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University of Alaska Fairbanks, P.O. Box 757900, Fairbanks, Alaska 99775-7900

CERTIFIED MAIL

August 19, 2013

Air Permit Program Permit Intake Clerk
Alaska Department of Environmental Conservation
Air Permit Program
619 E. Ship Creek, Suite 249
Anchorage, Alaska 99501

Subject: Amendment to Operating Permit Renewal Application for Title V Operating Permit No. AQ0316TVP02 for the University of Alaska Fairbanks Campus

Dear Compliance Technician:

The University of Alaska Fairbanks (UAF) is submitting the enclosed amendment to the permit renewal application for the above mentioned permit pursuant to 40 Code of Federal Regulations 71, adopted by reference at 18 Alaska Administrative Code 50.326(a) and (c). The purpose of this application amendment is to provide updates to several elements of the application. These updated elements are attached to this letter as described below:

Attachment	Description	Original Application Section
1	Request additional revisions to various permit conditions.	Section 5, Table 5-1
2	Revised Compliance Assurance Monitoring (CAM) Plan in support of requested change to Condition 42 presented in Attachment 1.	Section 5, Table 5-1
3	Updated emission calculations.	Section 2, Tables 2-1 through 2-20
4	Updated applicable requirements for stationary engines under 40 CFR 63 Subpart ZZZZ and 40 CFR 60 Subpart IIII.	Section 5, Tables B-1 through B-4
5	Updated applicable requirements for boilers under 40 CFR 63 Subpart JJJJJJ.	Section 5, Tables C-1 through C-4
6	Updated ORL summary table in Compliance Plan.	Section 4, Table 4-4

On April 30, 2013, the Alaska Department of Environmental Conservation (ADEC) advised UAF they had revised the emission unit numbers for several emission units. These changes are reflected in this application amendment, and are summarized below:

Previous EU ID	EU Description	New EU ID
25	AFES Greenhouse Furnace	30*
26	Copper Lane Furnace	31*
27	Skarland Cabin Furnace	32*
28	AFES Grain Dryer	25
29	Harper Hot Water Heater	33*
30	Duckering Classroom Engine	26
31	Alaska Center for Energy & Power (ACEP) Engine	27
32	Alaska Earthquake Information Center (AEIC) Engine	28
33	Arctic Health Research Building (AHRB) Engine	29

*ADEC indicated that these emission units would be insignificant. These emission units are now listed on the insignificant emission unit inventory, but have been numbered for clarity.

Please note that the ADEC Title V Standard Application Forms were not used to prepare this amendment because the original application was submitted prior to the date that the forms were required. The amendment is provided in a format consistent with the original application for ease of comparison. If you have any questions or need additional information, please contact Frances M. Isgrigg, PE at 907-474-5487 or by email at fisgrigg@alaska.edu.

Certification Statement: *"Based on information and belief formed after reasonable inquiry, I certify that the statements and information in and attached to this document are true, accurate, and complete."*

Sincerely,

Pat Pitney
Vice Chancellor for Administrative Services
Enclosure
cc: D. McLerran, USEPA – Seattle (w/attachment)
F. Isgrigg, UAF – Fairbanks (w/o attachment)
C. Kimball, SLR – Fairbanks (w/o attachment)

Attachment 1
Title V Condition Change Requests

University of Alaska (UAF) requests that ADEC revise several conditions in Permit No. AQ0316TVP02. These requested changes are described below.

1. Current Title V Operating Permit Condition Number: Permit No AQ0316TVP02, Section 1.

Type of change (revise or remove): Revise.

Reason for change: Provide a more accurate name for the stationary source.

Requested Change: Please revise the Stationary Source Name in Section 1 to the University of Alaska Fairbanks Campus. The stationary source includes emission units at the UAF campus which are not part of the power plant.

2. Current Title V Operating Permit Condition Number: Permit No AQ0316TVP02, Condition 2.

Type of change (revise or remove): Revise.

Reason for change: Add the option of Continuous Opacity Monitoring Systems (COMS) for Emission Unit (EU) IDs 3, 4, and 8.

Requested Change: Please revise the condition as follows.

2. **Visible Emissions Monitoring.** The Permittee shall monitor the exhaust of EU IDs 3, 4 (when not subject to condition 2.1), 5A, 6, 7, 8, and 9A for visible emissions using either the Method 9 Plan under condition 2.2 or the Smoke/No-Smoke Plan under condition 2.3. <u>The Permittee may use continuous opacity monitoring systems (COMS) for EU IDs 3, 4, and 8 as described in Condition 2.1 to demonstrate compliance with the VE standard.</u> The Permittee may change the visible emissions plan for an emission unit at any time unless prohibited from doing so by condition 2.4. The Permittee may continue visible emission monitoring according to the prevailing schedule established at the time this renewed permit is issued.

3. Current Title V Operating Permit Condition Number: Permit No AQ0316TVP02, Condition 2.1c.

Reason for change: Clarify condition requirement.

Requested Change: Please revise the condition as follows.

2.1c If the COMS is out of service for more than 24 hours, or the COMS failed the performance audit, <u>then after the 24 hour period and</u> <u>during each day that the emission</u>

unit is in operation the Permittee shall observe the opacity of the emission unit's exhaust ~~use the visible emissions monitoring described~~ in accordance with condition 2.2 or 2.3 ~~immediately~~. If the effected boiler is not operating, no monitoring is required.

4. Current Title V Operating Permit Condition Number: Permit No AQ0316TVP02, Condition 2.2a.

Type of change (revise or remove): Revise.

Reason for change: Add COMS to the condition.

Requested Change: Please revise the condition as follows.

2.2a First Method 9 Observation. Observe exhaust for 18 minutes within 14 calendar days after changing from either COMS or the Smoke/No-Smoke Plan of condition 2.1 or 2.3, respectively, whichever is later.

5. Current Title V Operating Permit Condition Number: Permit No AQ0316TVP02, Condition 27.4.

Type of change (revise or remove): Revise.

Reason for change: Clarify condition requirements.

Requested Change: Please revise the condition as follows.

27.4 If any of the COMS on the coal-fired boilers, EU IDs 1 and 2, is out of service for more than 24 hours, or the COMS failed the performance audit, then after the 24 hour period and during each day that the emission unit is in operation the Permittee shall observe the opacity of the emission unit's exhaust ~~use the visible emissions monitoring described~~ in accordance with condition 2.2 ~~immediately~~.

6. Current Title V Operating Permit Condition Number: Permit No AQ0316TVP02, Condition 42.

Type of change (revise or remove): Revise.

Reason for change: The baghouse was designed to operate normally with a differential pressure of up to 20 inches of H_2O. UAF believes this change provides operational flexibility. One of the reasons, the baghouse currently operates at a higher differential pressure is because of installation of snap bag style bags due to discontinuance of the older type bag gaskets.

Requested Change: Please revise the condition as follows. The revised Compliance Assurance Monitoring (CAM) plan is included in this application amendment.

42.1 Continuously monitor baghouse pressure differential across each baghouse. A baghouse pressure differential ~~between 4 and 9~~ between 2 and 20 inches of water

indicates normal operating conditions. Record instantaneous readings of pressure differential data electronically.

7. Revisions to Air Quality Control Minor Permit No. AQ0316MSS02.

Type of change (revise or remove): Revise corresponding Title V conditions following revision to Permit No. AQ0316MSS02.

Reason for change: UAF is submitting an application for revisions to several conditions in Permit No. AQ0316MSS02 and requests an integrated review of the minor permit application and this Title V permit renewal application.

Requested Change: Please refer to the minor permit application to revise Permit No. AQ0316MSS02. Changes include removal of the requirements pertaining to coal water slurry fuel, removal of the capacity factor for EU 4 following installation of a continuous emission monitoring system (CEMS) for NO_X, and various updates to information in the permit.

8. Current Title V Operating Permit Condition Number: Permit No AQ0316TVP02, Table C – Permit Shields Granted.

Type of change (revise or remove): Revise.

Reason for change: In the June 2012 Title V permit renewal application (refer to Item 68 of Table 5-1), UAF requested a permit shield from 40 CFR 60 Subpart Kb for the 212,120-gallon diesel fuel tank at the power plant. UAF requests additional permit shields for this fuel tank.

Requested Change: Please add the following permit shields:

EU ID: Diesel Fuel Tank at the Power Plant (no EU ID assigned)

Non-Applicable Requirements: 40 CFR 60 Subpart K and 40 CFR 60 Subpart Ka

Reason for Non-Appliablility: This tank was constructed in 1969. The construction date of this tank is prior to the applicability date of June 11, 1973 in 40 CFR 60.110(c)(2); therefore, the tank is not subject to 40 CFR 60 Subpart K.

The construction date is prior to the applicability date of May 18, 1978 in 40 CFR 60.110a; therefore, the tank is not subject to 40 CFR 60 Subpart Ka.

Attachment 2
Revised Compliance Assurance Monitoring (CAM) Plan

COMPLIANCE ASSURANCE MONITORING PLAN:
BAGHOUSE FOR COAL FIRED BOILERS NUMBER 1 AND 2

1. Background

   A. Emission Unit

Description:	Stoker fed Coal fired boiler
Identification	Boiler #1 and Boiler #2
Facility	UAF power plant, Fairbanks Alaska

   B. Applicable regulation, emission limit, and pre-CAM monitoring requirements

Regulation:	Permit: AQ0316TVP02
CAM emission limit	Particulate matter: 0.1 gr/dscf
Pre-CAM monitoring requirements:	None

   C. Control Technology, capture system, Bypass, PTE

Controls:	Pulse jet baghouse operated under negative pressure
Capture System:	Closed-duct system
Bypass:	Feedback signal indicates bypass operation
PTE before controls:	110 tons (total, based on pre-baghouse source test performed in 1973)
PTE after controls:	48 tons (total)

2. Monitoring approach

   The key elements of the monitoring approach are presented in the attached table. Normal process operations will not produce conditions that adversely affect the baghouse without affecting pressure drop

3. Response to excursion

A. A pressure drop excursion will trigger an inspection of the baghouse, and operations to lower load as feasible. Operations personnel shall perform initial tests and observations to determine which compartment has the problem within 4 hours of the alarm.

   Maintenance personnel will make repairs to the baghouse as soon as practical. Operations personnel will return the unit to normal operation upon completion of the corrective action. Pressure differentials will be monitored to determine if the corrective actions resolved the problem.

   The problem found and the corrective action taken will be logged in the engineer's logbook.

B. An excursion of baghouse inlet temperature may be caused by problems in the baghouse, or problems in the coal boiler and its associated equipment. It is also possible that a problem exists with the baghouse inlet damper position. An investigation will be started to determine the cause of the excursion and the problem will be corrected.

   The problem found and the corrective action taken will be logged in the engineer's logbook

C. If during an inspection of the baghouse, a problem is located, the appropriate operational and maintenance actions will be initiated as soon as is practicable.

D. An excursion during reference method testing may cause the test to be aborted, if a malfunction of the system causes atypical operation. Repairs will be performed and the reference method test will be re-run. The decision to abort and re-run the test will be done only after consulting with the on-site test witness.

JUSTIFICATION

I. Background

The monitoring approach outlined in this plan applies to Baghouses No 1 and No 2. These baghouses control dust from Coal Fired Boilers No 1 and No 2. The baghouses are pulse jet baghouses with three compartments each. Each compartment contains 176 bags. The airflow through each baghouse is maintained by an induced draft variable speed fans downstream of each baghouse. The capacity of each baghouse is 31,500 ACFM.

II. Rationale for Selection of Performance Indicators

The Pressure drop through the baghouse is monitored and recorded continuously. An increase in pressure differential can indicate that the cleaning cycle is not frequent enough; cleaning equipment is damaged; or the bags are becoming blinded. Decreases in pressure differential may indicate significant holes and tears or missing bags.

Good control of the baghouse inlet temperature is required to maintain good operating of the baghouse. The baghouse inlet temperature is monitored and recorded continuously. Too low of an inlet temperature can lead to condensation occurring in the baghouse. This condensation can cause the ash to form a cake of ash on the bags, effectively blinding the bags. An excessive inlet temperature can cause holes to form in the bags.

A robust baghouse inspection and maintenance (I/M) program has been implemented and provides assurance that the baghouse is in good repair and operating properly. Proper operation of the cleaning cycle facilitates gas flow through the baghouse and the removal of particulate, and also prevents blinding of the filter bags. Items of the daily I/M checklist include: Ash removal system, Baghouse compartments, Baghouse ID fans, Air compressors, and air dryers. A record of these inspections is included with the plant daily logs.

Reference method testing for particulate will confirm performance of the baghouses and that operation within the indicator ranges continues to assure compliance with the particulate limit.

III. Rationale for Selection of Indicator Ranges

The indicator range for baghouse pressure drop is a pressure drop between 2 and 20 inches H_2O. The lower range of the pressure differential is based historic data for normal operations; the upper range of pressure differential is based on design parameters. A pressure of 2 inches of water during operations has not historically indicated failed bags or seals.

When a problem with the baghouse in detected during an inspection, the problem is recorded and corrective action is initiated immediately.

INSPECTION AND PREVENTIVE MAINTENANCE PLAN

The pressure, temperature, and flow transmitters will be calibrated yearly in accordance with their respective manufacturer's procedures. Any device that fails its calibration will be replaced.

The exhaust gas path will be visually inspected daily for leakage when the unit is operating. Any problems that are discovered will be written up in the maintenance log, and repaired as soon as practical

The entire gas path is also internally inspected on a yearly basis. This includes inspection of the multicone ash separator and the baghouse compartments. Any defective multicones or bags are replaced before the unit it placed back into service.

Attachment 3
Updated Emission Estimate Calculations

Table 2-1. Assessable Emissions Summary
University of Alaska Fairbanks Campus

Emission Unit Type	Regulated Air Pollutant Emissions (tpy)[1,2]							
	NO_X	CO	PM_{10}	$PM_{2.5}$[3]	VOC	SO_2	HAP	GHG (CO_2e)[4]
Significant	643.8	397.7	81.5	39.5	17.5	911.8	19.8	333,023
Insignificant	2.6	1.7	1.6	1.6	3.1	1.6E+00		1,771
Total Stationary Source	**646**	**399**	**83**	**41**	**21**	**913**	**19.8**	**334,793**
Assessable Emission Subtotals	**646**	**399**	**83**	**41**	**21**	**913**	**19.8**	**334,793**
Fees Apply to Pollutant?[5]	**Yes**	**Yes**	**Yes**	**No**[6]	**Yes**	**Yes**	**No**[7]	**No**[8]
Total Assessable Emissions	**2,063**							

Notes:

[1] Emissions are potential to emit, except where noted, based on maximum allowable operation and permit operating limits, where applicable.

[2] Regulated air pollutant calculations based on AP-42 emission factors, manufacturer data, and mass balances as shown in accompanying spreadsheets.

[3] $PM_{2.5}$ emissions are assumed to be equal to PM_{10} emissions except where noted on Table 2-7c.

[4] GHG means greenhouse gases and is the summation of CO_2, CH_4, and N_2O and applying the global warming potential for each pollutant.

[5] Fees paid on each regulated air pollutant emitted in quantities greater than 10 tpy per 18 AAC 50.410.

