Quality Services

Facility: H&M

City/State: KERSHAW SC

Source: PT 5A

Date: 8/7/19

Run No.: 2

Start Time: 1130 | Stop Time: 1233

Moisture	Initial	Final	Totals	Analyst:
Impinger No. 1				KW
Impinger No. 2				
Impinger No. 3	SEE RECOVERY SHEET			Assistant:
Silica Gel				JW

Fyrite / Instrumental - Gas Analysis — Average:

O_2 %: SEE CEM'S DATA

CO_2 %:

EPA M. 3 § 11.2 - when using Fyrite repeat sampling until any 3 grab samples dry molecular weight differ from their mean by no more than 0.3 lb/lb-mole.

Field Balance ID: NC SCALE 1

Calibration Wt. ID / Mass: 1

Response:

EPA M.4 § 10.3 - Balance must be within ± 0.5g of certified weight.

Job Number: 475060

Barometric Pressure: 30.09

Stack Pressure:

Stack Diameter:

K Factor: 4.8

Nozzle Calibrations

	Pre-Test:	Post-Test:
Measurement 1:	.255	.255
Measurement 2:	.255	.255
Measurement 3:	.255	.255
Average:	.255	.255

EPA M. 5 § 10.1 - The difference between the high and low nozzle measurements shall not exceed 0.004 inches.

Sample Train Leak Checks

Sample Train Pre-Test:

Volume (cfm)	Vacuum
0.001	10

Sample Train Post-Test:

Volume (cfm)	Vacuum
0.002	7

Pitot Leak Checks

Pre- Pitot Check

Positive	Negative
4.6	5.2

Post-Pitot Check

Positive	Negative
4.2	5.0

Dry Gas Meter Readings (Cubic Feet):

	1	2	3	4	Total Cubic Feet:
Final:	152.290				
Initial:	105.100				
Net:					

Equipment Checklist

NIST Kit ID:
Meter Box ID: NC M5 2
Delta H @: 2.034
Y-Factor 0.992
Probe ID:
C_p Value: 0.99
Liner Material: GLASS
Nozzle ID:
Hot Box ID: NC HB 3
Filter Exit ID:
Impinger Outlet ID: NC CN 11
Filter ID:
Fyrite ID:
Acetone Lot No.

Port / Point	Time (min.)	Meter Reading (ft^3)	Delta P (in. H_2O)	Delta H (in. H_2O)	Stack (°F)	Probe (°F)	Oven (°F)	Impinger (°F)	Filter Outlet (°F)	Meter Avg. (°F)	Vacuum (in. Hg)	Other
1 / 1	0	105.100	0.64	3.07	165	249	249	64		88	5.0	
/ 2	2.5	107.520	0.53	2.54	165	249	251	62		90	5.0	
/ 3	5	109.710	0.50	2.40	165	245	249	57		92	4.0	
/ 4	7.5	111.705	0.28	1.34	165	247	248	53		92	4.0	
/ 5	10	113.250	0.24	1.15	165	247	238	54		93	3.0	
2 / 1	12.5	115.230	0.71	3.41	165	245	248	54		93	5.0	
/ 2	15	117.170	0.62	2.98	165	248	250	54		93	5.0	
/ 3	17.5	119.640	0.80	2.99	165	248	250	54		94	5.0	
/ 4	20	122.045	0.32	1.54	164	246	249	56		95	3.0	
/ 5	22.5	123.760	0.20	0.96	164	246	249	56		94	3.0	
3 / 1	25	125.010	0.67	3.22	165	247	248	57		94	3.0	
/ 2	27.5	127.340	0.54	2.59	165	245	247	57		94	3.0	
/ 3	30	129.360	0.30	1.44	165	247	248	57		95	3.0	
/ 4	32.5	131.340	0.17	0.82	165	249	248	58		94	2.0	
/ 5	35	132.650	0.13	0.62	165	247	246	59		94	2.0	
4 / 1	37.5	133.750	0.38	1.82	163	248	250	59		94	2.0	
/ 2	40	135.550	0.68	3.26	163	247	238	57		94	2.0	
/ 3	42.5	137.890	0.38	1.82	163	246	246	58		95	4.0	
/ 4	45	139.745	0.24	1.15	163	247	251	59		95	4.0	
/ 5	47.5	141.240	0.16	0.77	162	249	248	60		95	4.0	
5 / 1	50	142.790	0.38	1.82	162	247	249	60		95	4.0	
/ 2	52.5	144.520	0.64	3.07	161	246	247	60		96	5.0	
/ 3	55	146.780	0.53	2.54	161	247	249	61		97	5.0	
/ 4	57.5	149.050	0.25	1.20	161	247	249	61		97	5.0	
/ 5	60	150.710	0.17	0.82	161	249	249	61		97	5.0	
	62.5	152.290										

Field Notes:

Method(s) 29 Field Data Sheet

Field Technician Signature: Kent Anderson

Date: 8/7/19

DW SCHHEC 8/7/2019

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: **Haile Gold Mine** Test Date: **8/7/2018**

Source: **PT-5A** Run Number: **3**

METALS FIELD DATA, US EPA METHODS 1-4 29

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H	Stack Temp. (°F)	Meter Temp. (°F)
1-1	0.66	0.8124	4.80	3.17	166	96
1-2	0.55	0.7416	4.80	2.64	165	98
1-3	0.48	0.6928	4.80	2.30	165	99
1-4	0.30	0.5477	4.80	1.44	165	99
1-5	0.24	0.4899	4.80	1.15	165	99
2-1	0.70	0.8367	4.80	3.36	166	100
2-2	0.60	0.7746	4.80	2.88	166	101
2-3	0.61	0.7810	4.80	2.93	165	102
2-4	0.31	0.5568	4.80	1.49	165	102
2-5	0.22	0.4690	4.80	1.06	165	101
3-1	0.70	0.8367	4.80	3.36	165	100
3-2	0.55	0.7416	4.80	2.64	165	100
3-3	0.32	0.5657	4.80	1.54	165	100
3-4	0.20	0.4472	4.80	0.96	165	100
3-5	0.12	0.3464	4.80	0.58	164	100
4-1	0.39	0.6245	4.80	1.87	164	100
4-2	0.70	0.8367	4.80	3.36	164	100
4-3	0.36	0.6000	4.80	1.73	164	100
4-4	0.26	0.5099	4.80	1.25	164	101
4-5	0.15	0.3873	4.80	0.72	164	101
5-1	0.40	0.6325	4.80	1.92	164	101
5-2	0.61	0.7810	4.80	2.93	163	100
5-3	0.52	0.7211	4.80	2.50	163	100
5-4	0.27	0.5196	4.80	1.30	163	100
5-5	0.16	0.4000	4.80	0.77	163	100
Average:	**0.42**	**0.6261**	**4.80**	**1.99**	**164.5**	**100.0**

Montrose Air Quality Services

Facility: HCM

City/State: KERSHAW SC

Source: PT 5A

Date: 8/7/18

Run No.: 3

Start Time:	Stop Time:
1340	
1346	1445

Moisture (Initial / Final / Totals): Impinger No. 1, Impinger No. 2, Impinger No. 3, Silica Gel — SEE RECOVERY SHEET

Analyst: KL

Assistant: JW

O_2 %: SEE CEMS DATA

CO_2 %:

Average:

Fyrite / Instrumental - Gas Analysis

EPA M. 3 § 11.2 - when using Fyrite repeat sampling until any 3 grab samples dry molecular weight differ from their mean by no more than 0.3 lb/lb-mole.

Field Balance ID: NC Scale 1

Calibration Wt. ID / Mass: 1

Response:

EPA M.4 § 10.3 - Balance must be within ± 0.5g of certified weight.

Job Number: 475060

Barometric Pressure: 30.09

Stack Pressure:

Stack Diameter:

K Factor: 4.8

Nozzle Calibrations

	Pre-Test:	Post-Test:
Measurement 1:	.255	.255
Measurement 2:	.255	.255
Measurement 3:	.255	.255
Average:	.255	.255

EPA M. 5 § 10.1 - The difference between the high and low nozzle measurements shall not exceed 0.004 inches.

Sample Train Leak Checks

	Volume (cfm)	Vacuum
Sample Train Pre-Test:	0.002	10
Sample Train Post-Test:	0.002	12

Pitot Leak Checks

	Positive	Negative
Pre- Pitot Check	4.6	5.2
Post-Pitot Check	4.8	5.0

Equipment Checklist

- NIST Kit ID:
- Meter Box ID: NC MS-2
- Delta H @: 2.034
- Y-Factor: 0.982
- Probe ID: 0.9
- C_p Value: 0.99
- Liner Material: GLASS
- Nozzle ID:
- Hot Box ID: NCHB 3
- Filter Exit ID:
- Impinger Outlet ID: NC GN11
- Filter ID:
- Fyrite ID:
- Acetone Lot No.

Dry Gas Meter Readings (Cubic Feet):

	1	2	3	4	Total Cubic Feet:
Final:	200.075				
Initial:	152.560				
Net:					

Port / Point	Time (min.)	Meter Reading (ft^3)	Delta P (in. H_2O)	Delta H (in. H_2O)	Stack (°F)	Probe (°F)	Oven (°F)	Impinger (°F)	Filter Outlet (°F)	Meter Avg. (°F)	Vacuum (in. Hg)	Other
1 / 1	0	152.560	0.66	3.17	166	246	251	62		96	4.0	
/ 2	2.5	154.890	0.55	2.64	165	246	248	58		98	4.0	
/ 3	5	157.010	0.48	2.30	165	248	248	53		99	4.0	
/ 4	7.5	159.420	0.30	1.44	165	247	249	54		99	4.0	
/ 5	10	161.215	0.24	1.15	165	247	248	54		99	5.0	
2 / 1	12.5	162.560	0.70	3.36	166	247	248	55		100	5.0	
/ 2	15	164.870	0.60	2.88	166	247	249	56		101	5.0	
/ 3	17.5	167.460	0.61	2.93	165	246	248	57		102	5.0	
/ 4	20	169.520	0.31	1.49	165	248	247	57		102	3.0	
/ 5	22.5	171.490	0.22	1.06	165	246	248	58		101	5.0	
3 / 1	25	172.950	0.70	3.36	165	247	248	58		100	5.0	
/ 2	27.5	175.560	0.55	2.64	165	248	248	59		100	5.0	
/ 3	30	177.945	0.32	1.54	165	248	248	56		100	3.0	
/ 4	32.5	179.390	0.20	0.96	165	247	248	56		100	2.0	
/ 5	35	180.760	0.12	0.58	164	249	248	57		100	2.0	
4 / 1	37.5	181.795	0.39	1.87	164	246	249	58		100	4.0	
/ 2	40	183.755	0.70	3.36	164	248	247	58		100	5.0	
/ 3	42.5	186.120	0.36	1.73	164	248	248	59		100	3.0	
/ 4	45	187.760	0.26	1.25	164	248	247	60		101	3.0	
/ 5	47.5	189.440	0.15	0.72	164	248	248	60		101	3.0	
5 / 1	50	190.735	0.40	1.92	164	249	245	60		101	3.0	
/ 2	52.5	192.570	0.61	2.93	163	248	247	61		100	5.0	
/ 3	55	194.845	0.52	2.50	163	247	245	61		100	5.0	
/ 4	57.5	197.360	0.27	1.30	163	247	249	61		100	3.0	
/ 5	60	199.010	0.16	0.77	163	245	246	62		100	2.0	
	62.5	200.075										

Field Notes:

Method(s) 29 Field Data Sheet

Field Technician Signature: [signature]

Date: 8/7/18

Montrose Air Quality Services

Facility: H6M

City/State: KERSHAW SC

Source: PT 5A

Date: 8/7/18

Run No.: 3 POST

Start Time: 1450 | Stop Time: 1500

Moisture

	Initial	Final	Totals
Impinger No. 1			
Impinger No. 2			
Impinger No. 3			
Silica Gel			

Analyst: KC

Assistant: JW

Fyrite / Instrumental - Gas Analysis

				Average:
O_2 %:				
CO_2 %:				

EPA M. 3 § 11.2 - when using Fyrite repeat sampling until any 3 grab samples dry molecular weight differ from their mean by no more than 0.3 lb/lb-mole.

Field Balance ID:

Calibration Wt. ID / Mass: 1

Response:

EPA M.4 § 10.3 - Balance must be within ± 0.5g of certified weight.

Job Number: 475060

Barometric Pressure: 30.09

Stack Pressure:

Stack Diameter:

K Factor: 4.8

Nozzle Calibrations

	Pre-Test:	Post-Test:
Measurement 1:		
Measurement 2:		
Measurement 3:		
Average:		

EPA M. 5 § 10.1 - The difference between the high and low nozzle measurements shall not exceed 0.004 inches.

Sample Train Leak Checks

Sample Train Pre-Test:

Volume (cfm)	Vacuum

Sample Train Post-Test:

Volume (cfm)	Vacuum

Pitot Leak Checks

Pre- Pitot Check

Positive	Negative
4.6	5.2

Post-Pitot Check

Positive	Negative
4.8	5.00

Dry Gas Meter Readings (Cubic Feet):

	1	2	3	4	Total Cubic Feet:
Final:					
Initial:					
Net:					

Equipment Checklist

NIST Kit ID:
Meter Box ID: NCMS-2
Delta H @: 2.034
Y-Factor 0.982
Probe ID:
C_p Value: 0.99
Liner Material: GLASS
Nozzle ID:
Hot Box ID:
Filter Exit ID:
Impinger Outlet ID:
Filter ID:
Fyrite ID:
Acetone Lot No.

Port / Point	Time (min.)	Meter Reading (ft^3)	Delta P (in. H_2O)	Delta H (in. H_2O)	Stack (°F)	Probe (°F)	Oven (°F)	Impinger (°F)	Filter Outlet (°F)	Meter Avg. (°F)	Vacuum (in. Hg)	Other
1 1			0.66		165							
1 2			0.52		165							
1 3			0.50		165							
1 4			0.32		166							
1 5			0.23		165							
2 1			0.68		166							
1 2			0.59		166							
1 3			0.60		165							
1 4			0.30		165							
1 5			0.24		165							
3 1			0.72		164							
1 2			0.54		164							
1 3			0.30		164							
1 4			0.24		164							
1 5			0.14		165							
4 1			0.42		165							
1 2			0.68		165							
1 3			0.34		165							
1 4			0.30		165							
1 5			0.18		165							
5 1			0.37		164							
1 2			0.67		164							
1 3			0.48		164							
1 4			0.30		164							
1 5			0.18		164							

Field Notes:

Method(s) 29 Field Data Sheet

Field Technician Signature: Kat Cook

Date: 8/7/18

Montrose Air Quality Services

METHOD 29 SAMPLE RECOVERY DATA SHEET

Client / Location: Haile Gold Mine Sampling Date(s): 8/7/18 PT-5A

Run No.: 1 Recovery Date: 8/7/18 Recovered By: CPS

Imp. Type	(M) Empty	(M) 100 ml	(w/ Tip) 100 ml	(M) Empty	(M) 100 ml	(M) 100 ml	
Impingers	1 (Optional)	2 (HNO3/H2O2)	3 (HNO3/H2O2)	4	5 (KMnO4)	6 (KMnO4)	7 (Silica Gel)
Final Wt.	655.4	881.7	780.3	673.8	751.3	755.3	959.2
Initial Wt.	588.8	775.3	724.6	659.2	744.0	747.7	947.8
Net Weight	66.6	106.4	55.7	14.6	2.3	7.6	11.4

Moisture Imp.: 263.2 Grams Moisture Gel.: 11.4 Grams 50 % Spent

Description of Particulate on filter: BLACK Silica Gel Color: BLUE/PINK

Run No.: 2 Recovery Date: 8/7/18 Recovered By: CPS

Imp. Type	(M) Empty	(M) 100 ml	(w/ Tip) 100 ml	(M) Empty	(M) 100 ml	(M) 100 ml	
Impingers	1 (Optional)	2 (HNO3/H2O2)	3 (HNO3/H2O2)	4	5 (KMnO4)	6 (KMnO4)	7 (Silica Gel)
Final Wt.	721.9	913.7	752.4	693.5	654.7	732.3	945.2
Initial Wt.	586.4	702.6	733.2	690.7	653.3	731.1	934.5
Net Weight	135.5	111.1	19.2	2.8	1.4	1.2	10.7

Moisture Imp.: 271.2 Grams Moisture Gel.: 10.7 Grams 50 % Spent

Description of Particulate on filter: BLACK Silica Gel Color: BLUE/PINK

Run No.: 3 Recovery Date: 8/7/18 Recovered By: CPS

Imp. Type	(M) Empty	(M) 100 ml	(w/ Tip) 100 ml	(M) Empty	(M) 100 ml	(M) 100 ml	
Impingers	1 (Optional)	2 (HNO3/H2O2)	3 (HNO3/H2O2)	4	5 (KMnO4)	6 (KMnO4)	7 (Silica Gel)
Final Wt.	638.6	813.1	778.7	636.5	701.5	653.5	927.5
Initial Wt.	563.7	729.2	709.2	612.8	695.5	648.0	914.8
Net Weight	74.9	83.9	69.5	23.7	16	5.5	12.7

Moisture Imp.: 273.5 Grams Moisture Gel.: 12.7 Grams 50 % Spent

Description of Particulate on filter: BLACK Silica Gel Color: BLUE/PINK

Run No.: _____ Recovery Date: _____ Recovered By: _____

Imp. Type	(M) Empty	(M) 100 ml	(w/ Tip) 100 ml	(M) Empty	(M) 100 ml	(M) 100 ml	
Impingers	1 (Optional)	2 (HNO3/H2O2)	3 (HNO3/H2O2)	4	5 (KMnO4)	6 (KMnO4)	7 (Silica Gel)
Final Wt.							
Initial Wt.							
Net Weight							

Moisture Imp.: _____ Grams Moisture Gel.: _____ Grams _____ % Spent

Description of Particulate on filter: _____ Silica Gel Color: _____

Team Leader Signature: _____ Date: _____

NC SCALE 1

SN 67517 — 500 g — 499.8 g

A.2

UNIT PT-5B

Montrose Air Quality Services

SOURCE OVERVIEW

SOURCE OWNER:	Haile Gold Mine		
PLANT LOCATION (CITY / STATE):	Kershaw SC		
SOURCE(S) NAME(S):	PT-5B		
SOURCE(S) CONDITION:	Compliance		
SOURCE(S) SHAPE:	Rectangular		
PROBE WASH CHEMICAL:	.1 N HNO3		
TEST PERFORMED:	Metals (Mercury) and O2/CO2		
REFERENCE METHOD TESTS:	Sample Location	US EPA Method	1
	Volumetric Flow	US EPA Method	2
	Molecular Weight	US EPA Method	3A
	Moisture Content	US EPA Method	4
	Total Metals	US EPA Method	29
PROJECT MANAGER	Chuck Sneeringer		
ENVIRONMENTAL ANALYST - PROJECT LEADER	Chuck Sneeringer		
ENVIRONMENTAL ANALYST - ASSISTANT	Kent Childers, Justin Watson		
OWNER'S REPRESENTATIVE:	Get their business card for the report.		
RULING AGENCY :	SCDHEC		
DATE(S) TEST CONDUCTED:	08/01/18		
MONTROSE PROJECT NUMBER:	009AS-451092		

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

INPUT TEST DATA

Client: **Haile Gold Mine** Job No.: **009AS-451092**

Source: **PT-5B** Data Input By: **Chuck Sneeringer**

Field Data	Symbol	Units	Test Data			
Run Number	-	-	1	2	3	AVERAGE
Test Date	-	-	08/01/18	08/01/18	08/01/18	-
Emission Test Run Time Began - Ended	-	Military Time	0955-1106	1215-1325	1415-1525	-
Sampling Time	θ	minutes	68	68	68	68
Stack Area	A_s	Ft^2	3.036	3.036	3.036	-
Barometric Pressure	P_{bar}	in. Hg	30.13	30.13	30.13	30.13
Stack Static Pressure	P_g	in. H_20	0.20	0.20	0.20	0.20
Pitot Tube Correction factor	C_p	-	0.84	0.84	0.84	0.84
Meter Calibration Factor	Y	-	0.982	0.982	0.982	0.982
Meter Delta H @	$\Delta H@$	in. H_20	2.034	2.034	2.034	2.034
Nozzle Diameter	D_n	inches	0.290	0.290	0.290	0.290
Initial Meter Volume	V_{mi}	dcf	937.200	977.705	19.500	-
Final Meter Volume	V_{mf}	dcf	977.215	1018.870	59.050	-
Total Leak Check Meter Volume During Test (If Applicable)	V_{mlc}	dcf	0.000	0.000	0.000	-
Total Meter Volume	V_m	dcf	40.015	41.165	39.550	40.243
Meter Temperature	t_m	°F	85.6	94.4	94.3	91.42
Avg. Orifice Delta H	ΔH	in. H_20	1.40	1.35	1.25	1.33
Impingers Weight Gain (Moisture)	W_{imp}	grams	29.9	33.0	40.4	34.4
Silica Gel Impinger Weight Gain (Moisture)	W_{sg}	grams	8.2	5.9	6.1	6.7
Oxygen Concentration, dry basis	O_2	% (d)	20.90	20.87	20.86	20.87
Carbon Dioxide Concentration, dry basis	CO_2	% (d)	0.18	0.16	0.06	0.13
Avg. Sq. Rt. of Delta P	$(sqrt\ \Delta P)_{avg}$	$(in.\ H_20)^{1/2}$	0.397	0.389	0.375	0.387
Stack Temperature	t_s	°F	87.3	94.5	96.5	93
Mercury	Hg	mg_{Hg}	1.00E-03	1.80E-03	1.30E-03	1.37E-03

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

CALCULATED TEST DATA

Client: **Haile Gold Mine** Job No.: **009AS-451092**

Source: **PT-5B** Data Input By: **Chuck Sneeringer**

Description	Formulas	Symbol	Units	Calculated Data			
Run Number		-	-	1	2	3	AVERAGE
Test Date		-	-	08/01/18	08/01/18	08/01/18	-
Emission Test Run Time Began - Ended		-	Military Time	0955-1106	1215-1325	1415-1525	-
1. Stack Pressure	$= P_{bar} + P_g / 13.6$	P_s	in. Hg	30.14	30.14	30.14	30.14
2. Meter Pressure	$= P_{bar} + \Delta H / 13.6$	P_m	in. Hg	30.23	30.23	30.22	30.23
3. Standard Meter Volume	$= (T_{std}/P_{std})$* Y* (V_m/T_m)* $(P_{bar} + \Delta H / 13.6)$	$V_{m(std)}$	dscf	38.425	38.899	37.369	38.231
4. Standard Volume of Water Vapor Condensed	$=0.04715*W_{wc}$	$V_{w(std)}$	scf	1.410	1.556	1.905	1.624
4a. Standard Volume of Water Collected in Silica Gel	$=0.04715*W_{sg}$	$V_{w(sg)std}$	scf	0.387	0.278	0.288	0.317
4b. Total Standard Volume of Water Collected	$=V_{w(std)imp} + V_{w(sg)std}$	$V_{w(std)}$	scf	1.796	1.834	2.192	1.941
5. Moisture Fraction	$=(V_{w(std)})/(V_{w(std)} + V_{m(std)})$	B_{ws}	fraction	0.0447	0.0450	0.0554	0.0484
9. Molecular Weight Of Stack Gas, dry basis	$= 0.32*(O_2)+ 0.44*(CO_2)+0.28*(100-(O_2)-(CO_2))$	M_d	lb/lb-mole	28.865	28.860	28.844	28.856
10. Molecular Weight Of Stack Gas, wet basis	$= M_d*(1-B_{ws})+18.0*(B_{ws})$	M_s	lb/lb-mole	28.393	28.371	28.243	28.336
11. Average Stack Gas Velocity	$= 85.49*C_p*(\text{sqrt } \Delta P)_{avg}*SQRT((T_s) / (P_s*M_s))$	v_s	ft/s	22.78	22.48	21.75	22.337
12. Stack Gas Flow @ Actual Conditions	$= 60*v_s*A_s$	Q_a	acfm	4,151	4,096	3,962	4,069
13. Stack Gas Flow @ Standard Conditions	$= Q_a*(T_{std}/T_s)*(P_s/P_{std})$	Q_s	scfm	4,034	3,929	3,787	3,917
14. Stack Gas Flow @ Dry Standard Conditions	$= Q_s*(1-B_{ws})*(T_{std}/T_s)*(P_s/P_{std})$	Q_{std}	dscfm	3,859	3,752	3,577	3,730
15m. Mercury Concentration @ Standard Condtions	$=(0.01543*mg_{Hg})/V_{m(std)}$	C_{Hg}	gr/dscf	0.0000	0.0000	0.0000	0.0000
21ad. Mercury Emissions	$= (60/7000)*c_{Hg}*Q_{std}$	lb/hr_{Hg}	lb/hr	0.00	0.00	0.00	0.00
24. Volume collected through nozzle	$=T_s/P_s*[0.002669*V_{lc} + V_m*Y*P_m/T_m]$	V_s	acf	41.326	42.459	41.382	41.722
26. Isokinetic Sampling Rate, Percent	$= 100*Vn / (60*v_s*A_n*\theta)$	I	%	97.64	101.67	102.44	100.58
Post Meter Orifice Cal. (EMC ALT-009 Yqa)		y_{qa}	-	1.0638	1.0258	1.0251	1.0382
% Difference, (Calibration must be within 5% of original Y-factor)							-5.73%
27j.Mercury Concentration	$=\mu g_{Hg}/V_{m(metric)std}$	C_{Hg}	µg/dscm	0.92	1.63	1.23	1.26

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: **Haile Gold Mine** Test Date: **8/1/2018**

Source: **PT-5B** Run Number: **1**

METALS FIELD DATA, US EPA METHODS 1-4 29

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H	Stack Temp. (°F)	Meter Temp. (°F)
1-1	0.09	0.3000	7.90	0.71	87	81
1-2	0.06	0.2449	7.90	0.47	87	82
1-3	0.06	0.2449	7.90	0.47	87	82
1-4	0.08	0.2828	7.90	0.63	87	83
1-5	0.10	0.3162	7.90	0.79	87	82
1-6	0.15	0.3873	7.90	1.19	87	83
1-7	0.32	0.5657	7.90	2.53	87	84
1-8	0.49	0.7000	7.90	3.87	87	84
1-9	0.60	0.7746	7.90	4.74	87	84
2-1	0.10	0.3162	7.90	0.79	87	86
2-2	0.07	0.2646	7.90	0.55	87	85
2-3	0.06	0.2449	7.90	0.47	87	86
2-4	0.06	0.2449	7.90	0.47	87	85
2-5	0.10	0.3162	7.90	0.79	87	87
2-6	0.14	0.3742	7.90	1.11	87	86
2-7	0.25	0.5000	7.90	1.98	87	87
2-8	0.33	0.5745	7.90	2.61	87	87
2-9	0.35	0.5916	7.90	2.77	87	88
3-1	0.11	0.3317	7.90	0.87	87	87
3-2	0.10	0.3162	7.90	0.79	87	87
3-3	0.12	0.3464	7.90	0.95	88	88
3-4	0.11	0.3317	7.90	0.87	88	88
3-5	0.13	0.3606	7.90	1.03	88	87
3-6	0.15	0.3873	7.90	1.19	88	88
3-7	0.19	0.4359	7.90	1.50	88	88
3-8	0.24	0.4899	7.90	1.90	88	88
3-9	0.22	0.4690	7.90	1.74	90	88
Average:	**0.18**	**0.3968**	**7.90**	**1.40**	**87.3**	**85.6**

Montrose Air Quality Services

Facility: H6M

City/State: KERSHAW SC

Source: PT 5B

Date: 3/1/18

Run No.: 1

Start Time: 0955 | Stop Time: 1106

Moisture	Initial	Final	Totals	Analyst:
Impinger No. 1			STATED	KC
Impinger No. 2				
Impinger No. 3				Assistant:
Silica Gel	SEE FOLLOWING			JW, CS

Fyrite / Instrumental - Gas Analysis

				Average:
O_2 %:				
CO_2 %:				

EPA M. 3 § 11.2 - when using Fyrite repeat sampling until any 3 grab samples dry molecular weight differ from their mean by no more than 0.3 lb/lb-mole.

Field Balance ID: NL SCALE
Calibration Wt. ID / Mass: G75171 500g
Response: 499.6
EPA M.4 § 10.3 - Balance must be within ± 0.5g of certified weight.
Job Number: 451092
Barometric Pressure: 30.13
Stack Pressure: 0.20
Stack Diameter: 16.5 × 26.5
K Factor: 7.90

Nozzle Calibrations

	Pre-Test:	Post-Test:
Measurement 1:	.290	.290
Measurement 2:	.290	.290
Measurement 3:	.290	.290
Average:	.290	.290

EPA M. 5 § 10.1 - The difference between the high and low nozzle measurements shall not exceed 0.004 inches.

Sample Train Leak Checks

Sample Train Pre-Test:

Volume (cfm)	Vacuum
0.001	15

Sample Train Post-Test:

Volume (cfm)	Vacuum
0.002	12

Pitot Leak Checks

Pre- Pitot Check

Positive	Negative
4.6	5.2

Post-Pitot Check

Positive	Negative
4.2	4.8

Dry Gas Meter Readings (Cubic Feet):

	1	2	3	4	
Final:	972.215 (KC 3/1/18)	977.215			Total Cubic Feet:
Initial:	937.200				
Net:	35.015 (100)	40.015			40.015
	911				

Equipment Checklist

NIST Kit ID:	
Meter Box ID:	NCM8B
Delta H @:	2.034
Y-Factor	0.982
Probe ID:	NC 37C
C_p Value:	0.84
Liner Material:	GLASS
Nozzle ID:	
Hot Box ID:	NCHB3
Filter Exit ID:	-
Impinger Outlet ID:	NCGN11
Filter ID:	- R1
Fyrite ID:	-
Acetone Lot No.	-

Port / Point	Time (min.)	Meter Reading (ft^3)	Delta P (in. H_2O)	Delta H (in. H_2O)	Stack (°F)	Probe (°F)	Oven (°F)	Impinger (°F)	Filter Outlet (°F)	Meter Avg. (°F)	Vacuum (in. Hg)	Other
1 1	0	937.200	0.09	0.71	87	247	250	64		81	1	
1 2	2.5	938.560	0.06	0.47	87	248	249	58		82	1	
1 3	5	939.380	0.06	0.47	87	248	245	56		82	1	
1 4	7.5	940.310	0.08	0.63	87	247	248	54		83	1	
1 5	10	941.370	0.10	0.79	87	247	248	53		82	1	
1 6	12.5	142.680	0.15	1.19	87	246	243	51		83	1	
1 7	15	944.275	0.32	2.53	87	247	247	50		84	4	
1 8	17.5	145.910	0.49	3.87	87	246	244	50		84	5	
1 9	20	948.230	0.60	4.74	87	248	250	50		84	5	
2 1	22.5	951.260	0.10	0.79	87	246	248	52		86	2	
1 2	25	952.240	0.07	0.55	87	248	245	54		85	2	
1 3	27.5	953.375	0.06	0.47	87	248	250	56		86	2	
1 4	30	954.570	0.06	0.47	87	247	248	57		85	2	
1 5	32.5	955.540	0.10	0.79	87	247	244	56		87	2	
1 6	35	956.750	0.14	1.11	87	247	243	54		86	2	
1 7	37.5	958.260	0.25	1.98	87	247	248	54		87	2	
1 8	40	960.145	0.33	2.61	87	246	247	53		87	2	
1 9	42.5	961.870	0.35	2.77	87	247	248	53		88	4	
3 1	45	964.140	0.11	0.87	87	247	248	56		87	2	
1 2	47.5	965.490	0.10	0.79	87	248	243	57		87	2	
1 3	50	966.870	0.12	0.95	88	247	242	57		88	2	
1 4	52.5	968.240	0.11	0.87	88	247	247	57		88	2.0	
1 5	55	969.460	0.13	1.03	88	246	250	57		87	3.0	
1 6	57.5	970.545	0.15	1.19	88	248	246	58		88	3.0	
1 7	60	972.120	0.19	1.50	88	248	250	56		88	3.0	

Field Notes:

Method(s) 29 Field Data Sheet

Field Technician Signature: Kurt Chilcoat

Date: 3/1/18

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: **Haile Gold Mine** Test Date: **8/1/2018**

Source: **PT-5B** Run Number: **2**

METALS FIELD DATA, US EPA METHODS 1-4 29

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H	Stack Temp. (°F)	Meter Temp. (°F)
1-1	0.06	0.2449	8.00	0.48	94	90
1-2	0.06	0.2449	8.00	0.48	94	89
1-3	0.09	0.3000	8.00	0.72	94	91
1-4	0.10	0.3162	8.00	0.80	94	91
1-5	0.14	0.3742	8.00	1.12	94	92
1-6	0.18	0.4243	8.00	1.44	94	92
1-7	0.30	0.5477	8.00	2.40	94	94
1-8	0.48	0.6928	8.00	3.84	94	94
1-9	0.60	0.7746	8.00	4.80	94	94
2-1	0.11	0.3317	8.00	0.88	94	95
2-2	0.08	0.2828	8.00	0.64	94	96
2-3	0.07	0.2646	8.00	0.56	94	95
2-4	0.06	0.2449	8.00	0.48	94	94
2-5	0.08	0.2828	8.00	0.64	94	95
2-6	0.12	0.3464	8.00	0.96	94	95
2-7	0.24	0.4899	8.00	1.92	95	95
2-8	0.30	0.5477	8.00	2.40	95	96
2-9	0.29	0.5385	8.00	2.32	95	97
3-1	0.10	0.3162	8.00	0.80	95	96
3-2	0.09	0.3000	8.00	0.72	95	96
3-3	0.08	0.2828	8.00	0.64	95	96
3-4	0.10	0.3162	8.00	0.80	95	95
3-5	0.10	0.3162	8.00	0.80	95	95
3-6	0.14	0.3742	8.00	1.12	96	95
3-7	0.20	0.4472	8.00	1.60	96	97
3-8	0.20	0.4472	8.00	1.60	95	96
3-9	0.20	0.4472	8.00	1.60	95	97
Average:	**0.17**	**0.3888**	**8.00**	**1.35**	**94.5**	**94.4**

Montrose Air ality Services

Facility:	H6M
City/State:	KERSHAW SC
Source:	PT 5B
Date:	8/1/18
Run No.:	R2
Start Time:	1215
Stop Time:	1325

Moisture	Initial	Final	Totals
Impinger No. 1	SEE RECOVERY SHEETS		
Impinger No. 2			
Impinger No. 3			
Silica Gel			

Analyst:	KC
Assistant:	JW

Fyrite / Instrumental - Gas Analysis

		Average:
O_2 %:	SEE CEMS DATA	
CO_2 %:		

EPA M. 3 § 11.2 - when using Fyrite repeat sampling until any 3 grab samples dry molecular weight differ from their mean by no more than 0.3 lb/lb-mole.

Field Balance ID:	Scale 1
Calibration Wt. ID / Mass:	67517 5006
Response:	499.6
Job Number:	451092
Barometric Pressure:	30.13
Stack Pressure:	0.20
Stack Diameter:	16.5 x 26.5
K Factor:	8.0

EPA M.4 § 10.3 - Balance must be within ± 0.5g of certified weight.

Nozzle Calibrations

	Pre-Test:	Post-Test:
Measurement 1:	.290	.290
Measurement 2:	.290	.290
Measurement 3:	.290	.290
Average:	.290	.290

EPA M. 5 § 10.1 - The difference between the high and low nozzle measurements shall not exceed 0.004 inches.

Sample Train Leak Checks

	Volume (cfm)	Vacuum
Sample Train Pre-Test:	0.002	10
Sample Train Post-Test:	0.006	10

Pitot Leak Checks

	Positive	Negative
Pre- Pitot Check	4.6	5.0
Post-Pitot Check	5.2	4.8

Dry Gas Meter Readings (Cubic Feet):

	1	2	3	4
Final:	1018.870			
Initial:	977.705			
Net:	41.165			

Total Cubic Feet: 41.165

Equipment Checklist

NIST Kit ID:	
Meter Box ID:	NC MB 2
Delta H @:	2.034
Y-Factor	0.982
Probe ID:	NC 37 C
C_p Value:	0.84
Liner Material:	Glass
Nozzle ID:	—
Hot Box ID:	NC HB 3
Filter Exit ID:	—
Impinger Outlet ID:	NC 6N11
Filter ID:	. R2
Fyrite ID:	—
Acetone Lot No.	—

Port / Point	Time (min.)	Meter Reading (ft^3)	Delta P (in. H_2O)	Delta H (in. H_2O)	Stack (°F)	Probe (°F)	Oven (°F)	Impinger (°F)	Filter Outlet (°F)	Meter Avg. (°F)	Vacuum (in. Hg)	Other
1 11	0	977.705	0.06	0.48	94	246	250	60		90	1	
12	2.5	978.740	0.06	0.48	94	247	251	58		89	1	
13	5	979.210	0.09	0.72	94	248	250	54		91	2	
14	7.5	980.940	0.10	0.80	94	247	251	52		91	2	
15	10	982.240	0.14	1.12	94	248	247	51		92	2	
16	12.5	983.610	0.18	1.44	94	247	247	51		92	~	
17	15	985.250	0.30	2.40	94	247	248	49		94	2	
18	17.5	988.960	0.48	3.84	94	246	247	49		94	2	
19	20	990.925	0.60	4.80	94	248	248	50		94	2	
2 11	22.5	992.820	0.11	0.88	94	248	249	51		95	2	
12	25	994.260	0.08	0.64	94	247	247	51		96	2	
13	27.5	995.560	0.07	0.56	94	247	249	51		95	2	
14	30	996.625	0.06	0.48	94	247	249	51		94	2	
15	32.5	997.530	0.08	0.64	94	247	248	52		95	2	
16	35	998.790	0.12	0.96	94	248	249	30		95	2	
17	37.5	1000.340	0.24	1.92	95	248	245	51		95	2	
18	40	1001.560	0.30	2.40	95	246	246	51		96	3	
19	42.5	1004.210	0.29	2.32	95	246	248	51		97	3	
3 11	45	1005.610	0.10	0.80	95	247	252	53		96	3	
12	47.5	1007.140	0.09	0.72	95	247	249	54		96	2	
13	50	1008.425	0.08	0.64	95	247	249	54		96	2	
14	52.5	1009.680	0.10	0.80	95	248	248	54		95	2	
15	55	1010.840	0.10	0.80	95	247	248	53		96	2	
16	57.5	1012.050	0.14	1.12	96	247	243	53		95	2	
17	60	1013.420	0.20	1.60	96	246	248	52		97	2.	

Field Notes:

Method(s) 29 Field Data Sheet

Field Technician Signature: K. Gelder

Date: 8/1/18

8-1-18 SCDHEC JEJ

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: **Haile Gold Mine** Test Date: **8/1/2018**

Source: **PT-5B** Run Number: **3**

METALS FIELD DATA, US EPA METHODS 1-4 29

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H	Stack Temp. (°F)	Meter Temp. (°F)
1-1	0.06	0.2449	8.00	0.48	97	92
1-2	0.06	0.2449	8.00	0.48	97	91
1-3	0.08	0.2828	8.00	0.64	96	92
1-4	0.08	0.2828	8.00	0.64	96	92
1-5	0.18	0.4243	8.00	1.44	96	92
1-6	0.30	0.5477	8.00	2.40	96	92
1-7	0.32	0.5657	8.00	2.56	96	93
1-8	0.45	0.6708	8.00	3.60	96	95
1-9	0.54	0.7348	8.00	4.32	96	96
2-1	0.10	0.3162	8.00	0.80	96	95
2-2	0.08	0.2828	8.00	0.64	96	95
2-3	0.07	0.2646	8.00	0.56	96	94
2-4	0.08	0.2828	8.00	0.64	96	94
2-5	0.07	0.2646	8.00	0.56	96	95
2-6	0.10	0.3162	8.00	0.80	96	94
2-7	0.12	0.3464	8.00	0.96	96	94
2-8	0.20	0.4472	8.00	1.60	97	95
2-9	0.26	0.5099	8.00	2.08	97	96
3-1	0.10	0.3162	8.00	0.80	97	96
3-2	0.10	0.3162	8.00	0.80	97	96
3-3	0.12	0.3464	8.00	0.96	97	95
3-4	0.12	0.3464	8.00	0.96	97	96
3-5	0.11	0.3317	8.00	0.88	97	96
3-6	0.12	0.3464	8.00	0.96	97	95
3-7	0.11	0.3317	8.00	0.88	97	95
3-8	0.14	0.3742	8.00	1.12	97	95
3-9	0.14	0.3742	8.00	1.12	97	95
Average:	**0.16**	**0.3746**	**8.00**	**1.25**	**96.5**	**94.3**

Montrose Air ality Services

Facility: H6M

City/State: KERSHAW SC

Source: PT 5B

Date: 8/1/18

Run No.: 3

Start Time: 1415 | Stop Time: 1525

Moisture

	Initial	Final	Totals
Impinger No. 1			
Impinger No. 2			
Impinger No. 3	SEE	REVERSE SHEET	
Silica Gel			

Analyst: KW

Assistant: JW

Fyrite / Instrumental - Gas Analysis

		Average
O_2 %:	SEE CEMS DATA	
CO_2 %:		

EPA M. 3 § 11.2 - when using Fyrite repeat sampling until any 3 grab samples dry molecular weight differ from their mean by no more than 0.3 lb/lb-mole.

Field Balance ID: NC SOAHE1

Calibration Wt. ID / Mass: 675171 500g

Response: 499.6

EPA M.4 § 10.3 - Balance must be within ± 0.5g of certified weight.

Job Number: 451092

Barometric Pressure: 30.13

Stack Pressure: 0.20

Stack Diameter: 16.5 x 26.5

K Factor: 8.0

Nozzle Calibrations

	Pre-Test:	Post-Test:
Measurement 1:	.290	.290
Measurement 2:	.290	.290
Measurement 3:	.290	.290
Average:	.290	.290

EPA M. 5 § 10.1 - The difference between the high and low nozzle measurements shall not exceed 0.004 inches.

Sample Train Leak Checks

Sample Train Pre-Test:

Volume (cfm)	Vacuum
0.001	12

Sample Train Post-Test:

Volume (cfm)	Vacuum
0.002	10

Pitot Leak Checks

Pre- Pitot Check

Positive	Negative
4.8	5.2

Post-Pitot Check

Positive	Negative
4.6	5.0

Dry Gas Meter Readings (Cubic Feet):

	1	2	3	4	Total Cubic Feet:
Final:	59.050				39.550
Initial:	19.500				
Net:	39.550				

Equipment Checklist

NIST Kit ID:

Meter Box ID: NCMB 2

Delta H @: 2.034

Y-Factor: 0.982

Probe ID: NC 37C

C_p Value: 0.84

Liner Material: GLASS

Nozzle ID: —

Hot Box ID: NC HB 2

Filter Exit ID: -

Impinger Outlet ID: NC AN 11

Filter ID: - 123

Fyrite ID: -

Acetone Lot No.: -

Port / Point	Time (min.)	Meter Reading (ft^3)	Delta P (in. H_2O)	Delta H (in. H_2O)	Stack (°F)	Probe (°F)	Oven (°F)	Impinger (°F)	Filter Outlet (°F)	Meter Avg. (°F)	Vacuum (in. Hg)	Other
1 1	0	19.500	0.06	0.48	97	248	248	60		92	2	
1 2	2.5	20.460	0.06	0.48	97	246	245	59		91	2	
1 3	5	21.520	0.08	0.64	96	247	251	58		92	2	
1 4	7.5	22.740	0.08	0.64	96	246	241	58		92	2	
1 5	10	24.020	0.18	2.88 1.44	96	247	246	59		92	2	
1 6	12.5	25.890	0.30	2.40	96	246	251	56		92	4	
1 7	15	26.920	0.32	2.56	96	247	250	54		93	4	
1 8	17.5	29.760	0.45	3.60	96	247	244	51		95	4	
1 9	20	31.940	0.54	4.32	96	247	245	51		96	5	
2 1	22.5	34.540	0.10	0.80	96	246	248	53		95	2	
1 2	25	36.010	0.08	0.64	96	249	248	54		95	2	
1 3	27.5	37.360	0.07	0.56	96	250	249	55		94	2	
1 4	30	38.410	0.08	0.64	96	251	248	55		94	2	
1 5	32.5	39.620	0.07	0.56	96	250	249	55		95	2	
1 6	35	40.600	0.10	0.80	96	246	248	56		94	2	
1 7	37.5	41.740	0.12	0.96	96	247	248	56		94	2	
1 8	40	43.175	0.20	1.60	97	247	248	55		95	2	
1 9	42.5	45.460	0.26	2.08	97	247	248	56		96	4	
3 1	45	46.715	0.10	0.80	97	246	247	57		96	2	
1 2	47.5	48.030	0.10	0.80	97	246	250	57		96	2	
1 3	50	49.280	0.12	0.96	97	247	250	58		95	2	
1 4	52.5	50.760	0.12	0.96	97	247	248	58		96	2	
1 5	55	51.975	0.11	0.88	97	247	248	58		96	2	
1 6	57.5	53.640	0.12	0.96	97	247	249	57		95	2	
1 7	60	54.720	0.11	0.88	97	246	250	57		95	2	

Field Notes:

Method(s) 29 Field Data Sheet

Field Technician Signature:

Date: 8/1/18

Montrose Air Quality Services

Facility: HGM

City/State: KELSHAW SC

Source: PT 5B

Date: 8/1/18

Run No.: 3

Start Time:	Stop Time:
1445	1545

Moisture	Initial	Final	Totals
Impinger No. 1			
Impinger No. 2			
Impinger No. 3			
Silica Gel			

SEE RECOVERY SHEET

Analyst: KC

Assistant: JW

Fyrite / Instrumental - Gas Analysis — Average:

O_2 %: SEE CEMS DATA

CO_2 %:

EPA M. 3 § 11.2 - when using Fyrite repeat sampling until any 3 grab samples dry molecular weight differ from their mean by no more than 0.3 lb/lb-mole.

Field Balance ID: NC SCALE1

Calibration Wt. ID / Mass: 675171 500G

Response:

EPA M.4 § 10.3 - Balance must be within ± 0.5g of certified weight.

Job Number: 451092

Barometric Pressure: 30.13

Stack Pressure: 0.20

Stack Diameter: 16.5 x 26.5

K Factor: 8.0

Nozzle Calibrations

	Pre-Test:	Post-Test:
Measurement 1:	.290	.290
Measurement 2:	.290	.290
Measurement 3:	.290	.290
Average:	.290	.290

EPA M. 5 § 10.1 - The difference between the high and low nozzle measurements shall not exceed 0.004 inches.

Sample Train Leak Checks

	Volume (cfm)	Vacuum
Sample Train Pre-Test:	0.001	12
Sample Train Post-Test:	0.002	10

Pitot Leak Checks

	Positive	Negative
Pre-Pitot Check	4.8	5.2
Post-Pitot Check	4.6	5.0

Dry Gas Meter Readings (Cubic Feet):

	1	2	3	4
Final:	59.050			
Initial:	19.500			
Net:	39.550			

Total Cubic Feet: 39.550

Equipment Checklist

NIST Kit ID:	
Meter Box ID:	NCMB2
Delta H @:	2.034
Y-Factor	0.982
Probe ID:	NC37C
C_p Value:	0.84
Liner Material:	GLASS
Nozzle ID:	–
Hot Box ID:	NCHB3
Filter Exit ID:	–
Impinger Outlet ID:	NC GN11
Filter ID:	-23
Fyrite ID:	–
Acetone Lot No.	–

Port / Point	Time (min.)	Meter Reading (ft^3)	Delta P (in. H_2O)	Delta H (in. H_2O)	Stack (°F)	Probe (°F)	Oven (°F)	Impinger (°F)	Filter Outlet (°F)	Meter Avg. (°F)	Vacuum (in. Hg)	Other
3 / 8	62.5	55.460	0.14	1.12	97	247	249	58		95	2	
/ 9	65	57.610	0.14	1.12	97	242	239	58		95	2	
/	67.5	59.050										
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Field Notes:

Method(s) 29 **Field Data Sheet**

Field Technician Signature: Kent Cook

Date: 8/1/18

Montrose Air Quality Services

METHOD 29 SAMPLE RECOVERY DATA SHEET

Client / Location: Haile Gold Mine ~~Sampling Date(s):~~ PT-5B 8/1/18

Run No.: 1 Recovery Date: 8/1/18 Recovered By: CPS

Imp. Type	(M) Empty	(M) 100 ml	(w/ Tip) 100 ml	(M) Empty	(M) 100 ml	(M) 100 ml	
Impingers	1 (Optional)	2 (HNO3/H2O2)	3 (HNO3/H2O2)	4	5 (KMnO4)	6 (KMnO4)	7 (Silica Gel)
Final Wt.	—	763.4	719.6	623.2	775.6	721.1	881.4
Initial Wt.	—	746.7	709.0	621.1	775.6	720.6	873.2
Net Weight	—	16.7	10.6	2.1	0	0.5	8.2

Moisture Imp.: 29.9 Grams Moisture Gel.: 8.2 Grams 50 % Spent

Description of Particulate on filter: None Apparent Silica Gel Color: Blue/Pink

Run No.: 2 Recovery Date: 8/1/18 Recovered By: CPS

Imp. Type	(M) Empty	(M) 100 ml	(w/ Tip) 100 ml	(M) Empty	(M) 100 ml	(M) 100 ml	
Impingers	1 (Optional)	2 (HNO3/H2O2)	3 (HNO3/H2O2)	4	5 (KMnO4)	6 (KMnO4)	7 (Silica Gel)
Final Wt.	—	791.9	778.0	638.4	673.8	760.0	815.6
Initial Wt.	—	766.5	771.1	638.3	673.6	759.6	809.7
Net Weight	—	25.4	6.9	0.1	0.2	0.4	5.9

Moisture Imp.: 33 Grams Moisture Gel.: 5.9 Grams 50 % Spent

Description of Particulate on filter: None Apparent Silica Gel Color: Blue/Pink

Run No.: 3 Recovery Date: 8/1/18 Recovered By: CPS

Imp. Type	(M) Empty	(M) 100 ml	(w/ Tip) 100 ml	(M) Empty	(M) 100 ml	(M) 100 ml	
Impingers	1 (Optional)	2 (HNO3/H2O2)	3 (HNO3/H2O2)	4	5 (KMnO4)	6 (KMnO4)	7 (Silica Gel)
Final Wt.	—	792.4	736.5	578.0	656.1	645.0	924.3
Initial Wt.	—	761.6	728.1	577.2	655.3	645.4	918.2
Net Weight	—	30.8	8.4	0.8	0.8	-0.4	6.1

Moisture Imp.: 40.4 Grams Moisture Gel.: 6.1 Grams 50 % Spent

Description of Particulate on filter: None Apparent Silica Gel Color: Blue/Pink

Run No.: _____ Recovery Date: _____ Recovered By: _____

Imp. Type	(M) Empty	(M) 100 ml	(w/ Tip) 100 ml	(M) Empty	(M) 100 ml	(M) 100 ml	
Impingers	1 (Optional)	2 (HNO3/H2O2)	3 (HNO3/H2O2)	4	5 (KMnO4)	6 (KMnO4)	7 (Silica Gel)
Final Wt.							
Initial Wt.							
Net Weight							

Moisture Imp.: _____ Grams Moisture Gel.: _____ Grams _____ % Spent

Description of Particulate on filter: _____ Silica Gel Color: _____

Team Leader Signature: _____ Date: _____

67517
500g = 499.6g
NC Scale 1 CPS

A.3

UNIT PT-6

Montrose Air Quality Services

SOURCE OVERVIEW

SOURCE OWNER:	Haile Gold Mine		
PLANT LOCATION (CITY / STATE):	Kershaw SC		
SOURCE(S) NAME(S):	PT-6		
SOURCE(S) CONDITION:	Compliance		
SOURCE(S) SHAPE:	Circular		
PROBE WASH CHEMICAL:	.1 N HNO3		
TEST PERFORMED:	Metals (Mercury) and O2/CO2		
REFERENCE METHOD TESTS:	Sample Location	US EPA Method	1
	Volumetric Flow	US EPA Method	2
	Molecular Weight	US EPA Method	3A
	Moisture Content	US EPA Method	4
	Total Metals	US EPA Method	29
PROJECT MANAGER	Chuck Sneeringer		
ENVIRONMENTAL ANALYST - PROJECT LEADER	Chuck Sneeringer		
ENVIRONMENTAL ANALYST - ASSISTANT	Kent Childers, Justin Watson		
RULING AGENCY :	SCDHEC		
DATE(S) TEST CONDUCTED:	07/31/18		
MONTROSE PROJECT NUMBER:	009AS-451092		

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

INPUT TEST DATA

Client: **Haile Gold Mine** Job No.: **009AS-451092**

Source: **PT-6** Data Input By: **Chuck Sneeringer**

Field Data	Symbol	Units	Test Data			
Run Number	-	-	1	2	3	AVERAGE
Test Date	-	-	07/31/18	07/31/18	07/31/18	-
Emission Test Run Time Began - Ended	-	Military Time	1037-1144	1222-1331	1354-1501	-
Sampling Time	θ	minutes	64	64	64	64
Stack Area	A_s	Ft^2	1.069	1.069	1.069	-
Barometric Pressure	P_{bar}	in. Hg	30.04	30.04	30.04	30.04
Stack Static Pressure	P_g	in. H_20	-5.60	-5.60	-5.60	-5.60
Pitot Tube Correction factor	C_p	-	0.84	0.84	0.84	0.84
Meter Calibration Factor	Y	-	0.982	0.982	0.982	0.982
Meter Delta H @	ΔH@	in. H_20	2.034	2.034	2.034	2.034
Nozzle Diameter	D_n	inches	0.220	0.220	0.220	0.220
Initial Meter Volume	V_{mi}	dcf	753.901	816.000	876.604	-
Final Meter Volume	V_{mf}	dcf	813.543	876.266	936.717	-
Total Leak Check Meter Volume During Test (If Applicable)	V_{mlc}	dcf	0.000	0.000	0.000	-
Total Meter Volume	V_m	dcf	59.642	60.266	60.113	60.007
Meter Temperature	t_m	°F	96.6	100.5	101.3	99.46
Avg. Orifice Delta H	ΔH	in. H_20	2.94	2.97	2.97	2.96
Impingers Weight Gain (Moisture)	W_{imp}	grams	31.6	31.2	31.8	31.5
Silica Gel Impinger Weight Gain (Moisture)	W_{sg}	grams	14.4	15.2	12.7	14.1
Oxygen Concentration, dry basis	O_2	% (d)	20.90	20.89	20.89	20.90
Carbon Dioxide Concentration, dry basis	CO_2	% (d)	0.02	0.16	0.04	0.07
Avg. Sq. Rt. of Delta P	$(sqrt\ \Delta P)_{avg}$	$(in.\ H_20)^{1/2}$	1.043	1.049	1.049	1.047
Stack Temperature	t_s	°F	88.9	95.8	100.6	95
Mercury	Hg	mg_{Hg}	< 0.11	< 0.17	< 0.10	< 0.12

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

CALCULATED TEST DATA

Client: **Haile Gold Mine** Job No.: **009AS-451092**

Source: **PT-6** Data Input By: **Chuck Sneeringer**

Description	Formulas	Symbol	Units	Calculated Data			
Run Number		-	-	1	2	3	AVERAGE
Test Date		-	-	07/31/18	07/31/18	07/31/18	-
Emission Test Run Time Began - Ended		-	Military Time	1037-1144	1222-1331	1354-1501	-
1. Stack Pressure	$= P_{bar} + P_g / 13.6$	P_s	in. Hg	29.63	29.63	29.63	29.63
2. Meter Pressure	$= P_{bar} + \Delta H / 13.6$	P_m	in. Hg	30.26	30.26	30.26	30.26
3. Standard Meter Volume	$= (T_{std}/P_{std})^* Y^* (V_m/T_m)^* (P_{bar} + \Delta H / 13.6)$	$V_{m(std)}$	dscf	56.187	56.380	56.156	56.241
3a. (Metric) Standard Meter Volume	$=V_{m(std)}{}^* 0.0283168465921$	$V_{m(std)-metric}$	dscm	1.591	1.597	1.590	1.593
4. Standard Volume of Water Vapor Condensed	$=0.04715^*W_{mcf}$	$V_{w(std)}$	scf	1.490	1.471	1.499	1.487
4a. Standard Volume of Water Collected in Silica Gel	$=0.04715^*W_{sg}$	$V_{wsg(std)}$	scf	0.679	0.717	0.599	0.665
4b. Total Standard Volume of Water Collected	$=V_{w(std)imp} + V_{wsg(std)sg}$	$V_{w(std)}$	scf	2.169	2.188	2.098	2.152
5. Moisture Fraction	$=(V_{w(std)})/(V_{w(std)} + V_{m(std)})$	B_{ws}	fraction	0.0372	0.0374	0.0360	0.0368
9. Molecular Weight Of Stack Gas, dry basis	$= 0.32^*(O_2)+ 0.44^*(CO_2)+0.28^*(100-(O_2)-(CO_2))$	M_d	lb/lb-mole	28.839	28.862	28.842	28.847
10. Molecular Weight Of Stack Gas, wet basis	$= M_d^*(1-B_{ws})+18.0^*(B_{ws})$	M_s	lb/lb-mole	28.436	28.456	28.451	28.448
11. Average Stack Gas Velocity	$= 85.49^*C_p^*(\text{sqrt }\Delta P)_{avg}{}^*SQRT((T_s) / (P_s^*M_s))$	v_s	ft/s	60.44	61.15	61.42	61.004
12. Stack Gas Flow @ Actual Conditions	$= 60^*v_s{}^*A_s$	Q_a	acfm	3,877	3,922	3,939	3,913
13. Stack Gas Flow @ Standard Conditions	$= Q_a{}^*(T_{std}/T_s)^*(P_s/P_{std})$	Q_s	scfm	3,693	3,690	3,674	3,686
14. Stack Gas Flow @ Dry Standard Conditions	$= Q_s{}^*(1-B_{ws})^*(T_{std}/T_s)^*(P_s/P_{std})$	Q_{sd}	dscfm	3,555	3,552	3,542	3,550
24. Volume collected through nozzle	$=T_s/P_s{}^*[0.002669^*V_{lc}+ V_m{}^*Y^*P_m/T_m]$	V_n	acf	61.264	62.258	62.453	61.992
26. Isokinetic Sampling Rate, Percent	$= 100^*Vn / (60^*v_s{}^*A_n{}^*\theta)$	I	%	99.99	100.43	100.31	100.25
Post Meter Orifice Cal. (EMC ALT-009 Yqa)		Y_{qa}	-	0.9904	0.9888	0.9924	0.9905
% Difference, (Calibration must be within 5% of original Y-factor)							-0.87%
27j.Mercury Concentration	$=\mu g_{Hg}/V_{m(std)(gas)}$	C_{Hg}	µg/dscm	67.12653032	107.1087484	60.6860973	78.30712534

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: **Haile Gold Mine** Test Date: **7/31/2018**

Source: **PT-6** Run Number: **1**

METALS FIELD DATA, US EPA METHODS 1-4 29

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H	Stack Temp. (°F)	Meter Temp. (°F)
1-1	1.00	1.0000	2.70	2.70	87	86
1-1	1.10	1.0488	2.70	2.97	88	89
1-2	1.10	1.0488	2.70	2.97	88	92
1-2	1.10	1.0488	2.70	2.97	88	95
1-3	1.10	1.0488	2.70	2.97	88	95
1-3	1.10	1.0488	2.70	2.97	88	97
1-4	1.10	1.0488	2.70	2.97	88	97
1-4	1.00	1.0000	2.70	2.70	88	98
2-1	1.10	1.0488	2.70	2.97	89	97
2-1	1.10	1.0488	2.70	2.97	89	97
2-2	1.10	1.0488	2.70	2.97	89	98
2-2	1.10	1.0488	2.70	2.97	90	100
2-3	1.10	1.0488	2.70	2.97	90	100
2-3	1.10	1.0488	2.70	2.97	91	101
2-4	1.10	1.0488	2.70	2.97	91	102
2-4	1.10	1.0488	2.70	2.97	91	101
Average:	**1.09**	**1.0427**	**2.70**	**2.94**	**88.9**	**96.6**

Montrose Air ality Services

Facility: HGM

City/State: Kershaw SC

Source: PT-6

Date: 7/31/13

Run No.: 1

Start Time:	Stop Time:
1037	1144

Moisture

	Initial	Final	Totals
Impinger No. 1			
Impinger No. 2	See	Recovery	Sheet
Impinger No. 3			
Silica Gel			

Analyst: JW

Assistant: KL

Fyrite / Instrumental - Gas Analysis

				Average:
O_2 %:				
CO_2 %:				

EPA M. 3 § 11.2 - when using Fyrite repeat sampling until any 3 grab samples dry molecular weight differ from their mean by no more than 0.3 lb/lb-mole.

Field Balance ID: See

Calibration Wt. ID / Mass: Recovery

Response: Sheet

EPA M.4 § 10.3 - Balance must be within ± 0.5g of certified weight.

Job Number: 451092

Barometric Pressure: 30.04

Stack Pressure: -5.6

Stack Diameter: 14"

K Factor: 2.7

Nozzle Calibrations

	Pre-Test:	Post-Test:
Measurement 1:	.220	.220
Measurement 2:	.220	.220
Measurement 3:	.220	.220
Average:	.220	220

EPA M. 5 § 10.1 - The difference between the high and low nozzle measurements shall not exceed 0.004 inches.

Sample Train Leak Checks

Sample Train Pre-Test:

Volume (cfm)	Vacuum
0.002	12

Sample Train Post-Test:

Volume (cfm)	Vacuum
0.001	7

Pitot Leak Checks

Pre- Pitot Check

Positive	Negative
✓@ 3.5	✓@ 4.8

Post-Pitot Check

Positive	Negative
✓@ 4.1	✓@ 3.8

Dry Gas Meter Readings (Cubic Feet):

	1	2	3	4
Final:	813.543			
Initial:	753.901			
Net:	59.642			

Total Cubic Feet: 59.642

Equipment Checklist

NIST Kit ID:

Meter Box ID: NC M5 2

Delta H @: 2.034

Y-Factor: 0.982

Probe ID: NC 37 C

C_p Value: .84

Liner Material: glass

Nozzle ID:

Hot Box ID: NC HB 3

Filter Exit ID: N/A

Impinger Outlet ID: NC GN 11

Filter ID: Run 1

Fyrite ID: N/A

Acetone Lot No. N/A

Port / Point	Time (min.)	Meter Reading (ft^3)	Delta P (in. H_2O)	Delta H (in. H_2O)	Stack (°F)	Probe (°F)	Oven (°F)	Impinger (°F)	Filter Outlet (°F)	Meter Avg. (°F)	Vacuum (in. Hg)	Other
A 1	4	757.38	1.0	2.7	87	248	249	66	N/A	86	4	
1 1	8	761.16	1.1	2.97	88	246	247	65		89	4	
1 2	12	764.88	1.1	2.97	88	248	247	65		92	4	
1 2	16	766.74	1.1	2.97	88	246	247	62		95	4	
1 3	20	772.35	1.1	2.97	88	246	246	60		95	4	
1 3	24	776.07	1.1	2.97	88	247	251	59		97	4	
1 4	28	779.83	1.1	2.97	88	247	248	58		97	4	
1 4	32	783.443	1.0	2.7	88	249	250	58		98	4	
B 1	36	787.18	1.1	2.97	89	248	249	59		97	4	
1 1	40	790.95	1.1	2.97	89	247	247	58		97	4	
1 2	44	794.69	1.1	2.97	89	247	248	56		98	4	
1 2	48	798.47	1.1	2.97	90	247	248	57		100	4	
1 3	52	802.24	1.1	2.97	90	247	246	58		100	4	
1 3	56	806.00	1.1	2.97	91	247	247	59		101	4	
1 4	60	809.77	1.1	2.97	91	247	248	60		102	4	
1 4	64	813.543	1.1	2.97	91	247	249	60		101	4	
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Field Notes:

Method(s) 29 Field Data Sheet

Field Technician Signature:

Date: 7/31/13

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: **Haile Gold Mine** Test Date: **7/31/2018**

Source: **PT-6** Run Number: **2**

METALS FIELD DATA, US EPA METHODS 1-4 29

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H	Stack Temp. (°F)	Meter Temp. (°F)
1-1	1.10	1.0488	2.70	2.97	99	97
1-1	1.10	1.0488	2.70	2.97	99	98
1-2	1.10	1.0488	2.70	2.97	100	100
1-2	1.10	1.0488	2.70	2.97	101	101
1-3	1.10	1.0488	2.70	2.97	100	103
1-3	1.10	1.0488	2.70	2.97	98	102
1-4	1.10	1.0488	2.70	2.97	96	103
1-4	1.10	1.0488	2.70	2.97	95	102
2-1	1.10	1.0488	2.70	2.97	94	99
2-1	1.10	1.0488	2.70	2.97	94	101
2-2	1.10	1.0488	2.70	2.97	93	100
2-2	1.10	1.0488	2.70	2.97	93	101
2-3	1.10	1.0488	2.70	2.97	93	100
2-3	1.10	1.0488	2.70	2.97	93	101
2-4	1.10	1.0488	2.70	2.97	92	100
2-4	1.10	1.0488	2.70	2.97	93	100
Average:	**1.10**	**1.0488**	**2.70**	**2.97**	**95.8**	**100.5**

Montrose Air ality Services

Facility: HGM
City/State: Kershaw SC
Source: PT-6
Date: 7/31/18
Run No.: 2

Start Time:	Stop Time:
1222	1331

Moisture	Initial	Final	Totals
Impinger No. 1			
Impinger No. 2	See Recovery		
Impinger No. 3	Sheet		
Silica Gel			

Analyst: JW
Assistant: KC

Fyrite / **Instrumental** - Gas Analysis

				Average:
O_2 %:				
CO_2 %:				

EPA M. 3 § 11.2 - when using Fyrite repeat sampling until any 3 grab samples dry molecular weight differ from their mean by no more than 0.3 lb/lb-mole.

Field Balance ID: See
Calibration Wt. ID / Mass: Recovery
Response: Sheet
EPA M.4 § 10.3 - Balance must be within ± 0.5g of certified weight.
Job Number: 451092
Barometric Pressure: 30.04
Stack Pressure: -5.6
Stack Diameter: 14"
K Factor: 2.7

Nozzle Calibrations

	Pre-Test:	Post-Test:
Measurement 1:	.220	.220
Measurement 2:	.220	.220
Measurement 3:	.220	.220
Average:	.220	.220

EPA M. 5 § 10.1 - The difference between the high and low nozzle measurements shall not exceed 0.004 inches.

Sample Train Leak Checks

	Volume (cfm)	Vacuum
Sample Train Pre-Test:	0.004	13
Sample Train Post-Test:	0.003	8

Pitot Leak Checks

	Positive	Negative
Pre- Pitot Check	✓@ 4.1	✓@ 3.8
Post-Pitot Check	✓@ 4.4	✓@ 4.7

Dry Gas Meter Readings (Cubic Feet):

	1	2	3	4
Final:	876.266			
Initial:	816.000			
Net:	60.266			

Total Cubic Feet: 60.266

Equipment Checklist

NIST Kit ID:
Meter Box ID: NC MB 2
Delta H @: 2.034
Y-Factor: 0.982
Probe ID: NC 37 C
C_p Value: .84
Liner Material: glass
Nozzle ID:
Hot Box ID: NC HB 3
Filter Exit ID: N/A
Impinger Outlet ID: NC GN 11
Filter ID: Run 2
Fyrite ID: N/A
Acetone Lot No. N/A

Port / Point	Time (min.)	Meter Reading (ft³)	Delta P (in. H_2O)	Delta H (in. H_2O)	Stack (°F)	Probe (°F)	Oven (°F)	Impinger (°F)	Filter Outlet (°F)	Meter Avg. (°F)	Vacuum (in. Hg)	Other
B/1	4	819.78	1.1	2.97	99	246	250	66	N/A	97	4	
/1	8	823.57	1.1	2.97	99	246	248	66	↓	98	4	
/2	12	827.37	1.1	2.97	100	248	249	65		100	4	
/2	16	831.13	1.1	2.97	101	247	248	65		101	4	
/3	20	834.92	1.1	2.97	100	247	246	61		103	4	
/3	24	838.67	1.1	2.97	98	247	248	56		102	4	
/4	~~30~~ 28	842.46	1.1	2.97	96	247	247	55		103	4	
/4	32	846.233	1.1	2.97	95	248	248	55		102	4	
A/1	36	849.99	1.1	2.97	94	248	249	57		99	4	
/1	40	853.75	1.1	2.97	94	245	248	54		101	4	
/2	44	857.50	1.1	2.97	93	246	248	55		100	4	
/2	48	861.27	1.1	2.97	93	247	247	55		101	4	
/3	52	865.01	1.1	2.97	92	248	250	56		100	4	
/3	56	868.76	1.1	2.97	93	247	243	57		101	4	
/4	60	872.50	1.1	2.97	92	247	249	57		100	4	
/4	64	876.266	1.1	2.97	93	246	245	57		100	4	
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JW 7/31

Field Notes:

Method(s) 29 **Field Data Sheet**

Field Technician Signature: JW

Date: 7/31/18

Montrose Air Quality Services

30 Monroe Drive, Pelham, AL 35124

Client: **Haile Gold Mine** Test Date: **7/31/2018**

Source: **PT-6** Run Number: **3**

METALS FIELD DATA, US EPA METHODS 1-4 29

Traverse Point	Delta P	Sq. Rt. Delta P	K Factor	Delta H	Stack Temp. (°F)	Meter Temp. (°F)
1-1	1.10	1.0488	2.70	2.97	103	97
1-1	1.10	1.0488	2.70	2.97	102	98
1-2	1.10	1.0488	2.70	2.97	102	101
1-2	1.10	1.0488	2.70	2.97	102	100
1-3	1.10	1.0488	2.70	2.97	102	102
1-3	1.10	1.0488	2.70	2.97	102	102
1-4	1.10	1.0488	2.70	2.97	100	103
1-4	1.10	1.0488	2.70	2.97	100	102
2-1	1.10	1.0488	2.70	2.97	99	101
2-1	1.10	1.0488	2.70	2.97	99	101
2-2	1.10	1.0488	2.70	2.97	100	102
2-2	1.10	1.0488	2.70	2.97	100	102
2-3	1.10	1.0488	2.70	2.97	100	103
2-3	1.10	1.0488	2.70	2.97	99	102
2-4	1.10	1.0488	2.70	2.97	100	103
2-4	1.10	1.0488	2.70	2.97	99	102
Average:	**1.10**	**1.0488**	**2.70**	**2.97**	**100.6**	**101.3**

Montrose Air ality Services

Facility: HGM

City/State: Kershaw SC

Source: PT-6

Date: 7/31/18

Run No.: 3

Start Time: 1354 | Stop Time: 1501

Moisture	Initial	Final	Totals	Analyst:
Impinger No. 1				SW
Impinger No. 2	See	Recovery		
Impinger No. 3		Sheet		Assistant:
Silica Gel				KC

Fyrite (Instrumental) Gas Analysis

				Average:
O_2 %:				
CO_2 %:				

EPA M. 3 § 11.2 - when using Fyrite repeat sampling until any 3 grab samples dry molecular weight differ from their mean by no more than 0.3 lb/lb-mole.

Field Balance ID: See
Calibration Wt. ID / Mass: Recovery
Response: Sheet
EPA M.4 § 10.3 - Balance must be within ± 0.5g of certified weight.
Job Number: 451092
Barometric Pressure: 30.04
Stack Pressure: -5.6
Stack Diameter: 14"
K Factor: 2.7

Nozzle Calibrations

	Pre-Test:	Post-Test:
Measurement 1:	.220	.220
Measurement 2:	.220	.220
Measurement 3:	.220	.220
Average:	.220	.220

EPA M. 5 § 10.1 - The difference between the high and low nozzle measurements shall not exceed 0.004 inches.

Sample Train Leak Checks

Sample Train Pre-Test:

Volume (cfm)	Vacuum
0.003	12

Sample Train Post-Test:

Volume (cfm)	Vacuum
0.003	7

Pitot Leak Checks

Pre- Pitot Check: Positive ✓@ 4.4 | Negative ✓@ 4.7

Post-Pitot Check: Positive ✓@ 3.9 | Negative ✓@ 4.2

Dry Gas Meter Readings (Cubic Feet):

	1	2	3	4
Final:	936.717			
Initial:	876.604			
Net:	60.113			

Total Cubic Feet: 60.113

Equipment Checklist

NIST Kit ID:
Meter Box ID: NC MS 2
Delta H @: 2.034
Y-Factor 0.982
Probe ID: NC 37 C
C_p Value: .84
Liner Material: glass
Nozzle ID:
Hot Box ID: NC HB 3
Filter Exit ID: N/A
Impinger Outlet ID: NC GN 11
Filter ID: Run 3
Fyrite ID: N/A
Acetone Lot No. N/A

Port / Point	Time (min.)	Meter Reading (ft^3)	Delta P (in. H_2O)	Delta H (in. H_2O)	Stack (°F)	Probe (°F)	Oven (°F)	Impinger (°F)	Filter Outlet (°F)	Meter Avg. (°F)	Vacuum (in. Hg)	Other
A / 1	4	880.30	1.1	2.97	103	249	245	66	N/A	97	4	
/ 1	8	884.04	1.1	2.97	102	246	247	64		98	4	
/ 2	12	887.77	1.1	2.97	102	247	250	61		101	4	
/ 2	16	891.49	1.1	2.97	102	247	251	58		100	4	
/ 3	20	895.21	1.1	2.97	102	248	246	57		102	4	
/ 3	24	898.92	1.1	2.97	102	247	248	57		102	4	
/ 4	28	902.75	1.1	2.97	100	247	247	57		103	4	
/ 4	32	906.539	1.1	2.97	100	247	252	58		102	4	
B / 1	36	910.30	1.1	2.97	99	249	250	61		101	4	
/ 1	40	914.11	1.1	2.97	99	247	251	57		101	4	
/ 2	44	917.88	1.1	2.97	100	247	247	58		102	4	
/ 2	48	921.67	1.1	2.97	100	247	246	59		102	4	
/ 3	52	925.43	1.1	2.97	100	247	250	59		103	4	
/ 3	56	929.18	1.1	2.97	99	247	247	60		102	4	
/ 4	60	932.94	1.1	2.97	100	247	249	61		103	4	
/ 4	64	936.717	1.1	2.97	99	246	249	61		102	4	
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Field Notes:

Method(s) 29 Field Data Sheet

Field Technician Signature:

Date: 7/31/18

NC Scale 1 500g = 500.0g
67517

Montrose Air Quality Services

METHOD 29 SAMPLE RECOVERY DATA SHEET

Client / Location: Hale Gold / Pit 6 Sampling Date(s): 7/31/18

Run No.: 1 Recovery Date: 7/31/18 Recovered By: CPS

Imp. Type	(M) Empty	(M) 100 ml	(w/ Tip) 100 ml	(M) Empty	(M) 100 ml	(M) 100 ml	
Impingers	1 (Optional)	2 (HNO3/H2O2)	3 (HNO3/H2O2)	4	5 (KMnO4)	6 (KMnO4)	7 (Silica Gel)
Final Wt.	NA	746.2	718.6	625.8	757.3	735.9	903.4
Initial Wt.	NA	743.6	701.9	619.9	754.1	732.7	889.0
Net Weight	—	2.6	16.7	5.9	3.2	3.2	14.4

Moisture Imp.: 31.6 Grams Moisture Gel.: 14.4 Grams 50 % Spent
Description of Particulate on filter: None apparent Silica Gel Color: Blue/Pink

Run No.: 2 Recovery Date: 7/31/18 Recovered By: CPS

Imp. Type	(M) Empty	(M) 100 ml	(w/ Tip) 100 ml	(M) Empty	(M) 100 ml	(M) 100 ml	
Impingers	1 (Optional)	2 (HNO3/H2O2)	3 (HNO3/H2O2)	4	5 (KMnO4)	6 (KMnO4)	7 (Silica Gel)
Final Wt.	NA	772.3	779.8	641.6	671.8	749.1	819.7
Initial Wt.	NA	762.5	764.4	638.5	670.2	747.8	804.5
Net Weight	—	9.8	15.4	3.1	1.6	1.3	15.2

Moisture Imp.: 31.2 Grams Moisture Gel.: 15.2 Grams 75 % Spent
Description of Particulate on filter: None apparent Silica Gel Color: Blue/Pink

Run No.: 3 Recovery Date: 7/31/18 Recovered By: CPS

Imp. Type	(M) Empty	(M) 100 ml	(w/ Tip) 100 ml	(M) Empty	(M) 100 ml	(M) 100 ml	
Impingers	1 (Optional)	2 (HNO3/H2O2)	3 (HNO3/H2O2)	4	5 (KMnO4)	6 (KMnO4)	7 (Silica Gel)
Final Wt.	NA	776.4	737.2	578.5	649.9	647.6	891.5
Initial Wt.	NA	761.7	724.8	576.3	649.1	645.9	878.8
Net Weight	—	14.7	12.4	2.2	0.8	1.7	12.7

Moisture Imp.: 31.8 Grams Moisture Gel.: 12.7 Grams % Spent
Description of Particulate on filter: None Apparent Silica Gel Color: Blue/Pink

Run No.: ____ Recovery Date: ____ Recovered By: ____

Imp. Type	(M) Empty	(M) 100 ml	(w/ Tip) 100 ml	(M) Empty	(M) 100 ml	(M) 100 ml	
Impingers	1 (Optional)	2 (HNO3/H2O2)	3 (HNO3/H2O2)	4	5 (KMnO4)	6 (KMnO4)	7 (Silica Gel)
Final Wt.							
Initial Wt.							
Net Weight							

Moisture Imp.: ____ Grams Moisture Gel.: ____ Grams ____ % Spent
Description of Particulate on filter: ____ Silica Gel Color: ____