[6] $PM_{2.5}$ emissions are a subset of PM_{10} emissions and are excluded from the assessable emissions total to avoid a double payment.

[7] HAP emissions are a subset of either VOC emissions or PM_{10} and $PM_{2.5}$ emissions and are excluded from the assessable emissions total to avoid a double payment. No individual HAP is emitted at or above 10 tpy.

[8] Assessable emission fees for GHGs have not been established under 18 AAC 50.

Highlighted fields indicate information which has been updated since the submittal of the Title V permit renewal application in June 2012.

Table 2-2. Assessable Potential to Emit Emissions Inventory - Significant Emission Units
University of Alaska Fairbanks Campus

Emission Unit				Installation	Fuel Type	Maximum
ID	Description	Make/Model	Bldg. No.	Date		Rating/Capacity
1	Coal-Fired Boiler	Erie City	FS802	1962	Coal	84.5 MMBtu/hr[1]
2	Coal-Fired Boiler	Erie City	FS802	1962	Coal	84.5 MMBtu/hr[1]
3	Dual-Fired Boiler	Zurn	FS802	1970	Dual Fuel	180.9 MMBtu/hr
4	Dual-Fired Boiler	Zurn	FS802	1987	Dual Fuel	180.9 MMBtu/hr[5]
~~6~~	~~Arctic Health Research Bldg. Emergency Generator~~	~~Cummins/NH2501PG~~	~~FS901~~	~~1968~~	~~Diesel~~	~~125 kW~~
~~7~~	~~Arctic Health Research Bldg. Emergency Generator~~	~~Cummins/NH2501P~~	~~FS901~~	~~1968~~	~~Diesel~~	~~125 kW~~
8	Peaking/Backup Generator (DEG) Engine	Fairbanks Morse Colt-Pielstick PC2.6	FS817	1999	Diesel[3]	13,266 hp
9A	BiRD Incinerator	Therm-Tec/G-30P-1H	FS919	2006	Medical/Infectious Waste	83 lb/hr[4]
10	AFES Boiler	Burnham/V9OGA	AF256	2000	Diesel	1.08 MMBtu/hr[2]
11	AFES Boiler	Burnham/V9OGA	AF256	2000	Diesel	1.08 MMBtu/hr[2]
12	Harper Boiler #1	Weil McLain/BL776-S-W	FS420	1985	Diesel	0.64 MMBtu/hr[2]
13	Harper Boiler #2	Weil McLain/BL776-S-W	FS420	1985	Diesel	0.64 MMBtu/hr[2]
14	Copper Lane Boiler	Energy Kinetics System 2000	FS518	1985	Diesel	0.136 MMBtu/hr[2]
15	Copper Lane Boiler	Energy Kinetics System 2000	FS519	1985	Diesel	0.136 MMBtu/hr[2]
16	Copper Lane (Honor's House) Boiler	Weil McLain/P-WGO-5	FS520	2005	Diesel	0.233 MMBtu/hr[2]
17	West Ridge Research Building Boiler #1	Weil McLain/BL1688w-GPr10	FS909	2003	Diesel	4.93 MMBtu/hr[6]
18	West Ridge Research Building Boiler #2	Weil McLain/BL1688w-GPr10	FS909	2003	Diesel	4.93 MMBtu/hr[6]
19	BiRD RM 100U3 Boiler #1	Weil McLain/2094W	FS919	2004	Diesel	6.13 MMBtu/hr[2]
20	BiRD RM 100U3 Boiler #2	Weil McLain/2094W	FS919	2004	Diesel	6.13 MMBtu/hr[2]
21	BiRD RM 100U3 Boiler #3	Weil McLain/2094W	FS919	2004	Diesel	6.13 MMBtu/hr[2]
22	BiRD RM 100U3 Boiler #4	Bryan/EB200-S-150-FDGO	FS919	2005	Diesel	8.5 MMBtu/hr
23	Alaska Center for Energy and Power Generator Engine	Detroit Diesel/6043-TK35	FS814	2003	Diesel	235 kW
24	Old University Park Emergency Generator Engine	Cummins/4B3.9-G2	FS423	2001	Diesel	51 kW
25	AFES Grain Dryer	Unknown	AF108	1988	Diesel	2.43 MMBtu/hr[2]
26	Duckering Classroom Engine	Mitsubishi-Bosch	FS103	1987	Diesel	45 kW
27	Alaska Center for Energy and Power Generator Engine	Caterpillar C-15	FS814	TBD	Diesel	500 hp
28	Alaska Earthquake Information Center Emergency Generator Engine	Detroit Diesel	FS903	1998	Diesel	120 hp
29	Arctic Health Research Emergency Generator Engine	Cummins/QSB7-G6	FS901	2013	Diesel	314 hp

Notes:

[1] The rating of the coal-fired boilers as shown in Permit No. AQ0316TVP02 is incorrect. UAF has calculated the correct maximum heat input capacity. These calculations are provided in Section 2, Table 2-20 of this application.

[2] These external combustion units have nameplates which list the ratings in gross output or do not specify whether the rating is output or input. A 75 percent efficiency has been assumed for these units to conservatively calculate the heat input rating.

[3] EU 8 is also authorized to combust coal slurry fuel. The unit has not operated on this fuel and will not do so in the future. Emissions estimates for this unit are based on diesel fuel combustion.

[4] The rating of EU 9A is listed incorrectly in the existing Title V permit. The correct rating is provided here.

[5] EU 4 has a 10 percent capacity factor limit per Condition 17 of Permit No. AQ0316TVP02. That limit is applied in all calculations in this application.

[6] The previous Title V renewal application proposed a limit of 500 hours per year for EU 17 and 18. This limit was not incorporated into the permit and UAF does not wish to apply an operating hour limit to these units.

[7] EU 5A listed on Permit No. AQ0316TVP02 has been removed.

Table 2-3. Assessable Potential to Emit Emissions Inventory - Insignificant Emission Units
University of Alaska Fairbanks Campus

Emission Unit				Installation	Fuel Type	Maximum	Basis for
ID	Description	Make/Model	Bldg. No.	Date		Rating/Capacity	Insignificance
30	AFES Greenhouse Furnace	Sunderman/L02OUF	AF117	1991	Diesel	0.209 MMBtu/hr[2]	18 AAC 50.326(g)(7)[9]
31	Copper Lane Furnace	Matzger	FS517	2001	Diesel	0.08 MMBtu/hr	18 AAC 50.326(g)(7)[9]
32	Skarland Cabin Furnace	Rheem/ROBC-084QPEB	FS712	2001 (est)	Diesel	0.140 MMBtu/hr[2]	18 AAC 50.326(g)(7)[9]
33	Harper Hot Water Heater	Bock	FS420	1985 (est)	Diesel	0.236 MMBtu/hr	18 AAC 50.326(g)(7)[9]
	Coal Handling/Crushing Facility	American Pulverizer	FS802	1964	Coal	50 tons/hr	18 AAC 50.326(e)
	Fine Arts/Arts Wing Rm 302 Kiln	Alpine Kilns and Equipment/SBF-40	FS313	2009	Propane	1.81 MMBtu/hr	18 AAC 50.326(g)(5)
	Fine Arts/Arts Wing Ceramic Rm 413 Kiln	Kilnmaster/constructed on-site	FS313	2009	Propane	0.53 MMBtu/hr[1]	18 AAC 50.326(g)(5)
	Fine Arts/Arts Wing Ceramic Rm 413 Kiln	Geil Kilns/DLB2	FS313	2009	Propane	0.23 MMBtu/hr	18 AAC 50.326(g)(5)
	Wooded Area Kiln(s)	Hand-built	N/A	Various	Wood	Unknown[3]	18 AAC 50.326(e)
	Facilities Services Paint Booth Exhaust Fan	Unknown	FS803	2001	Various Paints	12,500 cfm	18 AAC 50.326(e)
	Museum Paint Booth Exhaust Fan	Greenheck/TAB-42-030T3	FS907	2006	Various Paints	5,480 cfm	18 AAC 50.326(e)
	Laboratory Fume Hoods (campus-wide)[5]	N/A	Multiple	Various	N/A	N/A	18 AAC 50.326(f)(10)
	Duckering Classroom Turbine	Cussons Two Shaft Gas Turbine Unit	FS103	1970(est)	Propane	0.33 MMBtu/hr[8]	18 AAC 50.326(e)
	Power Plant Field-Erected Tank	Vertical Fixed Roof	FS817	1969	Diesel	212,120 gallons	18 AAC 50.326(e)
	Graduation Flame	Custom-built	N/A	1975(est)	Propane	5.0E-03 MMBtu/hr[4]	18 AAC 50.326(e)
	Ash Bin Vent filter	N/A	FS802	1962	N/A	8,760 hr/yr	18 AAC 50.326(e)
	Ash Vacuum Pump Filter	N/A	FS802	1962	N/A	8,760 hr/yr	18 AAC 50.326(e)
	Ash Loadout to Truck	N/A	FS802	1962	N/A	8,225 tpy ash	18 AAC 50.326(e)
	SRC Pellet Stove	Avalon/AGP	N/A	2012	Wood Pellets	5 lb/hr[7]	18 AAC 50.326(g)(6)

Notes:

[1] This external combustion unit has a nameplate which does not specify whether the rating is output or input. A 75 percent efficiency has been assumed to conservatively calculate the heat input rating.

[2] These external combustion units have nameplates which list the ratings in gross output or do not specify whether the rating is output or input. A 75 percent efficiency has been assumed for these units to conservatively calculate the heat input rating.

[3] UAF estimates that these units combust a cumulative maximum of 1 cord of dry birch wood per year.

[4] The graduation flame is a small propane flare that operates during graduation week. The rating is an estimate because the unit was hand-built by university personnel.

[5] The laboratory fume hoods are not required to be listed on the application per 18 AAC 50.326(d)(3), however they are listed here in order to quantify VOC and HAP emissions toward the assessable emission total.

[6] A paint booth is currently in place at the Hutchison technical high school on campus. This emission unit will no longer be used after December 2012 because the program is relocating off-campus.

[7] The SRC pellet stove has a heat input rating of 0.041 MMBtu/hr. Wood pellets have a heating value of 8,200 Btu/lb.

[8] Rating calculated based on vendor data that fuel consumption at 100 percent load is approximately 15 pounds of propane per hour.

[9] ADEC advised UAF on April 30, 2013 that ADEC considers these emission units to be insignificant.

Table 2-4. Assessable Potential to Emit Calculations - Oxides of Nitrogen (NO_X) Emissions
University of Alaska Fairbanks Campus

Emission Unit ID	Emission Unit Description	Fuel Type	NO_X Emission Factor Reference	NO_X Emission Factor Factor	Maximum Rating/Capacity	Allowable Annual Operation[1]	Potential NO_X Emissions[2]
Significant Emission Units							
1	Coal-Fired Boiler	Coal	AP-42 Table 1.1-3	8.8 lb/ton	84.5 MMBtu/hr	8,760 hrs/yr	212.9 tpy
2	Coal-Fired Boiler	Coal	AP-42 Table 1.1-3	8.8 lb/ton	84.5 MMBtu/hr	8,760 hrs/yr	212.9 tpy
3	Dual-Fired Boiler	Diesel	AP-42 Table 1.3-1	24 lb/kgal	180.9 MMBtu/hr	8,760 hrs/yr	138.8 tpy[7]
3	Dual-Fired Boiler	Natural Gas	AP-42 Table 1.4-1 low NO_X	140 lb/MMscf	180.9 MMBtu/hr	8,760 hrs/yr	
~~6~~	~~Arctic Health Research Bldg. Emergency Generator~~	~~Diesel~~	~~AP-42 Table 3.3-1~~	~~0.031 lb/hp-hr~~	~~125 kW~~	~~hrs/yr~~	0.0 tpy
~~7~~	~~Arctic Health Research Bldg. Emergency Generator~~	~~Diesel~~	~~AP-42 Table 3.3-1~~	~~0.031 lb/hp-hr~~	~~125 kW~~	~~hrs/yr~~	0.0 tpy
4	Dual-Fired Boiler	Diesel	AP-42 Table 1.3-1	24 lb/kgal	180.9 MMBtu/hr	876 hrs/yr	40.0 tpy[8]
4	Dual-Fired Boiler	Natural Gas	AP-42 Table 1.4-1 low NO_X	140 lb/MMscf	180.9 MMBtu/hr	876 hrs/yr	
8	Peaking/Backup Generator (DEG) Engine	Diesel	AQ0316MSS02, Cond.12.3b	0.057 lb/gal	13,266 hp	1,403,509 gal/yr[18]	
9A	BiRD Incinerator	Medical/Infectious Waste	AP-42 Table 2.3-1	3.56 lb/ton	83 lb/hr	109 ton/yr[9]	0.2 tpy
10	AFES Boiler	Diesel	AP-42 Table 1.3-1	20 lb/kgal	1.08 MMBtu/hr	8,760 hrs/yr	0.7 tpy
11	AFES Boiler	Diesel	AP-42 Table 1.3-1	20 lb/kgal	1.08 MMBtu/hr	8,760 hrs/yr	0.7 tpy
12	Harper Boiler #1	Diesel	AP-42 Table 1.3-1	20 lb/kgal	0.64 MMBtu/hr	8,760 hrs/yr	0.4 tpy
13	Harper Boiler #2	Diesel	AP-42 Table 1.3-1	20 lb/kgal	0.64 MMBtu/hr	8,760 hrs/yr	0.4 tpy
14	Copper Lane Boiler	Diesel	AP-42 Table 1.3-1	20 lb/kgal	0.136 MMBtu/hr	8,760 hrs/yr	0.1 tpy
15	Copper Lane Boiler	Diesel	AP-42 Table 1.3-1	20 lb/kgal	0.136 MMBtu/hr	8,760 hrs/yr	0.1 tpy
16	Copper Lane (Honor's House) Boiler	Diesel	AP-42 Table 1.3-1	20 lb/kgal	0.233 MMBtu/hr	8,760 hrs/yr	0.1 tpy
17	West Ridge Research Building Boiler #1	Diesel	AP-42 Table 1.3-1	20 lb/kgal	4.93 MMBtu/hr	8,760 hrs/yr	3.2 tpy
18	West Ridge Research Building Boiler #2	Diesel	AP-42 Table 1.3-1	20 lb/kgal	4.93 MMBtu/hr	8,760 hrs/yr	3.2 tpy
19	BiRD RM 100U3 Boiler #1	Diesel	AP-42 Table 1.3-1	20 lb/kgal	6.13 MMBtu/hr	19,650 hrs/yr[10]	8.8 tpy
20	BiRD RM 100U3 Boiler #2	Diesel	AP-42 Table 1.3-1	20 lb/kgal	6.13 MMBtu/hr		
21	BiRD RM 100U3 Boiler #3	Diesel	AP-42 Table 1.3-1	20 lb/kgal	6.13 MMBtu/hr		
22	BiRD RM 100U3 Boiler #4	Diesel	AP-42 Table 1.3-1	20 lb/kgal	8.50 MMBtu/hr	8,760 hrs/yr	5.4 tpy
23	Alaska Center for Energy and Power Generator Engine	Diesel	Vendor Data	1,630 g/hr	235 kW	4,380 hrs/yr[11]	7.9 tpy
24	Old University Park Emergency Generator Engine	Diesel	AP-42 Table 3.3-1	0.031 lb/hp-hr	51 kW	100 hrs/yr[16]	0.1 tpy
25	AFES Grain Dryer	Diesel	AP-42 Table 1.3-1	20 lb/kgal	2.427 MMBtu/hr	100 hrs/yr[12]	0.02 tpy
26	Duckering Classroom Engine	Diesel	AP-42 Table 3.3-1	0.031 lb/hp-hr	45 kW	99 hrs/yr[13,17]	0.1 tpy
27	Alaska Center for Energy and Power Generator Engine	Diesel	Vendor Data	3.52 lb/hr	500 hp	4,380 hrs/yr[14]	7.7 tpy
28	Alaska Earthquake Information Center Emergency Generator Engine	Diesel	AP-42 Table 3.3-1	0.031 lb/hp-hr	120 hp	100 hrs/yr[15]	0.2 tpy
29	Arctic Health Research Emergency Generator Engine	Diesel	EPA Tier 4i	0.4 g/kW-hr	314 hp	100 hrs/yr[3]	0.01 tpy
Significant Emission Units Total Assessable Potential to Emit Emissions - NO_X							**643.8 tpy**

Emission Unit ID	Emission Unit Description	Fuel Type	NO_X Emission Factor Reference	NO_X Emission Factor Factor	Maximum Rating/Capacity	Allowable Annual Operation[1]	Potential NO_X Emissions[2]
	Insignificant Emission Units						
30	AFES Greenhouse Furnace	Diesel	AP-42 Table 1.3-1	20 lb/kgal	0.209 MMBtu/hr	8,760 hrs/yr	0.1 tpy
31	Copper Lane Furnace	Diesel	AP-42 Table 1.3-1	20 lb/kgal	0.080 MMBtu/hr	8,760 hrs/yr	0.1 tpy
32	Skarland Cabin Furnace	Diesel	AP-42 Table 1.3-1	20 lb/kgal	0.140 MMBtu/hr	8,760 hrs/yr	0.1 tpy
33	Harper Hot Water Heater	Diesel	AP-42 Table 1.3-1	20 lb/kgal	0.236 MMBtu/hr	8,760 hrs/yr	0.2 tpy
	Coal Handling/Coal Crushing	Coal	N/A	N/A	N/A	8,760 hrs/yr	0.0 tpy
	Various Propane-Fired Kilns	Propane	AP-42 Table 1.5-1	13 lb/kgal	2.6 MMBtu/hr, total	8,760 hrs/yr	1.6 tpy
	Wood-Fired Kilns	Wood	AP-42 Table 1.6-2	0.49 lb/MMBtu[4]	Unknown	1 cord/yr[5]	3.7E-03 tpy
	Duckering Classroom Turbine	Propane	AP-42 Table 3.1-1	3.2E-01 lb/MMBtu[6]	0.33 MMBtu/hr	8,760 hrs/yr	0.5 tpy
	Graduation Flame	Propane	AP-42 Table 13.5-1	0.068 lb/MMBtu	5.0E-03 MMBtu/hr	8,760 hrs/yr	1.5E-03 tpy
	Various Paint Booths	N/A	N/A	N/A	N/A	8,760 hrs/yr	0.0 tpy
	Various Laboratory Fume Hoods	N/A	N/A	N/A	N/A	8,760 hrs/yr	0.0 tpy
	Power Plant Field-Erected Tank	Diesel	N/A	N/A	212,120 gallons	8,760 hrs/yr	0.0 tpy
	Ash Bin Vent filter	N/A	N/A	N/A	N/A	8,760 hrs/yr	0.0 tpy
	Ash Vacuum Pump Filter	N/A	N/A	N/A	N/A	8,760 hrs/yr	0.0 tpy
	Ash Loadout to Truck	N/A	N/A	N/A	N/A	8,225 tpy ash	0.0 tpy
	SRC Pellet Stove	Wood Pellets	AP-42 Table 1.10-1	13.8 lb/ton	5.0 lb/hr	8,760 hrs/yr	0.2 tpy
						Insignificant Emission Units Total Assessable Potential to Emit Emissions - NO_X	**2.6 tpy**
						Total Assessable Potential to Emit Emissions - NO_X	**646.4 tpy**

Notes:

[1] Maximum annual operation for all units based on full-time operation, or permit operating limits, where applicable.

[2] Conversion factors:

Mass conversion	454.0	g/lb
Diesel Heating Value	0.137	MMBtu/gal
Coal Heating Value	15.3	MMBtu/ton
Propane Heating Value	91.5	MMBtu/kgal
Natural Gas Heat Content	1,000	Btu/scf
Engine horsepower	1.341	kW
Assumed drive shaft efficiency for engines	95%	Per Alan Schuler at ADEC

[3] New emergency stationary internal combustion engines are limited to maintenance checks and readiness testing to no more than 100 hours per year, per 40 CFR 60.4211(f).

[4] Emission factor for small pottery-firing wood-fired kilns are not available. Calculation assumes that combustion of wood in the kilns is similar to that in dry wood-fired boilers.

[5] Approximate heat value of wood combusted in kilns is 15 MMBtu/cord, per http://www.hrt.msu.edu/energy/pdf/heating%20value%20of%20common%20fuels.pdf

[6] Emission factors for propane-fired turbine are not available. Emission factors for natural gas-fired turbine are used.

[7] The higher potential emissions for natural gas or distillate firing is shown as the potential emissions for EU 3.

[8] The combined NO_X emissions from EU 4 and EU 8 are limited to less than 40 tons per year, per Condition 16 of AQ0316TVP02.

[9] UAF is proposing an operating limit for EU 9A to avoid HAP major classification. Details are provided in Section 4 of this application.

[10] UAF is proposing operating limits for EU19 through EU21 to avoid minor permitting requirements for NO_X. Details are provided in Section 4 of this application.

[11] UAF is proposing an operating limit for EU 23 to avoid minor permitting requirements for NO_X. Details are provided in Section 4 of this application.

[12] UAF is proposing an operating limit for EU 25 to avoid PSD permitting requirements for SO_2. Details are provided in Section 4 of this application.

[13] UAF is proposing an operating limit for EU 26 to avoid PSD permitting requirements for NO_X. Details are provided in Section 4 of this application.

[14] Owner-requested limit of 4,380 hr/yr per AQ0316MSS03, currently being prepared by ADEC.

[15] Basis for EU 28 PTE calculated with 100 hr/yr: historical data indicating that engine operates approximately 13 hr/yr. A PTE basis of 100 hr/yr is conservatively high.

[16] Basis for EU 24 PTE calculated with 100 hr/yr. A PTE basis of 100 hr/yr is conservatively high; this engine is operated infrequently.

[17] Basis for EU 26 PTE calculated with 99 hr/yr. This engine is operated approximately 6 hours per year and is considered "limited use" under 40 CFR 63 Subpart ZZZZ.

[18] Maximum annual operation of EU 8 determined using lowest NO_X emission factor and assuming 40 tpy NO_X limit is consumed by EU 8.

Table 2-5. Assessable Potential to Emit Calculations - Carbon Monoxide (CO) Emissions
University of Alaska Fairbanks Campus

Emission Unit ID	Emission Unit Description	Fuel Type	CO Emission Factor Reference	CO Emission Factor Factor	Maximum Rating/Capacity	Allowable Annual Operation[1]	Potential CO Emissions[2]
Significant Emission Units							
1	Coal-Fired Boiler	Coal	AP-42 Table 1.1-3	5 lb/ton	84.5 MMBtu/hr	8,760 hrs/yr	121.0 tpy
2	Coal-Fired Boiler	Coal	AP-42 Table 1.1-3	5 lb/ton	84.5 MMBtu/hr	8,760 hrs/yr	121.0 tpy
3	Dual-Fired Boiler	Diesel	AP-42 Table 1.3-1	5 lb/kgal	180.9 MMBtu/hr	8,760 hrs/yr	66.6 tpy[7]
3	Dual-Fired Boiler	Natural Gas	AP-42 Table 1.4-1	84 lb/MMscf	180.9 MMBtu/hr	8,760 hrs/yr	
~~6~~	~~Arctic Health Research Bldg. Emergency Generator~~	~~Diesel~~	~~AP-42 Table 3.3-1~~	~~6.68E-03 lb/hp-hr~~	~~125 kW~~	~~0 hrs/yr~~	0.0 tpy
~~7~~	~~Arctic Health Research Bldg. Emergency Generator~~	~~Diesel~~	~~AP-42 Table 3.3-1~~	~~6.68E-03 lb/hp-hr~~	~~125 kW~~	~~0 hrs/yr~~	0.0 tpy
4	Dual-Fired Boiler	Diesel	AP-42 Table 1.3-1	5 lb/kgal	180.9 MMBtu/hr	876 hrs/yr	75.5 tpy[8]
4	Dual-Fired Boiler	Natural Gas	AP-42 Table 1.4-1	84 lb/MMscf	180.9 MMBtu/hr	876 hrs/yr	
8	Peaking/Backup Generator (DEG) Engine	Diesel	AP-42 Table 3.4-1	5.50E-03 lb/hp-hr	13,266 hp	1,403,509 gal/yr	
9A	BiRD Incinerator	Medical/Infectious Waste	AP-42 Table 2.3-1	2.95 lb/ton	83 lb/hr	109 ton/yr[9]	0.2 tpy
10	AFES Boiler	Diesel	AP-42 Table 1.3-1	5 lb/kgal	1.08 MMBtu/hr	8,760 hrs/yr	0.17 tpy
11	AFES Boiler	Diesel	AP-42 Table 1.3-1	5 lb/kgal	1.08 MMBtu/hr	8,760 hrs/yr	0.17 tpy
12	Harper Boiler #1	Diesel	AP-42 Table 1.3-1	5 lb/kgal	0.64 MMBtu/hr	8,760 hrs/yr	0.10 tpy
13	Harper Boiler #2	Diesel	AP-42 Table 1.3-1	5 lb/kgal	0.64 MMBtu/hr	8,760 hrs/yr	0.10 tpy
14	Copper Lane Boiler	Diesel	AP-42 Table 1.3-1	5 lb/kgal	0.136 MMBtu/hr	8,760 hrs/yr	0.02 tpy
15	Copper Lane Boiler	Diesel	AP-42 Table 1.3-1	5 lb/kgal	0.136 MMBtu/hr	8,760 hrs/yr	0.02 tpy
16	Copper Lane (Honor's House) Boiler	Diesel	AP-42 Table 1.3-1	5 lb/kgal	0.233 MMBtu/hr	8,760 hrs/yr	0.04 tpy
17	West Ridge Research Building Boiler #1	Diesel	AP-42 Table 1.3-1	5 lb/kgal	4.93 MMBtu/hr	8,760 hrs/yr	0.79 tpy
18	West Ridge Research Building Boiler #2	Diesel	AP-42 Table 1.3-1	5 lb/kgal	4.93 MMBtu/hr	8,760 hrs/yr	0.79 tpy
19	BiRD RM 100U3 Boiler #1	Diesel	AP-42 Table 1.3-1	5 lb/kgal	6.13 MMBtu/hr	19,650 hrs/yr[10]	2.20 tpy
20	BiRD RM 100U3 Boiler #2	Diesel	AP-42 Table 1.3-1	5 lb/kgal	6.13 MMBtu/hr		
21	BiRD RM 100U3 Boiler #3	Diesel	AP-42 Table 1.3-1	5 lb/kgal	6.13 MMBtu/hr		
22	BiRD RM 100U3 Boiler #4	Diesel	AP-42 Table 1.3-1	5 lb/kgal	8.5 MMBtu/hr	8,760 hrs/yr	1.36 tpy
23	Alaska Center for Energy and Power Generator Engine	Diesel	Vendor Data	144 g/hr	235 kW	4,380 hrs/yr[11]	0.7 tpy
24	Old University Park Emergency Generator Engine	Diesel	AP-42 Table 3.3-1	6.68E-03 lb/hp-hr	51 kW	100 hrs/yr[16]	0.02 tpy
25	AFES Grain Dryer	Diesel	AP-42 Table 1.3-1	5 lb/kgal	2.427 MMBtu/hr	100 hrs/yr[12]	0.00 tpy
26	Duckering Classroom Engine	Diesel	AP-42 Table 3.3-1	6.68E-03 lb/hp-hr	45 kW	99 hrs/yr[13,17]	0.02 tpy
27	Alaska Center for Energy and Power Generator Engine	Diesel	Vendor Data	3.14 lb/hr	500 hp	4,380 hrs/yr[14]	6.9 tpy
28	Alaska Earthquake Information Center Emergency Generator Engine	Diesel	AP-42 Table 3.3-1	6.68E-03 lb/hp-hr	120 hp	100 hrs/yr[15]	0.04 tpy
29	Arctic Health Research Emergency Generator Engine	Diesel	EPA Tier 4i	3.5 g/kW-hr	314 hp	100 hrs/yr[3]	0.09 tpy
Significant Emission Units Total Assessable Potential to Emit Emissions - CO							**397.7 tpy**

Emission Unit ID	Emission Unit Description	Fuel Type	CO Emission Factor Reference	CO Emission Factor Factor	Maximum Rating/Capacity	Allowable Annual Operation[1]	Potential CO Emissions[2]
Insignificant Emission Units							
30	AFES Greenhouse Furnace	Diesel	AP-42 Table 1.3-1	5 lb/kgal	0.209 MMBtu/hr	8,760 hrs/yr	0.03 tpy
31	Copper Lane Furnace	Diesel	AP-42 Table 1.3-1	5 lb/kgal	0.080 MMBtu/hr	8,760 hrs/yr	0.01 tpy
32	Skarland Cabin Furnace	Diesel	AP-42 Table 1.3-1	5 lb/kgal	0.140 MMBtu/hr	8,760 hrs/yr	0.02 tpy
33	Harper Hot Water Heater	Diesel	AP-42 Table 1.3-1	5 lb/kgal	0.236 MMBtu/hr	8,760 hrs/yr	0.04 tpy
	Coal Handling/Coal Crushing	Coal	N/A	N/A	N/A	8,760 hrs/yr	0.0 tpy
	Various Propane-Fired Kilns	Propane	AP-42 Table 1.5-1	7.5 lb/kgal	2.6 MMBtu/hr, total	8,760 hrs/yr	0.92 tpy
	Wood-Fired Kilns	Wood	AP-42 Table 1.6-2	0.60 lb/MMBtu[4]	Unknown	1 cord/yr[5]	4.5E-03 tpy
	Duckering Classroom Turbine	Propane	AP-42 Table 3.1-1	8.2E-02 lb/MMBtu[6]	0.33 MMBtu/hr	8,760 hrs/yr	0.1 tpy
	Graduation Flame	Propane	AP-42 Table 13.5-1	0.37 lb/MMBtu	5.0E-03 MMBtu/hr	8,760 hrs/yr	8.1E-03 tpy
	Various Paint Booths	N/A	N/A	N/A	N/A	8,760 hrs/yr	0.0 tpy
	Various Laboratory Fume Hoods	N/A	N/A	N/A	N/A	8,760 hrs/yr	0.0 tpy
	Power Plant Field-Erected Tank	Diesel	N/A	N/A	212,120 gallons	8,760 hrs/yr	0.0 tpy
	Ash Bin Vent filter	N/A	N/A	N/A	N/A	8,760 hrs/yr	0.0 tpy
	Ash Vacuum Pump Filter	N/A	N/A	N/A	N/A	8,760 hrs/yr	0.0 tpy
	Ash Loadout to Truck	N/A	N/A	N/A	N/A	8,225 tpy ash	0.0 tpy
	SRC Pellet Stove	Wood Pellets	AP-42 Table 1.10-1	52.2 lb/ton	5.0 lb/hr	8,760 hrs/yr	0.6 tpy
						Insignificant Emission Units Total Assessable Potential to Emit Emissions - CO	**1.7 tpy**
						Total Assessable Potential to Emit Emissions - CO	**399.4 tpy**

Notes:

[1] Maximum annual operation for all units based on full-time operation, or permit operating limits, where applicable.