Team Leader Signature: ____ Date: ____

APPENDIX B

CONTINUOUS EMISSIONS MONITORING DATA

Haile Gold Mine
PT-5A
Kershaw, SC

Bias Correction

Run	Gas	Cal Gas Value	Initial Zero	Initial Upscale	Final Zero	Final Upscale	Average Zero	Average Upscale	Run Average	Corrected Average
1	O_2	21.97	0.01	21.91	0.02	21.91	0.01	21.91	16.16	16.20
1	CO_2	19.01	0.31	18.75	0.24	18.62	0.27	18.69	2.63	2.43
2	O_2	21.97	0.02	21.91	-0.03	21.88	-0.01	21.89	16.10	16.16
2	CO_2	19.01	0.24	18.62	0.22	18.59	0.23	18.60	2.78	2.63
3	O_2	21.97	-0.03	21.88	-0.04	21.85	-0.03	21.86	16.04	16.13
3	CO_2	19.01	0.22	18.59	0.33	18.84	0.28	18.71	2.78	2.58

Haile Gold Mine
Kershaw, SC
PT-5A

Date	Time	Ch1 Thermo 410i O2 %D	Ch2 Thermo 410i CO2 %D
8/7/2018	8:35:09	0.08	0.26
8/7/2018	8:35:19	0.04	0.26
8/7/2018	8:35:29	0.00	0.26
8/7/2018	8:35:39	0.00	0.26
8/7/2018	8:35:49	-0.01	0.26
8/7/2018	8:35:59	**0.00**	**0.26**
8/7/2018	8:36:09	**-0.01**	**0.26**
8/7/2018	8:36:19	**-0.01**	**0.26**
8/7/2018	8:36:29	**-0.01**	**0.26**
8/7/2018	8:36:39	**-0.01**	**0.26**
8/7/2018	8:36:49	**-0.01**	**0.26**
8/7/2018	8:36:59	0.45	0.27
8/7/2018	8:37:09	11.32	0.36
8/7/2018	8:37:19	18.44	0.40
8/7/2018	8:37:29	19.74	2.74
8/7/2018	8:37:39	20.81	14.16
8/7/2018	8:37:49	21.71	17.99
8/7/2018	8:37:59	21.94	18.73
8/7/2018	8:38:09	**21.97**	**18.86**
8/7/2018	8:38:19	**22.00**	**18.87**
8/7/2018	8:38:29	**22.00**	**18.83**
8/7/2018	8:38:39	**22.00**	**18.81**
8/7/2018	8:38:49	**22.00**	**18.82**
8/7/2018	8:38:59	**22.00**	**18.85**
8/7/2018	8:39:09	22.01	18.87
8/7/2018	8:39:19	22.00	18.88
8/7/2018	8:39:29	22.01	18.47
8/7/2018	8:39:39	21.49	8.28
8/7/2018	8:39:49	20.79	2.22
8/7/2018	8:39:59	17.95	6.12
8/7/2018	8:40:09	13.42	9.61
8/7/2018	8:40:19	12.28	10.22
8/7/2018	8:40:29	12.12	10.30

Direct Calibration

Zero N2

Averages

O2	CO2
-0.01	0.26

21.97 O2, 19.01 CO2
Cylinder SG9149611BAL

Averages

O2	CO2
22.00	18.84

8/7/2018	8:40:39	12.10	10.30
8/7/2018	8:40:49	12.10	10.29
8/7/2018	8:40:59	**12.10**	**10.29**
8/7/2018	8:41:09	**12.10**	**10.31**
8/7/2018	8:41:19	**12.11**	**10.33**
8/7/2018	8:41:29	**12.10**	**10.33**
8/7/2018	8:41:39	**12.10**	**10.31**
8/7/2018	8:41:49	**12.10**	**10.20**
8/7/2018	8:41:59	12.10	10.23
8/7/2018	8:42:09	14.75	5.28
8/7/2018	8:42:19	19.47	1.09
8/7/2018	8:42:29	20.65	0.43
8/7/2018	8:42:39	20.82	0.34
8/7/2018	8:42:49	20.85	0.33
8/7/2018	8:42:59	20.85	0.32
8/7/2018	8:43:09	20.84	0.32
8/7/2018	8:43:19	19.25	3.57
8/7/2018	8:43:29	14.16	8.74
8/7/2018	8:43:39	12.43	9.99
8/7/2018	8:43:49	12.11	10.16
8/7/2018	8:43:59	12.08	10.19
8/7/2018	8:44:09	12.06	10.22
8/7/2018	8:44:19	12.05	10.21
8/7/2018	8:44:29	**12.06**	**10.23**
8/7/2018	8:44:39	**12.05**	**10.24**
8/7/2018	8:44:49	**12.05**	**10.26**
8/7/2018	8:44:59	**12.05**	**10.25**
8/7/2018	8:45:09	**12.04**	**10.23**
8/7/2018	8:45:19	**12.05**	**10.22**
8/7/2018	8:45:29	12.04	10.23
8/7/2018	8:45:39	12.05	10.25
8/7/2018	8:45:49	12.04	10.25
8/7/2018	8:45:59	14.00	6.39
8/7/2018	8:46:09	17.86	3.95
8/7/2018	8:46:19	10.55	3.43
8/7/2018	8:46:29	2.24	0.87
8/7/2018	8:46:39	0.38	0.41
8/7/2018	8:46:49	0.08	0.34
8/7/2018	8:46:59	0.03	0.32
8/7/2018	8:47:09	**0.03**	**0.31**
8/7/2018	8:47:19	**0.01**	**0.31**
8/7/2018	8:47:29	**0.00**	**0.31**
8/7/2018	8:47:39	**0.02**	**0.31**
8/7/2018	8:47:49	**0.01**	**0.31**
8/7/2018	8:47:59	**0.01**	**0.31**
8/7/2018	8:48:09	0.01	0.31
8/7/2018	8:48:19	0.01	0.30

12.06 O2 9.92 CO2

O2	CO2
12.10	10.30

System Bias

12.06 O2 9.92 CO2

Averages

O2	CO2
12.05	10.24

Zero N2

Averages

O2	CO2
0.01	0.31

8/7/2018	8:48:29	0.01	0.30
8/7/2018	8:48:39	0.01	0.30
8/7/2018	8:48:49	6.10	0.32
8/7/2018	8:48:59	17.30	0.34
8/7/2018	8:49:09	17.02	0.76
8/7/2018	8:49:19	13.79	11.37
8/7/2018	8:49:29	19.71	17.10
8/7/2018	8:49:39	21.51	18.45
8/7/2018	8:49:49	21.85	18.63
8/7/2018	8:49:59	**21.90**	**18.76**
8/7/2018	8:50:09	**21.91**	**18.79**
8/7/2018	8:50:19	**21.92**	**18.77**
8/7/2018	8:50:29	**21.90**	**18.74**
8/7/2018	8:50:39	**21.92**	**18.74**
8/7/2018	8:50:49	**21.91**	**18.72**
8/7/2018	8:50:59	21.91	18.75
8/7/2018	8:51:09	21.92	18.78
8/7/2018	8:51:19	21.91	18.80
8/7/2018	8:51:29	21.92	18.76
8/7/2018	8:51:39	21.91	18.78

21.97 O2, 19.01 CO2
Cylinder SG9149611BAL

Averages

O2	CO2
21.91	18.75

Date	Time	Ch1 Thermo 410i O2 %D	Ch2 Thermo 410i CO2 %D
8/7/2018	8:53:00	20.81	0.40
8/7/2018	8:54:00	20.84	0.38
8/7/2018	8:55:00	20.84	0.37
8/7/2018	8:56:00	20.83	0.37
8/7/2018	8:57:00	20.85	0.35
8/7/2018	8:58:00	20.85	0.34
8/7/2018	8:59:00	20.85	0.33
8/7/2018	9:00:00	20.85	0.32
8/7/2018	9:01:00	20.85	0.31
8/7/2018	9:02:00	20.85	0.30
8/7/2018	9:03:00	20.85	0.29
8/7/2018	9:04:00	20.85	0.28
8/7/2018	9:05:00	20.85	0.27
8/7/2018	9:06:00	20.85	0.26
8/7/2018	9:07:00	20.85	0.25
8/7/2018	9:08:00	20.85	0.24
8/7/2018	9:09:00	20.84	0.24
8/7/2018	9:10:00	20.85	0.22
8/7/2018	9:11:00	20.85	0.21
8/7/2018	9:12:00	20.86	0.21

8/7/2018	9:13:00	20.86	0.20		
8/7/2018	9:14:00	20.85	0.19		
8/7/2018	9:15:00	20.85	0.18		
8/7/2018	9:16:00	20.86	0.17		
8/7/2018	9:17:00	20.86	0.16		
8/7/2018	9:18:00	20.82	0.21		
8/7/2018	9:19:00	16.53	2.46		
8/7/2018	9:20:00	16.14	2.58		
8/7/2018	9:21:00	16.12	2.58		
8/7/2018	9:22:00	16.12	2.57		
8/7/2018	9:23:00	16.13	2.56		
8/7/2018	9:24:00	16.15	2.54		
8/7/2018	9:25:00	16.12	2.55		
8/7/2018	9:26:00	16.12	2.55		
8/7/2018	9:27:00	16.14	2.55		
8/7/2018	9:28:00	16.15	2.54		
8/7/2018	9:29:00	16.16	2.54	Start Run	1
8/7/2018	9:30:00	16.17	2.53		
8/7/2018	9:31:00	16.15	2.53		
8/7/2018	9:32:00	16.15	2.53	Run Averages	
8/7/2018	9:33:00	16.13	2.53	O2	CO2
8/7/2018	9:34:00	16.12	2.54	16.16	2.63
8/7/2018	9:35:00	16.16	2.51		
8/7/2018	9:36:00	16.14	2.52		
8/7/2018	9:37:00	16.16	2.51		
8/7/2018	9:38:00	16.16	2.51		
8/7/2018	9:39:00	16.84	2.15		
8/7/2018	9:40:00	16.15	2.51		
8/7/2018	9:41:00	16.18	2.50		
8/7/2018	9:42:00	16.19	2.51		
8/7/2018	9:43:00	16.17	2.53		
8/7/2018	9:44:00	16.16	2.54		
8/7/2018	9:45:00	16.17	2.53		
8/7/2018	9:46:00	16.18	2.52		
8/7/2018	9:47:00	16.19	2.59		
8/7/2018	9:48:00	16.16	2.53		
8/7/2018	9:49:00	16.14	2.55		
8/7/2018	9:50:00	16.13	2.58		
8/7/2018	9:51:00	16.13	2.57		
8/7/2018	9:52:00	16.14	2.57		
8/7/2018	9:53:00	16.13	2.59		
8/7/2018	9:54:00	16.13	2.60		
8/7/2018	9:55:00	16.11	2.61		
8/7/2018	9:56:00	16.17	2.58		
8/7/2018	9:57:00	16.14	2.61		
8/7/2018	9:58:00	16.16	2.59		
8/7/2018	9:59:00	16.17	2.59		

8/7/2018	10:00:00	16.17	2.60		
8/7/2018	10:01:00	16.16	2.62		
8/7/2018	10:02:00	16.21	2.60		
8/7/2018	10:03:00	16.19	2.61		
8/7/2018	10:04:00	16.17	2.62		
8/7/2018	10:05:00	16.12	2.65		
8/7/2018	10:06:00	16.12	2.65		
8/7/2018	10:07:00	16.14	2.65		
8/7/2018	10:08:00	16.15	2.65		
8/7/2018	10:09:00	16.12	2.67		
8/7/2018	10:10:00	16.12	2.68		
8/7/2018	10:11:00	16.10	2.69		
8/7/2018	10:12:00	16.12	2.68		
8/7/2018	10:13:00	16.14	2.68		
8/7/2018	10:14:00	16.15	2.69		
8/7/2018	10:15:00	16.14	2.70		
8/7/2018	10:16:00	16.15	2.71		
8/7/2018	10:17:00	16.15	2.72		
8/7/2018	10:18:00	16.18	2.71		
8/7/2018	10:19:00	16.16	2.73		
8/7/2018	10:20:00	16.17	2.73		
8/7/2018	10:21:00	16.18	2.73		
8/7/2018	10:22:00	16.17	2.73		
8/7/2018	10:23:00	16.18	2.73		
8/7/2018	10:24:00	16.12	2.76		
8/7/2018	10:25:00	16.12	2.77		
8/7/2018	10:26:00	16.11	2.77		
8/7/2018	10:27:00	16.12	2.76		
8/7/2018	10:28:00	16.12	2.77		
8/7/2018	10:29:00	16.11	2.78		
8/7/2018	10:30:00	16.10	2.79		
8/7/2018	10:31:00	16.11	2.79		
8/7/2018	10:32:00	16.12	2.78		
8/7/2018	10:33:00	16.12	2.78		
8/7/2018	10:34:00	16.13	2.77		
8/7/2018	10:35:00	16.16	2.77	End Run	1
8/7/2018	10:36:00	16.18	2.76		
8/7/2018	10:37:00	16.18	2.76		
8/7/2018	10:38:00	16.17	2.75		
8/7/2018	10:39:00	16.38	2.57		
8/7/2018	10:40:00	20.42	0.52		
8/7/2018	10:41:00	20.71	0.39		
8/7/2018	10:42:00	20.68	0.37		
8/7/2018	10:43:00	20.77	0.32		
8/7/2018	10:44:00	20.61	0.37		
8/7/2018	10:45:00	20.76	0.29		

Date	Time	Ch1 Thermo 410i O2 %D	Ch2 Thermo 410i CO2 %D
8/7/2018	10:46:02	20.82	0.24
8/7/2018	10:46:12	20.83	0.24
8/7/2018	10:46:22	20.82	0.24
8/7/2018	10:46:32	21.09	4.32
8/7/2018	10:46:42	22.00	14.07
8/7/2018	10:46:52	22.08	17.52
8/7/2018	10:47:02	22.03	18.19
8/7/2018	10:47:12	22.00	18.34
8/7/2018	10:47:22	21.98	18.35
8/7/2018	10:47:32	21.97	18.46
8/7/2018	10:47:42	21.96	18.51
8/7/2018	10:47:52	21.94	18.54
8/7/2018	10:48:02	21.94	18.57
8/7/2018	10:48:12	21.93	18.54
8/7/2018	10:48:22	21.93	18.54
8/7/2018	10:48:32	21.93	18.55
8/7/2018	10:48:42	21.91	18.63
8/7/2018	10:48:52	21.93	18.59
8/7/2018	10:49:02	21.92	18.63
8/7/2018	10:49:12	21.91	18.60
8/7/2018	10:49:22	21.92	18.57
8/7/2018	10:49:32	21.92	18.57
8/7/2018	10:49:42	21.92	18.60
8/7/2018	10:49:52	21.92	18.64
8/7/2018	10:50:02	21.92	18.64
8/7/2018	10:50:12	21.91	18.64
8/7/2018	10:50:22	**21.92**	**18.59**
8/7/2018	10:50:32	**21.91**	**18.58**
8/7/2018	10:50:42	**21.91**	**18.60**
8/7/2018	10:50:52	**21.91**	**18.65**
8/7/2018	10:51:02	**21.92**	**18.67**
8/7/2018	10:51:12	**21.91**	**18.65**
8/7/2018	10:51:22	21.68	13.64
8/7/2018	10:51:32	20.95	3.66
8/7/2018	10:51:42	20.79	0.92
8/7/2018	10:51:52	20.84	2.92
8/7/2018	10:52:02	14.55	4.49
8/7/2018	10:52:12	3.30	1.18
8/7/2018	10:52:22	0.54	0.47
8/7/2018	10:52:32	0.12	0.34
8/7/2018	10:52:42	0.06	0.31

21.97 O2, 19.01 CO2
Cylinder SG9149611BAL

Averages

O2	CO2
21.91	18.62

8/7/2018	10:52:52	0.04	0.29
8/7/2018	10:53:02	0.03	0.28
8/7/2018	10:53:12	0.03	0.27
8/7/2018	10:53:22	0.02	0.27
8/7/2018	10:53:32	0.03	0.26
8/7/2018	10:53:42	0.02	0.25
8/7/2018	10:53:52	0.02	0.25
8/7/2018	10:54:02	**0.03**	**0.24**
8/7/2018	10:54:12	**0.01**	**0.24**
8/7/2018	10:54:22	**0.01**	**0.24**
8/7/2018	10:54:32	**0.02**	**0.24**
8/7/2018	10:54:42	**0.01**	**0.23**
8/7/2018	10:54:52	**0.01**	**0.23**
8/7/2018	10:55:02	0.11	0.23
8/7/2018	10:55:12	8.75	0.25

Zero N2

Averages

O2	CO2
0.02	0.24

Date	Time	Ch1 Thermo 410i O2 %D	Ch2 Thermo 410i CO2 %D
8/7/2018	10:57:00	20.84	0.26
8/7/2018	10:57:10	20.83	0.25
8/7/2018	10:57:20	20.84	0.25
8/7/2018	10:57:30	20.84	0.25
8/7/2018	10:57:40	20.83	0.26
8/7/2018	10:57:50	20.82	0.26
8/7/2018	10:58:00	20.83	0.25
8/7/2018	10:58:10	20.82	0.26
8/7/2018	10:58:20	20.83	0.26
8/7/2018	10:58:30	20.83	0.26
8/7/2018	10:58:40	20.83	0.26
8/7/2018	10:58:50	20.83	0.26
8/7/2018	10:59:00	20.84	0.26
8/7/2018	10:59:10	20.84	0.26
8/7/2018	10:59:20	20.84	0.26
8/7/2018	10:59:30	20.84	0.26
8/7/2018	10:59:40	20.84	0.26
8/7/2018	10:59:50	20.84	0.26
8/7/2018	11:00:00	20.84	0.26
8/7/2018	11:00:10	20.84	0.26
8/7/2018	11:00:20	20.85	0.26
8/7/2018	11:00:30	20.84	0.26
8/7/2018	11:00:40	20.84	0.26
8/7/2018	11:00:50	20.84	0.26
8/7/2018	11:01:00	20.84	0.26

8/7/2018	11:01:10	20.84	0.26
8/7/2018	11:01:20	20.84	0.26
8/7/2018	11:01:30	20.84	0.26
8/7/2018	11:01:40	20.81	0.26
8/7/2018	11:01:50	20.83	0.26
8/7/2018	11:02:00	20.84	0.25
8/7/2018	11:02:10	20.84	0.25
8/7/2018	11:02:20	20.84	0.25
8/7/2018	11:02:30	20.82	0.25
8/7/2018	11:02:40	20.83	0.25
8/7/2018	11:02:50	20.83	0.25
8/7/2018	11:03:00	20.83	0.25
8/7/2018	11:03:10	20.83	0.25
8/7/2018	11:03:20	20.84	0.24
8/7/2018	11:03:30	20.84	0.24
8/7/2018	11:03:40	20.84	0.24
8/7/2018	11:03:50	20.84	0.24
8/7/2018	11:04:00	20.84	0.24
8/7/2018	11:04:10	20.84	0.24
8/7/2018	11:04:20	20.83	0.24
8/7/2018	11:04:30	20.82	0.24
8/7/2018	11:04:40	20.83	0.24
8/7/2018	11:04:50	20.84	0.23
8/7/2018	11:05:00	20.85	0.23
8/7/2018	11:05:10	20.83	0.24
8/7/2018	11:05:20	20.83	0.24
8/7/2018	11:05:30	20.82	0.24
8/7/2018	11:05:40	20.83	0.24
8/7/2018	11:05:50	20.83	0.24
8/7/2018	11:06:00	20.83	0.24
8/7/2018	11:06:10	20.83	0.23
8/7/2018	11:06:20	20.83	0.23
8/7/2018	11:06:30	20.84	0.23
8/7/2018	11:06:40	20.83	0.23
8/7/2018	11:06:50	20.84	0.23
8/7/2018	11:07:00	20.84	0.23
8/7/2018	11:07:10	20.84	0.23
8/7/2018	11:07:20	20.84	0.22
8/7/2018	11:07:30	20.84	0.22
8/7/2018	11:07:40	20.83	0.22
8/7/2018	11:07:50	20.84	0.22
8/7/2018	11:08:00	20.84	0.22
8/7/2018	11:08:10	20.84	0.22
8/7/2018	11:08:20	20.83	0.22
8/7/2018	11:08:30	20.83	0.22
8/7/2018	11:08:40	20.84	0.22
8/7/2018	11:08:50	20.84	0.22

8/7/2018	11:09:00	20.84	0.22
8/7/2018	11:09:10	20.83	0.22
8/7/2018	11:09:20	20.84	0.22
8/7/2018	11:09:30	20.84	0.22
8/7/2018	11:09:40	20.84	0.22
8/7/2018	11:09:50	20.84	0.22
8/7/2018	11:10:00	20.84	0.22
8/7/2018	11:10:10	20.83	0.22
8/7/2018	11:10:20	20.84	0.22
8/7/2018	11:10:30	20.84	0.22
8/7/2018	11:10:40	20.83	0.21
8/7/2018	11:10:50	20.84	0.22
8/7/2018	11:11:00	20.83	0.22
8/7/2018	11:11:10	20.82	0.22
8/7/2018	11:11:20	20.83	0.22
8/7/2018	11:11:30	20.84	0.22
8/7/2018	11:11:40	20.84	0.22
8/7/2018	11:11:50	20.83	0.22
8/7/2018	11:12:00	20.83	0.22
8/7/2018	11:12:10	20.84	0.22
8/7/2018	11:12:20	20.84	0.22
8/7/2018	11:12:30	20.84	0.22
8/7/2018	11:12:40	20.82	0.22
8/7/2018	11:12:50	20.83	0.22
8/7/2018	11:13:00	20.82	0.22
8/7/2018	11:13:10	20.82	0.22
8/7/2018	11:13:20	20.81	0.22
8/7/2018	11:13:30	20.81	0.22
8/7/2018	11:13:40	20.81	0.22
8/7/2018	11:13:50	20.80	0.22
8/7/2018	11:14:00	20.79	0.22
8/7/2018	11:14:10	20.81	0.21
8/7/2018	11:14:20	20.81	0.22
8/7/2018	11:14:30	20.81	0.21
8/7/2018	11:14:40	20.82	0.21
8/7/2018	11:14:50	20.83	0.21
8/7/2018	11:15:00	20.83	0.20
8/7/2018	11:15:10	20.83	0.20
8/7/2018	11:15:20	20.83	0.20
8/7/2018	11:15:30	20.84	0.20
8/7/2018	11:15:40	20.82	0.20
8/7/2018	11:15:50	20.83	0.21
8/7/2018	11:16:00	20.82	0.21
8/7/2018	11:16:10	20.82	0.21
8/7/2018	11:16:20	20.83	0.21
8/7/2018	11:16:30	20.82	0.21
8/7/2018	11:16:40	20.83	0.21

8/7/2018	11:16:50	20.83	0.21
8/7/2018	11:17:00	20.82	0.21
8/7/2018	11:17:10	20.83	0.21
8/7/2018	11:17:20	20.82	0.21
8/7/2018	11:17:30	20.83	0.21
8/7/2018	11:17:40	20.82	0.21
8/7/2018	11:17:50	20.83	0.21
8/7/2018	11:18:00	20.82	0.21
8/7/2018	11:18:10	20.81	0.21
8/7/2018	11:18:20	20.81	0.21
8/7/2018	11:18:30	20.81	0.21
8/7/2018	11:18:40	20.83	0.21
8/7/2018	11:18:50	20.82	0.21
8/7/2018	11:19:00	20.83	0.21
8/7/2018	11:19:10	20.82	0.20
8/7/2018	11:19:20	20.82	0.20
8/7/2018	11:19:30	20.82	0.21
8/7/2018	11:19:40	20.81	0.22
8/7/2018	11:19:50	20.82	0.22
8/7/2018	11:20:00	20.82	0.21
8/7/2018	11:20:10	20.82	0.21
8/7/2018	11:20:20	20.82	0.21
8/7/2018	11:20:30	20.82	0.21
8/7/2018	11:20:40	20.82	0.21
8/7/2018	11:20:50	20.83	0.21
8/7/2018	11:21:00	20.83	0.21
8/7/2018	11:21:10	20.82	0.22
8/7/2018	11:21:20	20.81	0.22
8/7/2018	11:21:30	20.79	0.23
8/7/2018	11:21:40	20.79	0.23
8/7/2018	11:21:50	20.79	0.22
8/7/2018	11:22:00	20.81	0.22
8/7/2018	11:22:10	20.80	0.23
8/7/2018	11:22:20	20.79	0.23
8/7/2018	11:22:30	20.81	0.22
8/7/2018	11:22:40	20.82	0.22
8/7/2018	11:22:50	20.82	0.22
8/7/2018	11:23:00	20.82	0.22
8/7/2018	11:23:10	20.82	0.22
8/7/2018	11:23:20	20.81	0.22
8/7/2018	11:23:30	20.81	0.22
8/7/2018	11:23:40	20.80	0.23
8/7/2018	11:23:50	20.79	0.23
8/7/2018	11:24:00	20.80	0.22
8/7/2018	11:24:10	20.81	0.22
8/7/2018	11:24:20	20.82	0.22
8/7/2018	11:24:30	20.82	0.22

8/7/2018	11:24:40	20.82	0.22
8/7/2018	11:24:50	20.81	0.22
8/7/2018	11:25:00	20.82	0.22
8/7/2018	11:25:10	20.82	0.22
8/7/2018	11:25:20	20.81	0.22
8/7/2018	11:25:30	20.82	0.22
8/7/2018	11:25:40	20.81	0.22
8/7/2018	11:25:50	20.82	0.22
8/7/2018	11:26:00	20.82	0.22
8/7/2018	11:26:10	20.82	0.22
8/7/2018	11:26:20	20.82	0.22
8/7/2018	11:26:30	20.82	0.22
8/7/2018	11:26:40	20.82	0.22
8/7/2018	11:26:50	20.82	0.22
8/7/2018	11:27:00	20.81	0.23
8/7/2018	11:27:10	20.81	0.23
8/7/2018	11:27:20	20.82	0.23
8/7/2018	11:27:30	20.81	0.23
8/7/2018	11:27:40	20.82	0.23
8/7/2018	11:27:50	20.82	0.23
8/7/2018	11:28:00	20.81	0.23
8/7/2018	11:28:10	20.82	0.23
8/7/2018	11:28:20	20.81	0.24
8/7/2018	11:28:30	20.80	0.24
8/7/2018	11:28:40	20.78	0.25
8/7/2018	11:28:50	20.80	0.24
8/7/2018	11:29:00	20.81	0.24
8/7/2018	11:29:10	20.79	0.25
8/7/2018	11:29:20	20.79	0.24
8/7/2018	11:29:30	20.80	0.24
8/7/2018	11:29:40	20.78	0.26
8/7/2018	11:29:50	19.60	1.19
8/7/2018	11:30:00	17.01	2.29
8/7/2018	11:30:10	16.30	2.53
8/7/2018	11:30:20	16.12	2.60
8/7/2018	11:30:30	16.13	2.63
8/7/2018	11:30:40	16.12	2.65
8/7/2018	11:30:50	16.12	2.64
8/7/2018	11:31:00	16.14	2.64
8/7/2018	11:31:10	16.15	2.63
8/7/2018	11:31:20	16.14	2.64
8/7/2018	11:31:30	16.14	2.64
8/7/2018	11:31:40	16.14	2.65
8/7/2018	11:31:50	16.16	2.65
8/7/2018	11:32:00	16.13	2.65
8/7/2018	11:32:10	16.14	2.64
8/7/2018	11:32:20	16.15	2.65

Start Run 2

Run Averages

O2	CO2
16.10	2.78

8/7/2018	11:32:30	16.14	2.66
8/7/2018	11:32:40	16.15	2.66
8/7/2018	11:32:50	16.14	2.67
8/7/2018	11:33:00	16.14	2.66
8/7/2018	11:33:10	16.13	2.66
8/7/2018	11:33:20	16.16	2.65
8/7/2018	11:33:30	16.13	2.66
8/7/2018	11:33:40	16.15	2.65
8/7/2018	11:33:50	16.14	2.66
8/7/2018	11:34:00	16.17	2.65
8/7/2018	11:34:10	16.16	2.64
8/7/2018	11:34:20	16.19	2.64
8/7/2018	11:34:30	16.17	2.65
8/7/2018	11:34:40	16.17	2.65
8/7/2018	11:34:50	16.16	2.66
8/7/2018	11:35:00	16.16	2.65
8/7/2018	11:35:10	16.18	2.65
8/7/2018	11:35:20	16.17	2.64
8/7/2018	11:35:30	16.17	2.66
8/7/2018	11:35:40	16.18	2.66
8/7/2018	11:35:50	16.17	2.66
8/7/2018	11:36:00	16.18	2.65
8/7/2018	11:36:10	16.18	2.65
8/7/2018	11:36:20	16.17	2.64
8/7/2018	11:36:30	16.18	2.65
8/7/2018	11:36:40	16.17	2.65
8/7/2018	11:36:50	16.19	2.66
8/7/2018	11:37:00	16.19	2.66
8/7/2018	11:37:10	16.19	2.65
8/7/2018	11:37:20	16.19	2.65
8/7/2018	11:37:30	16.21	2.65
8/7/2018	11:37:40	16.17	2.69
8/7/2018	11:37:50	16.15	2.69
8/7/2018	11:38:00	16.15	2.70
8/7/2018	11:38:10	16.16	2.69
8/7/2018	11:38:20	16.14	2.70
8/7/2018	11:38:30	16.16	2.69
8/7/2018	11:38:40	16.16	2.70
8/7/2018	11:38:50	16.17	2.70
8/7/2018	11:39:00	16.14	2.72
8/7/2018	11:39:10	16.17	2.70
8/7/2018	11:39:20	16.16	2.71
8/7/2018	11:39:30	16.16	2.70
8/7/2018	11:39:40	16.15	2.71
8/7/2018	11:39:50	16.17	2.71
8/7/2018	11:40:00	16.18	2.72
8/7/2018	11:40:10	16.15	2.72

8/7/2018	11:40:20	16.14	2.73
8/7/2018	11:40:30	16.10	2.74
8/7/2018	11:40:40	16.10	2.75
8/7/2018	11:40:50	16.06	2.78
8/7/2018	11:41:00	16.09	2.76
8/7/2018	11:41:10	16.08	2.78
8/7/2018	11:41:20	16.08	2.77
8/7/2018	11:41:30	16.08	2.76
8/7/2018	11:41:40	16.09	2.74
8/7/2018	11:41:50	16.09	2.76
8/7/2018	11:42:00	16.08	2.76
8/7/2018	11:42:10	16.07	2.78
8/7/2018	11:42:20	16.09	2.75
8/7/2018	11:42:30	16.10	2.74
8/7/2018	11:42:40	16.11	2.73
8/7/2018	11:42:50	16.10	2.74
8/7/2018	11:43:00	16.10	2.75
8/7/2018	11:43:10	16.10	2.75
8/7/2018	11:43:20	16.11	2.74
8/7/2018	11:43:30	16.13	2.73
8/7/2018	11:43:40	16.11	2.73
8/7/2018	11:43:50	16.13	2.73
8/7/2018	11:44:00	16.11	2.74
8/7/2018	11:44:10	16.13	2.74
8/7/2018	11:44:20	16.12	2.74
8/7/2018	11:44:30	16.11	2.74
8/7/2018	11:44:40	16.11	2.74
8/7/2018	11:44:50	16.11	2.75
8/7/2018	11:45:00	16.07	2.77
8/7/2018	11:45:10	16.10	2.76
8/7/2018	11:45:20	16.09	2.77
8/7/2018	11:45:30	16.08	2.79
8/7/2018	11:45:40	16.07	2.79
8/7/2018	11:45:50	16.08	2.77
8/7/2018	11:46:00	16.09	2.77
8/7/2018	11:46:10	16.09	2.77
8/7/2018	11:46:20	16.08	2.78
8/7/2018	11:46:30	16.10	2.78
8/7/2018	11:46:40	16.09	2.79
8/7/2018	11:46:50	16.09	2.78
8/7/2018	11:47:00	16.09	2.79
8/7/2018	11:47:10	16.10	2.78
8/7/2018	11:47:20	16.10	2.79
8/7/2018	11:47:30	16.09	2.80
8/7/2018	11:47:40	16.09	2.81
8/7/2018	11:47:50	16.06	2.82
8/7/2018	11:48:00	16.08	2.81

8/7/2018	11:48:10	16.06	2.81
8/7/2018	11:48:20	16.09	2.81
8/7/2018	11:48:30	16.08	2.82
8/7/2018	11:48:40	16.09	2.82
8/7/2018	11:48:50	16.06	2.84
8/7/2018	11:49:00	16.08	2.82
8/7/2018	11:49:10	16.06	2.83
8/7/2018	11:49:20	16.08	2.82
8/7/2018	11:49:30	16.06	2.84
8/7/2018	11:49:40	16.06	2.84
8/7/2018	11:49:50	16.06	2.85
8/7/2018	11:50:00	16.07	2.83
8/7/2018	11:50:10	16.08	2.83
8/7/2018	11:50:20	16.07	2.83
8/7/2018	11:50:30	16.08	2.84
8/7/2018	11:50:40	16.07	2.84
8/7/2018	11:50:50	16.06	2.85
8/7/2018	11:51:00	16.07	2.85
8/7/2018	11:51:10	16.08	2.85
8/7/2018	11:51:20	16.08	2.84
8/7/2018	11:51:30	16.07	2.84
8/7/2018	11:51:40	16.06	2.86
8/7/2018	11:51:50	16.08	2.85
8/7/2018	11:52:00	16.08	2.86
8/7/2018	11:52:10	16.10	2.84
8/7/2018	11:52:20	16.09	2.83
8/7/2018	11:52:30	16.10	2.83
8/7/2018	11:52:40	16.09	2.84
8/7/2018	11:52:50	16.11	2.83
8/7/2018	11:53:00	16.11	2.83
8/7/2018	11:53:10	16.11	2.83
8/7/2018	11:53:20	16.09	2.82
8/7/2018	11:53:30	16.12	2.81
8/7/2018	11:53:40	16.12	2.81
8/7/2018	11:53:50	16.13	2.81
8/7/2018	11:54:00	16.13	2.82
8/7/2018	11:54:10	16.11	2.82
8/7/2018	11:54:20	16.11	2.82
8/7/2018	11:54:30	16.10	2.81
8/7/2018	11:54:40	16.13	2.80
8/7/2018	11:54:50	16.12	2.80
8/7/2018	11:55:00	16.14	2.81
8/7/2018	11:55:10	16.13	2.80
8/7/2018	11:55:20	16.16	2.79
8/7/2018	11:55:30	16.14	2.79
8/7/2018	11:55:40	16.16	2.79
8/7/2018	11:55:50	16.13	2.80

8/7/2018	11:56:00	16.17	2.78
8/7/2018	11:56:10	16.17	2.79
8/7/2018	11:56:20	16.16	2.78
8/7/2018	11:56:30	16.16	2.78
8/7/2018	11:56:40	16.17	2.77
8/7/2018	11:56:50	16.15	2.78
8/7/2018	11:57:00	16.14	2.79
8/7/2018	11:57:10	16.14	2.80
8/7/2018	11:57:20	16.13	2.79
8/7/2018	11:57:30	16.12	2.80
8/7/2018	11:57:40	16.12	2.78
8/7/2018	11:57:50	16.13	2.79
8/7/2018	11:58:00	16.11	2.80
8/7/2018	11:58:10	16.13	2.79
8/7/2018	11:58:20	16.13	2.79
8/7/2018	11:58:30	16.15	2.78
8/7/2018	11:58:40	16.15	2.77
8/7/2018	11:58:50	16.16	2.76
8/7/2018	11:59:00	16.16	2.77
8/7/2018	11:59:10	16.16	2.77
8/7/2018	11:59:20	16.15	2.78
8/7/2018	11:59:30	16.17	2.78
8/7/2018	11:59:40	16.12	2.79
8/7/2018	11:59:50	16.13	2.78
8/7/2018	12:00:00	16.11	2.79
8/7/2018	12:00:10	16.13	2.78
8/7/2018	12:00:20	16.11	2.80
8/7/2018	12:00:30	16.12	2.79
8/7/2018	12:00:40	16.11	2.80
8/7/2018	12:00:50	16.10	2.79
8/7/2018	12:01:00	16.10	2.79
8/7/2018	12:01:10	16.11	2.79
8/7/2018	12:01:20	16.11	2.79
8/7/2018	12:01:30	16.10	2.81
8/7/2018	12:01:40	16.09	2.81
8/7/2018	12:01:50	16.10	2.80
8/7/2018	12:02:00	16.10	2.79
8/7/2018	12:02:10	16.11	2.78
8/7/2018	12:02:20	16.11	2.79
8/7/2018	12:02:30	16.10	2.79
8/7/2018	12:02:40	16.10	2.80
8/7/2018	12:02:50	16.06	2.83
8/7/2018	12:03:00	16.04	2.83
8/7/2018	12:03:10	16.05	2.81
8/7/2018	12:03:20	16.09	2.80
8/7/2018	12:03:30	16.07	2.81
8/7/2018	12:03:40	16.07	2.81

8/7/2018	12:03:50	16.04	2.83
8/7/2018	12:04:00	16.09	2.79
8/7/2018	12:04:10	16.10	2.80
8/7/2018	12:04:20	16.08	2.80
8/7/2018	12:04:30	16.07	2.81
8/7/2018	12:04:40	16.06	2.82
8/7/2018	12:04:50	16.04	2.83
8/7/2018	12:05:00	16.05	2.82
8/7/2018	12:05:10	16.05	2.83
8/7/2018	12:05:20	16.03	2.82
8/7/2018	12:05:30	16.05	2.82
8/7/2018	12:05:40	16.04	2.83
8/7/2018	12:05:50	16.05	2.82
8/7/2018	12:06:00	16.05	2.82
8/7/2018	12:06:10	16.04	2.82
8/7/2018	12:06:20	16.02	2.83
8/7/2018	12:06:30	16.06	2.81
8/7/2018	12:06:40	16.04	2.83
8/7/2018	12:06:50	16.07	2.82
8/7/2018	12:07:00	16.03	2.84
8/7/2018	12:07:10	16.05	2.83
8/7/2018	12:07:20	16.05	2.82
8/7/2018	12:07:30	16.04	2.82
8/7/2018	12:07:40	16.03	2.84
8/7/2018	12:07:50	16.03	2.83
8/7/2018	12:08:00	16.03	2.84
8/7/2018	12:08:10	16.04	2.83
8/7/2018	12:08:20	16.04	2.83
8/7/2018	12:08:30	16.03	2.82
8/7/2018	12:08:40	16.04	2.82
8/7/2018	12:08:50	16.05	2.82
8/7/2018	12:09:00	16.06	2.82
8/7/2018	12:09:10	16.05	2.81
8/7/2018	12:09:20	16.06	2.80
8/7/2018	12:09:30	16.07	2.80
8/7/2018	12:09:40	16.06	2.81
8/7/2018	12:09:50	16.04	2.81
8/7/2018	12:10:00	16.08	2.81
8/7/2018	12:10:10	16.06	2.82
8/7/2018	12:10:20	16.08	2.81
8/7/2018	12:10:30	16.07	2.80
8/7/2018	12:10:40	16.11	2.79
8/7/2018	12:10:50	16.10	2.79
8/7/2018	12:11:00	16.10	2.79
8/7/2018	12:11:10	16.12	2.78
8/7/2018	12:11:20	16.13	2.78
8/7/2018	12:11:30	16.13	2.78