[2] Conversion factors:

Diesel Heating Value	0.137	MMBtu/gal
Coal Heating Value	15.3	MMBtu/ton
Propane Heating Value	91.5	MMBtu/kgal
Natural Gas Heat Content	1,000	Btu/scf
Engine horsepower	1.341	kW
Assumed drive shaft efficiency for engines	95%	Per Alan Schuler at ADEC
Mass conversion	454.0	g/lb
Engine Heat Rate	7,000	Btu/hp-hr

[3] New emergency stationary internal combustion engines are limited to maintenance checks and readiness testing to no more than 100 hours per year, per 40 CFR 60.4211(f).

[4] Emission factor for small pottery-firing wood-fired kilns are not available. Calculation assumes that combustion of wood in the kilns is similar to that in dry wood-fired boilers.

[5] Approximate heat value of wood combusted in kilns is 15 MMBtu/cord, per http://www.hrt.msu.edu/energy/pdf/heating%20value%20of%20common%20fuels.pdf

[6] Emission factors for propane-fired turbine are not available. Emission factors for natural gas-fired turbine are used.

[7] The higher potential emissions for natural gas or distillate firing is shown as the potential emissions for EU 3.

[8] The highest potential emissions for EU 4 and EU 8 is shown as the potential emissions.

[9] UAF is proposing an operating limit for EU 9A to avoid HAP major classification. Details are provided in Section 4 of this application.

[10] UAF is proposing operating limits for EU 19 through EU 21 to avoid minor permitting requirements for NO_X. Details are provided in Section 4 of this application.

[11] UAF is proposing an operating limit for EU 23 to avoid minor permitting requirements for NO_X. Details are provided in Section 4 of this application.

[12] UAF is proposing an operating limit for EU 25 to avoid PSD permitting requirements for SO_2. Details are provided in Section 4 of this application.

[13] UAF is proposing an operating limit for EU 26 to avoid PSD permitting requirements for NO_X. Details are provided in Section 4 of this application.

[14] Owner-requested limit of 4,380 hr/yr per AQ0316MSS03, currently being prepared by ADEC.

[15] Basis for EU 28 PTE calculated with 100 hr/yr: historical data indicating that engine operates approximately 13 hr/yr. A PTE basis of 100 hr/yr is conservatively high.

[16] Basis for EU 24 PTE calculated with 100 hr/yr. A PTE basis of 100 hr/yr is conservatively high; this engine is operated infrequently.

[17] Basis for EU 26 PTE calculated with 99 hr/yr. This engine is operated approximately 6 hours per year and is considered "limited use" under 40 CFR 63 Subpart ZZZZ.

Table 2-6. Assessable Potential to Emit Calculations - Particulate Matter Less Than 10 Microns (PM_{10}) Emissions
University of Alaska Fairbanks Campus

Emission Unit ID	Emission Unit Description	Fuel Type	PM_{10} Emission Factor Reference	PM_{10} Emission Factor Factor	Maximum Rating/Capacity	Allowable Annual Operation[1]	Potential PM_{10} Emissions[2]
Significant Emission Units							
1	Coal-Fired Boiler	Coal	November 2010 Source Test	0.65 lb/ton[4]	84.5 MMBtu/hr	8,760 hrs/yr	15.7 tpy
2	Coal-Fired Boiler	Coal	November 2010 Source Test	1.35 lb/ton[4]	84.5 MMBtu/hr	8,760 hrs/yr	32.7 tpy
3	Dual-Fired Boiler	Diesel	AP-42 Tables 1.3-1, 1.3-2	3.3 lb/kgal	180.9 MMBtu/hr	8,760 hrs/yr	19.1 tpy[9]
3	Dual-Fired Boiler	Natural Gas	AP-42 Table 1.4-2	7.6 lb/MMscf	180.9 MMBtu/hr	8,760 hrs/yr	
~~6~~	~~Arctic Health Research Bldg. Emergency Generator~~	~~Diesel~~	~~AP-42 Table 3.3-1~~	~~2.20E-03 lb/hp-hr~~	~~125 kW~~	~~0 hrs/yr~~	0.0 tpy
~~7~~	~~Arctic Health Research Bldg. Emergency Generator~~	~~Diesel~~	~~AP-42 Table 3.3-1~~	~~2.20E-03 lb/hp-hr~~	~~125 kW~~	~~0 hrs/yr~~	0.0 tpy
4	Dual-Fired Boiler	Diesel	AP-42 Tables 1.3-1, 1.3-2	3.3 lb/kgal	180.9 MMBtu/hr	876 hrs/yr	9.6 tpy[10]
4	Dual-Fired Boiler	Natural Gas	AP-42 Table 1.4-2	7.6 lb/MMscf	180.9 MMBtu/hr	876 hrs/yr	
8	Peaking/Backup Generator (DEG) Engine	Diesel	AP-42 Table 3.4-1	7.00E-04 lb/hp-hr	13,266 hp	1,403,509 gal/yr	
9A	BiRD Incinerator	Medical/Infectious Waste	AP-42 Table 2.3-2	4.7 lb/ton	83 lb/hr	109 ton/yr[11]	0.3 tpy
10	AFES Boiler	Diesel	AP-42 Tables 1.3-1, 1.3-2	3.3 lb/kgal	1.08 MMBtu/hr	8,760 hrs/yr	0.11 tpy
11	AFES Boiler	Diesel	AP-42 Tables 1.3-1, 1.3-2	3.3 lb/kgal	1.08 MMBtu/hr	8,760 hrs/yr	0.11 tpy
12	Harper Boiler #1	Diesel	AP-42 Tables 1.3-1, 1.3-2	3.3 lb/kgal	0.64 MMBtu/hr	8,760 hrs/yr	0.07 tpy
13	Harper Boiler #2	Diesel	AP-42 Tables 1.3-1, 1.3-2	3.3 lb/kgal	0.64 MMBtu/hr	8,760 hrs/yr	0.07 tpy
14	Copper Lane Boiler	Diesel	AP-42 Tables 1.3-1, 1.3-2	3.3 lb/kgal	0.136 MMBtu/hr	8,760 hrs/yr	0.01 tpy
15	Copper Lane Boiler	Diesel	AP-42 Tables 1.3-1, 1.3-2	3.3 lb/kgal	0.136 MMBtu/hr	8,760 hrs/yr	0.01 tpy
16	Copper Lane (Honor's House) Boiler	Diesel	AP-42 Tables 1.3-1, 1.3-2	3.3 lb/kgal	0.233 MMBtu/hr	8,760 hrs/yr	0.02 tpy
17	West Ridge Research Building Boiler #1	Diesel	AP-42 Tables 1.3-1, 1.3-2	3.3 lb/kgal	4.93 MMBtu/hr	8,760 hrs/yr	0.52 tpy
18	West Ridge Research Building Boiler #2	Diesel	AP-42 Tables 1.3-1, 1.3-2	3.3 lb/kgal	4.93 MMBtu/hr	8,760 hrs/yr	0.52 tpy
19	BiRD RM 100U3 Boiler #1	Diesel	AP-42 Tables 1.3-1, 1.3-2	3.3 lb/kgal	6.13 MMBtu/hr	19,650 hrs/yr[12]	1.45 tpy
20	BiRD RM 100U3 Boiler #2	Diesel	AP-42 Tables 1.3-1, 1.3-2	3.3 lb/kgal	6.13 MMBtu/hr		
21	BiRD RM 100U3 Boiler #3	Diesel	AP-42 Tables 1.3-1, 1.3-2	3.3 lb/kgal	6.13 MMBtu/hr		
22	BiRD RM 100U3 Boiler #4	Diesel	AP-42 Tables 1.3-1, 1.3-2	3.3 lb/kgal	8.5 MMBtu/hr	8,760 hrs/yr	0.90 tpy
23	Alaska Center for Energy and Power Generator Engine	Diesel	Vendor Data	8.1 g/hr	235 kW	4,380 hrs/yr[13]	0.04 tpy
24	Old University Park Emergency Generator Engine	Diesel	AP-42 Table 3.3-1	2.20E-03 lb/hp-hr	51 kW	100 hrs/yr[19]	0.01 tpy
25	AFES Grain Dryer	Diesel	AP-42 Tables 1.3-1, 1.3-2	3.3 lb/kgal	2.427 MMBtu/hr	100 hrs/yr[14]	2.9E-03 tpy
26	Duckering Classroom Engine	Diesel	AP-42 Table 3.3-1	2.20E-03 lb/hp-hr	45 kW	99 hrs/yr[15,20]	0.01 tpy
27	Alaska Center for Energy and Power Generator Engine	Diesel	Vendor Data	0.12 lb/hr	500 hp	4,380 hrs/yr[17]	0.26 tpy
28	Alaska Earthquake Information Center Emergency Generator Engine	Diesel	AP-42 Table 3.3-1	2.20E-03 lb/hp-hr	120 hp	100 hrs/yr[18]	0.01 tpy
29	Arctic Health Research Emergency Generator Engine	Diesel	EPA Tier 4i	0.02 g/kW-hr	314 hp	100 hrs/yr[3]	0.001 tpy
Significant Emission Units Total Assessable Potential to Emit Emissions - PM_{10}							**81.5 tpy**

Emission Unit ID	Emission Unit Description	Fuel Type	PM_{10} Emission Factor Reference	PM_{10} Emission Factor Factor	Maximum Rating/Capacity	Allowable Annual Operation[1]	Potential PM_{10} Emissions[2]
Insignificant Emission Units							
30	AFES Greenhouse Furnace	Diesel	AP-42 Tables 1.3-1, 1.3-2	3.3 lb/kgal	0.209 MMBtu/hr	8,760 hrs/yr	0.02 tpy
31	Copper Lane Furnace	Diesel	AP-42 Tables 1.3-1, 1.3-2	3.3 lb/kgal	0.080 MMBtu/hr	8,760 hrs/yr	0.01 tpy
32	Skarland Cabin Furnace	Diesel	AP-42 Tables 1.3-1, 1.3-2	3.3 lb/kgal	0.140 MMBtu/hr	8,760 hrs/yr	0.01 tpy
33	Harper Hot Water Heater	Diesel	AP-42 Tables 1.3-1, 1.3-2	3.3 lb/kgal	0.236 MMBtu/hr	8,760 hrs/yr	0.02 tpy
	Coal Handling/Coal Crushing	Coal	See detailed calculations in Table 2-6b				0.41 tpy
	Various Propane-Fired Kilns	Propane	AP-42 Table 1.5-1	0.7 lb/kgal	2.6 MMBtu/hr, total	8,760 hrs/yr	0.09 tpy
	Wood-Fired Kilns	Wood	AP-42 Table 1.6-2	0.36 lb/MMBtu[5]	Unknown	1 cord/yr[6]	2.7E-03 tpy
	Duckering Classroom Turbine	Propane	AP-42 Table 3.1-2a	6.6E-03 lb/MMBtu[7]	0.33 MMBtu/hr	8,760 hrs/yr	0.01 tpy
	Graduation Flame	Propane	AP-42 Table 13.5-1	0.0 lb/MMBtu[8]	5.0E-03 MMBtu/hr	8,760 hrs/yr	0.0 tpy
	Facilities Services Paint Booth Exhaust Fan	Various Paints	N/A	70% capture	Unknown	131 gal/yr	0.14 tpy[16]
	Museum Paint Booth Exhaust Fan	Various Paints	N/A	N/A	N/A	8,760 hrs/yr	0.0 tpy
	Various Laboratory Fume Hoods	N/A	N/A	N/A	N/A	8,760 hrs/yr	0.0 tpy
	Power Plant Field-Erected Tank	Diesel	N/A	N/A	212,120 gallons	8,760 hrs/yr	0.0 tpy
	Ash Bin Vent filter	N/A	See detailed calculations in Table 2-6a				0.35 tpy
	Ash Vacuum Pump Filter	N/A	See detailed calculations in Table 2-6a				0.43 tpy
	Ash Loadout to Truck	N/A	See detailed calculations in Table 2-6a				1.3E-04 tpy
	SRC Pellet Stove	Wood Pellets	AP-42 Table 1.10-1	8.8 lb/ton	5.0 lb/hr	8,760 hrs/yr	0.1 tpy
						Insignificant Emission Units Total Assessable Potential to Emit Emissions - PM_{10}	**1.6 tpy**
						Total Assessable Potential to Emit Emissions - PM_{10}	**83.1 tpy**

Notes:

[1] Maximum annual operation for all units based on full-time operation, or permit operating limits, where applicable.

[2] Conversion factors:

Assumed drive shaft efficiency for engines (Per Alan Schuler at ADEC)	95%	Diesel Heating Value	0.137 MMBtu/gal	Propane Heating Value	91.5 MMBtu/kgal
		Coal Heating Value	15.3 MMBtu/ton	Natural Gas Heat Content	1,000 Btu/scf
		Mass conversion	454.0 g/lb	Engine horsepower	1.341 kW
		Engine Heat Rate	7,000 Btu/hp-hr		

[3] New emergency stationary internal combustion engines are limited to maintenance checks and readiness testing to no more than 100 hours per year, per 40 CFR 60.4211(f).

[4] November 2010 source test emission factors reflect *maximum* Total PM emission rates for each coal boiler.

[5] Emission factor for small pottery-firing wood-fired kilns are not available. Calculation assumes that combustion of wood in the kilns is similar to that in dry wood-fired boilers.

[6] Approximate heat value of wood combusted in kilns is 15 MMBtu/cord, per http://www.hrt.msu.edu/energy/pdf/heating%20value%20of%20common%20fuels.pdf

[7] Emission factors for propane-fired turbine are not available. Emission factors for natural gas-fired turbine are used.

[8] The graduation flame is best described as a non-smoking flare. Soot emissions are zero.

[9] The higher potential emissions for natural gas or distillate firing is shown as the potential emissions for EU 3.

[10] The highest potential emissions for EU 4 and EU 8 is shown as the potential emissions.

[11] UAF is proposing an operating limit for EU 9A to avoid HAP major classification. Details are provided in Section 4 of this application.

[12] UAF is proposing operating limits for EU 19 through EU 21 to avoid minor permitting requirements for NO_X. Details are provided in Section 4 of this application.

[13] UAF is proposing an operating limit for EU 23 to avoid minor permitting requirements for NO_X. Details are provided in Section 4 of this application.

[14] UAF is proposing an operating limit for EU 25 to avoid PSD permitting requirements for SO_2. Details are provided in Section 4 of this application.

[15] UAF is proposing an operating limit for EU 26 to avoid PSD permitting requirements for NO_X. Details are provided in Section 4 of this application.

[16] Less than 131 gallons of paint are used on an annual basis in the facilities services paint booth. The density of paint is approximately 7 lb/gal. The facilities services paint booth has fiberglass paint arrestor pads. The calculation conservatively assumes that the entire volume of paint used is emitted as PM. Vendor data for the filters indicates an 70% capture efficiency for particles of 2.5 microns or greater.

[17] Owner-requested limit of 4,380 hr/yr per AQ0316MSS03, currently being prepared by ADEC.

[18] Basis for EU 28 PTE calculated with 100 hr/yr: historical data indicating that engine operates approximately 13 hr/yr. A PTE basis of 100 hr/yr is conservatively high.

[19] Basis for EU 24 PTE calculated with 100 hr/yr. A PTE basis of 100 hr/yr is conservatively high; this engine is operated infrequently.

[20] Basis for EU 26 PTE calculated with 99 hr/yr. This engine is operated approximately 6 hours per year and is considered "limited use" under 40 CFR 63 Subpart ZZZZ.

Table 2-6a. Assessable Potential to Emit Calculations - Ash Handling System PM_{10} Potential Emission
University of Alaska Fairbanks Campus

Emission Unit		Maximum	PM_{10} Emission Factor		Allowable Annual	Potential PM_{10}
Permit ID	Description	Rating/Capacity	Reference	Factor	Operation	Emissions
N/A	Ash Bin Vent filter	680 acfm	Vendor PM_{10} filter emission rating	0.02 gr/dscf	8,760 hr/yr	0.35 tpy
N/A	Ash vacuum pump filter	1,500 acfm	Vendor PM_{10} filter emission rating	0.02 gr/dscf	8,760 hr/yr	0.43 tpy
N/A	Ash Loadout to Truck	N/A	AP-42, Section 13.2.4	3.24E-05 lb/ton	8,225 tpy	1.33E-04 tpy

Notes:

1. Ash bin vent filter and ash vacuum pump filter emission calculations:

   (exhaust rate, acfm) x (Temp at STP/Temp of exhaust) x (PM_{10} exhaust concentration, gr/dscf) x (1 lb/ 7,000 gr) x (1 ton/ 2,000 lb) x (60 min/hr) x (operation, hr/yr)

   Temperature at standard conditions = 68 degrees Fahrenheight
   Exhaust temperature of ash bin vent filter = 100 degrees Fahrenheight (estimated)
   Exhaust temperature of fan duct blower/bag filte 180 degrees Fahrenheight (estimated)

2. Ash loadout emission calculations:

   Emission factor from AP-42, Section 13.2.4 based on empirical equation E = k x 0.0032 x (U/5)1.3/(M/2)1.4 lb/ton transferred where:
   k = 0.35 for PM_{10}
   U = mean wind speed = 5.4 mph in Fairbanks, per National Climactic Data Center (http://lwf.ncdc.noaa.gov/oa/climate/online/ccd/avgwind.html)
   M = ash moisture content = 27 percent (AP-42, Table 13.2.4-1)

   Ash loadout emissions based on maximum boiler (EU 1-2) total coal consumption capacity of 96,761 tpy
   Ash content of coal = 8.5% per Usibelli Coal Mine website
   Operations, ash tons/yr = (Σ coal capacity, hr/yr) x (0.085 ash content)
   Ash loadout emissions, tons/yr = (emission factor, lb/ton) x (ash loading, ton/yr) / (2,000 lb/ton)

Table 2-6b. Assessable Potential to Emit Calculations - Coal Handling System PM_{10} Potential Emission
University of Alaska Fairbanks Campus

Emission Source		PM_{10} Emission Factor		Material Handling[2] (tpy)	Control Method	Control Efficiency (percent)	Potential PM_{10} Emissions
Identification	Type	Reference[1]	Factor				
Railcar unloading through grate into crusher	Point	AP-42, Section 13.2.4	3.63E-04 lb/ton	96,761	Plant Building	0	0.02 tpy
Crusher	Point	3-05-010-10, FIRE[3]	0.006 lb/ton	96,761	Plant Building	0	0.29 tpy
Crusher to conveyor 1	Point	AP-42, Section 13.2.4	3.63E-04 lb/ton	96,761	Plant Building	0	0.02 tpy
Conveyor 1 to bucket elevator	Point	AP-42, Section 13.2.4	3.63E-04 lb/ton	96,761	Plant Building	0	0.02 tpy
Bucket elevator to screw conveyor	Point	AP-42, Section 13.2.4	3.63E-04 lb/ton	96,761	Plant Building	0	0.02 tpy
Screw conveyor to coal bin 1 or[4]	Point	AP-42, Section 13.2.4	3.63E-04 lb/ton	48,380	Plant Building	0	0.01 tpy
Screw conveyor to coal bin 2	Point	AP-42, Section 13.2.4	3.63E-04 lb/ton	48,380	Plant Building	0	0.01 tpy
Coal bin 1 to scale 1 or[4]	Point	AP-42, Section 13.2.4	3.63E-04 lb/ton	48,380	Plant Building	0	0.01 tpy
Coal bin 2 to scale 2	Point	AP-42, Section 13.2.4	3.63E-04 lb/ton	48,380	Plant Building	0	0.01 tpy
Scale 1 to boiler 1 or[4]	Point	AP-42, Section 13.2.4	3.63E-04 lb/ton	48,380	Plant Building	0	0.01 tpy
Scale 2 to boiler 2	Point	AP-42, Section 13.2.4	3.63E-04 lb/ton	48,380	Plant Building	0	0.01 tpy
Total Potential PM_{10} Emissions from Coal Preparation Plant							**0.41 tpy**

Notes:

[1]Coal transfer emission factor from AP-42, Section 13.2.4 based on empirical equation $E = k \times 0.0032 \times (U/5)^{1.3}/(M/2)^{1.4}$ lb/ton transferred where:

k = 0.35 for PM_{10}

U = mean wind speed = 5.4 mph per http://lwf.ncdc.noaa.gov/oa/climate/online/ccd/avgwind.html

M = coal moisture content = 4.8 percent

[2]Emissions based on maximum boiler (EU 1-2) total capacity of 96,761 tons per year

[3]FIRE = Factor Information Retrieval Data System.

[4]Coal bins are alternately loaded so half the annual coal material throughput (48,380 tpy) is sent to each side of the process because they are identical and in parallel.

Table 2-6c. Assessable Potential to Emit Calculations - Particulate Matter Less Than 2.5 Microns ($PM_{2.5}$) Emissions
University of Alaska Fairbanks Campus

Emission Unit ID	Emission Unit Description	Fuel Type	$PM_{2.5}$ Emission Factor Reference	$PM_{2.5}$ Emission Factor Factor	Maximum Rating/Capacity	Allowable Annual Operation[1]	Potential $PM_{2.5}$ Emissions[2]
Significant Emission Units							
1	Coal-Fired Boiler	Coal	November 2010 Source Test	0.3 lb/ton[4]	84.5 MMBtu/hr	8,760 hrs/yr	7.3 tpy
2	Coal-Fired Boiler	Coal	November 2010 Source Test	0.3 lb/ton[4]	84.5 MMBtu/hr	8,760 hrs/yr	7.3 tpy
3	Dual-Fired Boiler	Diesel	AP-42 Tables 1.3-2, 1.3-7	2.13 lb/kgal	180.9 MMBtu/hr	8,760 hrs/yr	12.3 tpy[10]
3	Dual-Fired Boiler	Natural Gas	AP-42 Table 1.4-2	7.6 lb/MMscf	180.9 MMBtu/hr	8,760 hrs/yr	
~~6~~	~~Arctic Health Research Bldg. Emergency Generator~~	~~Diesel~~	~~AP-42 Table 3.3-1~~	~~2.20E-03 lb/hp-hr~~	~~125 kW~~	~~0 hrs/yr~~	0.0 tpy
~~7~~	~~Arctic Health Research Bldg. Emergency Generator~~	~~Diesel~~	~~AP-42 Table 3.3-1~~	~~2.20E-03 lb/hp-hr~~	~~125 kW~~	~~0 hrs/yr~~	0.0 tpy
4	Dual-Fired Boiler	Diesel	AP-42 Tables 1.3-2, 1.3-7	2.13 lb/kgal	180.9 MMBtu/hr	876 hrs/yr	9.6 tpy[11]
4	Dual-Fired Boiler	Natural Gas	AP-42 Table 1.4-2	7.6 lb/MMscf	180.9 MMBtu/hr	876 hrs/yr	
8	Peaking/Backup Generator (DEG) Engine	Diesel	AP-42 Table 3.4-1	7.00E-04 lb/hp-hr	13,266 hp	1,403,509 gal/yr	
9A	BiRD Incinerator	Medical/Infectious Waste	AP-42 Table 2.3-2	4.7 lb/ton	83 lb/hr	109 ton/yr[12]	0.3 tpy
10	AFES Boiler	Diesel	AP-42 Tables 1.3-2, 1.3-7	2.13 lb/kgal	1.08 MMBtu/hr	8,760 hrs/yr	0.07 tpy
11	AFES Boiler	Diesel	AP-42 Tables 1.3-2, 1.3-7	2.13 lb/kgal	1.08 MMBtu/hr	8,760 hrs/yr	0.07 tpy
12	Harper Boiler #1	Diesel	AP-42 Tables 1.3-2, 1.3-7	2.13 lb/kgal	0.64 MMBtu/hr	8,760 hrs/yr	0.04 tpy
13	Harper Boiler #2	Diesel	AP-42 Tables 1.3-2, 1.3-7	2.13 lb/kgal	0.64 MMBtu/hr	8,760 hrs/yr	0.04 tpy
14	Copper Lane Boiler	Diesel	AP-42 Tables 1.3-2, 1.3-7	2.13 lb/kgal	0.136 MMBtu/hr	8,760 hrs/yr	0.01 tpy
15	Copper Lane Boiler	Diesel	AP-42 Tables 1.3-2, 1.3-7	2.13 lb/kgal	0.136 MMBtu/hr	8,760 hrs/yr	0.01 tpy
16	Copper Lane (Honor's House) Boiler	Diesel	AP-42 Tables 1.3-2, 1.3-7	2.13 lb/kgal	0.233 MMBtu/hr	8,760 hrs/yr	0.02 tpy
17	West Ridge Research Building Boiler #1	Diesel	AP-42 Tables 1.3-2, 1.3-7	2.13 lb/kgal	4.93 MMBtu/hr	8,760 hrs/yr	0.34 tpy
18	West Ridge Research Building Boiler #2	Diesel	AP-42 Tables 1.3-2, 1.3-7	2.13 lb/kgal	4.93 MMBtu/hr	8,760 hrs/yr	0.34 tpy
19	BiRD RM 100U3 Boiler #1	Diesel	AP-42 Tables 1.3-2, 1.3-7	2.13 lb/kgal	6.13 MMBtu/hr	19,650 hrs/yr[13]	0.94 tpy
20	BiRD RM 100U3 Boiler #2	Diesel	AP-42 Tables 1.3-2, 1.3-7	2.13 lb/kgal	6.13 MMBtu/hr		
21	BiRD RM 100U3 Boiler #3	Diesel	AP-42 Tables 1.3-2, 1.3-7	2.13 lb/kgal	6.13 MMBtu/hr		
22	BiRD RM 100U3 Boiler #4	Diesel	AP-42 Tables 1.3-2, 1.3-7	2.13 lb/kgal	8.5 MMBtu/hr	8,760 hrs/yr	0.58 tpy
23	Alaska Center for Energy and Power Generator Engine	Diesel	Vendor Data	8.1 g/hr	235 kW	4,380 hrs/yr[14]	0.04 tpy
24	Old University Park Emergency Generator Engine	Diesel	AP-42 Table 3.3-1	2.20E-03 lb/hp-hr	51 kW	100 hrs/yr[20]	0.01 tpy
25	AFES Grain Dryer	Diesel	AP-42 Tables 1.3-2, 1.3-7	2.13 lb/kgal	2.427 MMBtu/hr	100 hrs/yr[15]	0.00 tpy
26	Duckering Classroom Engine	Diesel	AP-42 Table 3.3-1	2.20E-03 lb/hp-hr	45 kW	99 hrs/yr[16,21]	0.01 tpy
27	Alaska Center for Energy and Power Generator Engine	Diesel	Vendor Data	0.12 lb/hr	500 hp	4,380 hrs/yr[18]	0.26 tpy
28	Alaska Earthquake Information Center Emergency Generator Engine	Diesel	AP-42 Table 3.3-1	2.20E-03 lb/hp-hr	120 hp	100 hrs/yr[19]	0.01 tpy
29	Arctic Health Research Emergency Generator Engine	Diesel	EPA Tier 4i	0.02 g/kW-hr	314 hp	100 hrs/yr[3]	0.001 tpy
Significant Emission Units Total Assessable Potential to Emit Emissions - $PM_{2.5}$							**39.5 tpy**

Emission Unit ID	Emission Unit Description	Fuel Type	$PM_{2.5}$ Emission Factor Reference	$PM_{2.5}$ Emission Factor	Maximum Rating/Capacity	Allowable Annual Operation[1]	Potential $PM_{2.5}$ Emissions[2]
Insignificant Emission Units							
30	AFES Greenhouse Furnace	Diesel	AP-42 Tables 1.3-2, 1.3-7	2.13 lb/kgal	0.209 MMBtu/hr	8,760 hrs/yr	0.01 tpy
31	Copper Lane Furnace	Diesel	AP-42 Tables 1.3-2, 1.3-7	2.13 lb/kgal	0.080 MMBtu/hr	8,760 hrs/yr	0.01 tpy
32	Skarland Cabin Furnace	Diesel	AP-42 Tables 1.3-2, 1.3-7	2.13 lb/kgal	0.140 MMBtu/hr	8,760 hrs/yr	0.01 tpy
33	Harper Hot Water Heater	Diesel	AP-42 Tables 1.3-2, 1.3-7	2.13 lb/kgal	0.236 MMBtu/hr	8,760 hrs/yr	0.02 tpy
	Coal Handling/Coal Crushing	Coal	See detailed calculations in Table 2-6b		96,761 tpy coal	8,760 hrs/yr	0.41 tpy
	Various Propane-Fired Kilns	Propane	AP-42 Table 1.5-1	0.7 lb/kgal	2.6 MMBtu/hr, total	8,760 hrs/yr	0.09 tpy
	Wood-Fired Kilns	Wood	AP-42 Table 1.6-2	0.36 lb/MMBtu[6]	Unknown	1 cord/yr[7]	2.7E-03 tpy
	Duckering Classroom Turbine	Propane	AP-42 Table 3.1-2a	6.6E-03 lb/MMBtu[8]	0.33 MMBtu/hr	8,760 hrs/yr	0.01 tpy
	Graduation Flame	Propane	AP-42 Table 13.5-1	0.0 lb/MMBtu[9]	5.0E-03 MMBtu/hr	8,760 hrs/yr	0.0 tpy
	Facilities Services Paint Booth Exhaust Fan	Various Paints	N/A	70% capture	Unknown	131 gal/yr	0.14 tpy[17]
	Museum Paint Booth Exhaust Fan	Various Paints	N/A	N/A	N/A	8,760 hrs/yr	0.0 tpy
	Various Laboratory Fume Hoods	N/A	N/A	N/A	N/A	8,760 hrs/yr	0.0 tpy
	Power Plant Field-Erected Tank	Diesel	N/A	N/A	212,120 gallons	8,760 hrs/yr	0.0 tpy
	Ash Bin Vent filter	N/A	See detailed calculations in Table 2-6a				0.35 tpy
	Ash Vacuum Pump Filter	N/A	See detailed calculations in Table 2-6a				0.43 tpy
	Ash Loadout to Truck	N/A	See detailed calculations in Table 2-6a				1.3E-04 tpy
	SRC Pellet Stove	Wood Pellets	AP-42 Table 1.10-1	8.8 lb/ton	5.0 lb/hr	8,760 hrs/yr	0.1 tpy
Insignificant Emission Units Total Assessable Potential to Emit Emissions - $PM_{2.5}$							**1.6 tpy**
Total Assessable Potential to Emit Emissions - $PM_{2.5}$							**41.1 tpy[5]**

Notes:

[1] Maximum annual operation for all units based on full-time operation, or permit operating limits, where applicable.