8/7/2018	12:11:40	16.12	2.77
8/7/2018	12:11:50	16.14	2.76
8/7/2018	12:12:00	16.15	2.76
8/7/2018	12:12:10	16.17	2.76
8/7/2018	12:12:20	16.17	2.76
8/7/2018	12:12:30	16.18	2.76
8/7/2018	12:12:40	16.17	2.76
8/7/2018	12:12:50	16.16	2.75
8/7/2018	12:13:00	16.16	2.75
8/7/2018	12:13:10	16.19	2.75
8/7/2018	12:13:20	16.15	2.76
8/7/2018	12:13:30	16.16	2.77
8/7/2018	12:13:40	16.14	2.76
8/7/2018	12:13:50	16.15	2.76
8/7/2018	12:14:00	16.14	2.77
8/7/2018	12:14:10	16.15	2.76
8/7/2018	12:14:20	16.15	2.76
8/7/2018	12:14:30	16.16	2.77
8/7/2018	12:14:40	16.13	2.77
8/7/2018	12:14:50	16.16	2.76
8/7/2018	12:15:00	16.14	2.77
8/7/2018	12:15:10	16.15	2.76
8/7/2018	12:15:20	16.14	2.77
8/7/2018	12:15:30	16.14	2.77
8/7/2018	12:15:40	16.15	2.77
8/7/2018	12:15:50	16.15	2.76
8/7/2018	12:16:00	16.14	2.77
8/7/2018	12:16:10	16.13	2.78
8/7/2018	12:16:20	16.13	2.77
8/7/2018	12:16:30	16.13	2.78
8/7/2018	12:16:40	16.15	2.77
8/7/2018	12:16:50	16.13	2.77
8/7/2018	12:17:00	16.16	2.76
8/7/2018	12:17:10	16.13	2.77
8/7/2018	12:17:20	16.13	2.78
8/7/2018	12:17:30	16.10	2.79
8/7/2018	12:17:40	16.13	2.77
8/7/2018	12:17:50	16.12	2.77
8/7/2018	12:18:00	16.13	2.77
8/7/2018	12:18:10	16.12	2.77
8/7/2018	12:18:20	16.14	2.77
8/7/2018	12:18:30	16.10	2.81
8/7/2018	12:18:40	16.06	2.81
8/7/2018	12:18:50	16.08	2.80
8/7/2018	12:19:00	16.10	2.78
8/7/2018	12:19:10	16.10	2.79
8/7/2018	12:19:20	16.09	2.80

8/7/2018	12:19:30	16.09	2.81
8/7/2018	12:19:40	16.07	2.81
8/7/2018	12:19:50	16.08	2.80
8/7/2018	12:20:00	16.08	2.80
8/7/2018	12:20:10	16.07	2.80
8/7/2018	12:20:20	16.06	2.81
8/7/2018	12:20:30	16.05	2.81
8/7/2018	12:20:40	16.05	2.82
8/7/2018	12:20:50	16.05	2.81
8/7/2018	12:21:00	16.05	2.80
8/7/2018	12:21:10	16.04	2.80
8/7/2018	12:21:20	16.03	2.81
8/7/2018	12:21:30	16.02	2.81
8/7/2018	12:21:40	16.03	2.81
8/7/2018	12:21:50	16.04	2.82
8/7/2018	12:22:00	15.99	2.84
8/7/2018	12:22:10	16.04	2.80
8/7/2018	12:22:20	16.03	2.81
8/7/2018	12:22:30	16.02	2.82
8/7/2018	12:22:40	16.01	2.83
8/7/2018	12:22:50	16.00	2.84
8/7/2018	12:23:00	16.00	2.83
8/7/2018	12:23:10	16.02	2.82
8/7/2018	12:23:20	16.04	2.80
8/7/2018	12:23:30	16.01	2.82
8/7/2018	12:23:40	16.03	2.82
8/7/2018	12:23:50	16.01	2.83
8/7/2018	12:24:00	16.03	2.82
8/7/2018	12:24:10	16.00	2.82
8/7/2018	12:24:20	16.04	2.81
8/7/2018	12:24:30	16.04	2.81
8/7/2018	12:24:40	16.06	2.80
8/7/2018	12:24:50	16.06	2.81
8/7/2018	12:25:00	16.05	2.82
8/7/2018	12:25:10	16.03	2.81
8/7/2018	12:25:20	16.06	2.80
8/7/2018	12:25:30	16.05	2.80
8/7/2018	12:25:40	16.06	2.80
8/7/2018	12:25:50	16.06	2.80
8/7/2018	12:26:00	16.07	2.80
8/7/2018	12:26:10	16.06	2.81
8/7/2018	12:26:20	16.05	2.81
8/7/2018	12:26:30	16.03	2.83
8/7/2018	12:26:40	16.02	2.82
8/7/2018	12:26:50	16.02	2.83
8/7/2018	12:27:00	16.02	2.84
8/7/2018	12:27:10	16.01	2.84

8/7/2018	12:27:20	16.01	2.84		
8/7/2018	12:27:30	16.02	2.83		
8/7/2018	12:27:40	16.02	2.83		
8/7/2018	12:27:50	16.04	2.82		
8/7/2018	12:28:00	16.02	2.83		
8/7/2018	12:28:10	16.05	2.82		
8/7/2018	12:28:20	16.01	2.85		
8/7/2018	12:28:30	16.01	2.84		
8/7/2018	12:28:40	16.01	2.83		
8/7/2018	12:28:50	16.04	2.81		
8/7/2018	12:29:00	16.04	2.82		
8/7/2018	12:29:10	16.05	2.81		
8/7/2018	12:29:20	16.07	2.81		
8/7/2018	12:29:30	16.08	2.79		
8/7/2018	12:29:40	16.08	2.79		
8/7/2018	12:29:50	16.07	2.79		
8/7/2018	12:30:00	16.08	2.79		
8/7/2018	12:30:10	16.07	2.80		
8/7/2018	12:30:20	16.07	2.80		
8/7/2018	12:30:30	16.07	2.79		
8/7/2018	12:30:40	16.08	2.79		
8/7/2018	12:30:50	16.08	2.78		
8/7/2018	12:31:00	16.08	2.80		
8/7/2018	12:31:10	16.02	2.81		
8/7/2018	12:31:20	16.05	2.81		
8/7/2018	12:31:30	16.07	2.80		
8/7/2018	12:31:40	16.09	2.79		
8/7/2018	12:31:50	16.08	2.78	End Run	2
8/7/2018	12:32:00	16.08	2.77		
8/7/2018	12:32:10	16.08	2.78		
8/7/2018	12:32:20	16.10	2.78		
8/7/2018	12:32:30	16.09	2.78		
8/7/2018	12:32:40	16.10	2.77		
8/7/2018	12:32:50	16.09	2.77		
8/7/2018	12:33:00	16.11	2.77		
8/7/2018	12:33:10	16.10	2.78		
8/7/2018	12:33:20	16.10	2.79		
8/7/2018	12:33:30	16.08	2.80		
8/7/2018	12:33:40	16.09	2.79		
8/7/2018	12:33:50	16.08	2.80		
8/7/2018	12:34:00	16.08	2.78		
8/7/2018	12:34:10	16.09	2.78		
8/7/2018	12:34:20	16.08	2.79		
8/7/2018	12:34:30	16.08	2.79		
8/7/2018	12:34:40	16.09	2.79		
8/7/2018	12:34:50	16.10	2.78		
8/7/2018	12:35:00	16.08	2.79		

8/7/2018	12:35:10	16.08	2.78
8/7/2018	12:35:20	16.08	2.78
8/7/2018	12:35:30	17.33	1.83
8/7/2018	12:35:40	19.90	0.77
8/7/2018	12:35:50	20.61	0.54
8/7/2018	12:36:00	20.73	0.48
8/7/2018	12:36:10	20.75	0.46
8/7/2018	12:36:20	20.76	0.46
8/7/2018	12:36:30	20.77	0.45
8/7/2018	12:36:40	20.76	0.45
8/7/2018	12:36:50	20.76	0.45
8/7/2018	12:37:00	20.77	0.44
8/7/2018	12:37:10	20.76	0.44
8/7/2018	12:37:20	20.75	0.44
8/7/2018	12:37:30	20.76	0.43
8/7/2018	12:37:40	20.77	0.42
8/7/2018	12:37:50	20.77	0.42
8/7/2018	12:38:00	20.77	0.42
8/7/2018	12:38:10	20.77	0.41
8/7/2018	12:38:20	20.78	0.41
8/7/2018	12:38:30	20.77	0.41
8/7/2018	12:38:40	20.78	0.41
8/7/2018	12:38:50	20.78	0.41
8/7/2018	12:39:00	20.77	0.40
8/7/2018	12:39:10	20.78	0.40
8/7/2018	12:39:20	20.77	0.40
8/7/2018	12:39:30	20.78	0.40
8/7/2018	12:39:40	20.77	0.40
8/7/2018	12:39:50	20.77	0.40
8/7/2018	12:40:00	20.78	0.40
8/7/2018	12:40:10	20.77	0.40
8/7/2018	12:40:20	20.79	0.39
8/7/2018	12:40:30	20.77	0.39
8/7/2018	12:40:40	20.78	0.40
8/7/2018	12:40:50	20.78	0.39

Date	Time	Ch1 Thermo 410i O2 %D	Ch2 Thermo 410i CO2 %D
8/7/2018	12:45:51	-0.01	0.27
8/7/2018	12:46:01	-0.02	0.27
8/7/2018	12:46:11	-0.02	0.26
8/7/2018	12:46:21	-0.02	0.26
8/7/2018	12:46:31	-0.03	0.25

8/7/2018	12:46:41	-0.02	0.25
8/7/2018	12:46:51	-0.03	0.24
8/7/2018	12:47:01	-0.03	0.24
8/7/2018	12:47:11	**-0.04**	**0.23**
8/7/2018	12:47:21	**-0.02**	**0.23**
8/7/2018	12:47:31	**-0.03**	**0.22**
8/7/2018	12:47:41	**-0.03**	**0.22**
8/7/2018	12:47:51	**-0.03**	**0.22**
8/7/2018	12:48:01	**-0.03**	**0.21**
8/7/2018	12:48:11	-0.03	0.21
8/7/2018	12:48:21	0.11	0.20
8/7/2018	12:48:31	9.29	0.21
8/7/2018	12:48:41	18.30	0.22
8/7/2018	12:48:51	20.34	0.22
8/7/2018	12:49:01	20.67	0.21
8/7/2018	12:49:11	20.72	0.21
8/7/2018	12:49:21	14.89	1.47
8/7/2018	12:49:31	15.35	11.89
8/7/2018	12:49:41	20.52	16.62
8/7/2018	12:49:51	21.74	17.83
8/7/2018	12:50:01	21.96	18.17
8/7/2018	12:50:11	21.95	18.32
8/7/2018	12:50:21	21.94	18.45
8/7/2018	12:50:31	21.91	18.49
8/7/2018	12:50:41	21.90	18.48
8/7/2018	12:50:51	21.89	18.50
8/7/2018	12:51:01	21.89	18.54
8/7/2018	12:51:11	21.88	18.58
8/7/2018	12:51:21	**21.87**	**18.61**
8/7/2018	12:51:31	**21.88**	**18.61**
8/7/2018	12:51:41	**21.87**	**18.59**
8/7/2018	12:51:51	**21.87**	**18.55**
8/7/2018	12:52:01	**21.88**	**18.56**
8/7/2018	12:52:11	**21.88**	**18.59**
8/7/2018	12:52:21	21.87	18.62
8/7/2018	12:52:31	21.88	18.63
8/7/2018	12:52:41	21.87	18.60
8/7/2018	12:52:51	21.88	18.56
8/7/2018	12:53:01	21.88	18.55

Zero N2

Averages

O2	CO2
-0.03	0.22

21.97 O2, 19.01 CO2
Cylinder SG9149611BAL

Averages

O2	CO2
21.88	18.59

Date	Time	Ch1 Thermo 410i O2 %D	Ch2 Thermo 410i CO2 %D
8/7/2018	13:24:00	20.82	0.16

8/7/2018	13:25:00	20.80	0.16
8/7/2018	13:26:00	20.81	0.16
8/7/2018	13:27:00	20.82	0.16
8/7/2018	13:28:00	20.82	0.16
8/7/2018	13:29:00	20.82	0.16
8/7/2018	13:30:00	20.81	0.16
8/7/2018	13:31:00	20.81	0.16
8/7/2018	13:32:00	20.82	0.16
8/7/2018	13:33:00	20.82	0.16
8/7/2018	13:34:00	20.82	0.16
8/7/2018	13:35:00	20.81	0.16
8/7/2018	13:36:00	20.80	0.17
8/7/2018	13:37:00	20.08	0.50
8/7/2018	13:38:00	20.81	0.18
8/7/2018	13:39:00	20.80	0.18
8/7/2018	13:40:00	20.82	0.18
8/7/2018	13:41:00	20.80	0.19
8/7/2018	13:42:00	20.60	0.39
8/7/2018	13:43:00	16.30	2.46
8/7/2018	13:44:00	16.02	2.62
8/7/2018	13:45:00	15.98	2.65
8/7/2018	13:46:00	15.97	2.67
8/7/2018	13:47:00	15.99	2.66
8/7/2018	13:48:00	15.88	2.74
8/7/2018	13:49:00	15.73	2.83
8/7/2018	13:50:00	15.70	2.84
8/7/2018	13:51:00	15.70	2.85
8/7/2018	13:52:00	15.59	2.92
8/7/2018	13:53:00	15.72	2.83
8/7/2018	13:54:00	15.82	2.78
8/7/2018	13:55:00	16.00	2.67
8/7/2018	13:56:00	16.21	2.57
8/7/2018	13:57:00	16.24	2.56
8/7/2018	13:58:00	16.28	2.54
8/7/2018	13:59:00	16.33	2.52
8/7/2018	14:00:00	16.33	2.53
8/7/2018	14:01:00	16.33	2.53
8/7/2018	14:02:00	16.33	2.53
8/7/2018	14:03:00	16.30	2.55
8/7/2018	14:04:00	16.32	2.54
8/7/2018	14:05:00	16.28	2.56
8/7/2018	14:06:00	16.28	2.57
8/7/2018	14:07:00	16.21	2.61
8/7/2018	14:08:00	16.17	2.64
8/7/2018	14:09:00	16.15	2.65
8/7/2018	14:10:00	16.04	2.72
8/7/2018	14:11:00	15.97	2.76

Start Run 3

Run Averages

O2	CO2
16.04	2.78

8/7/2018	14:12:00	15.93	2.79		
8/7/2018	14:13:00	15.84	2.84		
8/7/2018	14:14:00	15.80	2.87		
8/7/2018	14:15:00	15.87	2.85		
8/7/2018	14:16:00	15.78	2.91		
8/7/2018	14:17:00	15.68	2.97		
8/7/2018	14:18:00	15.57	3.05		
8/7/2018	14:19:00	15.47	3.11		
8/7/2018	14:20:00	15.46	3.13		
8/7/2018	14:21:00	15.32	3.22		
8/7/2018	14:22:00	15.24	3.28		
8/7/2018	14:23:00	15.18	3.32		
8/7/2018	14:24:00	15.17	3.34		
8/7/2018	14:25:00	15.16	3.35		
8/7/2018	14:26:00	15.31	3.28		
8/7/2018	14:27:00	15.66	3.10		
8/7/2018	14:28:00	16.07	2.89		
8/7/2018	14:29:00	16.69	2.57		
8/7/2018	14:30:00	17.09	2.37		
8/7/2018	14:31:00	17.04	2.41		
8/7/2018	14:32:00	16.47	2.72		
8/7/2018	14:33:00	16.12	2.90		
8/7/2018	14:34:00	16.06	2.94		
8/7/2018	14:35:00	16.13	2.89		
8/7/2018	14:36:00	16.37	2.76		
8/7/2018	14:37:00	16.68	2.59		
8/7/2018	14:38:00	16.80	2.53		
8/7/2018	14:39:00	16.82	2.51		
8/7/2018	14:40:00	16.56	2.65		
8/7/2018	14:41:00	16.30	2.77		
8/7/2018	14:42:00	16.20	2.82		
8/7/2018	14:43:00	16.17	2.83		
8/7/2018	14:44:00	16.17	2.81		
8/7/2018	14:45:00	16.16	2.81	End Run	3
8/7/2018	14:46:00	16.11	2.83		
8/7/2018	14:47:00	16.01	2.89		
8/7/2018	14:48:00	15.81	3.01		
8/7/2018	14:49:00	15.66	3.09		
8/7/2018	14:50:00	15.55	3.15		
8/7/2018	14:51:00	19.87	0.75		

Date	Time	Ch1 Therr %D	Ch2 Thermo 410i CO2 %D
8/7/2018	14:53:13	21.95	17.40
8/7/2018	14:53:23	21.95	18.07

8/7/2018	14:53:33	21.91	18.61
8/7/2018	14:53:43	21.89	18.76
8/7/2018	14:53:53	21.88	18.79
8/7/2018	14:54:03	21.86	18.78
8/7/2018	14:54:13	21.86	18.77
8/7/2018	14:54:23	21.86	18.80
8/7/2018	14:54:33	**21.85**	**18.84**
8/7/2018	14:54:43	**21.86**	**18.87**
8/7/2018	14:54:53	**21.86**	**18.86**
8/7/2018	14:55:03	**21.85**	**18.81**
8/7/2018	14:55:13	**21.85**	**18.81**
8/7/2018	14:55:23	**21.85**	**18.84**
8/7/2018	14:55:33	21.84	18.84
8/7/2018	14:55:43	21.50	12.37
8/7/2018	14:55:53	20.82	3.17
8/7/2018	14:56:03	20.71	0.94
8/7/2018	14:56:13	20.05	4.84
8/7/2018	14:56:23	8.84	2.72
8/7/2018	14:56:33	1.55	0.82
8/7/2018	14:56:43	0.23	0.47
8/7/2018	14:56:53	0.02	0.40
8/7/2018	14:57:03	-0.02	0.37
8/7/2018	14:57:13	-0.03	0.36
8/7/2018	14:57:23	-0.03	0.35
8/7/2018	14:57:33	**-0.03**	**0.34**
8/7/2018	14:57:43	**-0.04**	**0.34**
8/7/2018	14:57:53	**-0.03**	**0.33**
8/7/2018	14:58:03	**-0.04**	**0.33**
8/7/2018	14:58:13	**-0.04**	**0.32**
8/7/2018	14:58:23	**-0.05**	**0.32**
8/7/2018	14:58:33	-0.05	0.32

21.99 O2 19.01 CO2

Averages

O2	CO2
21.85	18.84

Zero N2

Averages

O2	CO2
-0.04	0.33

Haile Gold Mine
PT-5A
Kershaw, SC

System Linearity 8/7/2018

Analyzer	Cal Gas Value	Analyzer Response	Percent Difference
O_2	0.00	-0.01	-0.04
	12.06	12.10	0.19
	21.97	22.00	0.11
CO_2	0.00	0.26	1.37
	9.92	10.30	1.97
	19.01	18.84	-0.89

System Bias and Drift 8/7/2018

	Analyzer	Gas	Range	Measured Concentration Direct	System	Percent Bias
Pre Run 1	O2	Zero	21.98	-0.01	0.01	0.10
Pre Run 1	O2	Up Scale	21.98	22.00	21.91	-0.39
Pre Run 1	CO2	Zero	19.01	0.26	0.31	0.26
Pre Run 1	CO2	Up Scale	19.01	18.84	18.75	-0.46

	Analyzer	Gas	Range	Measured Concentration Direct	System	Percent Bias	Drift
Post Run 1	O2	Zero	21.98	-0.01	0.02	0.11	0.01
Post Run 1	O2	Up Scale	21.98	22.00	21.91	-0.37	0.02
Post Run 1	CO2	Zero	19.01	0.26	0.24	-0.12	0.39
Post Run 1	CO2	Up Scale	19.01	18.84	18.62	-1.14	0.68
Post Run 2	O2	Zero	21.98	-0.01	-0.03	-0.10	0.20
Post Run 2	O2	Up Scale	21.98	22.00	21.88	-0.55	0.17
Post Run 2	CO2	Zero	19.01	0.26	0.22	-0.20	0.08
Post Run 2	CO2	Up Scale	19.01	18.84	18.59	-1.34	0.20
Post Run 3	O2	Zero	21.98	-0.01	-0.04	-0.14	0.04
Post Run 3	O2	Up Scale	21.98	22.00	21.85	-0.64	0.10
Post Run 3	CO2	Zero	19.01	0.26	0.33	0.37	0.57
Post Run 3	CO2	Up Scale	19.01	18.84	18.84	-0.01	1.33

Haile Gold Mine
Kershaw, SC
PT-5B

Bias Correction

Run	Gas	Cal Gas Value	Initial Zero	Initial Upscale	Final Zero	Final Upscale	Average Zero	Average Upscale	Run Average	Corrected Average
1	O_2	21.97	-0.04	21.83	-0.06	21.85	-0.05	21.84	20.77	20.90
1	CO_2	19.01	0.18	18.81	0.10	18.67	0.14	18.74	0.31	0.18
2	O_2	21.97	-0.06	21.85	-0.04	21.86	-0.05	21.85	20.76	20.87
2	CO_2	19.01	0.10	18.67	0.26	18.79	0.18	18.73	0.33	0.16
3	O_2	21.97	-0.04	21.86	-0.08	21.80	-0.06	21.83	20.72	20.86
3	CO_2	19.01	0.26	18.79	0.36	18.94	0.31	18.87	0.37	0.06

Haile Gold Mine
Kershaw, SC
PT-5B

Date	Time	Ch1 Therr %D	Ch2 Thermo 410i CO2 %D	
8/1/2018	9:08:59	20.42	0.21	
8/1/2018	9:09:09	20.43	0.21	
8/1/2018	9:09:19	15.41	0.17	
8/1/2018	9:09:29	3.42	0.12	
8/1/2018	9:09:39	0.46	0.11	
8/1/2018	9:09:49	0.02	0.11	Direct Calibration
8/1/2018	9:09:59	-0.04	0.11	
8/1/2018	9:10:09	**-0.06**	**0.11**	Zero N2
8/1/2018	9:10:19	**-0.05**	**0.11**	
8/1/2018	9:10:29	**-0.06**	**0.11**	
8/1/2018	9:10:39	**-0.05**	**0.12**	Averages
8/1/2018	9:10:49	**-0.07**	**0.12**	O2 CO2
8/1/2018	9:10:59	**-0.06**	**0.12**	-0.06 0.12
8/1/2018	9:11:09	0.07	0.13	
8/1/2018	9:11:19	9.50	0.19	
8/1/2018	9:11:29	18.03	1.94	
8/1/2018	9:11:39	19.91	13.53	
8/1/2018	9:11:49	21.47	17.91	
8/1/2018	9:11:59	21.82	18.74	
8/1/2018	9:12:09	21.90	18.80	
8/1/2018	9:12:19	**21.92**	**18.76**	21.97 O2, 19.01 CO2
8/1/2018	9:12:29	**21.92**	**18.79**	Cylinder SG9149611BAL
8/1/2018	9:12:39	**21.92**	**18.80**	
8/1/2018	9:12:49	**21.92**	**18.83**	Averages
8/1/2018	9:12:59	**21.93**	**18.87**	O2 CO2
8/1/2018	9:13:09	**21.92**	**18.84**	21.92 18.82
8/1/2018	9:13:19	21.93	18.84	
8/1/2018	9:13:29	21.82	15.15	
8/1/2018	9:13:39	21.07	4.27	
8/1/2018	9:13:49	20.62	1.15	
8/1/2018	9:13:59	17.81	6.18	
8/1/2018	9:14:09	13.27	9.55	
8/1/2018	9:14:19	12.21	10.09	
8/1/2018	9:14:29	12.04	10.16	
8/1/2018	9:14:39	**12.03**	**10.19**	12.06 O2, 9.96 CO2

8/1/2018	9:14:49	**12.03**	**10.21**	Cylinder ALM-040316
8/1/2018	9:14:59	**12.02**	**10.22**	
8/1/2018	9:15:09	**12.04**	**10.23**	Averages
8/1/2018	9:15:19	**12.03**	**10.20**	O2 CO2
8/1/2018	9:15:29	**12.02**	**10.24**	12.03 10.22
8/1/2018	9:15:39	12.03	10.20	
8/1/2018	9:15:49	12.04	10.24	
8/1/2018	9:15:59	12.19	9.42	
8/1/2018	9:16:09	16.68	3.08	
8/1/2018	9:16:19	19.37	1.26	
8/1/2018	9:16:29	20.14	0.51	
8/1/2018	9:16:39	20.39	0.31	
8/1/2018	9:16:49	20.60	0.22	
8/1/2018	9:16:59	20.71	0.21	Bias Check
8/1/2018	9:17:09	20.76	0.21	
8/1/2018	9:17:19	20.78	0.20	
8/1/2018	9:17:29	20.76	0.21	
8/1/2018	9:17:39	18.02	0.53	
8/1/2018	9:17:49	8.46	0.47	
8/1/2018	9:17:59	1.66	0.23	
8/1/2018	9:18:09	0.23	0.19	
8/1/2018	9:18:19	0.02	0.18	
8/1/2018	9:18:29	-0.02	0.18	
8/1/2018	9:18:39	-0.02	0.18	
8/1/2018	9:18:49	-0.03	0.18	
8/1/2018	9:18:59	-0.04	0.18	
8/1/2018	9:19:09	**-0.05**	**0.18**	Zero N2
8/1/2018	9:19:19	**-0.03**	**0.18**	
8/1/2018	9:19:29	**-0.04**	**0.18**	
8/1/2018	9:19:39	**-0.05**	**0.18**	Averages
8/1/2018	9:19:49	**-0.04**	**0.18**	O2 CO2
8/1/2018	9:19:59	**-0.05**	**0.18**	-0.04 0.18
8/1/2018	9:20:09	0.85	0.19	
8/1/2018	9:20:19	12.34	0.21	
8/1/2018	9:20:29	19.15	0.22	
8/1/2018	9:20:39	19.95	0.22	
8/1/2018	9:20:49	12.19	5.19	
8/1/2018	9:20:59	17.52	15.55	
8/1/2018	9:21:09	20.90	18.07	
8/1/2018	9:21:19	21.67	18.64	
8/1/2018	9:21:29	21.80	18.79	
8/1/2018	9:21:39	21.83	18.78	
8/1/2018	9:21:49	21.82	18.85	
8/1/2018	9:21:59	**21.83**	**18.78**	21.99 O2, 19.01 CO2
8/1/2018	9:22:09	**21.83**	**18.79**	Cylinder SG9149611BAL
8/1/2018	9:22:19	**21.83**	**18.75**	
8/1/2018	9:22:29	**21.83**	**18.81**	Averages

8/1/2018	9:22:39	**21.83**	**18.86**
8/1/2018	9:22:49	**21.83**	**18.85**
8/1/2018	9:22:59	21.83	18.84
8/1/2018	9:23:09	21.76	16.29

O2	CO2
21.83	18.81

Date	Time	Ch1 Therr %D	Ch2 Thermo 410i CO2 %D
8/1/2018	9:48:00	20.81	0.22
8/1/2018	9:49:00	20.79	0.22
8/1/2018	9:50:00	20.76	0.23
8/1/2018	9:51:00	20.78	0.22
8/1/2018	9:52:00	20.79	0.22
8/1/2018	9:53:00	20.79	0.22
8/1/2018	9:54:00	20.78	0.23
8/1/2018	9:55:00	20.77	0.23
8/1/2018	9:56:00	20.72	0.20
8/1/2018	9:57:00	20.72	0.23
8/1/2018	9:58:00	20.72	0.24
8/1/2018	9:59:00	20.66	0.25
8/1/2018	10:00:00	20.41	0.25
8/1/2018	10:01:00	20.48	0.25
8/1/2018	10:02:00	20.51	0.25
8/1/2018	10:03:00	20.70	0.26
8/1/2018	10:04:00	20.79	0.26
8/1/2018	10:05:00	20.79	0.27
8/1/2018	10:06:00	20.80	0.27
8/1/2018	10:07:00	20.81	0.28
8/1/2018	10:08:00	20.80	0.29
8/1/2018	10:09:00	20.81	0.29
8/1/2018	10:10:00	20.81	0.29
8/1/2018	10:11:00	20.80	0.31
8/1/2018	10:12:00	20.80	0.31
8/1/2018	10:13:00	20.80	0.31
8/1/2018	10:14:00	20.80	0.32
8/1/2018	10:15:00	20.80	0.32
8/1/2018	10:16:00	20.80	0.33
8/1/2018	10:17:00	20.80	0.34
8/1/2018	10:18:00	20.80	0.34
8/1/2018	10:19:00	20.80	0.35
8/1/2018	10:20:00	20.80	0.35
8/1/2018	10:21:00	20.80	0.35
8/1/2018	10:22:00	20.80	0.35
8/1/2018	10:23:00	20.80	0.35
8/1/2018	10:24:00	20.80	0.36
8/1/2018	10:25:00	20.79	0.35

Start Run 1

Run Averages:

O2	CO2
20.77	0.31

8/1/2018	10:26:00	20.79	0.36		
8/1/2018	10:27:00	20.79	0.36		
8/1/2018	10:28:00	20.80	0.36		
8/1/2018	10:29:00	20.80	0.36		
8/1/2018	10:30:00	20.80	0.36		
8/1/2018	10:31:00	20.80	0.36		
8/1/2018	10:32:00	20.80	0.37		
8/1/2018	10:33:00	20.80	0.37		
8/1/2018	10:34:00	20.80	0.37		
8/1/2018	10:35:00	20.80	0.38		
8/1/2018	10:36:00	20.79	0.38		
8/1/2018	10:37:00	20.80	0.37		
8/1/2018	10:38:00	20.80	0.37		
8/1/2018	10:39:00	20.79	0.36		
8/1/2018	10:40:00	20.79	0.36		
8/1/2018	10:41:00	20.79	0.35		
8/1/2018	10:42:00	20.79	0.34		
8/1/2018	10:43:00	20.79	0.33		
8/1/2018	10:44:00	20.79	0.33		
8/1/2018	10:45:00	20.78	0.32		
8/1/2018	10:46:00	20.78	0.30		
8/1/2018	10:47:00	20.79	0.30		
8/1/2018	10:48:00	20.78	0.30		
8/1/2018	10:49:00	20.78	0.30		
8/1/2018	10:50:00	20.78	0.29		
8/1/2018	10:51:00	20.78	0.29		
8/1/2018	10:52:00	20.78	0.29		
8/1/2018	10:53:00	20.77	0.29		
8/1/2018	10:54:00	20.77	0.29		
8/1/2018	10:55:00	20.77	0.30		
8/1/2018	10:56:00	20.78	0.30		
8/1/2018	10:57:00	20.78	0.29		
8/1/2018	10:58:00	20.78	0.29		
8/1/2018	10:59:00	20.78	0.30		
8/1/2018	11:00:00	20.78	0.30		
8/1/2018	11:01:00	20.78	0.30		
8/1/2018	11:02:00	20.78	0.31		
8/1/2018	11:03:00	20.78	0.30		
8/1/2018	11:04:00	20.77	0.30		
8/1/2018	11:05:00	20.77	0.30		
8/1/2018	11:06:00	20.77	0.29	End Run	1
8/1/2018	11:07:00	20.77	0.28		
8/1/2018	11:08:00	20.77	0.27		
8/1/2018	11:09:00	20.77	0.26		
8/1/2018	11:10:00	20.77	0.25		
8/1/2018	11:11:00	20.76	0.24		
8/1/2018	11:12:00	20.76	0.24		

8/1/2018	11:13:00	20.75	0.24
8/1/2018	11:14:00	20.75	0.24
8/1/2018	11:15:00	20.75	0.24
8/1/2018	11:16:00	20.75	0.24
8/1/2018	11:17:00	20.75	0.24
8/1/2018	11:18:00	20.75	0.24
8/1/2018	11:19:00	20.75	0.24
8/1/2018	11:20:00	20.75	0.24
8/1/2018	11:21:00	20.75	0.23
8/1/2018	11:22:00	20.75	0.22
8/1/2018	11:23:00	20.75	0.22
8/1/2018	11:24:00	20.75	0.21
8/1/2018	11:25:00	20.75	0.21
8/1/2018	11:26:00	20.75	0.19
8/1/2018	11:27:00	20.75	0.18
8/1/2018	11:28:00	20.75	0.16
8/1/2018	11:29:00	20.75	0.15
8/1/2018	11:30:00	20.75	0.13
8/1/2018	11:31:00	20.75	0.13

Date	Time	Ch1 Therr %D	Ch2 Thermo 410i CO2 %D
8/1/2018	11:32:38	20.75	0.11
8/1/2018	11:32:48	20.78	1.20
8/1/2018	11:32:58	21.43	11.21
8/1/2018	11:33:08	21.83	17.02
8/1/2018	11:33:18	21.86	18.38
8/1/2018	11:33:28	21.85	18.63
8/1/2018	11:33:38	21.85	18.63
8/1/2018	11:33:48	**21.85**	**18.64**
8/1/2018	11:33:58	**21.85**	**18.61**
8/1/2018	11:34:08	**21.85**	**18.67**
8/1/2018	11:34:18	**21.85**	**18.72**
8/1/2018	11:34:28	**21.85**	**18.68**
8/1/2018	11:34:38	**21.85**	**18.71**
8/1/2018	11:34:48	21.85	18.65
8/1/2018	11:34:58	21.85	18.65
8/1/2018	11:35:08	21.84	18.68
8/1/2018	11:35:18	21.85	18.71
8/1/2018	11:35:28	21.85	18.71
8/1/2018	11:35:38	21.85	18.73
8/1/2018	11:35:48	21.70	14.46
8/1/2018	11:35:58	21.02	3.75
8/1/2018	11:36:08	20.79	0.65
8/1/2018	11:36:18	20.77	0.22

21.99 O2, 19.01 CO2
Cylinder SG9149611BAL

Averages

O2	CO2
21.85	18.67

8/1/2018	11:36:28	20.77	0.15
8/1/2018	11:36:38	20.77	0.13
8/1/2018	11:36:48	20.77	0.12
8/1/2018	11:36:58	20.77	0.12
8/1/2018	11:37:08	20.77	0.11
8/1/2018	11:37:18	20.82	2.36
8/1/2018	11:37:28	17.85	7.15
8/1/2018	11:37:38	5.32	1.73
8/1/2018	11:37:48	0.78	0.35
8/1/2018	11:37:58	0.10	0.16
8/1/2018	11:38:08	-0.01	0.12
8/1/2018	11:38:18	-0.04	0.11
8/1/2018	11:38:28	-0.05	0.10
8/1/2018	11:38:38	-0.05	0.10
8/1/2018	11:38:48	**-0.05**	**0.10**
8/1/2018	11:38:58	**-0.05**	**0.10**
8/1/2018	11:39:08	**-0.06**	**0.10**
8/1/2018	11:39:18	**-0.05**	**0.09**
8/1/2018	11:39:28	**-0.06**	**0.09**
8/1/2018	11:39:38	**-0.06**	**0.09**
8/1/2018	11:39:48	-0.05	0.09

Zero N2

Averages

O2	CO2
-0.06	0.10

Date	Time	Ch1 Therr %D	Ch2 Thermo 410i CO2 %D
8/1/2018	12:15:00	20.77	0.24
8/1/2018	12:16:00	20.70	0.25
8/1/2018	12:17:00	20.74	0.26
8/1/2018	12:18:00	20.75	0.26
8/1/2018	12:19:00	20.73	0.26
8/1/2018	12:20:00	20.75	0.27
8/1/2018	12:21:00	20.76	0.27
8/1/2018	12:22:00	20.76	0.27
8/1/2018	12:23:00	20.76	0.27
8/1/2018	12:24:00	20.77	0.27
8/1/2018	12:25:00	20.77	0.27
8/1/2018	12:26:00	20.77	0.27
8/1/2018	12:27:00	20.77	0.28
8/1/2018	12:28:00	20.76	0.28
8/1/2018	12:29:00	20.76	0.28
8/1/2018	12:30:00	20.76	0.29
8/1/2018	12:31:00	20.76	0.29
8/1/2018	12:32:00	20.76	0.28
8/1/2018	12:33:00	20.75	0.29
8/1/2018	12:34:00	20.76	0.29
8/1/2018	12:35:00	20.75	0.28

Start Run 2

Run Averages:

O2	CO2
20.76	0.33

8/1/2018	12:36:00	20.76	0.28
8/1/2018	12:37:00	20.77	0.29
8/1/2018	12:38:00	20.75	0.29
8/1/2018	12:39:00	20.76	0.30
8/1/2018	12:40:00	20.69	0.30
8/1/2018	12:41:00	20.67	0.31
8/1/2018	12:42:00	20.68	0.32
8/1/2018	12:43:00	20.72	0.32
8/1/2018	12:44:00	20.77	0.32
8/1/2018	12:45:00	20.77	0.33
8/1/2018	12:46:00	20.77	0.32
8/1/2018	12:47:00	20.77	0.32
8/1/2018	12:48:00	20.76	0.32
8/1/2018	12:49:00	20.76	0.33
8/1/2018	12:50:00	20.77	0.34
8/1/2018	12:51:00	20.77	0.34
8/1/2018	12:52:00	20.76	0.34
8/1/2018	12:53:00	20.76	0.34
8/1/2018	12:54:00	20.76	0.35
8/1/2018	12:55:00	20.76	0.35
8/1/2018	12:56:00	20.76	0.35
8/1/2018	12:57:00	20.76	0.36
8/1/2018	12:58:00	20.76	0.36
8/1/2018	12:59:00	20.77	0.36
8/1/2018	13:00:00	20.77	0.37
8/1/2018	13:01:00	20.77	0.37
8/1/2018	13:02:00	20.78	0.37
8/1/2018	13:03:00	20.77	0.37
8/1/2018	13:04:00	20.78	0.37
8/1/2018	13:05:00	20.78	0.37
8/1/2018	13:06:00	20.78	0.37
8/1/2018	13:07:00	20.78	0.37
8/1/2018	13:08:00	20.78	0.37
8/1/2018	13:09:00	20.78	0.37
8/1/2018	13:10:00	20.77	0.37
8/1/2018	13:11:00	20.77	0.37
8/1/2018	13:12:00	20.77	0.38
8/1/2018	13:13:00	20.72	0.38
8/1/2018	13:14:00	20.75	0.38
8/1/2018	13:15:00	20.76	0.38
8/1/2018	13:16:00	20.76	0.38
8/1/2018	13:17:00	20.76	0.39
8/1/2018	13:18:00	20.76	0.39
8/1/2018	13:19:00	20.76	0.39
8/1/2018	13:20:00	20.75	0.39
8/1/2018	13:21:00	20.75	0.40
8/1/2018	13:22:00	20.74	0.40