[2] Conversion factors:

Mass conversion	454.0 g/lb		
Diesel Heating Value	0.137 MMBtu/gal	Propane Heating Value	91.5 MMBtu/kgal
Coal Heating Value	15.3 MMBtu/ton	Natural Gas Heat Content	1,000 Btu/scf
Assumed drive shaft efficiency for engines (Per Alan Schuler at ADEC)	95%	Engine horsepower	1.341 kW
Engine Heat Rate	7,000 Btu/hp-hr		

[3] New emergency stationary internal combustion engines are limited to maintenance checks and readiness testing to no more than 100 hours per year, per 40 CFR 60.4211(f).

[4] November 2010 source test emission factor reflects average $PM_{2.5}$ emission rate for both boilers.

[5] $PM_{2.5}$ potential to emit calculations for all emission units other than the coal-fired boilers (EU ID 1 and 2) conservatively assume that $PM_{2.5}$ emissions are equal to PM_{10} emissions.

[6] Emission factor for small pottery-firing wood-fired kilns are not available. Calculation assumes that combustion of wood in the kilns is similar to that in dry wood-fired boilers.

[7] Approximate heat value of wood combusted in kilns is 15 MMBtu/cord, per http://www.hrt.msu.edu/energy/pdf/heating%20value%20of%20common%20fuels.pdf

[8] Emission factors for propane-fired turbine are not available. Emission factors for natural gas-fired turbine are used.

[9] The graduation flame is best described as a non-smoking flare. Soot emissions are zero.

[10] The higher potential emissions for natural gas or distillate firing is shown as the potential emissions for EU 3.

[11] The highest potential emissions for EU 4 and EU 8 is shown as the potential emissions.

[12] UAF is proposing an operating limit for EU 9A to avoid HAP major classification. Details are provided in Section 4 of this application.

[13] UAF is proposing operating limits for EU 19 through EU 21 to avoid minor permitting requirements for NO_X. Details are provided in Section 4 of this application.

[14] UAF is proposing an operating limit for EU 23 to avoid minor permitting requirements for NO_X. Details are provided in Section 4 of this application.

[15] UAF is proposing an operating limit for EU 25 to avoid PSD permitting requirements for SO_2. Details are provided in Section 4 of this application.

[16] UAF is proposing an operating limit for EU 26 to avoid PSD permitting requirements for NO_X. Details are provided in Section 4 of this application.

[17] Less than 131 gallons of paint are used on an annual basis in the facilities services paint booth. The density of paint is approximately 7 lb/gal. The facilities services paint booth has fiberglass paint arrestor pads. The calculation

[18] Owner-requested limit of 4,380 hr/yr per AQ0316MSS03, currently being prepared by ADEC.

[19] Basis for EU 28 PTE calculated with 100 hr/yr: historical data indicating that engine operates approximately 13 hr/yr. A PTE basis of 100 hr/yr is conservatively high.

[20] Basis for EU 24 PTE calculated with 100 hr/yr. A PTE basis of 100 hr/yr is conservatively high; this engine is operated infrequently.

[21] Basis for EU 26 PTE calculated with 99 hr/yr. This engine is operated approximately 6 hours per year and is considered "limited use" under 40 CFR 63 Subpart ZZZZ.

Table 2-7. Assessable Potential to Emit Calculations - Volatile Organic Compounds (VOC) Emissions
University of Alaska Fairbanks Campus

Emission Unit ID	Emission Unit Description	Fuel Type	VOC Emission Factor Reference	VOC Emission Factor	Maximum Rating/Capacity	Allowable Annual Operation[1]	Potential VOC Emissions[2]
Significant Emission Units							
1	Coal-Fired Boiler	Coal	AP-42 Table 1.1-19	0.05 lb/ton	84.5 MMBtu/hr	8,760 hrs/yr	1.2 tpy
2	Coal-Fired Boiler	Coal	AP-42 Table 1.1-19	0.05 lb/ton	84.5 MMBtu/hr	8,760 hrs/yr	1.2 tpy
3	Dual-Fired Boiler	Diesel	AP-42 Table 1.3-3	0.34 lb/kgal	180.9 MMBtu/hr	8,760 hrs/yr	4.4 tpy[8]
3	Dual-Fired Boiler	Natural Gas	AP-42 Table 1.4-2	5.5 lb/MMscf	180.9 MMBtu/hr	8,760 hrs/yr	
~~6~~	~~Arctic Health Research Bldg. Emergency Generator~~	~~Diesel~~	~~AP-42 Table 3.3-1~~	~~0.00251 lb/hp-hr~~	~~125 kW~~	~~0 hrs/yr~~	0.0 tpy
~~7~~	~~Arctic Health Research Bldg. Emergency Generator~~	~~Diesel~~	~~AP-42 Table 3.3-1~~	~~0.00251 lb/hp-hr~~	~~125 kW~~	~~0 hrs/yr~~	0.0 tpy
4	Dual-Fired Boiler	Diesel	AP-42 Table 1.3-3	0.34 lb/kgal	180.9 MMBtu/hr	876 hrs/yr	9.7 tpy[9]
4	Dual-Fired Boiler	Natural Gas	AP-42 Table 1.4-2	5.5 lb/MMscf	180.9 MMBtu/hr	876 hrs/yr	
8	Peaking/Backup Generator (DEG) Engine	Diesel	AP-42 Table 3.4-1	7.05E-04 lb/hp-hr	13,266 hp	1,403,509 gal/yr	
9A	BiRD Incinerator	Medical/Infectious Waste	AP-42, Table 2.3-2	2.99E-01 lb/ton	83 lb/hr	109 ton/yr[10]	0.02 tpy
10	AFES Boiler	Diesel	AP-42 Table 1.3-3	0.34 lb/kgal	1.08 MMBtu/hr	8,760 hrs/yr	0.012 tpy
11	AFES Boiler	Diesel	AP-42 Table 1.3-3	0.34 lb/kgal	1.08 MMBtu/hr	8,760 hrs/yr	0.012 tpy
12	Harper Boiler #1	Diesel	AP-42 Table 1.3-3	0.34 lb/kgal	0.64 MMBtu/hr	8,760 hrs/yr	0.007 tpy
13	Harper Boiler #2	Diesel	AP-42 Table 1.3-3	0.34 lb/kgal	0.64 MMBtu/hr	8,760 hrs/yr	0.007 tpy
14	Copper Lane Boiler	Diesel	AP-42 Table 1.3-3	0.34 lb/kgal	0.136 MMBtu/hr	8,760 hrs/yr	0.001 tpy
15	Copper Lane Boiler	Diesel	AP-42 Table 1.3-3	0.34 lb/kgal	0.136 MMBtu/hr	8,760 hrs/yr	0.001 tpy
16	Copper Lane (Honor's House) Boiler	Diesel	AP-42 Table 1.3-3	0.34 lb/kgal	0.233 MMBtu/hr	8,760 hrs/yr	0.003 tpy
17	West Ridge Research Building Boiler #1	Diesel	AP-42 Table 1.3-3	0.34 lb/kgal	4.93 MMBtu/hr	8,760 hrs/yr	0.054 tpy
18	West Ridge Research Building Boiler #2	Diesel	AP-42 Table 1.3-3	0.34 lb/kgal	4.93 MMBtu/hr	8,760 hrs/yr	0.054 tpy
19	BiRD RM 100U3 Boiler #1	Diesel	AP-42 Table 1.3-3	0.34 lb/kgal	6.13 MMBtu/hr	19,650 hrs/yr[11]	0.150 tpy
20	BiRD RM 100U3 Boiler #2	Diesel	AP-42 Table 1.3-3	0.34 lb/kgal	6.13 MMBtu/hr		
21	BiRD RM 100U3 Boiler #3	Diesel	AP-42 Table 1.3-3	0.34 lb/kgal	6.13 MMBtu/hr		
22	BiRD RM 100U3 Boiler #4	Diesel	AP-42 Table 1.3-3	0.34 lb/kgal	8.5 MMBtu/hr	8,760 hrs/yr	0.092 tpy
23	Alaska Center for Energy and Power Generator Engine	Diesel	Vendor Data	23 g/hr	235 kW	4,380 hrs/yr[12]	0.111 tpy
24	Old University Park Emergency Generator Engine	Diesel	AP-42 Table 3.3-1	0.00251 lb/hp-hr	51 kW	100 hrs/yr[18]	0.009 tpy
25	AFES Grain Dryer	Diesel	AP-42 Table 1.3-3	0.34 lb/kgal	2.43 MMBtu/hr	100 hrs/yr[13]	0.0003 tpy
26	Duckering Classroom Engine	Diesel	AP-42 Table 3.3-1	0.00251 lb/hp-hr	45 kW	99 hrs/yr[14,19]	0.01 tpy
27	Alaska Center for Energy and Power Generator Engine	Diesel	Vendor Data	0.21 lb/hr	500 hp	4,380 hrs/yr[16]	0.46 tpy
28	Alaska Earthquake Information Center Emergency Generator Engine	Diesel	AP-42 Table 3.3-1	0.00251 lb/hp-hr	120 hp	100 hrs/yr[17]	0.015 tpy
29	Arctic Health Research Emergency Generator Engine	Diesel	EPA Tier 4i	0.19 g/kW-hr	314 hp	100 hrs/yr[3]	0.005 tpy
Significant Emission Units Total Assessable Potential to Emit Emissions - VOC							**17.5 tpy**

Emission Unit ID	Emission Unit Description	Fuel Type	VOC Emission Factor Reference	VOC Emission Factor Factor	Maximum Rating/Capacity	Allowable Annual Operation [1]	Potential VOC Emissions [2]
Insignificant Emission Units							
30	AFES Greenhouse Furnace	Diesel	AP-42 Table 1.3-3	0.713 lb/kgal	0.209 MMBtu/hr	8,760 hrs/yr	0.012 tpy
31	Copper Lane Furnace	Diesel	AP-42 Table 1.3-3	0.713 lb/kgal	0.08 MMBtu/hr	8,760 hrs/yr	0.002 tpy
32	Skarland Cabin Furnace	Diesel	AP-42 Table 1.3-3	0.713 lb/kgal	0.14 MMBtu/hr	8,760 hrs/yr	0.003 tpy
33	Harper Hot Water Heater	Diesel	AP-42 Table 1.3-3	0.713 lb/kgal	0.236 MMBtu/hr	8,760 hrs/yr	0.005 tpy
	Coal Handling/Coal Crushing	Coal	N/A	N/A	N/A	8,760 hrs/yr	0.0 tpy
	Various Propane-Fired Kilns	Propane	AP-42 Table 1.5-1	1 lb/kgal	2.6 MMBtu/hr, total	8,760 hrs/yr	0.123 tpy
	Wood-Fired Kilns	Wood	AP-42 Table 1.6-2	0.017 lb/MMBtu [4]	Unknown	1 cord/yr [5]	1.3E-04 tpy
	Duckering Classroom Turbine	Propane	AP-42 Table 3.1-2a	2.1E-03 lb/MMBtu [6]	0.33 MMBtu/hr	8,760 hrs/yr	0.003 tpy
	Graduation Flame	Propane	AP-42 Table 13.5-1	0.14 lb/MMBtu	5.0E-03 MMBtu/hr	8,760 hrs/yr	3.1E-03 tpy
	Facilities Services Paint Booth Exhaust Fan	Various Paints	N/A	N/A	Unknown	131 gal/yr	0.46 tpy [7]
	Museum Paint Booth Exhaust Fan	Various Paints	N/A	N/A	Unknown	10 gal/yr	0.035 tpy [7]
	Various Laboratory Fume Hoods	N/A	See detailed calculations in Table 2-8a				2.4 tpy
	Power Plant Field-Erected Tank	Diesel	EPA TANKS [15]	N/A	212,120 gallons	8,760 hrs/yr	9.2E-03 tpy
	Ash Bin Vent filter	N/A	N/A	N/A	N/A	8,760 hrs/yr	0.0 tpy
	Ash Vacuum Pump Filter	N/A	N/A	N/A	N/A	8,760 hrs/yr	0.0 tpy
	Ash Loadout to Truck	N/A	N/A	N/A	N/A	8,225 tpy ash	0.0 tpy
	SRC Pellet Stove	Wood Pellets	AP-42 Table 1.10-1	No data	5.0 lb/hr	8,760 hrs/yr	0.0 tpy
						Insignificant Emission Units Total Assessable Potential to Emit Emissions - VOC	**3.1 tpy**
						Total Assessable Potential to Emit Emissions - VOC	**20.6 tpy**

Notes:

[1] Maximum annual operation for all units based on full-time operation, or permit operating limits, where applicable.

[2] Conversion factors:

Mass conversion	454.0 g/lb	Propane Heating Value	91.5 MMBtu/kgal
Diesel Heating Value	0.137 MMBtu/gal	Natural Gas Heat Content	1,000 Btu/scf
Coal Heating Value	15.3 MMBtu/ton	Engine horsepower	1.341 kW
Assumed drive shaft efficiency for engines	95% Per Alan Schuler at ADEC		
Engine Heat Rate	7,000 Btu/hp-hr		

[3] New emergency stationary internal combustion engines are limited to maintenance checks and readiness testing to no more than 100 hours per year, per 40 CFR 60.4211(f).

[4] Emission factor for small pottery-firing wood-fired kilns are not available. Calculation assumes that combustion of wood in the kilns is similar to that in dry wood-fired boilers.

[5] Approximate heat value of wood combusted in kilns is 15 MMBtu/cord, per http://www.hrt.msu.edu/energy/pdf/heating%20value%20of%20common%20fuels.pdf

[6] Emission factors for propane-fired turbine are not available. Emission factors for natural gas-fired turbine are used.

[7] Less than 131 gallons of paint are used on an annual basis in the facilities services paint booth. Less than 10 gallons of paint are used on an annual basis in the museum paint booth. The density of paint is approximately 7

[8] The higher potential emissions for natural gas or distillate firing is shown as the potential emissions for EU 3.