8/1/2018	13:23:00	20.75	0.40	
8/1/2018	13:24:00	20.75	0.40	
8/1/2018	13:25:00	20.75	0.40	End Run 2
8/1/2018	13:26:00	20.75	0.40	
8/1/2018	13:27:00	20.75	0.40	
8/1/2018	13:28:00	20.75	0.40	
8/1/2018	13:29:00	20.75	0.40	
8/1/2018	13:30:00	20.76	0.40	
8/1/2018	13:31:00	20.76	0.40	
8/1/2018	13:32:00	20.76	0.40	
8/1/2018	13:33:00	20.76	0.39	
8/1/2018	13:34:00	20.76	0.38	
8/1/2018	13:35:00	20.76	0.38	
8/1/2018	13:36:00	20.76	0.37	
8/1/2018	13:37:00	20.77	0.37	
8/1/2018	13:38:00	20.77	0.36	
8/1/2018	13:39:00	20.77	0.35	
8/1/2018	13:40:00	20.77	0.34	

Date	Time	Ch1 Therr %D	Ch2 Thermo 410i CO2 %D	
8/1/2018	13:40:59	20.67	0.32	
8/1/2018	13:41:09	20.69	0.32	
8/1/2018	13:41:19	20.73	0.32	
8/1/2018	13:41:29	20.76	0.31	
8/1/2018	13:41:39	17.62	0.77	
8/1/2018	13:41:49	5.52	0.64	
8/1/2018	13:41:59	0.88	0.35	
8/1/2018	13:42:09	0.11	0.29	
8/1/2018	13:42:19	-0.01	0.28	
8/1/2018	13:42:29	-0.03	0.28	
8/1/2018	13:42:39	**-0.03**	**0.27**	Zero N2
8/1/2018	13:42:49	**-0.04**	**0.27**	
8/1/2018	13:42:59	**-0.04**	**0.26**	
8/1/2018	13:43:09	**-0.04**	**0.26**	Averages
8/1/2018	13:43:19	**-0.04**	**0.26**	O2 CO2
8/1/2018	13:43:29	**-0.04**	**0.26**	-0.04 0.26
8/1/2018	13:43:39	-0.04	0.25	
8/1/2018	13:43:49	-0.05	0.25	
8/1/2018	13:43:59	-0.05	0.25	
8/1/2018	13:44:09	-0.05	0.25	
8/1/2018	13:44:19	-0.05	0.24	
8/1/2018	13:44:29	-0.05	0.24	
8/1/2018	13:44:39	2.42	0.25	
8/1/2018	13:44:49	14.82	0.26	

8/1/2018	13:44:59	19.69	0.26
8/1/2018	13:45:09	18.71	0.35
8/1/2018	13:45:19	12.83	9.22
8/1/2018	13:45:29	19.10	16.72
8/1/2018	13:45:39	21.26	18.40
8/1/2018	13:45:49	21.73	18.71
8/1/2018	13:45:59	21.83	18.68
8/1/2018	13:46:09	21.84	18.75
8/1/2018	13:46:19	21.81	18.78
8/1/2018	13:46:29	21.81	18.81
8/1/2018	13:46:39	21.83	18.81
8/1/2018	13:46:49	21.85	18.82
8/1/2018	13:46:59	21.87	18.76
8/1/2018	13:47:09	21.86	18.78
8/1/2018	13:47:19	21.86	18.79
8/1/2018	13:47:29	**21.85**	**18.80**
8/1/2018	13:47:39	**21.86**	**18.84**
8/1/2018	13:47:49	**21.86**	**18.80**
8/1/2018	13:47:59	**21.85**	**18.74**
8/1/2018	13:48:09	**21.86**	**18.75**
8/1/2018	13:48:19	**21.87**	**18.81**
8/1/2018	13:48:29	21.45	18.82

21.99 O2, 19.01 CO2
Cylinder SG9149611BAL

Averages

O2	CO2
21.86	18.79

Date	Time	Ch1 Therr %D	Ch2 Thermo 410i CO2 %D
8/1/2018	14:15:06	20.71	0.28
8/1/2018	14:16:06	20.72	0.29
8/1/2018	14:17:06	20.72	0.29
8/1/2018	14:18:06	20.72	0.30
8/1/2018	14:19:06	20.72	0.30
8/1/2018	14:20:06	20.72	0.31
8/1/2018	14:21:06	20.71	0.31
8/1/2018	14:22:06	20.72	0.32
8/1/2018	14:23:06	20.72	0.33
8/1/2018	14:24:06	20.74	0.33
8/1/2018	14:25:06	20.74	0.34
8/1/2018	14:26:06	20.74	0.34
8/1/2018	14:27:06	20.74	0.34
8/1/2018	14:28:06	20.74	0.35
8/1/2018	14:29:06	20.74	0.35
8/1/2018	14:30:06	20.74	0.35
8/1/2018	14:31:06	20.74	0.36
8/1/2018	14:32:06	20.74	0.36
8/1/2018	14:33:06	20.74	0.37
8/1/2018	14:34:06	20.74	0.37

Start Run 3

Run Averages:

O2	CO2
20.72	0.37

8/1/2018	14:35:06	20.74	0.37
8/1/2018	14:36:06	20.74	0.37
8/1/2018	14:37:06	20.74	0.38
8/1/2018	14:38:06	20.74	0.39
8/1/2018	14:39:06	20.73	0.38
8/1/2018	14:40:06	20.74	0.38
8/1/2018	14:41:06	20.74	0.38
8/1/2018	14:42:06	20.73	0.37
8/1/2018	14:43:06	20.62	0.38
8/1/2018	14:44:06	20.73	0.37
8/1/2018	14:45:06	20.67	0.37
8/1/2018	14:46:06	20.71	0.37
8/1/2018	14:47:06	20.70	0.37
8/1/2018	14:48:06	20.72	0.37
8/1/2018	14:49:06	20.73	0.37
8/1/2018	14:50:06	20.73	0.38
8/1/2018	14:51:06	20.72	0.38
8/1/2018	14:52:06	20.72	0.38
8/1/2018	14:53:06	20.72	0.39
8/1/2018	14:54:06	20.72	0.39
8/1/2018	14:55:06	20.72	0.39
8/1/2018	14:56:06	20.72	0.39
8/1/2018	14:57:06	20.71	0.39
8/1/2018	14:58:06	20.71	0.39
8/1/2018	14:59:06	20.71	0.40
8/1/2018	15:00:06	20.71	0.40
8/1/2018	15:01:06	20.71	0.40
8/1/2018	15:02:06	20.71	0.40
8/1/2018	15:03:06	20.71	0.40
8/1/2018	15:04:06	20.71	0.40
8/1/2018	15:05:06	20.71	0.40
8/1/2018	15:06:06	20.71	0.40
8/1/2018	15:07:06	20.70	0.41
8/1/2018	15:08:06	20.70	0.41
8/1/2018	15:09:06	20.71	0.41
8/1/2018	15:10:06	20.71	0.41
8/1/2018	15:11:06	20.71	0.41
8/1/2018	15:12:06	20.71	0.41
8/1/2018	15:13:06	20.71	0.41
8/1/2018	15:14:06	20.71	0.40
8/1/2018	15:15:06	20.71	0.40
8/1/2018	15:16:06	20.71	0.39
8/1/2018	15:17:06	20.71	0.38
8/1/2018	15:18:06	20.71	0.38
8/1/2018	15:19:06	20.71	0.38
8/1/2018	15:20:06	20.71	0.38
8/1/2018	15:21:06	20.71	0.37

8/1/2018	15:22:06	20.71	0.37		
8/1/2018	15:23:06	20.71	0.37		
8/1/2018	15:24:06	20.70	0.37		
8/1/2018	15:25:06	20.70	0.37	End Run	3
8/1/2018	15:26:06	20.69	0.37		
8/1/2018	15:27:06	20.69	0.37		
8/1/2018	15:28:06	20.68	0.38		

Date	Time	Ch1 Therr %D	Ch2 Thermo 410i CO2 %D	
8/1/2018	15:30:25	20.67	0.38	
8/1/2018	15:30:35	20.68	0.38	
8/1/2018	15:30:45	20.69	0.38	
8/1/2018	15:30:55	20.70	0.38	
8/1/2018	15:31:05	20.82	3.81	
8/1/2018	15:31:15	21.53	14.22	
8/1/2018	15:31:25	21.79	17.99	
8/1/2018	15:31:35	21.81	18.79	
8/1/2018	15:31:45	21.81	18.91	
8/1/2018	15:31:55	**21.81**	**18.93**	21.99 O2, 19.01 CO2
8/1/2018	15:32:05	**21.79**	**18.88**	Cylinder SG9149611BAL
8/1/2018	15:32:15	**21.80**	**18.93**	
8/1/2018	15:32:25	**21.79**	**18.94**	Averages
8/1/2018	15:32:35	**21.79**	**18.94**	O2 CO2
8/1/2018	15:32:45	**21.79**	**19.04**	21.80 18.94
8/1/2018	15:32:55	21.81	18.95	
8/1/2018	15:33:05	21.81	18.94	
8/1/2018	15:33:15	21.81	18.90	
8/1/2018	15:33:25	21.81	18.95	
8/1/2018	15:33:35	21.81	18.95	
8/1/2018	15:33:45	21.81	19.02	
8/1/2018	15:33:55	21.81	18.35	
8/1/2018	15:34:05	21.29	8.09	
8/1/2018	15:34:15	20.81	2.05	
8/1/2018	15:34:25	20.30	7.93	
8/1/2018	15:34:35	9.29	3.55	
8/1/2018	15:34:45	1.15	0.92	
8/1/2018	15:34:55	-0.04	0.50	
8/1/2018	15:35:05	-0.04	0.42	
8/1/2018	15:35:15	-0.04	0.40	
8/1/2018	15:35:25	-0.06	0.39	
8/1/2018	15:35:35	-0.07	0.38	
8/1/2018	15:35:45	-0.04	0.38	
8/1/2018	15:35:55	-0.04	0.38	
8/1/2018	15:36:05	**-0.07**	**0.37**	Zero N2

8/1/2018	15:36:15	**-0.08**	**0.37**
8/1/2018	15:36:25	**-0.08**	**0.36**
8/1/2018	15:36:35	**-0.09**	**0.36**
8/1/2018	15:36:45	**-0.08**	**0.36**
8/1/2018	15:36:55	**-0.08**	**0.36**
8/1/2018	15:37:05	-0.09	0.36
8/1/2018	15:37:15	1.65	0.36

Averages

O2	CO2
-0.08	0.36

Haile Gold Mine
PT-5B
Kershaw, SC

System Linearity 8/7/2018

Analyzer	Cal Gas Value	Analyzer Response	Percent Difference
O_2	0.00	-0.06	-0.27
	12.06	12.03	-0.14
	21.97	21.92	-0.22
CO_2	0.00	0.12	0.60
	9.92	10.22	1.55
	19.01	18.82	-1.03

System Bias and Drift 8/7/2018

	Analyzer	Gas	Range	Measured Concentration Direct	Measured Concentration System	Percent Bias
Pre Run 1	O2	Zero	21.98	-0.06	-0.04	0.07
Pre Run 1	O2	Up Scale	21.98	21.92	21.83	-0.42
Pre Run 1	CO2	Zero	19.01	0.12	0.18	0.34
Pre Run 1	CO2	Up Scale	19.01	18.82	18.81	-0.04

	Analyzer	Gas	Range	Measured Concentration Direct	Measured Concentration System	Percent Bias	Drift
Post Run 1	O2	Zero	21.98	-0.06	-0.06	0.02	0.05
Post Run 1	O2	Up Scale	21.98	21.92	21.85	-0.33	0.09
Post Run 1	CO2	Zero	19.01	0.12	0.10	-0.11	0.45
Post Run 1	CO2	Up Scale	19.01	18.82	18.67	-0.75	0.71
Post Run 2	O2	Zero	21.98	-0.06	-0.04	0.09	0.08
Post Run 2	O2	Up Scale	21.98	21.92	21.86	-0.29	0.04
Post Run 2	CO2	Zero	19.01	0.12	0.26	0.78	0.89
Post Run 2	CO2	Up Scale	19.01	18.82	18.79	-0.13	0.62
Post Run 3	O2	Zero	21.98	-0.06	-0.08	-0.10	0.19
Post Run 3	O2	Up Scale	21.98	21.92	21.80	-0.58	0.29
Post Run 3	CO2	Zero	19.01	0.12	0.36	1.31	0.53
Post Run 3	CO2	Up Scale	19.01	18.82	18.94	0.68	0.81

Haile Gold Mine
PT-6
Kershaw, SC

Bias Correction

Run	Gas	Cal Gas Value	Initial Zero	Initial Upscale	Final Zero	Final Upscale	Average Zero	Average Upscale	Run Average	Corrected Average
1	O_2	21.97	0.01	21.91	0.01	21.89	0.01	21.90	20.84	20.90
1	CO_2	19.01	0.14	18.68	0.05	18.67	0.10	18.68	0.11	0.02
2	O_2	21.97	0.01	21.89	0.00	21.87	0.00	21.88	20.81	20.89
2	CO_2	19.01	0.05	18.67	0.14	18.72	0.09	18.69	0.25	0.16
3	O_2	21.97	0.01	21.89	0.00	21.87	0.00	21.88	20.81	20.89
3	CO_2	19.01	0.05	18.67	0.14	18.72	0.09	18.69	0.13	0.04

Haile Gold Mine
Kershaw, SC
PT-6

Date	Time	Ch1 Therr %D	Ch2 Thermo 410i CO2 %D
7/31/2018	9:18:03	21.69	17.46
7/31/2018	9:18:13	21.82	18.15
7/31/2018	9:18:23	21.93	18.61
7/31/2018	9:18:33	**21.96**	**18.69**
7/31/2018	9:18:43	**21.98**	**18.69**
7/31/2018	9:18:53	**21.99**	**18.75**
7/31/2018	9:19:03	**21.99**	**18.74**
7/31/2018	9:19:13	**22.00**	**18.76**
7/31/2018	9:19:23	**21.99**	**18.72**
7/31/2018	9:19:33	22.00	18.72
7/31/2018	9:19:43	21.99	18.69
7/31/2018	9:19:53	22.00	18.74
7/31/2018	9:20:03	21.99	18.72
7/31/2018	9:20:13	21.71	11.05
7/31/2018	9:20:23	21.01	2.46
7/31/2018	9:20:33	20.57	0.84
7/31/2018	9:20:43	11.06	0.62
7/31/2018	9:20:53	1.86	0.14
7/31/2018	9:21:03	0.28	0.07
7/31/2018	9:21:13	0.03	0.06
7/31/2018	9:21:23	-0.01	0.06
7/31/2018	9:21:33	**-0.03**	**0.05**
7/31/2018	9:21:43	**-0.03**	**0.05**
7/31/2018	9:21:53	**-0.03**	**0.05**
7/31/2018	9:22:03	**-0.02**	**0.06**
7/31/2018	9:22:13	**-0.02**	**0.06**
7/31/2018	9:22:23	**-0.03**	**0.06**
7/31/2018	9:22:33	0.01	0.06
7/31/2018	9:22:43	8.54	0.11
7/31/2018	9:22:53	18.20	0.14
7/31/2018	9:23:03	20.06	0.14
7/31/2018	9:23:13	19.56	3.87
7/31/2018	9:23:23	17.15	10.71
7/31/2018	9:23:33	13.44	10.45
7/31/2018	9:23:43	12.33	10.20

Direct Calibration

21.97 O2, 19.01 CO2
Cylinder SG9149611BAL

Averages

O2	CO2
21.99	18.73

Zero N2

Averages

O2	CO2
-0.03	0.06

7/31/2018	9:23:53	12.13	10.13
7/31/2018	9:24:03	12.10	10.10
7/31/2018	9:24:13	12.09	10.11
7/31/2018	9:24:23	**12.09**	**10.13**
7/31/2018	9:24:33	**12.09**	**10.14**
7/31/2018	9:24:43	**12.09**	**10.14**
7/31/2018	9:24:53	**12.09**	**10.14**
7/31/2018	9:25:03	**12.09**	**10.12**
7/31/2018	9:25:13	**12.09**	**10.11**
7/31/2018	9:25:23	12.34	9.26
7/31/2018	9:25:33	17.06	2.82
7/31/2018	9:25:43	19.93	0.63
7/31/2018	9:25:53	20.40	0.29
7/31/2018	9:26:03	20.39	4.24
7/31/2018	9:26:13	21.07	12.71
7/31/2018	9:26:23	21.01	4.08
7/31/2018	9:26:33	20.64	0.79
7/31/2018	9:26:43	20.58	0.24
7/31/2018	9:26:53	20.86	4.37
7/31/2018	9:27:03	21.49	12.63
7/31/2018	9:27:13	21.68	14.95
7/31/2018	9:27:23	21.72	15.61
7/31/2018	9:27:33	21.74	15.92
7/31/2018	9:27:43	21.74	16.01
7/31/2018	9:27:53	21.77	16.68
7/31/2018	9:28:03	21.87	18.16
7/31/2018	9:28:13	21.91	18.61
7/31/2018	9:28:23	21.91	18.66
7/31/2018	9:28:33	21.91	18.65
7/31/2018	9:28:43	21.91	18.62
7/31/2018	9:28:53	**21.91**	**18.70**
7/31/2018	9:29:03	**21.91**	**18.69**
7/31/2018	9:29:13	**21.91**	**18.72**
7/31/2018	9:29:23	**21.91**	**18.70**
7/31/2018	9:29:33	**21.91**	**18.65**
7/31/2018	9:29:43	**21.91**	**18.64**
7/31/2018	9:29:53	21.91	18.67
7/31/2018	9:30:03	21.91	18.69
7/31/2018	9:30:13	21.92	18.71
7/31/2018	9:30:23	21.91	18.73
7/31/2018	9:30:33	21.75	14.11
7/31/2018	9:30:43	21.08	3.61
7/31/2018	9:30:53	20.86	0.69
7/31/2018	9:31:03	20.63	6.11
7/31/2018	9:31:13	10.76	3.61
7/31/2018	9:31:23	2.08	0.71
7/31/2018	9:31:33	0.32	0.24

12.06 O2, 9.96 CO2
Cylinder ALM-040316

Averages

O2	CO2
12.09	10.13

Bias Check

21.97 O2, 19.01 CO2
Cylinder SG9149611BAL

Averages

O2	CO2
21.91	18.68

7/31/2018	9:31:43	0.08	0.17	
7/31/2018	9:31:53	0.03	0.15	
7/31/2018	9:32:03	0.03	0.15	
7/31/2018	9:32:13	0.03	0.14	
7/31/2018	9:32:23	0.03	0.15	
7/31/2018	9:32:33	**0.01**	**0.14**	Zero N2
7/31/2018	9:32:43	**0.01**	**0.15**	
7/31/2018	9:32:53	**0.01**	**0.15**	
7/31/2018	9:33:03	**0.01**	**0.14**	Averages
7/31/2018	9:33:13	**0.02**	**0.14**	O2 CO2
7/31/2018	9:33:23	0.01	0.14	0.01 0.14

Date	Time	Ch1 Therr %D	Ch2 Thermo 410i CO2 %D	
7/31/2018	10:28:04	20.84	0.09	
7/31/2018	10:29:04	20.85	0.09	
7/31/2018	10:30:04	20.85	0.08	
7/31/2018	10:31:04	20.85	0.07	
7/31/2018	10:32:04	20.85	0.07	
7/31/2018	10:33:04	20.85	0.07	
7/31/2018	10:34:04	20.85	0.06	
7/31/2018	10:35:04	20.85	0.05	
7/31/2018	10:36:04	20.84	0.05	Start Run 1
7/31/2018	10:37:04	20.81	0.05	
7/31/2018	10:38:04	20.82	0.05	
7/31/2018	10:39:04	20.83	0.05	Run Averages:
7/31/2018	10:40:04	20.83	0.05	O2 CO2
7/31/2018	10:41:04	20.84	0.05	20.84 0.11
7/31/2018	10:42:04	20.84	0.05	
7/31/2018	10:43:04	20.84	0.05	
7/31/2018	10:44:04	20.84	0.05	
7/31/2018	10:45:04	20.84	0.05	
7/31/2018	10:46:04	20.84	0.06	
7/31/2018	10:47:04	20.84	0.06	
7/31/2018	10:48:04	20.84	0.07	
7/31/2018	10:49:04	20.84	0.07	
7/31/2018	10:50:04	20.84	0.07	
7/31/2018	10:51:04	20.84	0.08	
7/31/2018	10:52:04	20.84	0.08	
7/31/2018	10:53:04	20.84	0.09	
7/31/2018	10:54:04	20.84	0.09	
7/31/2018	10:55:04	20.84	0.10	
7/31/2018	10:56:04	20.84	0.10	
7/31/2018	10:57:04	20.84	0.11	
7/31/2018	10:58:04	20.84	0.11	

7/31/2018	10:59:04	20.83	0.11		
7/31/2018	11:00:04	20.84	0.12		
7/31/2018	11:01:04	20.84	0.12		
7/31/2018	11:02:04	20.84	0.12		
7/31/2018	11:03:04	20.83	0.12		
7/31/2018	11:04:04	20.83	0.12		
7/31/2018	11:05:04	20.83	0.13		
7/31/2018	11:06:04	20.83	0.13		
7/31/2018	11:07:04	20.83	0.13		
7/31/2018	11:08:04	20.84	0.13		
7/31/2018	11:09:04	20.83	0.13		
7/31/2018	11:10:04	20.84	0.13		
7/31/2018	11:11:04	20.84	0.12		
7/31/2018	11:12:04	20.85	0.10		
7/31/2018	11:13:04	20.85	0.10		
7/31/2018	11:14:04	20.82	0.13		
7/31/2018	11:15:04	20.83	0.13		
7/31/2018	11:16:04	20.83	0.13		
7/31/2018	11:17:04	20.84	0.13		
7/31/2018	11:18:04	20.84	0.13		
7/31/2018	11:19:04	20.84	0.13		
7/31/2018	11:20:04	20.84	0.14		
7/31/2018	11:21:04	20.83	0.14		
7/31/2018	11:22:04	20.83	0.14		
7/31/2018	11:23:04	20.83	0.14		
7/31/2018	11:24:04	20.83	0.14		
7/31/2018	11:25:04	20.83	0.14		
7/31/2018	11:26:04	20.83	0.14		
7/31/2018	11:27:04	20.82	0.14		
7/31/2018	11:28:04	20.83	0.14		
7/31/2018	11:29:04	20.83	0.14		
7/31/2018	11:30:04	20.83	0.14		
7/31/2018	11:31:04	20.84	0.14		
7/31/2018	11:32:04	20.84	0.14		
7/31/2018	11:33:04	20.84	0.14		
7/31/2018	11:34:04	20.84	0.14		
7/31/2018	11:35:04	20.84	0.14		
7/31/2018	11:36:04	20.84	0.14		
7/31/2018	11:37:04	20.83	0.14		
7/31/2018	11:38:04	20.83	0.14		
7/31/2018	11:39:04	20.84	0.14		
7/31/2018	11:40:04	20.83	0.14		
7/31/2018	11:41:04	20.84	0.14		
7/31/2018	11:42:04	20.84	0.14		
7/31/2018	11:43:04	20.84	0.14		
7/31/2018	11:44:04	20.84	0.14	End Run	1
7/31/2018	11:45:04	20.84	0.14		

7/31/2018	11:46:04	20.84	0.14
7/31/2018	11:47:04	20.84	0.14
7/31/2018	11:48:04	20.84	0.14
7/31/2018	11:49:04	20.84	0.13
7/31/2018	11:50:04	20.85	0.13
7/31/2018	11:51:04	20.85	0.13
7/31/2018	11:52:04	20.86	0.12
7/31/2018	11:53:04	20.86	0.13
7/31/2018	11:54:04	20.86	0.13
7/31/2018	11:55:04	20.86	0.13
7/31/2018	11:56:04	20.86	0.13
7/31/2018	11:57:04	20.86	0.12
7/31/2018	11:58:04	20.85	0.11
7/31/2018	11:59:04	20.86	0.11
7/31/2018	12:00:04	20.85	0.10
7/31/2018	12:01:04	20.85	0.10
7/31/2018	12:02:04	20.85	0.09
7/31/2018	12:03:04	20.85	0.09
7/31/2018	12:04:04	20.85	0.09
7/31/2018	12:05:04	20.85	0.09
7/31/2018	12:06:04	20.85	0.09
7/31/2018	12:07:04	20.85	0.09
7/31/2018	12:08:04	20.85	0.09
7/31/2018	12:09:04	20.85	0.09
7/31/2018	12:10:04	20.85	0.09
7/31/2018	12:11:04	20.85	0.09
7/31/2018	12:12:04	20.85	0.09
7/31/2018	12:13:04	20.84	0.09

Date	Time	Ch1 Therr %D	Ch2 Thermo 410i CO2 %D
7/31/2018	12:13:37	20.84	0.09
7/31/2018	12:13:47	20.84	0.09
7/31/2018	12:13:57	20.84	0.09
7/31/2018	12:14:07	20.84	0.09
7/31/2018	12:14:17	18.50	0.15
7/31/2018	12:14:27	6.45	0.12
7/31/2018	12:14:37	1.07	0.07
7/31/2018	12:14:47	0.18	0.06
7/31/2018	12:14:57	0.05	0.06
7/31/2018	12:15:07	0.03	0.05
7/31/2018	12:15:17	0.01	0.05
7/31/2018	12:15:27	0.02	0.05
7/31/2018	12:15:37	0.02	0.06
7/31/2018	12:15:47	0.02	0.05

7/31/2018	12:15:57	0.01	0.05	
7/31/2018	12:16:07	0.00	0.05	
7/31/2018	12:16:17	**0.01**	**0.05**	Zero N2
7/31/2018	12:16:27	**0.01**	**0.05**	
7/31/2018	12:16:37	**0.01**	**0.05**	
7/31/2018	12:16:47	**0.00**	**0.05**	Averages
7/31/2018	12:16:57	**0.01**	**0.05**	O2 CO2
7/31/2018	12:17:07	**0.01**	**0.05**	0.01 0.05
7/31/2018	12:17:17	0.01	0.05	
7/31/2018	12:17:27	0.00	0.05	
7/31/2018	12:17:37	0.00	0.05	
7/31/2018	12:17:47	0.01	0.05	
7/31/2018	12:17:57	0.01	0.05	
7/31/2018	12:18:07	0.00	0.05	
7/31/2018	12:18:17	2.86	0.06	
7/31/2018	12:18:27	15.25	0.08	
7/31/2018	12:18:37	19.83	0.09	
7/31/2018	12:18:47	20.06	0.10	
7/31/2018	12:18:57	14.16	7.55	
7/31/2018	12:19:07	19.04	16.29	
7/31/2018	12:19:17	21.33	18.18	
7/31/2018	12:19:27	21.80	18.51	
7/31/2018	12:19:37	21.88	18.61	
7/31/2018	12:19:47	**21.88**	**18.66**	21.97 O2, 19.01 CO2
7/31/2018	12:19:57	**21.88**	**18.68**	Cylinder SG9149611BAL
7/31/2018	12:20:07	**21.89**	**18.70**	
7/31/2018	12:20:17	**21.89**	**18.68**	Averages
7/31/2018	12:20:27	**21.89**	**18.64**	O2 CO2
7/31/2018	12:20:37	**21.89**	**18.64**	21.89 18.67
7/31/2018	12:20:47	21.89	18.68	
7/31/2018	12:20:57	21.89	18.71	

Date	Time	Ch1 Therr %D	Ch2 Thermo 410i CO2 %D	
7/31/2018	12:25:00	20.82	0.13	Start Run 2
7/31/2018	12:26:00	20.83	0.12	
7/31/2018	12:27:00	20.83	0.11	
7/31/2018	12:28:00	20.82	0.11	Run Averages:
7/31/2018	12:29:00	20.82	0.12	O2 CO2
7/31/2018	12:30:00	20.82	0.12	20.81 0.25
7/31/2018	12:31:00	20.81	0.13	
7/31/2018	12:32:00	20.82	0.12	
7/31/2018	12:33:00	20.82	0.14	
7/31/2018	12:34:00	20.81	0.17	
7/31/2018	12:35:00	20.81	0.18	

7/31/2018	12:36:00	20.81	0.18
7/31/2018	12:37:00	20.81	0.19
7/31/2018	12:38:00	20.81	0.19
7/31/2018	12:39:00	20.81	0.20
7/31/2018	12:40:00	20.81	0.20
7/31/2018	12:41:00	20.81	0.21
7/31/2018	12:42:00	20.80	0.21
7/31/2018	12:43:00	20.80	0.22
7/31/2018	12:44:00	20.80	0.23
7/31/2018	12:45:00	20.81	0.23
7/31/2018	12:46:00	20.80	0.24
7/31/2018	12:47:00	20.80	0.24
7/31/2018	12:48:00	20.79	0.25
7/31/2018	12:49:00	20.79	0.24
7/31/2018	12:50:00	20.80	0.24
7/31/2018	12:51:00	20.79	0.25
7/31/2018	12:52:00	20.80	0.26
7/31/2018	12:53:00	20.79	0.26
7/31/2018	12:54:00	20.79	0.27
7/31/2018	12:55:00	20.79	0.27
7/31/2018	12:56:00	20.80	0.25
7/31/2018	12:57:00	20.81	0.23
7/31/2018	12:58:00	20.81	0.23
7/31/2018	12:59:00	20.81	0.25
7/31/2018	13:00:00	20.79	0.28
7/31/2018	13:01:00	20.80	0.28
7/31/2018	13:02:00	20.80	0.29
7/31/2018	13:03:00	20.80	0.28
7/31/2018	13:04:00	20.81	0.29
7/31/2018	13:05:00	20.81	0.29
7/31/2018	13:06:00	20.80	0.29
7/31/2018	13:07:00	20.79	0.29
7/31/2018	13:08:00	20.79	0.29
7/31/2018	13:09:00	20.80	0.29
7/31/2018	13:10:00	20.81	0.29
7/31/2018	13:11:00	20.80	0.29
7/31/2018	13:12:00	20.80	0.30
7/31/2018	13:13:00	20.80	0.30
7/31/2018	13:14:00	20.80	0.31
7/31/2018	13:15:00	20.81	0.31
7/31/2018	13:16:00	20.81	0.31
7/31/2018	13:17:00	20.81	0.32
7/31/2018	13:18:00	20.81	0.32
7/31/2018	13:19:00	20.82	0.32
7/31/2018	13:20:00	20.81	0.34
7/31/2018	13:21:00	20.82	0.34
7/31/2018	13:22:00	20.81	0.33

7/31/2018	13:23:00	20.82	0.33		
7/31/2018	13:24:00	20.82	0.33		
7/31/2018	13:25:00	20.82	0.33		
7/31/2018	13:26:00	20.82	0.34		
7/31/2018	13:27:00	20.82	0.32		
7/31/2018	13:28:00	20.83	0.32		
7/31/2018	13:29:00	20.83	0.32		
7/31/2018	13:30:00	20.82	0.32		
7/31/2018	13:31:00	20.84	0.32	End Run	2
7/31/2018	13:32:00	20.84	0.32		
7/31/2018	13:33:00	20.84	0.33		
7/31/2018	13:34:00	20.84	0.33		
7/31/2018	13:35:00	20.85	0.32		
7/31/2018	13:36:00	20.86	0.31		
7/31/2018	13:37:00	20.87	0.30		
7/31/2018	13:38:00	20.87	0.27		
7/31/2018	13:39:00	20.87	0.25		
7/31/2018	13:40:00	20.87	0.23		
7/31/2018	13:41:00	20.87	0.21		
7/31/2018	13:42:00	20.88	0.19		
7/31/2018	13:43:00	20.87	0.17		
7/31/2018	13:44:00	20.88	0.16		
7/31/2018	13:45:00	20.87	0.15		
7/31/2018	13:46:00	20.86	0.14		
7/31/2018	13:47:00	20.86	0.13		
7/31/2018	13:48:00	20.87	0.12		
7/31/2018	13:49:00	20.86	0.11		
7/31/2018	13:50:00	20.85	0.10		
7/31/2018	13:51:00	20.85	0.09		
7/31/2018	13:52:00	20.83	0.09		
7/31/2018	13:53:00	20.84	0.09	Start Run	3
7/31/2018	13:54:00	20.84	0.10		
7/31/2018	13:55:00	20.83	0.10		
7/31/2018	13:56:00	20.83	0.10	Run Averages:	
7/31/2018	13:57:00	20.83	0.09	O2	CO2
7/31/2018	13:58:00	20.83	0.09	20.81	0.13
7/31/2018	13:59:00	20.83	0.08		
7/31/2018	14:00:00	20.83	0.08		
7/31/2018	14:01:00	20.83	0.08		
7/31/2018	14:02:00	20.83	0.07		
7/31/2018	14:03:00	20.83	0.08		
7/31/2018	14:04:00	20.83	0.07		
7/31/2018	14:05:00	20.83	0.07		
7/31/2018	14:06:00	20.83	0.07		
7/31/2018	14:07:00	20.82	0.08		
7/31/2018	14:08:00	20.82	0.09		
7/31/2018	14:09:00	20.82	0.10		

7/31/2018	14:10:00	20.82	0.10
7/31/2018	14:11:00	20.82	0.11
7/31/2018	14:12:00	20.82	0.11
7/31/2018	14:13:00	20.81	0.11
7/31/2018	14:14:00	20.81	0.12
7/31/2018	14:15:00	20.81	0.12
7/31/2018	14:16:00	20.81	0.13
7/31/2018	14:17:00	20.81	0.13
7/31/2018	14:18:00	20.81	0.14
7/31/2018	14:19:00	20.81	0.14
7/31/2018	14:20:00	20.81	0.15
7/31/2018	14:21:00	20.80	0.15
7/31/2018	14:22:00	20.81	0.15
7/31/2018	14:23:00	20.80	0.15
7/31/2018	14:24:00	20.81	0.16
7/31/2018	14:25:00	20.80	0.16
7/31/2018	14:26:00	20.80	0.16
7/31/2018	14:27:00	20.80	0.16
7/31/2018	14:28:00	20.80	0.16
7/31/2018	14:29:00	20.81	0.15
7/31/2018	14:30:00	20.80	0.16
7/31/2018	14:31:00	20.79	0.17
7/31/2018	14:32:00	20.79	0.17
7/31/2018	14:33:00	20.79	0.17
7/31/2018	14:34:00	20.79	0.17
7/31/2018	14:35:00	20.79	0.17
7/31/2018	14:36:00	20.79	0.17
7/31/2018	14:37:00	20.79	0.18
7/31/2018	14:38:00	20.79	0.18
7/31/2018	14:39:00	20.79	0.18
7/31/2018	14:40:00	20.79	0.18
7/31/2018	14:41:00	20.80	0.17
7/31/2018	14:42:00	20.79	0.17
7/31/2018	14:43:00	20.80	0.17
7/31/2018	14:44:00	20.80	0.17
7/31/2018	14:45:00	20.80	0.16
7/31/2018	14:46:00	20.80	0.16
7/31/2018	14:47:00	20.80	0.15
7/31/2018	14:48:00	20.80	0.14
7/31/2018	14:49:00	20.80	0.14
7/31/2018	14:50:00	20.80	0.13
7/31/2018	14:51:00	20.80	0.12
7/31/2018	14:52:00	20.80	0.12
7/31/2018	14:53:00	20.80	0.12
7/31/2018	14:54:00	20.80	0.11
7/31/2018	14:55:00	20.80	0.11
7/31/2018	14:56:00	20.81	0.10

7/31/2018	14:57:00	20.80	0.10		
7/31/2018	14:58:00	20.80	0.10		
7/31/2018	14:59:00	20.80	0.10		
7/31/2018	15:00:00	20.80	0.10		
7/31/2018	15:01:00	20.80	0.09	End Run	3
7/31/2018	15:02:00	20.80	0.09		
7/31/2018	15:03:00	20.80	0.09		
7/31/2018	15:04:00	20.81	0.08		
7/31/2018	15:05:00	20.82	0.07		
7/31/2018	15:06:00	20.81	0.06		
7/31/2018	15:07:00	20.81	0.06		
7/31/2018	15:08:00	20.81	0.06		
7/31/2018	15:09:00	20.82	0.06		
7/31/2018	15:10:00	20.81	0.06		
7/31/2018	15:11:00	20.82	0.07		
7/31/2018	15:12:00	20.81	0.07		

Date	Time	Ch1 Therr %D	Ch2 Thermo 410i CO2 %D		
7/31/2018	15:18:30	21.87	18.68		
7/31/2018	15:18:40	21.87	18.67		
7/31/2018	15:18:50	21.87	18.68		
7/31/2018	15:19:00	**21.88**	**18.71**	21.97 O2, 19.01 CO2	
7/31/2018	15:19:10	**21.88**	**18.74**	Cylinder SG9149611BAL	
7/31/2018	15:19:20	**21.87**	**18.75**		
7/31/2018	15:19:30	**21.87**	**18.74**	Averages	
7/31/2018	15:19:40	**21.87**	**18.70**	O2	CO2
7/31/2018	15:19:50	**21.87**	**18.68**	21.87	18.72
7/31/2018	15:20:00	21.88	18.71		
7/31/2018	15:20:10	21.87	18.74		
7/31/2018	15:20:20	21.87	18.76		
7/31/2018	15:20:30	21.63	12.55		
7/31/2018	15:20:40	21.00	2.93		
7/31/2018	15:20:50	20.85	2.21		
7/31/2018	15:21:00	17.47	6.32		
7/31/2018	15:21:10	5.12	1.57		
7/31/2018	15:21:20	0.81	0.37		
7/31/2018	15:21:30	0.14	0.19		
7/31/2018	15:21:40	0.03	0.16		
7/31/2018	15:21:50	0.01	0.15		
7/31/2018	15:22:00	**0.00**	**0.14**	Zero N2	
7/31/2018	15:22:10	**0.00**	**0.14**		
7/31/2018	15:22:20	**-0.01**	**0.14**		
7/31/2018	15:22:30	**0.00**	**0.13**	Averages	
7/31/2018	15:22:40	**0.00**	**0.13**	O2	CO2

7/31/2018	15:22:50	**-0.01**	**0.13**	0.00	0.14
7/31/2018	15:23:00	-0.02	0.13		

Haile Gold Mine
PT-6
Kershaw, SC

System Linearity 8/7/2018

Analyzer	Cal Gas Value	Analyzer Response	Percent Difference
O_2	0.00	-0.03	-0.12
	12.06	12.09	0.14
	21.97	21.99	0.07
CO_2	0.00	0.06	0.29
	9.92	10.13	1.10
	19.01	18.73	-1.50

System Bias and Drift 8/7/2018

	Analyzer	Gas	Range	Measured Concentration Direct	Measured Concentration System	Percent Bias
Pre Run 1	O2	Zero	21.98	-0.03	0.01	0.17
Pre Run 1	O2	Up Scale	21.98	21.99	21.91	-0.34
Pre Run 1	CO2	Zero	19.01	0.06	0.14	0.46
Pre Run 1	CO2	Up Scale	19.01	18.73	18.68	-0.22