[9] The highest potential emissions for EU 4 and EU 8 is shown as the potential emissions.

[10] UAF is proposing an operating limit for EU 9A to avoid HAP major classification. Details are provided in Section 4 of this application.

[11] UAF is proposing operating limits for EU19 through EU21 to avoid minor permitting requirements for NO_X. Details are provided in Section 4 of this application.

[12] UAF is proposing an operating limit for EU 23 to avoid minor permitting requirements for NO_X. Details are provided in Section 4 of this application.

[13] UAF is proposing an operating limit for EU 25 to avoid PSD permitting requirements for SO_2. Details are provided in Section 4 of this application.

[14] UAF is proposing an operating limit for EU 26 to avoid PSD permitting requirements for NO_X. Details are provided in Section 4 of this application.

[15] See TANKS report in Section 2 of this application.

[16] Owner-requested limit of 4,380 hr/yr per AQ0316MSS03, currently being prepared by ADEC.

[17] Basis for EU 28 PTE calculated with 100 hr/yr: historical data indicating that engine operates approximately 13 hr/yr. A PTE basis of 100 hr/yr is conservatively high.

[18] Basis for EU 24 PTE calculated with 100 hr/yr. A PTE basis of 100 hr/yr is conservatively high; this engine is operated infrequently.

[19] Basis for EU 26 PTE calculated with 99 hr/yr. This engine is operated approximately 6 hours per year and is considered "limited use" under 40 CFR 63 Subpart ZZZZ.

Table 2-7a. Assessable Potential to Emit Calculations - Laboratory Fume Hoods VOC Potential Emission
University of Alaska Fairbanks Campus

Chemical	CAS No.	Amount Stored On-site (liters)	Specific Gravity of Stored Substance	Percent in solution	Amount Stored On-site (lbs)	Potential VOC Emissions (tpy)	HAP Emissions (tpy)
2-Butanone	78-93-3	35	0.806	100	62.2	0.031	
Acetic acid	64-19-7	39	1.05	97	87.5	0.044	
Acetone	67-64-1	495	0.788	100	859.7	0.430	
Benzene	71-43-2	12	0.8765	100	23.2	0.012	0.012
Ethanol	64-17-5	502	0.79	100	874.1	0.437	
Formaldehyde	50-00-0	398	1.08	38	360.0	0.180	0.180
Methyl alcohol in formaldehyde solution	67-56-1			15	142.1	0.071	0.071
Hexane	110-54-3	77	0.659	94	105.1	0.053	0.053
Methanol	67-56-1	443	0.791	100	772.3	0.386	0.386
Methylene chloride	75-09-2	156	1.3266	100	456.1	0.228	0.228
Phenol	108-95-2	4	1.057	100	9.3	0.005	0.005
n-Propyl alcohol and 2-Propanol	71-23-8, 67-63-0	356	0.7945	100	623.4	0.312	
Stoddard solvent	8052-41-3	32	0.787	100	55.5	0.028	
Toluene	108-88-3	178	0.86	100	337.4	0.169	0.169
Xylene	1330-20-7	43	0.864	100	81.9	0.041	0.041
Total Potential VOC Emissions from Laboratory Hoods						**2.42**	**1.14**

Notes:

1. The above chemicals were determined to be common chemicals that contained VOCs.
3. Only chemical inventories of 4 liters or greater were included.
4. This inventory is not up to date, but reflects the most current information available.
5. This inventory does not reflect chemical usage, only those stored on-site.
6. In order to estimate VOC emissions from laboratory hoods, the following assumptions are made:
   - The chemicals stored on-site are used within a year.
   - The chemicals are emitted in their current form and are 100% volatile.
   - The chemicals are not transformed into other chemicals. Other VOCs are not created during laboratory use.
7. Specific gravity and percent of chemical in solution data obtained from chemical product material safety data sheets.

SG of Water	1	kg/L
Conversion	2.204	lb/kg
Conversion	2000	lb/ton

8. Example calculations:

Amount stored on-site (lbs) = (liters stored) x (specific gravity) x (2.204 lb/kg) x (percent in solution)
Emission estimate (ton/yr) = (pounds stored) / (2,000 lb/ton)

Table 2-8. Assessable Potential to Emit Calculations - Sulfur Dioxide (SO_2) Emissions
University of Alaska Fairbanks Campus

Emission Unit ID	Emission Unit Description	Fuel Type	Fuel Sulfur Content[12]	SO_2 Emission Factor Reference	SO_2 Emission Factor Factor	Maximum Rating/Capacity	Allowable Annual Operation[1]	Potential SO_2 Emissions[2]
Significant Emission Units								
1	Coal-Fired Boiler	Coal	0.26 weight %	AP-42 Table 1.1-3	35 *S lb/ton	84.5 MMBtu/hr	8,760 hrs/yr	220.1 tpy
2	Coal-Fired Boiler	Coal	0.26 weight %	AP-42 Table 1.1-3	35 *S lb/ton	84.5 MMBtu/hr	8,760 hrs/yr	220.1 tpy
3	Dual-Fired Boiler	Diesel	0.5 weight %	AP-42 Table 1.3-1	142 *S lb/kgal	180.9 MMBtu/hr	8,760 hrs/yr	410.6 tpy[7]
3	Dual-Fired Boiler	Natural Gas	N/A	AP-42 Table 1.4-2	0.6 lb/MMscf	180.9 MMBtu/hr	8,760 hrs/yr	
~~6~~	~~Arctic Health Research Bldg. Emergency Generator~~	~~Diesel~~	~~0.5 weight %~~	~~Mass Balance~~	~~0.0036277 lb/hp-hr~~	~~125 kW~~	~~0 hrs/yr~~	0.0 tpy
~~7~~	~~Arctic Health Research Bldg. Emergency Generator~~	~~Diesel~~	~~0.5 weight %~~	~~Mass Balance~~	~~0.0036277 lb/hp-hr~~	~~125 kW~~	~~0 hrs/yr~~	0.0 tpy
4	Dual-Fired Boiler	Diesel	0.5 weight %	AP-42 Table 1.3-1	142 *S lb/kgal	180.9 MMBtu/hr	876 hrs/yr	55.6 tpy[8]
4	Dual-Fired Boiler	Natural Gas	N/A	AP-42 Table 1.4-2	0.6 lb/MMscf	180.9 MMBtu/hr	876 hrs/yr	
8	Peaking/Backup Generator (DEG) Engine	Diesel	0.5 weight %	AP-42 Table 3.4-1	8.09E-03 *S lb/hp-hr	13,266 hp	1,403,509 gal/yr	
9A	BiRD Incinerator	Medical/Infectious Waste	N/A	AP-42 Table 2.3-1	2.17 lb/ton	83 lb/hr	109 ton/yr[9]	0.1 tpy
10	AFES Boiler	Diesel	0.5 weight %	AP-42 Table 1.3-1	142 *S lb/kgal	1.08 MMBtu/hr	8,760 hrs/yr	2.445 tpy
11	AFES Boiler	Diesel	0.5 weight %	AP-42 Table 1.3-1	142 *S lb/kgal	1.08 MMBtu/hr	8,760 hrs/yr	2.445 tpy
12	Harper Boiler #1	Diesel	0.0015 weight %[12]	AP-42 Table 1.3-1	142 *S lb/kgal	0.64 MMBtu/hr	8,760 hrs/yr	0.004 tpy
13	Harper Boiler #2	Diesel	0.0015 weight %[12]	AP-42 Table 1.3-1	142 *S lb/kgal	0.64 MMBtu/hr	8,760 hrs/yr	0.004 tpy
14	Copper Lane Boiler	Diesel	0.0015 weight %[12]	AP-42 Table 1.3-1	142 *S lb/kgal	0.136 MMBtu/hr	8,760 hrs/yr	0.001 tpy
15	Copper Lane Boiler	Diesel	0.0015 weight %[12]	AP-42 Table 1.3-1	142 *S lb/kgal	0.136 MMBtu/hr	8,760 hrs/yr	0.001 tpy
16	Copper Lane (Honor's House) Boiler	Diesel	0.0015 weight %[12]	AP-42 Table 1.3-1	142 *S lb/kgal	0.233 MMBtu/hr	8,760 hrs/yr	0.002 tpy
17	West Ridge Research Building Boiler #1	Diesel	0.0015 weight %[12]	AP-42 Table 1.3-1	142 *S lb/kgal	4.93 MMBtu/hr	8,760 hrs/yr	0.034 tpy
18	West Ridge Research Building Boiler #2	Diesel	0.0015 weight %[12]	AP-42 Table 1.3-1	142 *S lb/kgal	4.93 MMBtu/hr	8,760 hrs/yr	0.034 tpy
19	BiRD RM 100U3 Boiler #1	Diesel	0.0015 weight %[12]	AP-42 Table 1.3-1	142 *S lb/kgal	6.13 MMBtu/hr	19,650 hrs/yr[10]	0.094 tpy
20	BiRD RM 100U3 Boiler #2	Diesel	0.0015 weight %[12]	AP-42 Table 1.3-1	142 *S lb/kgal	6.13 MMBtu/hr		
21	BiRD RM 100U3 Boiler #3	Diesel	0.0015 weight %[12]	AP-42 Table 1.3-1	142 *S lb/kgal	6.13 MMBtu/hr		
22	BiRD RM 100U3 Boiler #4	Diesel	0.0015 weight %[12]	AP-42 Table 1.3-1	142 *S lb/kgal	8.5 MMBtu/hr	8,760 hrs/yr	0.058 tpy
23	Alaska Center for Energy and Power Generator Engine	Diesel	0.0015 weight %[12]	Mass Balance	1.088E-05 lb/hp-hr	235 kW	4,380 hrs/yr[11]	0.008 tpy
24	Old University Park Emergency Generator Engine	Diesel	0.0015 weight %[12]	Mass Balance	1.088E-05 lb/hp-hr	51 kW	100 hrs/yr[17]	3.9E-05 tpy
25	AFES Grain Dryer	Diesel	0.5 weight %	AP-42 Table 1.3-1	142 *S lb/kgal	2.43 MMBtu/hr	100 hrs/yr[13]	0.063 tpy
26	Duckering Classroom Engine	Diesel	0.0015 weight %[12]	Mass Balance	1.088E-05 lb/hp-hr	45 kW	99 hrs/yr[14,18]	3.4E-05 tpy
27	Alaska Center for Energy and Power Generator Engine	Diesel	0.0015 weight %	Mass Balance	1.088E-05 lb/hp-hr	500 hp	4,380 hrs/yr[15]	0.01 tpy
28	Alaska Earthquake Information Center Emergency Generator Engine	Diesel	0.0015 weight %[12]	Mass Balance	1.088E-05 lb/hp-hr	120 hp	100 hrs/yr[16]	6.5E-05 tpy
29	Arctic Health Research Emergency Generator Engine	Diesel	0.0015 weight %	Mass Balance	0.0027 lb/hr	314 hp	100 hrs/yr[3]	1.4E-04 tpy
Significant Emission Units Total Assessable Potential to Emit Emissions - SO_2								**911.8 tpy**

Emission Unit ID	Emission Unit Description	Fuel Type	Fuel Sulfur Content[12]	SO_2 Emission Factor Reference	SO_2 Emission Factor Factor	Maximum Rating/Capacity	Allowable Annual Operation[1]	Potential SO_2 Emissions[2]
Insignificant Emission Units								
30	AFES Greenhouse Furnace	Diesel	0.5 weight %	AP-42 Table 1.3-1	142 *S lb/kgal	0.209 MMBtu/hr	8,760 hrs/yr	0.475 tpy
31	Copper Lane Furnace	Diesel	0.5 weight %	AP-42 Table 1.3-1	142 *S lb/kgal	0.08 MMBtu/hr	8,760 hrs/yr	0.182 tpy
32	Skarland Cabin Furnace	Diesel	0.5 weight %	AP-42 Table 1.3-1	142 *S lb/kgal	0.14 MMBtu/hr	8,760 hrs/yr	0.318 tpy
33	Harper Hot Water Heater	Diesel	0.5 weight %	AP-42 Table 1.3-1	142 *S lb/kgal	0.236 MMBtu/hr	8,760 hrs/yr	0.536 tpy
	Coal Handling/Coal Crushing	Coal	N/A	N/A	N/A	N/A	8,760 hrs/yr	0.00 tpy
	Various Propane-Fired Kilns	Propane	0.2 gr/100 ft^3	AP-42 Table 1.5-1	0.1 *S lb/kgal	2.6 MMBtu/hr, total	8,760 hrs/yr	0.002 tpy
	Wood-Fired Kilns	Wood	N/A	AP-42 Table 1.6-2	0.025 lb/MMBtu[4]	Unknown	1 cord/yr[5]	1.9E-04 tpy
	Duckering Classroom Turbine	Propane	2.4E-02 weight %	AP-42 Table 3.1-2a	9.4E-01 *S lb/MMBtu[6]	0.33 MMBtu/hr	8,760 hrs/yr	0.03 tpy
	Graduation Flame	Propane	0.2 gr/100 ft^3	Mass Balance	2.3E-04 lb/MMBtu	5.0E-03 MMBtu/hr	8,760 hrs/yr	5.0E-06 tpy
	Various Paint Booths	N/A	N/A	N/A	N/A	N/A	8,760 hrs/yr	0.00 tpy
	Various Laboratory Fume Hoods	N/A	N/A	N/A	N/A	N/A	8,760 hrs/yr	0.00 tpy
	Power Plant Field-Erected Tank	Diesel	0.5 weight %	N/A	N/A	212,120 gallons	8,760 hrs/yr	0.0 tpy
	Ash Bin Vent filter	N/A	N/A	N/A	N/A	N/A	8,760 hrs/yr	0.00 tpy
	Ash Vacuum Pump Filter	N/A	N/A	N/A	N/A	N/A	8,760 hrs/yr	0.00 tpy
	Ash Loadout to Truck	N/A	N/A	N/A	N/A	N/A	8,225 tpy ash	0.00 tpy
	SRC Pellet Stove	Wood Pellets	N/A	AP-42 Table 1.10-1	0.4 lb/ton	5.0 lb/hr	8,760 hrs/yr	4.4E-03 tpy
							Insignificant Emission Units Total Assessable Potential to Emit Emissions - SO_2	**1.55 tpy**
							Total Assessable Potential to Emit Emissions - SO_2	**913.3 tpy**

Notes:

[1] Maximum annual operation for all units based on full-time operation, or permit operating limits, where applicable.

[2] Conversion factors:

Diesel Heating Value	0.137	MMBtu/gal
Coal Heating Value	15.3	MMBtu/ton
Propane Heating Value	91.5	MMBtu/kgal
Natural Gas Heat Content	1,000	Btu/scf
Density of Diesel	7.1	lb/gal
Engine Heat Rate	7,000	Btu/hp-hr
Engine horsepower	1.341	kW
Assumed drive shaft efficiency for engines	95%	Per Alan Schuler at ADEC

[3] New emergency stationary internal combustion engines are limited to maintenance checks and readiness testing to no more than 100 hours per year, per 40 CFR 60.4211(f).

[4] Emission factor for small pottery-firing wood-fired kilns are not available. Calculation assumes that combustion of wood in the kilns is similar to that in dry wood-fired boilers.