	Analyzer	Gas	Range	Measured Concentration Direct	Measured Concentration System	Percent Bias	Drift
Post Run 1	O2	Zero	21.98	-0.03	0.01	0.16	0.02
Post Run 1	O2	Up Scale	21.98	21.99	21.89	-0.45	0.11
Post Run 1	CO2	Zero	19.01	0.06	0.05	-0.03	0.49
Post Run 1	CO2	Up Scale	19.01	18.73	18.67	-0.31	0.09
Post Run 3	O2	Zero	21.98	-0.03	0.00	0.11	0.05
Post Run 3	O2	Up Scale	21.98	21.99	21.87	-0.51	0.06
Post Run 3	CO2	Zero	19.01	0.06	0.14	0.42	0.45
Post Run 3	CO2	Up Scale	19.01	18.73	18.72	-0.03	0.28

APPENDIX C

CALIBRATION DATA

C.1

EQUIPMENT CALIBRATIONS

Montrose Air Quality Services

Meter Box Annual Calibration

Critical Orifice Calibration Method (*EPA Method 5 Section 16.2.3*)

NIST Thermometer ID:	152263
Orifice Kit ID:	AH40-73
Meter Box Manufacturer:	ESC
Meter Box Identification No.:	NC-M5-2

NIST Traceable Thermometer Calibration Due Date:	02/06/18
Orifice Kit Calibration Due Date:	01/05/18
Meter Box Annual Calibration Due Date:	01/16/18
Barometric Pressure:	29.29
Theoretical Critical Vacuum:	13.82

DRY GAS METER READINGS									-CRITICAL ORIFICE READINGS-					
dH (in H2O)	Time (min)	Volume Initial (cu ft)	Volume Final (cu ft)	Volume Total (cu ft)	Initial Temps. Inlet (deg F)	Initial Temps. Outlet (deg F)	Final Temps. Inlet (deg F)	Final Temps. Outlet (deg F)	Orifice Serial# (number)	K' Orifice Coefficient (see above)	Actual Vacuum (in Hg)	Ambient Temperature Initial (deg F)	Final (deg F)	Average (deg F)
0.29	28.00	133.950	142.318	8.368	60.0	60.0	61.0	61.0	AH-40	0.2292	21.0	59.5	58.4	59.0
0.63	23.00	142.318	152.294	9.976	61.0	61.0	61.0	61.0	AH-48	0.3316	20.0	58.8	59.2	59.0
1.20	11.00	152.294	158.631	6.337	61.0	61.0	62.0	62.0	AH-55	0.4375	18.0	59.8	60.6	60.2
2.10	8.00	158.631	164.724	6.093	61.0	61.0	63.0	63.0	AH-63	0.5757	16.0	60.9	62.2	61.6
3.70	7.00	164.724	171.838	7.114	63.0	63.0	65.0	65.0	AH-73	0.7707	14.0	62.5	62.8	62.7

********** RESULTS **********

DRY GAS METER		ORIFICE			DRY GAS METER		ORIFICE			
VOLUME CORRECTED Vm(std) (cu ft)	VOLUME CORRECTED Vm(std) (liters)	VOLUME CORRECTED Vcr(std) (cu ft)	VOLUME CORRECTED Vcr(std) (liters)	VOLUME NOMINAL Vcr (cu ft)	CALIBRATION FACTOR *Y Value (number)	CALIBRATION FACTOR *Y Variation (number)	CALIBRATION FACTOR **dH@ Value (in H2O)	CALIBRATION FACTOR **dH@ Value (mm H2O)	CALIBRATION FACTOR **dH@ Variation (in H2O)	
8.316	235.5	8.251	233.7	8.288	0.992	0.010	1.865	47.38	-0.169	
9.913	280.7	9.806	277.7	9.850	0.989	0.007	1.934	49.13	-0.100	
6.300	178.4	6.180	175.0	6.222	0.981	-0.001	2.119	53.83	0.085	
6.065	171.8	5.907	167.3	5.963	0.974	-0.009	2.145	54.49	0.111	
7.083	200.6	6.912	195.7	6.992	0.976	-0.007	2.106	53.48	0.072	
			Average Y		0.982		2.034	51.66	Average dH@	

***Y tolerance for individual values is ± 2 % from average (*EPA Method 5 § 16.2.3.5*).**

****Delta $H_@$ tolerance for individual values is ± 0.20 from average (*EPA Method 5 Figure 5.5*).**

Calibrated By: Justin Watson **Date Calibrated:** 11/20/2017

Revised 9/19/2018 - KMR

Montrose Air Quality Services

EPA Method 5

Post-Test Meter Box Calibration

Orifice Method

Project: Haile Gold Mine
Source: PT-5A, PT-5B, PT-6

Date: 8/9/2018
Barometric Pressure: 29.06 (in. Hg)
Theoretical Critical Vacuum: 13.71 (in. Hg)

Model #: C-5000

Meter Box ID #: NC-M5-2

---------- DRY GAS METER READINGS ----------

--------CRITICAL ORIFICE READINGS--------

dH (in H2O)	Time (min)	Volume Initial (cu ft)	Volume Final (cu ft)	Volume Total (cu ft)	Initial Outlet (deg F)	Final Outlet (deg F)	Orifice Serial# (number)	K' Orifice Coefficient (see above)	Actual Vacuum (in Hg)	Ambient Temperature – Initial (deg F)	Ambient Temperature – Final (deg F)	Ambient Temperature – Average (deg F)	Average Temperatures – DGM Outlet (deg R)	Average Temperatures – DGM Overall (deg R)	Average Temperatures – Ambient Temp (deg R)
1.20	22.00	270.792	283.831	13.039	94.0	91.0	AH-55	0.446	19.0	88.5	87.6	88.1	551.0	552.5	548.1
1.20	12.00	283.831	290.930	7.099	91.0	90.0	AH-55	0.446	19.0	87.7	89.1	88.4	550.0	550.5	548.4
1.20	11.00	290.930	297.446	6.516	90.0	91.0	AH-55	0.446	19.0	89.1	89.4	89.3	551.0	550.5	549.3

RESULTS

DRY GAS METER – VOLUME CORRECTED Vm(std) (cu ft)	DRY GAS METER – VOLUME CORRECTED Vm(std) (liters)	ORIFICE – VOLUME CORRECTED Vcr(std) (cu ft)	ORIFICE – VOLUME CORRECTED Vcr(std) (liters)	VOLUME NOMINAL Vcr (cu ft)	DRY GAS METER – CALIBRATION FACTOR Y Value (number)	DRY GAS METER – CALIBRATION FACTOR Y Variation (number)	ORIFICE – CALIBRATION FACTOR dH@ Value (in H2O)	ORIFICE – CALIBRATION FACTOR dH@ Value (mm H2O)	ORIFICE – CALIBRATION FACTOR dH@ Variation (in H2O)
12.135	0.0	12.191	0.0	13.033	1.005	0.002	2.046	51.97	-0.003
6.631	0.0	6.647	0.0	7.111	1.003	0.000	2.051	51.97	0.002
6.086	0.0	6.089	0.0	6.524	1.000	-0.002	2.050	51.97	0.001

Average Y ——> 1.003 Average dH@ 2.049

Original Average Y ——> 0.982

% Difference ——> 2.05*

The Orifice Post Calibration Factor Y must be within 5 % of the origional values obtained from the annual calibration results.

Allometrics
when measurements matter

2500 Bayport Boulevard, Seabrook, TX 77586
(800) 528-2246 Fax (281) 474-5482
www.allometrics.com

Balance Calibration Certificate

00122077

Customer:	MONTROSE AIR QUALITY SERVICES LLC 301 BROOKDALE ST KANNAPOLIS, NC, 28083-2787	**P.O. Number:** **Cal Date:** **Next Cal Date:**	CC 12/27/2016 12/27/2017
Test Result:	PASS	**Location:**	1
Performed At:	Allometrics Laboratory	**Manufacturer:**	A & D
Procedure:	12-ALBAL-02	**Model Number:**	EJ-3000
Temperature:	22 C	**Serial Number:**	5A2835077
Humidity:	38 %	**Asset ID:**	5A2835077

Calibrations by Allometrics are performed in accordance with the principles of ISO 9001:2008. Allometrics maintains a Quality Management System accredited to ISO/IEC 17025:2005. The use of the Accrediting Body's logo is exclusive to calibrations where the contractual obligations meet the minimum requirements as specified by ISO/IEC 17025:2005 and the Accrediting Body. For additional information regarding Allometrics' accredited status visit the A2LA website and view scope 2039.01.

The Measurement Standards used during this calibration are traceable to the International System of Units through NIST, other Nationally and/or Internationally recognized standards.

Performed By: JROBINSON

PROCEDURE

Procedure Name	Descripton	Revision	Date
12-ALBAL-02	BALANCE PROCEDURE	A	10/3/2012

UUT CONFORMITY TEST DATA

cription	Test Point	As Found	As Left	Error
MASS INDICATION	10.0 g		10.0	0.0 g
	100.0 g		100.0	0.0 g
	500.0 g		500.0	0.0 g
	1000.0 g		1000.0	0.0 g
	2000.0 g		2000.0	0.0 g
Cornerload within 3 counts?		N/A	YES	
Linearity within 3 counts?		N/A	YES	

TEST EQUIPMENT

Description	Cal Standard.	Cal. Due Date
WEIGHT SET	3600	6/7/2017

COMMENTS

New Balance, No As Found Data

Allometrics
when measurements matter

2500 Bayport Boulevard, Seabrook, TX 77586
(800) 528-2246 Fax (281) 474-5482
www.allometrics.com

Balance Calibration Certificate

00119919

Customer:	MONTROSE AIR QUALITY SERVICES LLC 301 BROOKDALE ST KANNAPOLIS, NC, 28083-2787	**P.O. Number:** **Cal Date:** **Next Cal Date:**	CC 11/15/2016 11/15/2017
Test Result:	ADJ.	**Location:**	1
Performed At:	Allometrics Laboratory	**Manufacturer:**	OHAUS
Procedure:	12-ALBAL-02	**Model Number:**	SP2001
Temperature:	22 C	**Serial Number:**	B432906979
Humidity:	44 %	**Asset ID:**	B432906979

Calibrations by Allometrics are performed in accordance with the principles of ISO 9001:2008. Allometrics maintains a Quality Management System accredited to ISO/IEC 17025:2005. The use of the Accrediting Body's logo is exclusive to calibrations where the contractual obligations meet the minimum requirements as specified by ISO/IEC 17025:2005 and the Accrediting Body. For additional information regarding Allometrics' accredited status visit the A2LA website and view scope 2039.01.

The Measurement Standards used during this calibration are traceable to the International System of Units through NIST, other Nationally and/or Internationally recognized standards.

Performed By: JTAVERNIER

PROCEDURE

Procedure Name	Descripton	Revision	Date
12-ALBAL-02	BALANCE PROCEDURE	A	10/3/2012

UUT CONFORMITY TEST DATA

:ription	Test Point	As Found	As Left	Error
MASS INDICATION	10.0 g	10.0	10.0	0.0 g
	100.0 g	99.9	100.0	0.0 g
	500.0 g	499.6	500.0	0.0 g
	1000.0 g	999.1	1000.0	0.0 g
	2000.0 g	1998.2	2000.0	0.0 g
Cornerload within 3 counts?		YES	YES	
Linearity within 3 counts?		YES	YES	

TEST EQUIPMENT

Description	Cal Standard.	Cal. Due Date
WEIGHT SET	1612	1/7/2017

COMMENTS

Allometrics
when measurements matter

2500 Bayport Boulevard, Seabrook, TX 77586
(800) 528-2246 Fax (281) 474-5482
www.allometrics.com

67517

Calibration Certificate

00119921

Customer: MONTROSE AIR QUALITY
301 BROOKDALE ST

KANNAPOLIS, NC, 28083-2787
PO Number: CC

SN: 67517
ID: 67517
MFR: TROEMNER
MODEL: ASTM Class 1

Test Result: *Report of Value*
Cal Date: 11/15/2016
Due Date: 11/15/2017
Performed By: JTAVERNIER
Performed At: Allometrics Laboratory

Calibrations by Allometrics are performed in accordance with the principles of ISO 9001:2008. Allometrics maintains a Quality Management System accredited to ISO/IEC 17025:2005. The use of the Accrediting Body's logo is exclusive to calibrations where the contractual obligations meet the minimum requirements as specified by ISO/IEC 17025:2005 and the Accrediting Body. For additional information regarding Allometrics' accredited status visit the A2LA website and view scope 2039.01.

The Measurement Standards used during this calibration are traceable to the International System of Units through NIST, other Nationally and/or Internationally recognized standards.

Temp: 22 °C **Humidity:** 44 %

UUT CONFORMITY TEST DATA

Description	Test Point	As Found	As Left	Error
MASS	200.0000	200.0130	200.0130	0.0130
*	200.0000	200.0167	200.0167	0.0167
	500.000	500.000	500.000	0.000
*	500.000	500.000	500.000	0.000

TEST EQUIPMENT

scription	ID	SERIAL NO.	Cal. Due Date
ROEMNER/10KG - 1MG/WEIGHT SET	1600	59200	11/4/2017

PROCEDURE

Procedure Name	Revision	Descripton	Date
5-4WI04	B	WORK INSTRUCTION FOR CALIBRATING WEIGHTS TO CLASS 6 TOLERANCES	12/22/2006

COMMENTS

Asterisk on test points indicates weight with engraved dot.

OCEANAGOLD
Haile Operation

April 5, 2019

Ms. Mareesa Singleton
South Carolina Department of Health and Environmental Control
Bureau of Air Quality
2600 Bull Street
Columbia, SC 29201

Program ID: 1460-0070

Re: Haile Gold Mine
Construction Permit Number 1460-0070-CA
Title V Operating Permit Application

Dear Ms. Singleton,

Haile Gold Mine (Haile) is submitting the enclosed Title V Operating Permit application. While Haile is not a major source of emissions, the Title V Operating Permit is required because Haile is subject to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for the Gold Mine Ore Processing and Production Area Source Category at 40 CFR 63 Subpart EEEEEEE.

If you have any questions or require further clarification, please call me at (803) 475-2943.

Sincerely,

Scott McDaniel
Health, Safety & Environmental Manager

6911 Snowy Owl Road, P.O. Box 128, Kershaw, South Carolina 29067 USA
Telephone (803) 475-1220, Facsimile (803) 475-2317

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Facility Information
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FACILITY IDENTIFICATION	
SC Air Permit Number (8-digits only) 1460 - 0070	Application Date 4/5/2019
Facility Name *(This should be the name used to identify the facility at the physical address listed below)* Haile Gold Mine Inc.	Facility Federal Tax Identification Number *(Established by the U.S. Internal Revenue Service to identify a business entity)* 26-0716741

FACILITY PHYSICAL ADDRESS		
Physical Address: 6911 Snowy Owl Road		County: Lancaster
City: Kershaw	State: SC	Zip Code: 29067
Facility Coordinates *(Facility coordinates should be based at the front door or main entrance of the facility.)*		
Latitude: 34° 36' 00.43" N	Longitude: 80° 32' 27.77" W	☐ NAD27 *(North American Datum of 1927)* Or ☒ NAD83 *(North American Datum of 1983)*

CO-LOCATION DETERMINATION
Are there other facilities in close proximity that could be considered co-located? ☒ No ☐ Yes*
List potential co-located facilities, including air permit numbers, if applicable:
If applicable, location in application for co-location determination:

*(*If yes, please submit co-location applicability determination details in an attachment to this application.)*

CONFIDENTIAL INFORMATION / DATA
Does this application contain confidential information or data? ☒ No ☐ Yes*

If yes, include a sanitized version of the application for public review and **ONLY ONE COPY OF CONFIDENTIAL INFORMATION SHOULD BE SUBMITTED*

AIR PERMIT FACILITY CONTACT *(Person who can answer technical questions about the facility and permit application.)*			
Title/Position: HSE Manager	Salutation: Mr.	First Name: Scott	Last Name: McDaniel
Mailing Address: 6911 Snowy Owl Road, PO Box 128			
City: Kershaw		State: SC	Zip Code: 29067
E-mail Address: scott.mcdaniel@oceanagold.com		Phone No.: 803-475-2943	Cell No.: 803-577-3380

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RESPONSIBLE OFFICIAL			
Title/Position: VP/Country Director	Salutation: Mr.	First Name: David	Last Name: Thomas
Mailing Address: 6911 Snowy Owl Road			
City: Kershaw		State: SC	Zip Code: 29067
E-mail Address: david.thomas@oceanagold.com		Phone No.: 803-475-2924	Cell No.: 803-214-3255

RESPONSIBLE OFFICIAL SIGNATURE

I certify, to the best of my knowledge and belief, that no applicable standards and/or regulations will be contravened or violated. I certify that any application form, report, or compliance certification submitted in this permit application is true, accurate, and complete based on information and belief formed after reasonable inquiry. I understand that any statements and/or descriptions, which are found to be incorrect, may result in the immediate revocation of any permit issued for this application.

C J Gudwell for David Thomas — 04/04/19

Signature of Responsible Official — Date

H. AIR PERMIT CONSULTANT			
Consulting Firm Name: Tetra Tech			
Title/Position: Principal Engineer	Salutation: Mr.	First Name: Daryl	Last Name: Longwell
Mailing Address: 350 Indiana Street, Suite 500			
City: Golden		State: CO	Zip Code: 80401
E-mail Address: daryl.longwell@tetratech.com		Phone No.: 303-217-5700	Cell No.: 303-588-0902
SC Professional Engineer License/Registration No. (if applicable): 32120			

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Bureau of Air Quality
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Emission Unit, Equipment and Processes

Please use a separate form for each Emission Unit ID

APPLICATION IDENTIFICATION *(Please ensure that the information list in this table is the same on all of the forms and required information submitted in the Title V application package.)*		
Facility Name *(This should be the name used to identify the facility)*	SC Air Permit Number (8-digits only) *(Leave blank if one has never been assigned)*	Application Date
Haile Gold Mine, Inc.	1460 - 0070	4/5/2019

EMISSION UNIT IDENTIFICATION	
Emission Unit ID	**Emission Unit Description**
PT-1	Primary Crusher

ASSOCIATED EQUIPMENT / PROCESS INFORMATION

Equipment/Process ID	Action	Equipment / Process Description	Installation / Modification Date	Maximum Design Capacity (Units)	Control Device ID(s)	Pollutants Controlled (Include CAS#)	Capture System Efficiency and Description	Emission Point ID(s)
100-CR-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Primary Crusher including Load-In/Load-Out	10/4/2017	24,000 tons/day	N/A	PM	62% efficiency. water spray bars	PT-1
100-CR-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Primary Crusher including Load-In/Load-Out	10/4/2017	24,000 tons/day	N/A	PM_{10}	62% efficiency. water spray bars	PT-1
100-CR-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Primary Crusher including Load-In/Load-Out	10/4/2017	24,000 tons/day	N/A	$PM_{2.5}$	62% efficiency. water spray bars	PT-1

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ASSOCIATED EQUIPMENT / PROCESS INFORMATION								
Equipment/Process ID	**Action**	**Equipment / Process Description**	**Installation / Modification Date**	**Maximum Design Capacity (Units)**	**Control Device ID(s)**	**Pollutants Controlled (Include CAS#)**	**Capture System Efficiency and Description**	**Emission Point ID(s)**
100-CR-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Primary Crusher including Load-In/Load-Out	10/4/2017	24,000 tons/day	N/A	Pb	62% efficiency. water spray bars	PT-1
100-CR-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Primary Crusher including Load-In/Load-Out	10/4/2017	24,000 tons/day	N/A	As	62% efficiency. water spray bars	PT-1

ASSOCIATED CONTROL DEVICE INFORMATION						
Control Device ID	**Action**	**Control Device Description**	**Installation/Modification Date**	**Maximum Design Capacity (Units)**	**Inherent/Required/Voluntary (Explain)**	**Destruction / Removal Efficiency**
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	water spray bars	10/4/2017	N/A	required	62%

FUEL INFORMATION				
Equipment ID Process ID Control Device ID	**Fuels Combusted**	**BTU Content**	**% Sulfur by Weight**	**% Ash by Weight**
100-CR-001	Electric	N/A	N/A	N/A

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Please use a separate form for each Emission Unit ID

APPLICATION IDENTIFICATION *(Please ensure that the information list in this table is the same on all of the forms and required information submitted in the Title V application package.)*		
Facility Name *(This should be the name used to identify the facility)* Haile Gold Mine, Inc.	SC Air Permit Number (8-digits only) *(Leave blank if one has never been assigned)* 1460 - 0070	Application Date 4/5/2019

EMISSION UNIT IDENTIFICATION	
Emission Unit ID	**Emission Unit Description**
PT-2	Crusher Conveyor Transfer to Stockpile Feed Conveyor

ASSOCIATED EQUIPMENT / PROCESS INFORMATION

Equipment/Process ID	Action	Equipment / Process Description	Installation / Modification Date	Maximum Design Capacity (Units)	Control Device ID(s)	Pollutants Controlled (Include CAS#)	Capture System Efficiency and Description	Emission Point ID(s)
150-CV-002	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Crusher Conveyor Transfer to Stockpile Feed Conveyor	10/4/2017	24,000 tons/day	N/A	PM	62% efficiency. water spray bars	PT-2
150-CV-002	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Crusher Conveyor Transfer to Stockpile Feed Conveyor	10/4/2017	24,000 tons/day	N/A	PM_{10}	62% efficiency. water spray bars	PT-2
150-CV-002	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Crusher Conveyor Transfer to Stockpile Feed Conveyor	10/4/2017	24,000 tons/day	N/A	$PM_{2.5}$	62% efficiency. water spray bars	PT-2

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ASSOCIATED EQUIPMENT / PROCESS INFORMATION								
Equipment/Process ID	**Action**	**Equipment / Process Description**	**Installation / Modification Date**	**Maximum Design Capacity (Units)**	**Control Device ID(s)**	**Pollutants Controlled (Include CAS#)**	**Capture System Efficiency and Description**	**Emission Point ID(s)**
150-CV-002	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Crusher Conveyor Transfer to Stockpile Feed Conveyor	10/4/2017	24,000 tons/day	N/A	Pb	62% efficiency. water spray bars	PT-2
150-CV-002	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Crusher Conveyor Transfer to Stockpile Feed Conveyor	10/4/2017	24,000 tons/day	N/A	As	62% efficiency. water spray bars	PT-2

ASSOCIATED CONTROL DEVICE INFORMATION						
Control Device ID	**Action**	**Control Device Description**	**Installation/Modification Date**	**Maximum Design Capacity (Units)**	**Inherent/Required/Voluntary (Explain)**	**Destruction / Removal Efficiency**
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	water spray bars	10/4/2017	N/A	required	62%

FUEL INFORMATION				
Equipment ID Process ID Control Device ID	**Fuels Combusted**	**BTU Content**	**% Sulfur by Weight**	**% Ash by Weight**
150-CV-002	Electric	N/A	N/A	N/A

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Please use a separate form for each Emission Unit ID

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Facility Name *(This should be the name used to identify the facility)* Haile Gold Mine, Inc.	SC Air Permit Number (8-digits only) *(Leave blank if one has never been assigned)* 1460 - 0070	Application Date 4/5/2019

EMISSION UNIT IDENTIFICATION	
Emission Unit ID	**Emission Unit Description**
PT-2A	Crusher Conveyor Transfer to Coarse Ore Bin

ASSOCIATED EQUIPMENT / PROCESS INFORMATION

Equipment/Process ID	Action	Equipment / Process Description	Installation / Modification Date	Maximum Design Capacity (Units)	Control Device ID(s)	Pollutants Controlled (Include CAS#)	Capture System Efficiency and Description	Emission Point ID(s)
150-BN-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Crusher Conveyor Transfer to Coarse Ore Bin	10/4/2017	24,000 tons/day	N/A	PM	95% efficiency. bag house	PT-2A
150-BN-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Crusher Conveyor Transfer to Coarse Ore Bin	10/4/2017	24,000 tons/day	N/A	PM_{10}	95% efficiency. bag house	PT-2A
150-BN-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Crusher Conveyor Transfer to Coarse Ore Bin	10/4/2017	24,000 tons/day	N/A	$PM_{2.5}$	95% efficiency. bag house	PT-2A

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ASSOCIATED EQUIPMENT / PROCESS INFORMATION								
Equipment/Process ID	**Action**	**Equipment / Process Description**	**Installation / Modification Date**	**Maximum Design Capacity (Units)**	**Control Device ID(s)**	**Pollutants Controlled (Include CAS#)**	**Capture System Efficiency and Description**	**Emission Point ID(s)**
150-BN-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Crusher Conveyor Transfer to Coarse Ore Bin	10/4/2017	24,000 tons/day	N/A	Pb	95% efficiency. bag house	PT-2A
150-BN-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Crusher Conveyor Transfer to Coarse Ore Bin	10/4/2017	24,000 tons/day	N/A	As	95% efficiency. bag house	PT-2A

ASSOCIATED CONTROL DEVICE INFORMATION						
Control Device ID	**Action**	**Control Device Description**	**Installation/Modification Date**	**Maximum Design Capacity (Units)**	**Inherent/Required/Voluntary (Explain)**	**Destruction / Removal Efficiency**
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Bag house	10/4/2017	N/A	required	95%

FUEL INFORMATION				
Equipment ID Process ID Control Device ID	**Fuels Combusted**	**BTU Content**	**% Sulfur by Weight**	**% Ash by Weight**
150-BN-001	Electric	N/A	N/A	N/A

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Please use a separate form for each Emission Unit ID

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Facility Name *(This should be the name used to identify the facility)* Haile Gold Mine, Inc.	SC Air Permit Number (8-digits only) *(Leave blank if one has never been assigned)* 1460 - 0070	Application Date 4/5/2019

EMISSION UNIT IDENTIFICATION	
Emission Unit ID	**Emission Unit Description**
PT-3	Stockpile Feed Conveyor Transfer to Coarse Ore Stockpile

ASSOCIATED EQUIPMENT / PROCESS INFORMATION

Equipment/Process ID	Action	Equipment / Process Description	Installation / Modification Date	Maximum Design Capacity (Units)	Control Device ID(s)	Pollutants Controlled (Include CAS#)	Capture System Efficiency and Description	Emission Point ID(s)
150-CV-003	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Stockpile Feed Conveyor Transfer to Coarse Ore Stockpile	10/4/2017	24,000 tons/day	N/A	PM	62% efficiency. water spray bars	PT-3
150-CV-003	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Stockpile Feed Conveyor Transfer to Coarse Ore Stockpile	10/4/2017	24,000 tons/day	N/A	PM_{10}	62% efficiency. water spray bars	PT-3
150-CV-003	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Stockpile Feed Conveyor Transfer to Coarse Ore Stockpile	10/4/2017	24,000 tons/day	N/A	$PM_{2.5}$	62% efficiency. water spray bars	PT-3

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ASSOCIATED EQUIPMENT / PROCESS INFORMATION								
Equipment/Process ID	**Action**	**Equipment / Process Description**	**Installation / Modification Date**	**Maximum Design Capacity (Units)**	**Control Device ID(s)**	**Pollutants Controlled (Include CAS#)**	**Capture System Efficiency and Description**	**Emission Point ID(s)**
150-CV-003	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Stockpile Feed Conveyor Transfer to Coarse Ore Stockpile	10/4/2017	24,000 tons/day	N/A	Pb	62% efficiency. water spray bars	PT-3
150-CV-003	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Stockpile Feed Conveyor Transfer to Coarse Ore Stockpile	10/4/2017	24,000 tons/day	N/A	As	62% efficiency. water spray bars	PT-3

ASSOCIATED CONTROL DEVICE INFORMATION						
Control Device ID	**Action**	**Control Device Description**	**Installation/Modification Date**	**Maximum Design Capacity (Units)**	**Inherent/Required/Voluntary (Explain)**	**Destruction / Removal Efficiency**
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	water spray bars	10/4/2017	N/A	required	62%

FUEL INFORMATION				
Equipment ID Process ID Control Device ID	**Fuels Combusted**	**BTU Content**	**% Sulfur by Weight**	**% Ash by Weight**
150-CV-003	Electric	N/A	N/A	N/A

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Please use a separate form for each Emission Unit ID

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EMISSION UNIT IDENTIFICATION	
Emission Unit ID	**Emission Unit Description**
PT-3A	Emergency Hopper

ASSOCIATED EQUIPMENT / PROCESS INFORMATION								
Equipment/Process ID	**Action**	**Equipment / Process Description**	**Installation / Modification Date**	**Maximum Design Capacity (Units)**	**Control Device ID(s)**	**Pollutants Controlled (Include CAS#)**	**Capture System Efficiency and Description**	**Emission Point ID(s)**
200-HP-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Emergency Hopper Load-In	10/4/2017	24,000 tons/day	N/A	PM	N/A	PT-3A
200-HP-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Emergency Hopper Load-In	10/4/2017	24,000 tons/day	N/A	PM_{10}	N/A	PT-3A
200-HP-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Emergency Hopper Load-In	10/4/2017	24,000 tons/day	N/A	$PM_{2.5}$	N/A	PT-3A

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ASSOCIATED EQUIPMENT / PROCESS INFORMATION								
Equipment/Process ID	**Action**	**Equipment / Process Description**	**Installation / Modification Date**	**Maximum Design Capacity (Units)**	**Control Device ID(s)**	**Pollutants Controlled (Include CAS#)**	**Capture System Efficiency and Description**	**Emission Point ID(s)**
200-HP-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Emergency Hopper Load-In	10/4/2017	24,000 tons/day	N/A	Pb	N/A	PT-3A
200-HP-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Emergency Hopper Load-In	10/4/2017	24,000 tons/day	N/A	As	N/A	PT-3A

ASSOCIATED CONTROL DEVICE INFORMATION						
Control Device ID	**Action**	**Control Device Description**	**Installation/Modification Date**	**Maximum Design Capacity (Units)**	**Inherent/Required/Voluntary (Explain)**	**Destruction / Removal Efficiency**
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	N/A	10/4/2017	N/A	Inherent	N/A

FUEL INFORMATION				
Equipment ID Process ID Control Device ID	**Fuels Combusted**	**BTU Content**	**% Sulfur by Weight**	**% Ash by Weight**
200-HP-001	N/A	N/A	N/A	N/A

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Facility Name *(This should be the name used to identify the facility)* Haile Gold Mine, Inc.	SC Air Permit Number (8-digits only) *(Leave blank if one has never been assigned)* 1460 - 0070	Application Date 4/5/2019

EMISSION UNIT IDENTIFICATION	
Emission Unit ID	**Emission Unit Description**
PT-4	Conveyor Transfer to SAG Mill

ASSOCIATED EQUIPMENT / PROCESS INFORMATION

Equipment/Process ID	Action	Equipment / Process Description	Installation / Modification Date	Maximum Design Capacity (Units)	Control Device ID(s)	Pollutants Controlled (Include CAS#)	Capture System Efficiency and Description	Emission Point ID(s)
300-CV-002	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Conveyor Transfer to SAG Mill	10/4/2017	24,000 tons/day	N/A	PM	62% efficiency. water spray bars	PT-4
300-CV-002	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Conveyor Transfer to SAG Mill	10/4/2017	24,000 tons/day	N/A	PM_{10}	62% efficiency. water spray bars	PT-4
300-CV-002	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Conveyor Transfer to SAG Mill	10/4/2017	24,000 tons/day	N/A	$PM_{2.5}$	62% efficiency. water spray bars	PT-4

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ASSOCIATED EQUIPMENT / PROCESS INFORMATION								
Equipment/Process ID	**Action**	**Equipment / Process Description**	**Installation / Modification Date**	**Maximum Design Capacity (Units)**	**Control Device ID(s)**	**Pollutants Controlled (Include CAS#)**	**Capture System Efficiency and Description**	**Emission Point ID(s)**
300-CV-002	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Conveyor Transfer to SAG Mill	10/4/2017	24,000 tons/day	N/A	Pb	62% efficiency. water spray bars	PT-4
300-CV-002	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Conveyor Transfer to SAG Mill	10/4/2017	24,000 tons/day	N/A	As	62% efficiency. water spray bars	PT-4

ASSOCIATED CONTROL DEVICE INFORMATION						
Control Device ID	**Action**	**Control Device Description**	**Installation/Modification Date**	**Maximum Design Capacity (Units)**	**Inherent/Required/Voluntary (Explain)**	**Destruction / Removal Efficiency**
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	water spray bars	10/4/2017	N/A	required	62%

FUEL INFORMATION				
Equipment ID Process ID Control Device ID	**Fuels Combusted**	**BTU Content**	**% Sulfur by Weight**	**% Ash by Weight**
300-CV-002	Electric	N/A	N/A	N/A

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Haile Gold Mine, Inc.	1460 - 0070	4/5/2019

EMISSION UNIT IDENTIFICATION	
Emission Unit ID	**Emission Unit Description**
PT-7	Reagent Lime Silo Bin Vent Filter

ASSOCIATED EQUIPMENT / PROCESS INFORMATION								
Equipment/Process ID	**Action**	**Equipment / Process Description**	**Installation / Modification Date**	**Maximum Design Capacity (Units)**	**Control Device ID(s)**	**Pollutants Controlled (Include CAS#)**	**Capture System Efficiency and Description**	**Emission Point ID(s)**
800-FL-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Reagent Lime Silo Bin Vent Filter	10/4/2017	75 tons/day	N/A	PM	97%	PT-7
800-FL-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Reagent Lime Silo Bin Vent Filter	10/4/2017	75 tons/day	N/A	PM_{10}	97%	PT-7
800-FL-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Reagent Lime Silo Bin Vent Filter	10/4/2017	75 tons/day	N/A	$PM_{2.5}$	97%	PT-7

ASSOCIATED CONTROL DEVICE INFORMATION						
Control Device ID	**Action**	**Control Device Description**	**Installation/Modification Date**	**Maximum Design Capacity (Units)**	**Inherent/Required/Voluntary (Explain)**	**Destruction / Removal Efficiency**
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	vent	10/4/2017	0.47 lb/ton	required	97%
	☐ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other					
	☐ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other					

FUEL INFORMATION				
Equipment ID Process ID Control Device ID	**Fuels Combusted**	**BTU Content**	**% Sulfur by Weight**	**% Ash by Weight**
800-FL-001	N/A	N/A	N/A	N/A

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EMISSION UNIT IDENTIFICATION	
Emission Unit ID	**Emission Unit Description**
PT-7A	Reagent Lime Slaker

ASSOCIATED EQUIPMENT / PROCESS INFORMATION

Equipment/Process ID	Action	Equipment / Process Description	Installation / Modification Date	Maximum Design Capacity (Units)	Control Device ID(s)	Pollutants Controlled (Include CAS#)	Capture System Efficiency and Description	Emission Point ID(s)
800-PK-010	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Reagent Lime Slaker	10/4/2017	8760 hr/year	N/A	PM	0%	PT-7A
800-PK-010	☐ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Reagent Lime Slaker	10/4/2017	8760 hr/year	N/A	PM_{10}	0%	PT-7A
800-PK-010	☐ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Reagent Lime Slaker	10/4/2017	8760 hr/year	N/A	$PM_{2.5}$	0%	PT-7A

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ASSOCIATED CONTROL DEVICE INFORMATION						
Control Device ID	**Action**	**Control Device Description**	**Installation/Modification Date**	**Maximum Design Capacity (Units)**	**Inherent/Required/Voluntary (Explain)**	**Destruction / Removal Efficiency**
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	N/A	10/4/2017	7.6 lb/MMSCF	required	0%
	☐ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other					
	☐ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other					

FUEL INFORMATION				
Equipment ID Process ID Control Device ID	**Fuels Combusted**	**BTU Content**	**% Sulfur by Weight**	**% Ash by Weight**
800-PK-010	N/A	N/A	N/A	N/A

Bureau of Air Quality
Title V Operating Permit Application
Emission Unit, Equipment and Processes

Please use a separate form for each Emission Unit ID

APPLICATION IDENTIFICATION *(Please ensure that the information list in this table is the same on all of the forms and required information submitted in the Title V application package.)*		
Facility Name *(This should be the name used to identify the facility)* Haile Gold Mine, Inc.	SC Air Permit Number (8-digits only) *(Leave blank if one has never been assigned)* 1460 - 0070	Application Date 4/5/2019

EMISSION UNIT IDENTIFICATION	
Emission Unit ID	**Emission Unit Description**
PT-15	335 HP Diesel Powered Sump Pump Engine (5 units)

ASSOCIATED EQUIPMENT / PROCESS INFORMATION

Equipment/Process ID	Action	Equipment / Process Description	Installation / Modification Date	Maximum Design Capacity (Units)	Control Device ID(s)	Pollutants Controlled (Include CAS#)	Capture System Efficiency and Description	Emission Point ID(s)
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	PM (--)	0%	PT-15
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	PM_{10} (--)	0%	PT-15
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	$PM_{2.5}$ (--)	0%	PT-15

ASSOCIATED EQUIPMENT / PROCESS INFORMATION								
Equipment/Process ID	**Action**	**Equipment / Process Description**	**Installation / Modification Date**	**Maximum Design Capacity (Units)**	**Control Device ID(s)**	**Pollutants Controlled (Include CAS#)**	**Capture System Efficiency and Description**	**Emission Point ID(s)**
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	SO_2 (7446-09-5)	0%	PT-15
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	NO_x (10024-97-2)	0%	PT-15
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	VOC (--)	0%	PT-15
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	CO (630-08-0)	0%	PT-15
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	Benzene (71-43-2)	0%	PT-15

ASSOCIATED EQUIPMENT / PROCESS INFORMATION								
Equipment/Process ID	**Action**	**Equipment / Process Description**	**Installation / Modification Date**	**Maximum Design Capacity (Units)**	**Control Device ID(s)**	**Pollutants Controlled (Include CAS#)**	**Capture System Efficiency and Description**	**Emission Point ID(s)**
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	Toluene (108-88-3)	0%	PT-15
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	Xylenes (1330-20-7)	0%	PT-15
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	1,3-Butadiene (106-99-0)	0%	PT-15
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	Formaldehyde (50-00-0)	0%	PT-15
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	Acetaldehyde (75-07-0)	0%	PT-15

ASSOCIATED EQUIPMENT / PROCESS INFORMATION								
Equipment/Process ID	**Action**	**Equipment / Process Description**	**Installation / Modification Date**	**Maximum Design Capacity (Units)**	**Control Device ID(s)**	**Pollutants Controlled (Include CAS#)**	**Capture System Efficiency and Description**	**Emission Point ID(s)**
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	Acrolein (107-02-8)	0%	PT-15
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	Naphthalene (91-20-3)	0%	PT-15
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	Acenaphthylene (208-96-8)	0%	PT-15
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	Acenaphthene (83-32-9)	0%	PT-15
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	Fluorene (86-73-7)	0%	PT-15

ASSOCIATED EQUIPMENT / PROCESS INFORMATION								
Equipment/Process ID	**Action**	**Equipment / Process Description**	**Installation / Modification Date**	**Maximum Design Capacity (Units)**	**Control Device ID(s)**	**Pollutants Controlled (Include CAS#)**	**Capture System Efficiency and Description**	**Emission Point ID(s)**
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	Phenanthrene (85-01-8)	0%	PT-15
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	Anthracene (120-12-7)	0%	PT-15
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	Fluoranthene (206-44-0)	0%	PT-15
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	Pyrene (129-00-0)	0%	PT-15
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	Benzo(a)anthracene (56-55-3)	0%	PT-15

ASSOCIATED EQUIPMENT / PROCESS INFORMATION								
Equipment/Process ID	**Action**	**Equipment / Process Description**	**Installation / Modification Date**	**Maximum Design Capacity (Units)**	**Control Device ID(s)**	**Pollutants Controlled (Include CAS#)**	**Capture System Efficiency and Description**	**Emission Point ID(s)**
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	Chrysene (218-01-9)	0%	PT-15
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	Benzo(b)fluoranthene (205-99-2)	0%	PT-15
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	Benzo(k)fluoranthene (207-08-9)	0%	PT-15
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	Benzo(a)pyrene (50-32-8)	0%	PT-15
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	Indeno(1,2,3-cd)pyrene (193-39-5)	0%	PT-15

ASSOCIATED EQUIPMENT / PROCESS INFORMATION								
Equipment/Process ID	**Action**	**Equipment / Process Description**	**Installation / Modification Date**	**Maximum Design Capacity (Units)**	**Control Device ID(s)**	**Pollutants Controlled (Include CAS#)**	**Capture System Efficiency and Description**	**Emission Point ID(s)**
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	Dibenz(a,h)anthracene (53-70-3)	0%	PT-15
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Pump Engine	10/4/2017	8,760 hr/year	N/A	Benzo(g,h,I)perylene (191-24-2)	0%	PT-15

ASSOCIATED CONTROL DEVICE INFORMATION						
Control Device ID	**Action**	**Control Device Description**	**Installation/Modification Date**	**Maximum Design Capacity (Units)**	**Inherent/Required/Voluntary (Explain)**	**Destruction / Removal Efficiency**
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	N/A	10/4/2017	N/A	Inherent	0%

FUEL INFORMATION				
Equipment ID Process ID Control Device ID	**Fuels Combusted**	**BTU Content**	**% Sulfur by Weight**	**% Ash by Weight**
N/A	Diesel	N/A	0.0015%	N/A

Bureau of Air Quality
Title V Operating Permit Application
Emission Unit, Equipment and Processes

Please use a separate form for each Emission Unit ID

APPLICATION IDENTIFICATION *(Please ensure that the information list in this table is the same on all of the forms and required information submitted in the Title V application package.)*		
Facility Name *(This should be the name used to identify the facility)*	SC Air Permit Number (8-digits only) *(Leave blank if one has never been assigned)*	Application Date
Haile Gold Mine, Inc.	1460 - 0070	4/5/2019

EMISSION UNIT IDENTIFICATION	
Emission Unit ID	**Emission Unit Description**
PT-16	Natural Gas Fired Thermal Fluid Heater

ASSOCIATED EQUIPMENT / PROCESS INFORMATION

Equipment/Process ID	Action	Equipment / Process Description	Installation / Modification Date	Maximum Design Capacity (Units)	Control Device ID(s)	Pollutants Controlled (Include CAS#)	Capture System Efficiency and Description	Emission Point ID(s)
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	PM (--)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	PM_{10} (--)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	$PM_{2.5}$ (--)	0%	PT-16

ASSOCIATED EQUIPMENT / PROCESS INFORMATION								
Equipment/Process ID	**Action**	**Equipment / Process Description**	**Installation / Modification Date**	**Maximum Design Capacity (Units)**	**Control Device ID(s)**	**Pollutants Controlled (Include CAS#)**	**Capture System Efficiency and Description**	**Emission Point ID(s)**
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	SO_2 (7446-09-5)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	NO_x (10024-97-2)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	VOC (--)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	CO (630-08-0)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Pb (7439-92-1)	0%	PT-16

ASSOCIATED EQUIPMENT / PROCESS INFORMATION								
Equipment/Process ID	**Action**	**Equipment / Process Description**	**Installation / Modification Date**	**Maximum Design Capacity (Units)**	**Control Device ID(s)**	**Pollutants Controlled (Include CAS#)**	**Capture System Efficiency and Description**	**Emission Point ID(s)**
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	2-Methylnaphthalene (91-57-6)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	3-Methylchloranthrene (56-49-5)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	7,12-Dimethylbenz(a)anthracene	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Acenaphthene (83-32-9)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Acenaphthylene (203-96-8)	0%	PT-16

ASSOCIATED EQUIPMENT / PROCESS INFORMATION								
Equipment/Process ID	**Action**	**Equipment / Process Description**	**Installation / Modification Date**	**Maximum Design Capacity (Units)**	**Control Device ID(s)**	**Pollutants Controlled (Include CAS#)**	**Capture System Efficiency and Description**	**Emission Point ID(s)**
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Anthracene (120-12-7)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Benz(a)anthracene (56-55-3)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Benzene (71-43-2)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Benzo(a)pyrene (50-32-8)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Benzo(b)fluoranthene (205-99-2)	0%	PT-16

ASSOCIATED EQUIPMENT / PROCESS INFORMATION								
Equipment/Process ID	**Action**	**Equipment / Process Description**	**Installation / Modification Date**	**Maximum Design Capacity (Units)**	**Control Device ID(s)**	**Pollutants Controlled (Include CAS#)**	**Capture System Efficiency and Description**	**Emission Point ID(s)**
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Benzo(g,h,i)perylene (191-24-2)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Benzo(k)fluoranthene (205-82-3)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Chrysene (218-01-9)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Dibenzo(a,h)anthracene (53-70-3)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Dichlorobenzene (25321-22-6)	0%	PT-16

ASSOCIATED EQUIPMENT / PROCESS INFORMATION								
Equipment/Process ID	**Action**	**Equipment / Process Description**	**Installation / Modification Date**	**Maximum Design Capacity (Units)**	**Control Device ID(s)**	**Pollutants Controlled (Include CAS#)**	**Capture System Efficiency and Description**	**Emission Point ID(s)**
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Fluoranthene (206-44-0)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Fluorene (86-73-7)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Formaldehyde (50-00-0)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Hexane (110-54-3)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Indeno(1,2,3-cd)pyrene (193-39-5)	0%	PT-16

ASSOCIATED EQUIPMENT / PROCESS INFORMATION								
Equipment/Process ID	**Action**	**Equipment / Process Description**	**Installation / Modification Date**	**Maximum Design Capacity (Units)**	**Control Device ID(s)**	**Pollutants Controlled (Include CAS#)**	**Capture System Efficiency and Description**	**Emission Point ID(s)**
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Naphthalene (91-20-3)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Phenanthrene (85-01-8)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Pyrene (129-00-0)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Toluene (108-88-3)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Arsenic (7440-38-2)	0%	PT-16

ASSOCIATED EQUIPMENT / PROCESS INFORMATION								
Equipment/Process ID	**Action**	**Equipment / Process Description**	**Installation / Modification Date**	**Maximum Design Capacity (Units)**	**Control Device ID(s)**	**Pollutants Controlled (Include CAS#)**	**Capture System Efficiency and Description**	**Emission Point ID(s)**
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Beryllium (7440-39-3)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Cadmium (7440-43-9)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Chromium (7440-47-3)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Cobalt (7440-48-4)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Manganese (7439-96-5)	0%	PT-16

ASSOCIATED EQUIPMENT / PROCESS INFORMATION								
Equipment/Process ID	**Action**	**Equipment / Process Description**	**Installation / Modification Date**	**Maximum Design Capacity (Units)**	**Control Device ID(s)**	**Pollutants Controlled (Include CAS#)**	**Capture System Efficiency and Description**	**Emission Point ID(s)**
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Mercury (7439-97-6)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Nickel (7440-02-0)	0%	PT-16
500-HT-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Thermal Fluid Heater	10/4/2017	8,760 hr/year	N/A	Selenium (7782-49-2)	0%	PT-16

ASSOCIATED CONTROL DEVICE INFORMATION						
Control Device ID	**Action**	**Control Device Description**	**Installation/Modification Date**	**Maximum Design Capacity (Units)**	**Inherent/Required/Voluntary (Explain)**	**Destruction / Removal Efficiency**
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	N/A	10/4/2017	N/A	Inherent	0%

FUEL INFORMATION				
Equipment ID Process ID Control Device ID	**Fuels Combusted**	**BTU Content**	**% Sulfur by Weight**	**% Ash by Weight**
N/A	Natural Gas	1,000 BTU/scf	N/A	N/A

Bureau of Air Quality
Title V Operating Permit Application
Emission Unit, Equipment and Processes

Please use a separate form for each Emission Unit ID

APPLICATION IDENTIFICATION *(Please ensure that the information list in this table is the same on all of the forms and required information submitted in the Title V application package.)*		
Facility Name *(This should be the name used to identify the facility)*	SC Air Permit Number (8-digits only) *(Leave blank if one has never been assigned)*	Application Date
Haile Gold Mine, Inc.	1460 - 0070	4/5/2019

EMISSION UNIT IDENTIFICATION	
Emission Unit ID	**Emission Unit Description**
PT-18	Mobile Crusher

ASSOCIATED EQUIPMENT / PROCESS INFORMATION

Equipment/Process ID	Action	Equipment / Process Description	Installation / Modification Date	Maximum Design Capacity (Units)	Control Device ID(s)	Pollutants Controlled (Include CAS#)	Capture System Efficiency and Description	Emission Point ID(s)
PT-18	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Mobile Crusher	10/4/2017	24,000 tons/day	N/A	PM	62% efficiency. water spray bars	PT-18
PT-18	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Mobile Crusher	10/4/2017	24,000 tons/day	N/A	PM_{10}	62% efficiency. water spray bars	PT-18
PT-18	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Mobile Crusher	10/4/2017	24,000 tons/day	N/A	$PM_{2.5}$	62% efficiency. water spray bars	PT-18

ASSOCIATED CONTROL DEVICE INFORMATION						
Control Device ID	**Action**	**Control Device Description**	**Installation/Modification Date**	**Maximum Design Capacity (Units)**	**Inherent/Required/Voluntary (Explain)**	**Destruction / Removal Efficiency**
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	water spray bars	10/4/2017	N/A	required	62%

FUEL INFORMATION				
Equipment ID Process ID Control Device ID	**Fuels Combusted**	**BTU Content**	**% Sulfur by Weight**	**% Ash by Weight**
PT-18	Diesel	N/A	0.0015%	N/A

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Emission Unit, Equipment and Processes
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Please use a separate form for each Emission Unit ID

APPLICATION IDENTIFICATION *(Please ensure that the information list in this table is the same on all of the forms and required information submitted in the Title V application package.)*		
Facility Name *(This should be the name used to identify the facility)*	SC Air Permit Number (8-digits only) *(Leave blank if one has never been assigned)*	Application Date
Haile Gold Mine, Inc.	1460 - 0070	4/5/2019

EMISSION UNIT IDENTIFICATION	
Emission Unit ID	**Emission Unit Description**
T-1	Carbon-in-Leach Tanks (8 total) and Cyanide Recovery Thickener

ASSOCIATED EQUIPMENT / PROCESS INFORMATION

Equipment /Process ID	Action	Equipment / Process Description	Installation/ Modification Date	Maximum Design Capacity (Units)	Control Device ID(s)	Pollutants Controlled (Include CAS#)	Capture System Efficiency and Description	Emission Point ID(s)
450-TK-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Carbon-in-Leach Tank 1	10/4/2017	8,760 hr/year	N/A	HCN (74-90-8)	0%	T-1
450-TK-002	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Carbon-in-Leach Tank 2	10/4/2017	8,760 hr/year	N/A	HCN (74-90-8)	0%	T-1
450-TK-003	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Carbon-in-Leach Tank 3	10/4/2017	8,760 hr/year	N/A	HCN (74-90-8)	0%	T-1

ASSOCIATED EQUIPMENT / PROCESS INFORMATION								
Equipment /Process ID	**Action**	**Equipment / Process Description**	**Installation/ Modification Date**	**Maximum Design Capacity (Units)**	**Control Device ID(s)**	**Pollutants Controlled (Include CAS#)**	**Capture System Efficiency and Description**	**Emission Point ID(s)**
420-TK-005	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Carbon-in-Leach Tank 4	10/4/2017	8,760 hr/year	N/A	HCN (74-90-8)	0%	T-1
450-TK-005	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Carbon-in-Leach Tank 5	10/4/2017	8,760 hr/year	N/A	HCN (74-90-8)	0%	T-1
450-TK-006	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Carbon-in-Leach Tank 6	10/4/2017	8,760 hr/year	N/A	HCN (74-90-8)	0%	T-1
450-TK-007	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Carbon-in-Leach Tank 7	10/4/2017	8,760 hr/year	N/A	HCN (74-90-8)	0%	T-1
450-TK-008	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Carbon-in-Leach Tank 8	10/4/2017	8,760 hr/year	N/A	HCN (74-90-8)	0%	T-1
600-TH-001	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	Cyanide Recovery Thickener	10/4/2017	8,760 hr/year	N/A	HCN (74-90-8)	0%	T-1

ASSOCIATED CONTROL DEVICE INFORMATION						
Control Device ID	**Action**	**Control Device Description**	**Installation/ Modification Date**	**Maximum Design Capacity (Units)**	**Inherent/Required/Voluntary (Explain)**	**Destruction / Removal Efficiency**
N/A	☒ Stay the Same ☐ Add ☐ Remove ☐ Modify ☐ Other	N/A	10/4/2017	N/A	Inherent	N/A

FUEL INFORMATION				
Equipment ID Process ID Control Device ID	**Fuels Combusted**	**BTU Content**	**% Sulfur by Weight**	**% Ash by Weight**
420-TK-005	Electric	N/A	N/A	N/A
450-TK-002	Electric	N/A	N/A	N/A
450-TK-003	Electric	N/A	N/A	N/A
450-TK-004	Electric	N/A	N/A	N/A
450-TK-005	Electric	N/A	N/A	N/A
450-TK-006	Electric	N/A	N/A	N/A
450-TK-007	Electric	N/A	N/A	N/A
450-TK-008	Electric	N/A	N/A	N/A
600-TH-001	Electric	N/A	N/A	N/A

Bureau of Air Quality
Title V Operating Permit Application
Facility Wide Raw Materials and Products

APPLICATION IDENTIFICATION *(Please ensure that the information list in this table is the same on all of the forms and required information submitted in the Title V application package.)*		
Facility Name *(This should be the name used to identify the facility)* Haile Gold Mine, Inc.	SC Air Permit Number (8-digits only) *(Leave blank if one has never been assigned)* 1460 - 0070	Application Date 4/5/2019

FACILITY WIDE RAW MATERIALS LIST
(This section lists all of the raw materials used in the total process.)

Raw Materials Used*	**Quantity Used Annually** *(Indicate units of measure.)*
Gold Ore	2,780,000 tonnes

NOTE: *List all major raw materials which comprise 10% or more of the materials used in the total process. Other raw materials must be listed if they are a regulated pollutant or contribute to the formation of a regulated pollutant.

FACILITY WIDE PRODUCTS LIST
(This section lists all of the products manufactured at this facility.)

Products Manufactured *(List products in order of major to minor.)*	SIC Code *(Standard Industrial Classification Codes)*	NAICS Code *(North American Industry Classification System)*	**Annual Production Rate** *(Indicate units of measure.)*
Gold	1041	212221	131,000 troy oz.

Bureau of Air Quality
Title V Operating Permit Application
Facility Wide Emissions

APPLICATION IDENTIFICATION *(Please ensure that the information list in this table is the same on all of the forms and required information submitted in the Title V application package.)*		
Facility Name *(This should be the name used to identify the facility)*	SC Air Permit Number (8-digits only) *(Leave blank if one has never been assigned)*	Application Date
Haile Gold Mine, Inc.	1460 - 0070	4/5/2019

EMISSION DATA FOR REGULATED POLLUTANTS

Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
100-CR-001	PT-1	Criteria	PM	--	9.375	24.966	3.563	9.487	9.375	24.966	AP-42 Section 11.24.2, Table 11.24-2; WRAP Fugitive Dust Handbook, Table 4-2 for emission factor reduction for partial enclosure.
100-CR-001	PT-1	Criteria	PM_{10}	--	4.219	11.235	1.603	4.269	4.219	11.235	AP-42 Section 11.24.2, Table 11.24-2; WRAP Fugitive Dust Handbook, Table 4-2 for emission factor reduction for partial enclosure

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
100-CR-001	PT-1	Criteria	$PM_{2.5}$	--	0.639	1.701	0.243	0.646	0.639	1.701	AP-42 Section 11.24.2, Table 11.24-2; AP-42 Section 13.2.4 PM10/PM2.5 particle size multiplier ratio; WRAP Fugitive Dust Handbook, Table 4-2 for emission factor reduction for partial enclosure
100-CR-001	PT-1	Criteria	Pb	7439-92-1	1.13E-04	3.00E-04	4.28E-05	1.14E-04	1.13E-04	3.00E-04	Lead content from site assey data multiplied by source PM emissions.
100-CR-001	PT-1	HAP	Arsenic	7440-38-2	8.92E-04	2.38E-03	3.39E-04	9.03E-04	8.92E-04	2.38E-03	Arsenic content from site assey data multiplied by source PM emissions.
150-BN-001	PT-2	Criteria	PM	--	1.563	4.161	0.594	1.581	1.563	4.161	AP-42 Section 11.24.2, Table 11.24-2; WRAP Fugitive Dust Handbook, Table 4-2 for emission factor reduction for partial enclosure.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
150-BN-001	PT-2	Criteria	PM_{10}	--	0.625	1.664	0.238	0.632	0.625	1.664	AP-42 Section 11.24.2, Table 11.24-2; WRAP Fugitive Dust Handbook, Table 4-2 for emission factor reduction for partial enclosure.
150-BN-001	PT-2	Criteria	$PM_{2.5}$	--	9.46E-02	0.252	3.60E-02	9.58E-02	9.46E-02	0.252	AP-42 Section 11.24.2, Table 11.24-2; AP-42 Section 13.2.4 PM10/PM2.5 particle size multiplier ratio; WRAP Fugitive Dust Handbook, Table 4-2 for emission factor reduction for partial enclosure.
150-BN-001	PT-2	Criteria	Pb	7439-92-1	1.88E-05	4.99E-05	7.13E-06	1.90E-05	1.88E-05	4.99E-05	Lead content from site assey data multiplied by source PM emissions.
150-BN-001	PT-2	HAP	Arsenic	7440-38-2	1.49E-04	3.96E-04	5.65E-05	1.51E-04	1.49E-04	3.96E-04	Arsenic content from site assey data multiplied by source PM emissions.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
150-BN-001	PT-2A	Criteria	PM	--	1.563	4.161	7.81E-02	0.208	1.563	4.161	AP-42 Section 11.24.2, Table 11.24-2; WRAP Fugitive Dust Handbook, Table 4-2 for emission factor reduction for partial enclosure.
150-BN-001	PT-2A	Criteria	PM_{10}	--	0.625	1.664	3.13E-02	8.32E-02	0.625	1.664	AP-42 Section 11.24.2, Table 11.24-2; WRAP Fugitive Dust Handbook, Table 4-2 for emission factor reduction for partial enclosure.
150-BN-001	PT-2A	Criteria	$PM_{2.5}$	--	9.46E-02	0.252	4.73E-03	1.26E-02	9.46E-02	0.252	AP-42 Section 11.24.2, Table 11.24-2; AP-42 Section 13.2.4 PM10/PM2.5 particle size multiplier ratio; WRAP Fugitive Dust Handbook, Table 4-2 for emission factor reduction for partial enclosure.
150-BN-001	PT-2A	Criteria	Pb	7439-92-1	1.88E-05	4.99E-05	9.38E-07	2.50E-06	1.88E-05	4.99E-05	Lead content from site assey data multiplied by source PM emissions.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
150-BN-001	PT-2A	HAP	Arsenic	7440-38-2	1.49E-04	3.96E-04	7.44E-06	1.98E-05	1.49E-04	3.96E-04	Arsenic content from site assey data multiplied by source PM emissions.
150-CV-003	PT-3	Criteria	PM	--	0.668	0.240	0.254	9.14E-02	0.668	0.240	AP-42 Section 13.2.4.
150-CV-003	PT-3	Criteria	PM_{10}	--	0.316	0.114	0.120	4.32E-02	0.316	0.114	AP-42 Section 13.2.4.
150-CV-003	PT-3	Criteria	$PM_{2.5}$	--	4.78E-02	1.72E-02	1.82E-02	6.54E-03	4.78E-02	1.72E-02	AP-42 Section 13.2.4.
150-CV-003	PT-3	Criteria	Pb	7439-92-1	8.02E-06	2.89E-06	3.05E-06	1.10E-06	8.02E-06	2.89E-06	Lead content from site assey data multiplied by source PM emissions.
150-CV-003	PT-3	HAP	Arsenic	7440-38-2	6.36E-05	2.29E-05	2.42E-05	8.70E-06	6.36E-05	2.29E-05	Arsenic content from site assey data multiplied by source PM emissions.
200-HP-001	PT-3A	Criteria	PM	--	0.406	0.240	0.406	0.240	0.406	0.240	AP-42 Section 13.2.4.
200-HP-001	PT-3A	Criteria	PM_{10}	--	0.192	0.114	0.192	0.114	0.192	0.114	AP-42 Section 13.2.4.
200-HP-001	PT-3A	Criteria	$PM_{2.5}$	--	2.91E-02	1.72E-02	2.91E-02	1.72E-02	2.91E-02	1.72E-02	AP-42 Section 13.2.4.
200-HP-001	PT-3A	Criteria	Pb	7439-92-1	4.87E-06	2.89E-06	4.87E-06	2.89E-06	4.87E-06	2.89E-06	Lead content from site assey data multiplied by source PM emissions.
200-HP-001	PT-3A	HAP	Arsenic	7440-38-2	3.87E-05	2.29E-05	3.87E-05	2.29E-05	3.87E-05	2.29E-05	Arsenic content from site assey data multiplied by source PM emissions.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
300-CV-002	PT-4	Criteria	PM	--	0.950	4.161	0.361	1.581	0.950	4.161	AP-42 Section 11.24.2, Table 11.24-2; WRAP Fugitive Dust Handbook, Table 4-2 for emission factor reduction for partial enclosure.
300-CV-002	PT-4	Criteria	PM_{10}	--	0.380	1.664	0.144	0.632	0.380	1.664	AP-42 Section 11.24.2, Table 11.24-2; WRAP Fugitive Dust Handbook, Table 4-2 for emission factor reduction for partial enclosure.
300-CV-002	PT-4	Criteria	$PM_{2.5}$	--	5.75E-02	0.252	2.19E-02	9.58E-02	5.75E-02	0.252	AP-42 Section 11.24.2, Table 11.24-2; AP-42 Section 13.2.4 PM10/PM2.5 particle size multiplier ratio; WRAP Fugitive Dust Handbook, Table 4-2 for emission factor reduction for partial enclosure.
300-CV-002	PT-4	Criteria	Pb	7439-92-1	1.14E-05	4.99E-05	4.33E-06	1.90E-05	1.14E-05	4.99E-05	Lead content from site assey data multiplied by source PM emissions.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
300-CV-002	PT-4	HAP	Arsenic	7440-38-2	9.04E-05	3.96E-04	3.44E-05	1.51E-04	9.04E-05	3.96E-04	Arsenic content from site assey data multiplied by source PM emissions.
500-KN-001	PT-5A	Criteria	PM	--	9.710	42.530	0.194	0.851	9.710	42.530	Kiln Exhaust: Manufacturer engineering data and control efficiency.
500-KN-001	PT-5A	Criteria	PM_{10}	--	1.942	8.506	3.88E-02	0.170	1.942	8.506	Kiln Exhaust: Manufacturer engineering data and control efficiency; vendor data indicates 20% of PM would be smaller than 20 microns.
500-KN-001	PT-5A	Criteria	$PM_{2.5}$	--	1.942	8.506	3.88E-02	0.170	1.942	8.506	Kiln Exhaust: Manufacturer engineering data and control efficiency; vendor data indicates 20% of PM would be smaller than 20 microns; assume PM2.5=PM10.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
500-KN-001	PT-5A	HAP	Hydrogen Cyanide	70-90-8	8.78E-02	0.385	8.78E-02	0.385	8.78E-02	0.385	Kiln Exhaust Wet Scrubber: Worst case available HCN stack test results (2009 stack test from Newmont Mining Corporation's Carlin Operations using EPA Method 29).

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
500-KN-001	PT-5A	HAP	Mercury	7439-97-6	8.33E-05	3.65E-04	8.33E-05	3.65E-04	8.33E-05	3.65E-04	USEPA Document No. REPA2-0920-002. The USEPA carbon regneration kiln mercury emission rate equation is based on an average mercury content in calcined ore of 4 mg Hg/kg. Based on assay data the average mercury content of the Haile ore is 0.078 mg/kg. The USEPA emission calculation has been adjusted for the difference in Hg content by multiplying the emission rate equation by the ratio of actual average concentration to the average concentration used to develop the emission factors (0.078 mg/kg/4 mg/kg) or 0.0195.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
500-KN-001	PT-5A	Criteria	PM	--	1.67E-02	7.32E-02	1.67E-02	7.32E-02	1.67E-02	7.32E-02	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-2.
500-KN-001	PT-5A	Criteria	PM_{10}	--	1.67E-02	7.32E-02	1.67E-02	7.32E-02	1.67E-02	7.32E-02	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-2.
500-KN-001	PT-5A	Criteria	$PM_{2.5}$	--	1.67E-02	7.32E-02	1.67E-02	7.32E-02	1.67E-02	7.32E-02	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-2.
500-KN-001	PT-5A	Criteria	SO_2	7446-09-5	1.32E-03	5.78E-03	1.32E-03	5.78E-03	1.32E-03	5.78E-03	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-2.
500-KN-001	PT-5A	Criteria	NO_x	10024-97-2	0.220	0.964	0.220	0.964	0.220	0.964	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-1.
500-KN-001	PT-5A	Criteria	VOC	--	1.21E-02	5.30E-02	1.21E-02	5.30E-02	1.21E-02	5.30E-02	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-2.
500-KN-001	PT-5A	Criteria	CO	630-08-0	0.185	0.809	0.185	0.809	0.185	0.809	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-1.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
500-KN-001	PT-5A	Criteria	Pb	7439-92-1	1.10E-06	4.82E-06	1.10E-06	4.82E-06	1.10E-06	4.82E-06	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-2.
500-KN-001	PT-5A	HAP	2-Methylnaphthalene	91-57-6	5.28E-08	2.31E-07	5.28E-08	2.31E-07	5.28E-08	2.31E-07	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.
500-KN-001	PT-5A	HAP	3-Methylchloranthrene	56-49-5	3.96E-09	1.73E-08	3.96E-09	1.73E-08	3.96E-09	1.73E-08	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.
500-KN-001	PT-5A	HAP	7,12-Dimethylbenz(a)anthracene	57-97-6	3.52E-08	1.54E-07	3.52E-08	1.54E-07	3.52E-08	1.54E-07	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.
500-KN-001	PT-5A	HAP	Acenaphthene	83-32-9	3.96E-09	1.73E-08	3.96E-09	1.73E-08	3.96E-09	1.73E-08	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.
500-KN-001	PT-5A	HAP	Acenaphthylene	203-96-8	3.96E-09	1.73E-08	3.96E-09	1.73E-08	3.96E-09	1.73E-08	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.
500-KN-001	PT-5A	HAP	Anthracene	120-12-7	5.28E-09	2.31E-08	5.28E-09	2.31E-08	5.28E-09	2.31E-08	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
500-KN-001	PT-5A	HAP	Benz(a)anthracene	56-55-3	3.96E-09	1.73E-08	3.96E-09	1.73E-08	3.96E-09	1.73E-08	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.
500-KN-001	PT-5A	HAP	Benzene	71-43-2	4.62E-06	2.02E-05	4.62E-06	2.02E-05	4.62E-06	2.02E-05	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.
500-KN-001	PT-5A	HAP	Benzo(a)pyrene	50-32-8	2.64E-09	1.16E-08	2.64E-09	1.16E-08	2.64E-09	1.16E-08	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.
500-KN-001	PT-5A	HAP	Benzo(b)fluoranthene	205-99-2	3.96E-09	1.73E-08	3.96E-09	1.73E-08	3.96E-09	1.73E-08	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.
500-KN-001	PT-5A	HAP	Benzo(g,h,i)perylene	191-24-2	2.64E-09	1.16E-08	2.64E-09	1.16E-08	2.64E-09	1.16E-08	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.
500-KN-001	PT-5A	HAP	Benzo(k)fluoranthene	205-82-3	3.96E-09	1.73E-08	3.96E-09	1.73E-08	3.96E-09	1.73E-08	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.
500-KN-001	PT-5A	HAP	Chrysene	218-01-9	3.96E-09	1.73E-08	3.96E-09	1.73E-08	3.96E-09	1.73E-08	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
500-KN-001	PT-5A	HAP	Dibenzo(a,h)anthracene	53-70-3	2.64E-09	1.16E-08	2.64E-09	1.16E-08	2.64E-09	1.16E-08	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.
500-KN-001	PT-5A	HAP	Dichlorobenzene	25321-22-6	2.64E-06	1.16E-05	2.64E-06	1.16E-05	2.64E-06	1.16E-05	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.
500-KN-001	PT-5A	HAP	Fluoranthene	206-44-0	6.60E-09	2.89E-08	6.60E-09	2.89E-08	6.60E-09	2.89E-08	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.
500-KN-001	PT-5A	HAP	Fluorene	86-73-7	6.16E-09	2.70E-08	6.16E-09	2.70E-08	6.16E-09	2.70E-08	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.
500-KN-001	PT-5A	HAP	Formaldehyde	50-00-0	1.65E-04	7.23E-04	1.65E-04	7.23E-04	1.65E-04	7.23E-04	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.
500-KN-001	PT-5A	HAP	Hexane	110-54-3	3.96E-03	1.73E-02	3.96E-03	1.73E-02	3.96E-03	1.73E-02	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.
500-KN-001	PT-5A	HAP	Indeno(1,2,3-cd)pyrene	193-39-5	3.96E-09	1.73E-08	3.96E-09	1.73E-08	3.96E-09	1.73E-08	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
500-KN-001	PT-5A	HAP	Naphthalene	91-20-3	1.34E-06	5.88E-06	1.34E-06	5.88E-06	1.34E-06	5.88E-06	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.
500-KN-001	PT-5A	HAP	Phenanthrene	85-01-8	3.74E-08	1.64E-07	3.74E-08	1.64E-07	3.74E-08	1.64E-07	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.
500-KN-001	PT-5A	HAP	Pyrene	129-00-0	1.10E-08	4.82E-08	1.10E-08	4.82E-08	1.10E-08	4.82E-08	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.
500-KN-001	PT-5A	HAP	Toluene	108-88-3	7.48E-06	3.28E-05	7.48E-06	3.28E-05	7.48E-06	3.28E-05	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.
500-KN-001	PT-5A	HAP	Arsenic	7440-38-2	4.40E-07	1.93E-06	4.40E-07	1.93E-06	4.40E-07	1.93E-06	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.
500-KN-001	PT-5A	HAP	Beryllium	7440-41-7	2.64E-08	1.16E-07	2.64E-08	1.16E-07	2.64E-08	1.16E-07	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.
500-KN-001	PT-5A	HAP	Cadmium	7440-43-9	2.42E-06	1.06E-05	2.42E-06	1.06E-05	2.42E-06	1.06E-05	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
500-KN-001	PT-5A	HAP	Chromium	7440-47-3	3.08E-06	1.35E-05	3.08E-06	1.35E-05	3.08E-06	1.35E-05	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.
500-KN-001	PT-5A	HAP	Cobalt	7440-48-4	1.85E-07	8.09E-07	1.85E-07	8.09E-07	1.85E-07	8.09E-07	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.
500-KN-001	PT-5A	HAP	Manganese	7439-96-5	8.36E-07	3.66E-06	8.36E-07	3.66E-06	8.36E-07	3.66E-06	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.
500-KN-001	PT-5A	HAP	Mercury	7439-97-6	5.72E-07	2.51E-06	5.72E-07	2.51E-06	5.72E-07	2.51E-06	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.
500-KN-001	PT-5A	HAP	Nickel	7440-02-0	4.62E-06	2.02E-05	4.62E-06	2.02E-05	4.62E-06	2.02E-05	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.
500-KN-001	PT-5A	HAP	Selenium	7782-49-2	5.28E-08	2.31E-07	5.28E-08	2.31E-07	5.28E-08	2.31E-07	Natural Gas Combustion: AP-42 Section 1.4, Table 1.4-3.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
500-WS-002	PT-5B	HAP	Hydrogen Cyanide	70-90-8	8.78E-02	0.385	8.78E-02	0.385	8.78E-02	0.385	Worst case available HCN stack test results (2009 stack test from Newmont Mining Corporation's Carlin Operations using EPA Method 29).

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
500-WS-002	PT-5B	HAP	Mercury	7439-97-6	1.44E-05	6.31E-05	1.44E-05	6.31E-05	1.44E-05	6.31E-05	USEPA Document No. REPA2-0920-002. The USEPA electrowinning mercury emission rate equation is based on an average mercury content in calcined ore of 4 mg Hg/kg. Based on assay data the average mercury content of the Haile ore is 0.078 mg/kg. The USEPA emission calculation has been adjusted for the difference in Hg content by multiplying the emission rate equation by the ratio of actual average concentration to the average concentration used to develop the emission factors (0.078 mg/kg/4 mg/kg) or 0.0195.
500-DC-001	PT-6	Criteria	PM	--	0.858	1.070	0.858	1.070	0.858	1.070	Product recovery filter exhaust flow capacity and outlet loading.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
500-DC-001	PT-6	Criteria	PM_{10}	--	0.858	1.070	0.858	1.070	0.858	1.070	Product recovery filter exhaust flow capacity and outlet loading.
500-DC-001	PT-6	Criteria	$PM_{2.5}$	--	0.858	1.070	0.858	1.070	0.858	1.070	Product recovery filter exhaust flow capacity and outlet loading.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
500-DC-001	PT-6	HAP	Mercury	7439-97-6	1.76E-04	2.19E-04	1.76E-04	2.19E-04	1.76E-04	2.19E-04	USEPA Document No. REPA2-0920-002. The USEPA electrowinning mercury emission rate equation is based on an average mercury content in calcined ore of 4 mg Hg/kg. Based on assay data the average mercury content of the Haile ore is 0.078 mg/kg. The USEPA emission calculation has been adjusted for the difference in Hg content by multiplying the emission rate equation by the ratio of actual average concentration to the average concentration used to develop the emission factors (0.078 mg/kg/4 mg/kg) or 0.0195. Limited to 2,496 hr/yr (4 day/wk, 12 hr/day).

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
500-DC-001	PT-6	Criteria	Pb	7439-92-1	1.03E-05	1.28E-05	1.03E-05	1.28E-05	1.03E-05	1.28E-05	Lead content from site assey data multiplied by source PM emissions.
500-DC-001	PT-6	HAP	Arsenic	7440-38-2	8.16E-05	1.02E-04	8.16E-05	1.02E-04	8.16E-05	1.02E-04	Arsenic content from site assey data multiplied by source PM emissions.
800-FL-001	PT-7	Criteria	PM	--	2.281	3.833	0.129	9.64E-02	2.281	3.833	AP-42 Table 11.12-2 (Cement unloading to elevated storage silo (pneumatic) for uncontrolled emissions. The controlled emissions are calculated based on flow rate and outlet loading.
800-FL-001	PT-7	Criteria	PM_{10}	--	1.469	2.468	0.129	9.64E-02	1.469	2.468	AP-42 Table 11.12-2 (Cement unloading to elevated storage silo (pneumatic) for uncontrolled emissions. The controlled emissions are calculated based on flow rate and outlet loading.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
800-FL-001	PT-7	Criteria	$PM_{2.5}$	--	1.469	2.468	0.129	9.64E-02	1.469	2.468	AP-42 Table 11.12-2 (Cement unloading to elevated storage silo (pneumatic) for uncontrolled emissions. The controlled emissions are calculated based on flow rate and outlet loading.
800-PK-010	PT-7A	Criteria	PM	--	1.71E-02	0.188	1.71E-02	0.188	1.71E-02	0.188	Emissions are calculated based on flow rate and outlet loading
800-PK-010	PT-7A	Criteria	PM_{10}	--	1.71E-02	0.188	1.71E-02	0.188	1.71E-02	0.188	Emissions are calculated based on flow rate and outlet loading
800-PK-010	PT-7A	Criteria	$PM_{2.5}$	--	1.71E-02	0.188	1.71E-02	0.188	1.71E-02	0.188	Emissions are calculated based on flow rate and outlet loading
700-GE-001	PT-8	Criteria	PM	--	0.133	3.33E-02	0.133	3.33E-02	0.133	3.33E-02	Manufacturer specifications.
700-GE-001	PT-8	Criteria	PM_{10}	--	0.133	3.33E-02	0.133	3.33E-02	0.133	3.33E-02	Manufacturer specifications.
700-GE-001	PT-8	Criteria	$PM_{2.5}$	--	0.133	3.33E-02	0.133	3.33E-02	0.133	3.33E-02	Manufacturer specifications.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
700-GE-001	PT-8	Criteria	SO_2	7446-09-5	2.17E-02	5.43E-03	2.17E-02	5.43E-03	2.17E-02	5.43E-03	AP-42 Section 3.4, Table 3.4-1.
700-GE-001	PT-8	Criteria	NO_x	10024-97-2	2.572	0.643	2.572	0.643	2.572	0.643	Manufacturer specifications.
700-GE-001	PT-8	Criteria	VOC	--	0.488	0.122	0.488	0.122	0.488	0.122	Manufacturer specifications.
700-GE-001	PT-8	Criteria	CO	630-08-0	1.951	0.488	1.951	0.488	1.951	0.488	Manufacturer specifications.
700-GE-001	PT-8	HAP	Benzene	71-43-2	1.11E-02	2.78E-03	1.11E-02	2.78E-03	1.11E-02	2.78E-03	AP-42 Section 3.4, Table 3.4-3.
700-GE-001	PT-8	HAP	Toluene	108-88-3	4.03E-03	1.01E-03	4.03E-03	1.01E-03	4.03E-03	1.01E-03	AP-42 Section 3.4, Table 3.4-3.
700-GE-001	PT-8	HAP	Xylenes	1330-20-7	2.77E-03	6.91E-04	2.77E-03	6.91E-04	2.77E-03	6.91E-04	AP-42 Section 3.4, Table 3.4-3.
700-GE-001	PT-8	HAP	Formaldehyde	50-00-0	1.13E-03	2.83E-04	1.13E-03	2.83E-04	1.13E-03	2.83E-04	AP-42 Section 3.4, Table 3.4-3.
700-GE-001	PT-8	HAP	Acetaldehyde	75-07-0	3.61E-04	9.03E-05	3.61E-04	9.03E-05	3.61E-04	9.03E-05	AP-42 Section 3.4, Table 3.4-3.
700-GE-001	PT-8	HAP	Acrolein	107-02-8	1.13E-04	2.82E-05	1.13E-04	2.82E-05	1.13E-04	2.82E-05	AP-42 Section 3.4, Table 3.4-3.
700-GE-001	PT-8	HAP	Naphthalene	91-20-3	1.86E-03	4.66E-04	1.86E-03	4.66E-04	1.86E-03	4.66E-04	AP-42 Section 3.4, Table 3.4-4.
PT-9	PT-9	Criteria	PM	--	0.236	1.034	0.236	1.034	0.236	1.034	AP-42 Section 3.3, Table 3.3-1.
PT-9	PT-9	Criteria	PM_{10}	--	0.236	1.034	0.236	1.034	0.236	1.034	AP-42 Section 3.3, Table 3.3-1.
PT-9	PT-9	Criteria	$PM_{2.5}$	--	0.236	1.034	0.236	1.034	0.236	1.034	AP-42 Section 3.3, Table 3.3-1.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
PT-9	PT-9	Criteria	SO_2	7446-09-5	0.220	0.963	0.220	0.963	0.220	0.963	AP-42 Section 3.3, Table 3.3-1.
PT-9	PT-9	Criteria	NO_x	10024-97-2	0.901	3.945	0.901	3.945	0.901	3.945	NSPS IIII for Tier 4 engines 8≤kw<19.
PT-9	PT-9	Criteria	VOC	--	0.424	1.856	0.424	1.856	0.424	1.856	NSPS IIII for Tier 4 engines 8≤kw<19.
PT-9	PT-9	Criteria	CO	630-08-0	1.159	5.076	1.159	5.076	1.159	5.076	NSPS IIII for Tier 4 engines 8≤kw<19.
PT-9	PT-9	HAP	Benzene	71-43-2	9.71E-04	4.25E-03	9.71E-04	4.25E-03	9.71E-04	4.25E-03	AP-42 Section 3.3, Table 3.3-2.
PT-9	PT-9	HAP	Toluene	108-88-3	4.26E-04	1.87E-03	4.26E-04	1.87E-03	4.26E-04	1.87E-03	AP-42 Section 3.3, Table 3.3-2.
PT-9	PT-9	HAP	Xylenes	1330-20-7	2.97E-04	1.30E-03	2.97E-04	1.30E-03	2.97E-04	1.30E-03	AP-42 Section 3.3, Table 3.3-2.
PT-9	PT-9	HAP	1,3-Butadiene	106-99-0	4.07E-05	1.78E-04	4.07E-05	1.78E-04	4.07E-05	1.78E-04	AP-42 Section 3.3, Table 3.3-2.
PT-9	PT-9	HAP	Formaldehyde	50-00-0	1.23E-03	5.38E-03	1.23E-03	5.38E-03	1.23E-03	5.38E-03	AP-42 Section 3.3, Table 3.3-2.
PT-9	PT-9	HAP	Acetaldehyde	75-07-0	7.99E-04	3.50E-03	7.99E-04	3.50E-03	7.99E-04	3.50E-03	AP-42 Section 3.3, Table 3.3-2.
PT-9	PT-9	HAP	Acrolein	107-02-8	9.63E-05	4.22E-04	9.63E-05	4.22E-04	9.63E-05	4.22E-04	AP-42 Section 3.3, Table 3.3-2.
PT-9	PT-9	HAP	Naphthalene	91-20-3	8.83E-05	3.87E-04	8.83E-05	3.87E-04	8.83E-05	3.87E-04	AP-42 Section 3.3, Table 3.3-2.
PT-9	PT-9	HAP	Acenaphthylene	208-96-8	5.27E-06	2.31E-05	5.27E-06	2.31E-05	5.27E-06	2.31E-05	AP-42 Section 3.3, Table 3.3-2.
PT-9	PT-9	HAP	Acenaphthene	83-32-9	1.48E-06	6.48E-06	1.48E-06	6.48E-06	1.48E-06	6.48E-06	AP-42 Section 3.3, Table 3.3-2.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
PT-9	PT-9	HAP	Fluorene	86-73-7	3.04E-05	1.33E-04	3.04E-05	1.33E-04	3.04E-05	1.33E-04	AP-42 Section 3.3, Table 3.3-2.
PT-9	PT-9	HAP	Phenanthrene	85-01-8	3.06E-05	1.34E-04	3.06E-05	1.34E-04	3.06E-05	1.34E-04	AP-42 Section 3.3, Table 3.3-2.
PT-9	PT-9	HAP	Anthracene	120-12-7	1.95E-06	8.53E-06	1.95E-06	8.53E-06	1.95E-06	8.53E-06	AP-42 Section 3.3, Table 3.3-2.
PT-9	PT-9	HAP	Fluoranthene	206-44-0	7.92E-06	3.47E-05	7.92E-06	3.47E-05	7.92E-06	3.47E-05	AP-42 Section 3.3, Table 3.3-2.
PT-9	PT-9	HAP	Pyrene	129-00-0	4.98E-06	2.18E-05	4.98E-06	2.18E-05	4.98E-06	2.18E-05	AP-42 Section 3.3, Table 3.3-2.
PT-9	PT-9	HAP	Benzo(a)anthracene	56-55-3	1.75E-06	7.66E-06	1.75E-06	7.66E-06	1.75E-06	7.66E-06	AP-42 Section 3.3, Table 3.3-2.
PT-9	PT-9	HAP	Chrysene	218-01-9	3.68E-07	1.61E-06	3.68E-07	1.61E-06	3.68E-07	1.61E-06	AP-42 Section 3.3, Table 3.3-2.
PT-9	PT-9	HAP	Benzo(b)fluoranthene	205-99-2	1.03E-07	4.52E-07	1.03E-07	4.52E-07	1.03E-07	4.52E-07	AP-42 Section 3.3, Table 3.3-2.
PT-9	PT-9	HAP	Benzo(k)fluoranthene	207-08-9	1.61E-07	7.07E-07	1.61E-07	7.07E-07	1.61E-07	7.07E-07	AP-42 Section 3.3, Table 3.3-2.
PT-9	PT-9	HAP	Benzo(a)pyrene	50-32-8	1.96E-07	8.57E-07	1.96E-07	8.57E-07	1.96E-07	8.57E-07	AP-42 Section 3.3, Table 3.3-2.
PT-9	PT-9	HAP	Indeno(1,2,3-cd)pyrene	193-39-5	3.90E-07	1.71E-06	3.90E-07	1.71E-06	3.90E-07	1.71E-06	AP-42 Section 3.3, Table 3.3-2.
PT-9	PT-9	HAP	Dibenz(a,h)anthracene	53-70-3	6.07E-07	2.66E-06	6.07E-07	2.66E-06	6.07E-07	2.66E-06	AP-42 Section 3.3, Table 3.3-2.
PT-9	PT-9	HAP	Benzo(g,h,I)perylene	191-24-2	5.09E-07	2.23E-06	5.09E-07	2.23E-06	5.09E-07	2.23E-06	AP-42 Section 3.3, Table 3.3-2.
PT-15	PT-15	Criteria	PM	--	0.295	1.294	0.295	1.294	0.295	1.294	Manufacturer specifications.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
PT-15	PT-15	Criteria	PM_{10}	--	0.295	1.294	0.295	1.294	0.295	1.294	Manufacturer specifications.
PT-15	PT-15	Criteria	$PM_{2.5}$	--	0.295	1.294	0.295	1.294	0.295	1.294	Manufacturer specifications.
PT-15	PT-15	Criteria	SO2	7446-09-5	3.854	16.880	3.854	16.880	3.854	16.880	AP-42 Section 3.3, Table 3.3-1.
PT-15	PT-15	Criteria	NOx	10024-97-2	11.041	48.361	11.041	48.361	11.041	48.361	Manufacturer specifications.
PT-15	PT-15	Criteria	VOC	--	0.369	1.617	0.369	1.617	0.369	1.617	Manufacturer specifications.
PT-15	PT-15	Criteria	CO	630-08-0	1.329	5.823	1.329	5.823	1.329	5.823	Manufacturer specifications.
PT-15	PT-15	HAP	Benzene	71-43-2	1.24E-02	5.43E-02	1.24E-02	5.43E-02	1.24E-02	5.43E-02	AP-42 Section 3.3, Table 3.3-2.
PT-15	PT-15	HAP	Toluene	108-88-3	5.44E-03	2.38E-02	5.44E-03	2.38E-02	5.44E-03	2.38E-02	AP-42 Section 3.3, Table 3.3-2.
PT-15	PT-15	HAP	Xylenes	1330-20-7	3.79E-03	1.66E-02	3.79E-03	1.66E-02	3.79E-03	1.66E-02	AP-42 Section 3.3, Table 3.3-2.
PT-15	PT-15	HAP	1,3-Butadiene	106-99-0	5.20E-04	2.28E-03	5.20E-04	2.28E-03	5.20E-04	2.28E-03	AP-42 Section 3.3, Table 3.3-2.
PT-15	PT-15	HAP	Formaldehyde	50-00-0	1.57E-02	6.87E-02	1.57E-02	6.87E-02	1.57E-02	6.87E-02	AP-42 Section 3.3, Table 3.3-2.
PT-15	PT-15	HAP	Acetaldehyde	75-07-0	1.02E-02	4.46E-02	1.02E-02	4.46E-02	1.02E-02	4.46E-02	AP-42 Section 3.3, Table 3.3-2.
PT-15	PT-15	HAP	Acrolein	107-02-8	1.23E-03	5.38E-03	1.23E-03	5.38E-03	1.23E-03	5.38E-03	AP-42 Section 3.3, Table 3.3-2.
PT-15	PT-15	HAP	Naphthalene	91-20-3	1.13E-03	4.94E-03	1.13E-03	4.94E-03	1.13E-03	4.94E-03	AP-42 Section 3.3, Table 3.3-2.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
PT-15	PT-15	HAP	Acenaphthylene	208-96-8	6.72E-05	2.95E-04	6.72E-05	2.95E-04	6.72E-05	2.95E-04	AP-42 Section 3.3, Table 3.3-2.
PT-15	PT-15	HAP	Acenaphthene	83-32-9	1.89E-05	8.27E-05	1.89E-05	8.27E-05	1.89E-05	8.27E-05	AP-42 Section 3.3, Table 3.3-2.
PT-15	PT-15	HAP	Fluorene	86-73-7	3.88E-04	1.70E-03	3.88E-04	1.70E-03	3.88E-04	1.70E-03	AP-42 Section 3.3, Table 3.3-2.
PT-15	PT-15	HAP	Phenanthrene	85-01-8	3.91E-04	1.71E-03	3.91E-04	1.71E-03	3.91E-04	1.71E-03	AP-42 Section 3.3, Table 3.3-2.
PT-15	PT-15	HAP	Anthracene	120-12-7	2.49E-05	1.09E-04	2.49E-05	1.09E-04	2.49E-05	1.09E-04	AP-42 Section 3.3, Table 3.3-2.
PT-15	PT-15	HAP	Fluoranthene	206-44-0	1.01E-04	4.43E-04	1.01E-04	4.43E-04	1.01E-04	4.43E-04	AP-42 Section 3.3, Table 3.3-2.
PT-15	PT-15	HAP	Pyrene	129-00-0	6.35E-05	2.78E-04	6.35E-05	2.78E-04	6.35E-05	2.78E-04	AP-42 Section 3.3, Table 3.3-2.
PT-15	PT-15	HAP	Benzo(a)anthracene	56-55-3	2.23E-05	9.78E-05	2.23E-05	9.78E-05	2.23E-05	9.78E-05	AP-42 Section 3.3, Table 3.3-2.
PT-15	PT-15	HAP	Chrysene	218-01-9	4.69E-06	2.05E-05	4.69E-06	2.05E-05	4.69E-06	2.05E-05	AP-42 Section 3.3, Table 3.3-2.
PT-15	PT-15	HAP	Benzo(b)fluoranthene	205-99-2	1.32E-06	5.77E-06	1.32E-06	5.77E-06	1.32E-06	5.77E-06	AP-42 Section 3.3, Table 3.3-2.
PT-15	PT-15	HAP	Benzo(k)fluoranthene	207-08-9	2.06E-06	9.02E-06	2.06E-06	9.02E-06	2.06E-06	9.02E-06	AP-42 Section 3.3, Table 3.3-2.
PT-15	PT-15	HAP	Benzo(a)pyrene	50-32-8	2.50E-06	1.09E-05	2.50E-06	1.09E-05	2.50E-06	1.09E-05	AP-42 Section 3.3, Table 3.3-2.
PT-15	PT-15	HAP	Indeno(1,2,3-cd)pyrene	193-39-5	4.98E-06	2.18E-05	4.98E-06	2.18E-05	4.98E-06	2.18E-05	AP-42 Section 3.3, Table 3.3-2.
PT-15	PT-15	HAP	Dibenz(a,h)anthracene	53-70-3	7.75E-06	3.39E-05	7.75E-06	3.39E-05	7.75E-06	3.39E-05	AP-42 Section 3.3, Table 3.3-2.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
PT-15	PT-15	HAP	Benzo(g,h,I)perylene	191-24-2	6.50E-06	2.85E-05	6.50E-06	2.85E-05	6.50E-06	2.85E-05	AP-42 Section 3.3, Table 3.3-2.
500-HT-001	PT-16	Criteria	PM	--	9.50E-02	0.416	9.50E-02	0.416	9.50E-02	0.416	AP-42 Section 1.4, Table 1.4-2.
500-HT-001	PT-16	Criteria	PM_{10}	--	9.50E-02	0.416	9.50E-02	0.416	9.50E-02	0.416	AP-42 Section 1.4, Table 1.4-2.
500-HT-001	PT-16	Criteria	$PM_{2.5}$	--	9.50E-02	0.416	9.50E-02	0.416	9.50E-02	0.416	AP-42 Section 1.4, Table 1.4-2.
500-HT-001	PT-16	Criteria	SO_2	7446-09-5	7.50E-03	3.29E-02	7.50E-03	3.29E-02	7.50E-03	3.29E-02	AP-42 Section 1.4, Table 1.4-2.
500-HT-001	PT-16	Criteria	NO_x	10024-97-2	1.250	5.475	1.250	5.475	1.250	5.475	AP-42 Section 1.4, Table 1.4-1.
500-HT-001	PT-16	Criteria	VOC	--	6.88E-02	0.301	6.88E-02	0.301	6.88E-02	0.301	AP-42 Section 1.4, Table 1.4-2.
500-HT-001	PT-16	Criteria	CO	630-08-0	1.050	4.599	1.050	4.599	1.050	4.599	AP-42 Section 1.4, Table 1.4-1.
500-HT-001	PT-16	Criteria	Pb	7439-92-1	6.25E-06	2.74E-05	6.25E-06	2.74E-05	6.25E-06	2.74E-05	AP-42 Section 1.4, Table 1.4-2.
500-HT-001	PT-16	HAP	2-Methylnaphthalene	91-57-6	3.00E-07	1.31E-06	3.00E-07	1.31E-06	3.00E-07	1.31E-06	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	3-Methylchloranthrene	56-49-5	2.25E-08	9.86E-08	2.25E-08	9.86E-08	2.25E-08	9.86E-08	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	7,12-Dimethylbenz(a)anthracene	57-97-6	2.00E-07	8.76E-07	2.00E-07	8.76E-07	2.00E-07	8.76E-07	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	Acenaphthene	83-32-9	2.25E-08	9.86E-08	2.25E-08	9.86E-08	2.25E-08	9.86E-08	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	Acenaphthylene	203-96-8	2.25E-08	9.86E-08	2.25E-08	9.86E-08	2.25E-08	9.86E-08	AP-42 Section 1.4, Table 1.4-3.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
500-HT-001	PT-16	HAP	Anthracene	120-12-7	3.00E-08	1.31E-07	3.00E-08	1.31E-07	3.00E-08	1.31E-07	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	Benz(a)anthracene	56-55-3	2.25E-08	9.86E-08	2.25E-08	9.86E-08	2.25E-08	9.86E-08	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	Benzene	71-43-2	2.63E-05	1.15E-04	2.63E-05	1.15E-04	2.63E-05	1.15E-04	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	Benzo(a)pyrene	50-32-8	1.50E-08	6.57E-08	1.50E-08	6.57E-08	1.50E-08	6.57E-08	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	Benzo(b)fluoranthene	205-99-2	2.25E-08	9.86E-08	2.25E-08	9.86E-08	2.25E-08	9.86E-08	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	Benzo(g,h,i)perylene	191-24-2	1.50E-08	6.57E-08	1.50E-08	6.57E-08	1.50E-08	6.57E-08	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	Benzo(k)fluoranthene	205-82-3	2.25E-08	9.86E-08	2.25E-08	9.86E-08	2.25E-08	9.86E-08	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	Chrysene	218-01-9	2.25E-08	9.86E-08	2.25E-08	9.86E-08	2.25E-08	9.86E-08	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	Dibenzo(a,h)anthracene	53-70-3	1.50E-08	6.57E-08	1.50E-08	6.57E-08	1.50E-08	6.57E-08	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	Dichlorobenzene	25321-22-6	1.50E-05	6.57E-05	1.50E-05	6.57E-05	1.50E-05	6.57E-05	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	Fluoranthene	206-44-0	3.75E-08	1.64E-07	3.75E-08	1.64E-07	3.75E-08	1.64E-07	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	Fluorene	86-73-7	3.50E-08	1.53E-07	3.50E-08	1.53E-07	3.50E-08	1.53E-07	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	Formaldehyde	50-00-0	9.38E-04	4.11E-03	9.38E-04	4.11E-03	9.38E-04	4.11E-03	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	Hexane	110-54-3	2.25E-02	9.86E-02	2.25E-02	9.86E-02	2.25E-02	9.86E-02	AP-42 Section 1.4, Table 1.4-3.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
500-HT-001	PT-16	HAP	Indeno(1,2,3-cd)pyrene	193-39-5	2.25E-08	9.86E-08	2.25E-08	9.86E-08	2.25E-08	9.86E-08	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	Naphthalene	91-20-3	7.63E-06	3.34E-05	7.63E-06	3.34E-05	7.63E-06	3.34E-05	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	Phenanthrene	85-01-8	2.13E-07	9.31E-07	2.13E-07	9.31E-07	2.13E-07	9.31E-07	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	Pyrene	129-00-0	6.25E-08	2.74E-07	6.25E-08	2.74E-07	6.25E-08	2.74E-07	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	Toluene	108-88-3	4.25E-05	1.86E-04	4.25E-05	1.86E-04	4.25E-05	1.86E-04	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	Arsenic	7440-38-2	2.50E-06	1.10E-05	2.50E-06	1.10E-05	2.50E-06	1.10E-05	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	Beryllium	7440-41-7	1.50E-07	6.57E-07	1.50E-07	6.57E-07	1.50E-07	6.57E-07	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	Cadmium	7440-43-9	1.38E-05	6.02E-05	1.38E-05	6.02E-05	1.38E-05	6.02E-05	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	Chromium	7440-47-3	1.75E-05	7.67E-05	1.75E-05	7.67E-05	1.75E-05	7.67E-05	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	Cobalt	7440-48-4	1.05E-06	4.60E-06	1.05E-06	4.60E-06	1.05E-06	4.60E-06	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	Manganese	7439-96-5	4.75E-06	2.08E-05	4.75E-06	2.08E-05	4.75E-06	2.08E-05	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	Mercury	7439-97-6	3.25E-06	1.42E-05	3.25E-06	1.42E-05	3.25E-06	1.42E-05	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	Nickel	7440-02-0	2.63E-05	1.15E-04	2.63E-05	1.15E-04	2.63E-05	1.15E-04	AP-42 Section 1.4, Table 1.4-3.
500-HT-001	PT-16	HAP	Selenium	7782-49-2	3.00E-07	1.31E-06	3.00E-07	1.31E-06	3.00E-07	1.31E-06	AP-42 Section 1.4, Table 1.4-3.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
650-PP-022	PT-17	Criteria	PM	--	6.24E-02	1.56E-02	6.24E-02	1.56E-02	6.24E-02	1.56E-02	Manufacturer specifications.
650-PP-022	PT-17	Criteria	PM_{10}	--	6.24E-02	1.56E-02	6.24E-02	1.56E-02	6.24E-02	1.56E-02	Manufacturer specifications.
650-PP-022	PT-17	Criteria	$PM_{2.5}$	--	6.24E-02	1.56E-02	6.24E-02	1.56E-02	6.24E-02	1.56E-02	Manufacturer specifications.
650-PP-022	PT-17	Criteria	SO_2	7446-09-5	0.377	9.44E-02	0.377	9.44E-02	0.377	9.44E-02	AP-42 Section 3.3, Table 3.3-1.
650-PP-022	PT-17	Criteria	NO_x	10024-97-2	1.639	0.410	1.639	0.410	1.639	0.410	Manufacturer specifications.
650-PP-022	PT-17	Criteria	VOC	--	6.90E-02	1.72E-02	6.90E-02	1.72E-02	6.90E-02	1.72E-02	Manufacturer specifications.
650-PP-022	PT-17	Criteria	CO	630-08-0	0.108	2.71E-02	0.108	2.71E-02	0.108	2.71E-02	Manufacturer specifications.
650-PP-022	PT-17	HAP	Benzene	71-43-2	1.21E-03	3.04E-04	1.21E-03	3.04E-04	1.21E-03	3.04E-04	AP-42 Section 3.3, Table 3.3-2.
650-PP-022	PT-17	HAP	Toluene	108-88-3	5.32E-04	1.33E-04	5.32E-04	1.33E-04	5.32E-04	1.33E-04	AP-42 Section 3.3, Table 3.3-2.
650-PP-022	PT-17	HAP	Xylenes	1330-20-7	3.71E-04	9.27E-05	3.71E-04	9.27E-05	3.71E-04	9.27E-05	AP-42 Section 3.3, Table 3.3-2.
650-PP-022	PT-17	HAP	1,3-Butadiene	106-99-0	5.09E-05	1.27E-05	5.09E-05	1.27E-05	5.09E-05	1.27E-05	AP-42 Section 3.3, Table 3.3-2.
650-PP-022	PT-17	HAP	Formaldehyde	50-00-0	1.54E-03	3.84E-04	1.54E-03	3.84E-04	1.54E-03	3.84E-04	AP-42 Section 3.3, Table 3.3-2.
650-PP-022	PT-17	HAP	Acetaldehyde	75-07-0	9.98E-04	2.50E-04	9.98E-04	2.50E-04	9.98E-04	2.50E-04	AP-42 Section 3.3, Table 3.3-2.
650-PP-022	PT-17	HAP	Acrolein	107-02-8	1.20E-04	3.01E-05	1.20E-04	3.01E-05	1.20E-04	3.01E-05	AP-42 Section 3.3, Table 3.3-2.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
650-PP-022	PT-17	HAP	Naphthalene	91-20-3	1.10E-04	2.76E-05	1.10E-04	2.76E-05	1.10E-04	2.76E-05	AP-42 Section 3.3, Table 3.3-2.
650-PP-022	PT-17	HAP	Acenaphthylene	208-96-8	6.59E-06	1.65E-06	6.59E-06	1.65E-06	6.59E-06	1.65E-06	AP-42 Section 3.3, Table 3.3-2.
650-PP-022	PT-17	HAP	Acenaphthene	83-32-9	1.85E-06	4.62E-07	1.85E-06	4.62E-07	1.85E-06	4.62E-07	AP-42 Section 3.3, Table 3.3-2.
650-PP-022	PT-17	HAP	Fluorene	86-73-7	3.80E-05	9.50E-06	3.80E-05	9.50E-06	3.80E-05	9.50E-06	AP-42 Section 3.3, Table 3.3-2.
650-PP-022	PT-17	HAP	Phenanthrene	85-01-8	3.83E-05	9.57E-06	3.83E-05	9.57E-06	3.83E-05	9.57E-06	AP-42 Section 3.3, Table 3.3-2.
650-PP-022	PT-17	HAP	Anthracene	120-12-7	2.43E-06	6.08E-07	2.43E-06	6.08E-07	2.43E-06	6.08E-07	AP-42 Section 3.3, Table 3.3-2.
650-PP-022	PT-17	HAP	Fluoranthene	206-44-0	9.90E-06	2.48E-06	9.90E-06	2.48E-06	9.90E-06	2.48E-06	AP-42 Section 3.3, Table 3.3-2.
650-PP-022	PT-17	HAP	Pyrene	129-00-0	6.22E-06	1.56E-06	6.22E-06	1.56E-06	6.22E-06	1.56E-06	AP-42 Section 3.3, Table 3.3-2.
650-PP-022	PT-17	HAP	Benzo(a)anthracene	56-55-3	2.19E-06	5.47E-07	2.19E-06	5.47E-07	2.19E-06	5.47E-07	AP-42 Section 3.3, Table 3.3-2.
650-PP-022	PT-17	HAP	Chrysene	218-01-9	4.59E-07	1.15E-07	4.59E-07	1.15E-07	4.59E-07	1.15E-07	AP-42 Section 3.3, Table 3.3-2.
650-PP-022	PT-17	HAP	Benzo(b)fluoranthene	205-99-2	1.29E-07	3.22E-08	1.29E-07	3.22E-08	1.29E-07	3.22E-08	AP-42 Section 3.3, Table 3.3-2.
650-PP-022	PT-17	HAP	Benzo(k)fluoranthene	207-08-9	2.02E-07	5.04E-08	2.02E-07	5.04E-08	2.02E-07	5.04E-08	AP-42 Section 3.3, Table 3.3-2.
650-PP-022	PT-17	HAP	Benzo(a)pyrene	50-32-8	2.45E-07	6.12E-08	2.45E-07	6.12E-08	2.45E-07	6.12E-08	AP-42 Section 3.3, Table 3.3-2.
650-PP-022	PT-17	HAP	Indeno(1,2,3-cd)pyrene	193-39-5	4.88E-07	1.22E-07	4.88E-07	1.22E-07	4.88E-07	1.22E-07	AP-42 Section 3.3, Table 3.3-2.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
650-PP-022	PT-17	HAP	Dibenz(a,h)anthracene	53-70-3	7.59E-07	1.90E-07	7.59E-07	1.90E-07	7.59E-07	1.90E-07	AP-42 Section 3.3, Table 3.3-2.
650-PP-022	PT-17	HAP	Benzo(g,h,I)perylene	191-24-2	6.36E-07	1.59E-07	6.36E-07	1.59E-07	6.36E-07	1.59E-07	AP-42 Section 3.3, Table 3.3-2.
PT-18	PT-18	Criteria	PM		11.690	9.776	1.312	1.097	11.690	9.776	AP-42 Section 11.19.2, Table 11.19.2-2) and AP-42 Section 13.2.4. Water sprays associated with the screen and transfer points claim a 62% control efficiency per WRAP fugitive dust handbook, 2006 Table 4-2. The engines powering the crusher and screen are non-road engines, and emissions are therefore not considered. Material throughput is based on the crusher design capacity of 342 tons per hour, operated 8 hours per day, 4 days per week, with a daily maximum production of 2,750 tons/day.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
PT-18	PT-18	Criteria	PM_{10}	--	4.299	3.595	0.502	0.419	4.299	3.595	AP-42 Section 11.19.2, Table 11.19.2-2) and AP-42 Section 13.2.4. Water sprays associated with the screen and transfer points claim a 62% control efficiency per WRAP fugitive dust handbook, 2006 Table 4-2. The engines powering the crusher and screen are non-road engines, and emissions are therefore not considered. Material throughput is based on the crusher design capacity of 342 tons per hour, operated 8 hours per day, 4 days per week, with a daily maximum production of 2,750 tons/day.

EMISSION DATA FOR REGULATED POLLUTANTS											
Equipment ID / Process ID	Emission Point ID	Type of Pollutant	Pollutant Name	CAS #	Maximum Uncontrolled		Maximum Controlled		Maximum PTE		Calculation Methods / Limits Taken / Other Comments
					lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	
PT-18	PT-18	Criteria	$PM_{2.5}$	--	0.479	0.400	6.30E-02	5.27E-02	0.479	0.400	AP-42 Section 11.19.2, Table 11.19.2-2) and AP-42 Section 13.2.4. Water sprays associated with the screen and transfer points claim a 62% control efficiency per WRAP fugitive dust handbook, 2006 Table 4-2. The engines powering the crusher and screen are non-road engines, and emissions are therefore not considered. Material throughput is based on the crusher design capacity of 342 tons per hour, operated 8 hours per day, 4 days per week, with a daily maximum production of 2,750 tons/day.

SUMMARY OF FACILITY WIDE TOTAL EMISSIONS			
Pollutants	Total Uncontrolled Emissions (tons/year)	Total Controlled Emissions (tons/year)	Total PTE Emissions (tons/year)
Particulate Matter (PM)	98.19	19.36	98.19
Particulate Matter <10 Microns (PM_{10})	35.15	10.58	35.15
Particulate Matter <2.5 Microns ($PM_{2.5}$)	17.99	5.32	17.99
Sulfur Dioxide (SO_2)	17.98	17.98	17.98
Nitrogen Oxides (NO_x)	59.8	59.8	59.8
Carbon Monoxide (CO)	16.82	16.82	16.82
Total Volatile Organic Compounds (VOC)	3.97	3.97	3.97
Lead (Pb)	5.00E-4	2.03E-4	5.00E-4
Highest HAP (Hexane CAS #:110-54-3)	0.116	0.116	0.116
Other HAP (Formaldehyde CAS #: 50-00-0)	0.080	0.080	0.080
Other HAP (Benzene CAS #: 71-43-2)	0.062	0.062	0.062
Other HAP (Toluene CAS #: 108-88-3)	0.027	0.027	0.027
Other HAP (Xylenes CAS #: 1330-20-7)	0.019	0.019	0.019
Other HAP (Acrolein CAS #: 107-02-8)	0.006	0.006	0.006
Total HAP Emissions*	0.327	0.325	0.327
112(r) Pollutant ( )			
112(r) Pollutant ( )			
112(r) Pollutant ( )			
112(r) Pollutant ( )			
112(r) Pollutant ( )			

(*All HAP emitted from the various equipment or processes must be listed in "Emission Data for Regulated Pollutants" table.)

Bureau of Air Quality
Title V Operating Permit Application
Insignificant Activity Equipment

APPLICATION IDENTIFICATION *(Please ensure that the information listed in this table is the same on all of the forms and required information submitted in the Title V application package.)*		
Facility Name *(This should be the name used to identify the facility)* Haile Gold Mine Inc.	SC Air Permit Number (8-digits only) 1460 - 0070	Application Date 4/5/2019

INSIGNIFICANT ACTIVITY (IA) EQUIPMENT

IA Equipment ID	IA Equipment Description	On SC IA List		IA Installation Date	Pollutant(s)	Emission Rate
		Yes	No			
700-GE-001	1,500 kW Diesel Emergency Generator	☒	☐	10/4/2017	PM (--)	0.033 ton/yr
700-GE-001	1,500 kW Diesel Emergency Generator	☒	☐	10/4/2017	PM_{10} (--)	0.033 ton/yr
700-GE-001	1,500 kW Diesel Emergency Generator	☒	☐	10/4/2017	$PM_{2.5}$ (--)	0.033 ton/yr
700-GE-001	1,500 kW Diesel Emergency Generator	☒	☐	10/4/2017	SO_2 (7446-09-5)	0.005 ton/yr
700-GE-001	1,500 kW Diesel Emergency Generator	☒	☐	10/4/2017	NO_x (10024-97-2)	0.643 ton/yr
700-GE-001	1,500 kW Diesel Emergency Generator	☒	☐	10/4/2017	VOC (--)	0.122 ton/yr
700-GE-001	1,500 kW Diesel Emergency Generator	☒	☐	10/4/2017	CO (630-08-0)	0.488 ton/yr
700-GE-001	1,500 kW Diesel Emergency Generator	☒	☐	10/4/2017	Benzene (71-43-2)	2.78E-03 ton/yr
700-GE-001	1,500 kW Diesel Emergency Generator	☒	☐	10/4/2017	Toluene (108-88-3)	1.01E-03 ton/yr
700-GE-001	1,500 kW Diesel Emergency Generator	☒	☐	10/4/2017	Xylenes (1330-20-7)	6.91E-04 ton/yr
700-GE-001	1,500 kW Diesel Emergency Generator	☒	☐	10/4/2017	Formaldehyde (50-00-0)	2.83E-04 ton/yr
700-GE-001	1,500 kW Diesel Emergency Generator	☒	☐	10/4/2017	Acetaldehyde (75-07-0)	9.03E-05 ton/yr
700-GE-001	1,500 kW Diesel Emergency Generator	☒	☐	10/4/2017	Acrolein (107-02-8)	2.82E-05 ton/yr

INSIGNIFICANT ACTIVITY (IA) EQUIPMENT						
IA Equipment ID	IA Equipment Description	On SC IA List		IA Installation Date	Pollutant(s)	Emission Rate
		Yes	No			
700-GE-001	1,500 kW Diesel Emergency Generator	☒	☐	10/4/2017	Naphthalene (91-20-3)	4.66E-04 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	PM (--)	0.039 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	PM_{10} (--)	0.039 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	$PM_{2.5}$ (--)	0.039 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	SO_2 (7446-09-5)	0.165 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	NO_x (10024-97-2)	0.493 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	VOC (--)	0.232 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	CO (630-08-0)	0.635 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	Benzene (71-43-2)	5.32E-04 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	Toluene (108-88-3)	2.33E-04 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	Xylenes (1330-20-7)	1.62E-04 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	1,3-Butadiene (106-99-0)	2.23E-05 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	Formaldehyde (50-00-0)	6.73E-04 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	Acetaldehyde (75-07-0)	4.37E-04 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	Acrolein (107-02-8)	5.27E-05 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	Naphthalene (91-20-3)	4.83E-05 ton/yr

INSIGNIFICANT ACTIVITY (IA) EQUIPMENT						
IA Equipment ID	IA Equipment Description	On SC IA List		IA Installation Date	Pollutant(s)	Emission Rate
		Yes	No			
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	Acenaphthylene (203-96-8)	2.88E-06 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	Acenaphthene (83-32-9)	8.09E-07 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	Fluorene (86-73-7)	1.66E-05 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	Phenanthrene (85-01-8)	1.68E-05 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	Anthracene (120-12-7)	1.07E-06 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	Fluoranthene (206-44-0)	4.34E-06 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	Pyrene (129-00-0)	2.72E-06 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	Benzo(a)anthracene (56-55-3)	9.58E-07 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	Chrysene (218-01-9)	2.01E-07 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	Benzo(b)fluoranthene (205-99-2)	5.65E-08 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	Benzo(k)fluoranthene (205-82-3)	8.84E-08 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	Benzo(a)pyrene (50-32-8)	1.07E-07 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	Indeno(1,2,3-cd)pyrene (193-39-5)	2.14E-07 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	Dibenzo(a,h)anthracene (53-70-3)	3.32E-07 ton/yr
N/A	Trailer Mounted Lighting Systems (10 kW each)	☒	☐	10/4/2017	Benzo(g,h,i)perylene (191-24-2)	2.79E-07 ton/yr
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	PM (--)	0.016 ton/yr
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	PM_{10} (--)	0.016 ton/yr

INSIGNIFICANT ACTIVITY (IA) EQUIPMENT						
IA Equipment ID	IA Equipment Description	On SC IA List		IA Installation Date	Pollutant(s)	Emission Rate
		Yes	No			
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	$PM_{2.5}$ (--)	0.016 ton/yr
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	SO_2 (7446-09-5)	0.094 ton/yr
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	NO_x (10024-97-2)	0.410 ton/yr
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	VOC (--)	0.017 ton/yr
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	CO (630-08-0)	0.027 ton/yr
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	Benzene (71-43-2)	3.04E-04 ton/yr
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	Toluene (108-88-3)	1.33E-04 ton/yr
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	Xylenes (1330-20-7)	9.27E-05 ton/yr
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	1,3-Butadiene (106-99-0)	1.27E-05 ton/yr
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	Formaldehyde (50-00-0)	3.84E-04 ton/yr
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	Acetaldehyde (75-07-0)	2.50E-04 ton/yr
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	Acrolein (107-02-8)	3.01E-05 ton/yr
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	Naphthalene (91-20-3)	2.76E-05 ton/yr
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	Acenaphthylene (208-96-8)	1.65E-06 ton/yr
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	Acenaphthene (83-32-9)	4.62E-07 ton/yr
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	Fluorene (86-73-7)	9.50E-06 ton/yr
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	Phenanthrene (85-01-8)	9.57E-06 ton/yr

INSIGNIFICANT ACTIVITY (IA) EQUIPMENT						
IA Equipment ID	IA Equipment Description	On SC IA List		IA Installation Date	Pollutant(s)	Emission Rate
		Yes	No			
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	Anthracene (120-12-7)	6.08E-07 ton/yr
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	Fluoranthene (206-44-0)	2.48E-06 ton/yr
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	Pyrene (129-00-0)	1.56E-06 ton/yr
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	Benzo(a)anthracene (56-55-3)	5.47E-07 ton/yr
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	Chrysene (218-01-9)	1.15E-07 ton/yr
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	Benzo(b)fluoranthene (205-99-2)	3.22E-08 ton/yr
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	Benzo(k)fluoranthene(207-08-9)	5.04E-08 ton/yr
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	Benzo(a)pyrene (50-32-8)	6.12E-08 ton/yr
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	Indeno(1,2,3-cd)pyrene (193-39-5)	1.22E-07 ton/yr
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	Dibenz(a,h)anthracene (53-70-3)	1.90E-07 ton/yr
650-PP-022	Fire Water Pump Engine (149 hp)	☒	☐	10/4/2017	Benzo(g,h,I)perylene (191-24-2)	1.59E-07 ton/yr
800-TK-015	Hydrochloric Acid (30%) Storage Tank	☒	☐	10/4/2017	HCl (7647-01-0)	2.61E-03 ton/yr
800-TK-007	Sulfuric Acid (93%) Storage Tank	☒	☐	10/4/2017	H_2SO_4 (7664-93-9)	1.82E-04 ton/yr
800-TK-016	Sodium Hydroxide Storage Tank	☒	☐	10/4/2017	N/A	0.00E+00 ton/yr
800-TK-011	Potassium Amyl Xanthate Usage	☒	☐	10/4/2017	CS_2 (75-15-0)	3.12E-02 ton/yr
960-TK-001	Diesel Off-Road Fuel Storage Tank	☒	☐	10/4/2017	VOC (--)	9.82E-01 ton/yr
960-TK-002	Diesel Off-Road Fuel Storage Tank	☒	☐	10/4/2017	VOC (--)	9.82E-01 ton/yr

INSIGNIFICANT ACTIVITY (IA) EQUIPMENT						
IA Equipment ID	IA Equipment Description	On SC IA List		IA Installation Date	Pollutant(s)	Emission Rate
		Yes	No			
960-TK-003	Gasoline Fuel Storage Tank	☒	☐	10/4/2017	VOC (--)	9.82E-01 ton/yr
960-TK-004	Diesel Small Vehicle Storage Tank	☒	☐	10/4/2017	VOC (--)	1.45E-02 ton/yr
960-TK-007	Diesel Off-Road Fuel Storage Tank	☒	☐	10/4/2017	VOC (--)	2.50E-03 ton/yr
		☐	☐			