[5] Approximate heat value of wood combusted in kilns is 15 MMBtu/cord, per http://www.hrt.msu.edu/energy/pdf/heating%20value%20of%20common%20fuels.pdf

[6] Emission factors for propane-fired turbine are not available. Emission factors for natural gas-fired turbine are used.

[7] The higher potential emissions for natural gas or distillate firing is shown as the potential emissions for EU 3.

[8] The highest potential emissions for EU 4 and EU 8 is shown as the potential emissions.

[9] UAF is proposing an operating limit for EU 9A to avoid HAP major classification. Details are provided in Section 4 of this application.

[10] UAF is proposing operating limits for EU 19 through EU 21 to avoid minor permitting requirements for NO_X. Details are provided in Section 4 of this application.

[11] UAF is proposing an operating limit for EU 23 to avoid minor permitting requirements for NO_X. Details are provided in Section 4 of this application.

[12] UAF is proposing an operating limit requiring the use of ultra-low sulfur diesel for EU 12 through EU 24 to avoid PSD permitting requirements for SO_2. Details are provided in Section 4 of this application.

[13] UAF is proposing an operating limit for EU 25 to avoid PSD permitting requirements for SO_2. Details are provided in Section 4 of this application.

[14] UAF is proposing an operating limit for EU 26 to avoid PSD permitting requirements for NO_X. Details are provided in Section 4 of this application.

[15] Owner-requested limit of 4,380 hr/yr per AQ0316MSS03, currently being prepared by ADEC.

[16] Basis for EU 28 PTE calculated with 100 hr/yr: historical data indicating that engine operates approximately 13 hr/yr. A PTE basis of 100 hr/yr is conservatively high.

[17] Basis for EU 24 PTE calculated with 100 hr/yr. A PTE basis of 100 hr/yr is conservatively high; this engine is operated infrequently.

[18] Basis for EU 26 PTE calculated with 99 hr/yr. This engine is operated approximately 6 hours per year and is considered "limited use" under 40 CFR 63 Subpart ZZZZ.

Table 2-9. Summary of Estimated Potential Hazardous Air Pollutants (HAP) Emissions
University of Alaska Fairbanks Campus

Hazardous Air Pollutant	HAP Emissions by Emission Unit Category (tons per year)[1]										
	Storage Tank[2]	Coal-Fired Boilers	Diesel Boilers & Heaters (Except EU 4)	Natural Gas Boiler EU 3	Diesel Engines <=600 hp	EU 4 and EU 8	Waste Incinerators	Laboratory Hoods	Propane-Fired Kilns[3]	Pellet Stove	Total HAP Emissions
Acetaldehyde	----	2.76E-02	----	----	9.72E-03	2.42E-03	----	----	----	----	3.97E-02
Acetamide	----	----	----	----	----	----	----	----	----	----	0.00E+00
Acetonitrile	----	----	----	----	----	----	----	----	----	----	0.00E+00
Acetophenone	----	7.26E-04	----	----	----	----	----	----	----	----	7.26E-04
2-Acetylaminofluorene	----	----	----	----	----	----	----	----	----	----	0.00E+00
Acrolein	----	1.40E-02	----	----	1.17E-03	7.58E-04	----	----	----	----	1.60E-02
Acrylamide	----	----	----	----	----	----	----	----	----	----	0.00E+00
Acrylic Acid	----	----	----	----	----	----	----	----	----	----	0.00E+00
Acrylonitrile	----	----	----	----	----	----	----	----	----	----	0.00E+00
Allyl chloride	----	----	----	----	----	----	----	----	----	----	0.00E+00
4-Aminobiphenyl	----	----	----	----	----	----	----	----	----	----	0.00E+00
Aniline	----	----	----	----	----	----	----	----	----	----	0.00E+00
o-Anisidine	----	----	----	----	----	----	----	----	----	----	0.00E+00
Asbestos	----	----	----	----	----	----	----	----	----	----	0.00E+00
Benzene	----	6.29E-02	1.49E-03	1.66E-03	1.18E-02	7.46E-02	----	1.16E-02	----	----	1.64E-01
Benzidine	----	----	----	----	----	----	----	----	----	----	0.00E+00
Benzotricholoride	----	----	----	----	----	----	----	----	----	----	0.00E+00
Benzyl chloride	----	3.39E-02	----	----	----	----	----	----	----	----	3.39E-02
Biphenyl	----	8.22E-05	----	----	----	----	----	----	----	----	8.22E-05
Bis(2-ethylhexyl)phthalate (DEHP)	----	3.53E-03	----	----	----	----	----	----	----	----	3.53E-03
Bis(chloromethyl)ether	----	----	----	----	----	----	----	----	----	----	0.00E+00
Bromoform	----	1.89E-03	----	----	----	----	----	----	----	----	1.89E-03
1,3 Butadiene	----	----	----	----	4.95E-04	----	----	----	----	----	4.95E-04
Calcium cyanamide	----	----	----	----	----	----	----	----	----	----	0.00E+00
Caprolactam	----	----	----	----	----	----	----	----	----	----	0.00E+00
Captan	----	----	----	----	----	----	----	----	----	----	0.00E+00
Carbaryl	----	----	----	----	----	----	----	----	----	----	0.00E+00
Carbon disulfide	----	6.29E-03	----	----	----	----	----	----	----	----	6.29E-03
Carbon tetrachloride	----	----	----	----	----	----	----	----	----	----	0.00E+00
Carbonyl sufide	----	----	----	----	----	----	----	----	----	----	0.00E+00
Catechol	----	----	----	----	----	----	----	----	----	----	0.00E+00
Chloramben	----	----	----	----	----	----	----	----	----	----	0.00E+00
Chlordane	----	----	----	----	----	----	----	----	----	----	0.00E+00
Chlorine	----	----	----	----	----	----	5.72E-03	----	----	----	5.72E-03
Chloroacetic acid	----	----	----	----	----	----	----	----	----	----	0.00E+00
2-Chloroacetophenone	----	3.39E-04	----	----	----	----	----	----	----	----	3.39E-04
Chlorobenzene	----	1.06E-03	----	----	----	----	----	----	----	----	1.06E-03
Chlorobenzilate	----	----	----	----	----	----	----	----	----	----	0.00E+00
Chloroform	----	2.85E-03	----	----	----	----	----	----	----	----	2.85E-03
Chloromethyl methyl ether	----	----	----	----	----	----	----	----	----	----	0.00E+00
Chloroprene	----	----	----	----	----	----	----	----	----	----	0.00E+00
Cresols/Creshlic acid (isomers and mixture)	----	----	----	----	----	----	----	----	----	----	0.00E+00
o-Cresol	----	----	----	----	----	----	----	----	----	----	0.00E+00
m-Cresol	----	----	----	----	----	----	----	----	----	----	0.00E+00
p-Cresol	----	----	----	----	----	----	----	----	----	----	0.00E+00
Cumene	----	2.56E-04	----	----	----	----	----	----	----	----	2.56E-04
2,4-D, salts and esters	----	----	----	----	----	----	----	----	----	----	0.00E+00

Hazardous Air Pollutant	HAP Emissions by Emission Unit Category (tons per year)[1]										Total HAP Emissions
	Storage Tank[2]	Coal-Fired Boilers	Diesel Boilers & Heaters (Except EU 4)	Natural Gas Boiler EU 3	Diesel Engines <=600 hp	EU 4 and EU 8	Waste Incinerators	Laboratory Hoods	Propane-Fired Kilns[3]	Pellet Stove	
DDE	----	----	----	----	----	----	----	----	----	----	0.00E+00
Diazomethane	----	----	----	----	----	----	----	----	----	----	0.00E+00
Dibenzofurans	----	5.27E-08	----	----	----	----	3.90E-06	----	----	----	3.95E-06
1,2-Dibromo-3-chloropropane	----	----	----	----	----	----	----	----	----	----	0.00E+00
Dibutylphthalate	----	----	----	----	----	----	----	----	----	----	0.00E+00
1,4-Dichlorobenzene(p)	----	----	----	9.51E-04	----	9.51E-05	----	----	----	----	1.05E-03
3,3-Dichlorobenzidene	----	----	----	----	----	----	----	----	----	----	0.00E+00
Dichloroethyl ether(Bis(2-chloroethyl)ether)	----	----	----	----	----	----	----	----	----	----	0.00E+00
1,3-Dichloropropene	----	----	----	----	----	----	----	----	----	----	0.00E+00
Dichlorvos	----	----	----	----	----	----	----	----	----	----	0.00E+00
Diethanolamine	----	----	----	----	----	----	----	----	----	----	0.00E+00
N,N-Diethyl anniline (N,N-Dimethylanine)	----	----	----	----	----	----	----	----	----	----	0.00E+00
Diethyl sulfate	----	----	----	----	----	----	----	----	----	----	0.00E+00
3,3-Dimethoxybenzidine	----	----	----	----	----	----	----	----	----	----	0.00E+00
Dimethyl aminoazobenzene	----	----	----	----	----	----	----	----	----	----	0.00E+00
3,3-Dimethyl benzidine	----	----	----	----	----	----	----	----	----	----	0.00E+00
Dimethyl caramoyl chloride	----	----	----	----	----	----	----	----	----	----	0.00E+00
Dimethyl formamide	----	----	----	----	----	----	----	----	----	----	0.00E+00
1,1-Dimethyl hydrazine	----	----	----	----	----	----	----	----	----	----	0.00E+00
Dimethyl phthalate	----	----	----	----	----	----	----	----	----	----	0.00E+00
Dimethyl sulfate	----	2.32E-03	----	----	----	----	----	----	----	----	2.32E-03
4,6-Dinitro-o-cresol, and salts	----	----	----	----	----	----	----	----	----	----	0.00E+00
2,4-Dinitrophenol	----	----	----	----	----	----	----	----	----	----	0.00E+00
2,4-Dinitrotoluene	----	1.35E-05	----	----	----	----	----	----	----	----	1.35E-05
1,4-Dioxane(1,4-Diethyleneoxide)	----	----	----	----	----	----	----	----	----	----	0.00E+00
1,2-Diphenylhydrazine	----	----	----	----	----	----	----	----	----	----	0.00E+00
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	----	----	----	----	----	----	----	----	----	----	0.00E+00
1,2-Epoxybutane	----	----	----	----	----	----	----	----	----	----	0.00E+00
Ethyl acrylate	----	----	----	----	----	----	----	----	----	----	0.00E+00
Ethyl benzene	----	4.55E-03	4.43E-04	----	----	3.68E-05	----	----	----	----	5.03E-03
Ethyl carbamate (Urethane)	----	----	----	----	----	----	----	----	----	----	0.00E+00
Ethyl chloride (Chloroethane)	----	2.03E-03	----	----	----	----	----	----	----	----	2.03E-03
Ethylene dibromide (Dibromoethane)	----	5.81E-05	----	----	----	----	----	----	----	----	5.81E-05
Ethylene dichloride (1,2-Dichloroethane)	----	1.94E-03	----	----	----	----	----	----	----	----	1.94E-03
Ethylene glycol	----	----	----	----	----	----	----	----	----	----	0.00E+00
Ethylene imine (Aziridine)	----	----	----	----	----	----	----	----	----	----	0.00E+00
Ethylene oxide	----	----	----	----	----	----	----	----	----	----	0.00E+00
Ethylene thiourea	----	----	----	----	----	----	----	----	----	----	0.00E+00
Ethylidene dichloride (1,1-Dichloroethane)	----	----	----	----	----	----	----	----	----	----	0.00E+00
Formaldehyde	----	1.16E-02	2.44E-01	5.96E-02	1.50E-02	2.02E-02	----	1.80E-01	----	----	5.30E-01
Heptachlor	----	----	----	----	----	----	----	----	----	----	0.00E+00
Hexachlorobenzene	----	----	----	----	----	----	----	----	----	----	0.00E+00
Hexachlorobutadiene	----	----	----	----	----	----	----	----	----	----	0.00E+00
Hexachlorocyclopentadiene	----	----	----	----	----	----	----	----	----	----	0.00E+00
Hexachloroethane	----	----	----	----	----	----	----	----	----	----	0.00E+00
Hexamethylene-1,6-diisocyanate	----	----	----	----	----	----	----	----	----	----	0.00E+00
Hexamethylphosphoramide	----	----	----	----	----	----	----	----	----	----	0.00E+00
Hexane	----	3.24E-03	----	1.43E+00	----	1.43E-01	----	5.26E-02	----	----	1.62E+00
Hydrazine	----	----	----	----	----	----	----	----	----	----	0.00E+00
Hydrochloric acid	----	6.68E+00	----	----	----	----	1.83E+00	----	----	----	8.50E+00

Hazardous Air Pollutant	HAP Emissions by Emission Unit Category (tons per year)[1]										Total HAP Emissions
	Storage Tank[2]	Coal-Fired Boilers	Diesel Boilers & Heaters (Except EU 4)	Natural Gas Boiler EU 3	Diesel Engines <=600 hp	EU 4 and EU 8	Waste Incinerators	Laboratory Hoods	Propane-Fired Kilns[3]	Pellet Stove	
Hydrogen fluoride (Hydrofluoric acid)	----	6.72E+00	----	----	----	----	8.12E-03	----	----	----	6.73E+00
Hydroquinone	----	----	----	----	----	----	----	----	----	----	0.00E+00
Isophorone	----	2.81E-02	----	----	----	----	----	----	----	----	2.81E-02
Lindane (all isomers)	----	----	----	----	----	----	----	----	----	----	0.00E+00
Maleic anhydride	----	----	----	----	----	----	----	----	----	----	0.00E+00
Methanol	----	----	----	----	----	----	----	4.57E-01	----	----	4.57E-01
Methoxychlor	----	----	----	----	----	----	----	----	----	----	0.00E+00
Methyl bromide (Bromomethane)	----	7.74E-03	----	----	----	----	----	----	----	----	7.74E-03
Methyl chloride (chloromethane)	----	2.56E-02	----	----	----	----	----	----	----	----	2.56E-02
Methyl chloroform (1,1,1-Trichloroethane)	----	----	----	----	----	----	----	----	----	----	0.00E+00
Methyl hydrazine	----	8.22E-03	----	----	----	----	----	----	----	----	8.22E-03
Methyl iodide (Iodomethane)	----	----	----	----	----	----	----	----	----	----	0.00E+00
Methyl isobutyl ketone (Hexone)	----	----	----	----	----	----	----	----	----	----	0.00E+00
Methyl isocyanate	----	----	----	----	----	----	----	----	----	----	0.00E+00
Methyl methacrylate	----	9.68E-04	----	----	----	----	----	----	----	----	9.68E-04
Methyl tert butyl ether	----	1.69E-03	----	----	----	----	----	----	----	----	1.69E-03
4,4-Methylene bis(2-chloroaniline)	----	----	----	----	----	----	----	----	----	----	0.00E+00
Methylene chloride (Dichloromethane)	----	1.40E-02	----	----	----	----	----	2.28E-01	----	----	2.42E-01
Methylene diphenyl diisocyante (MDI)	----	----	----	----	----	----	----	----	----	----	0.00E+00
4,4'-Methylenedianiline	----	----	----	----	----	----	----	----	----	----	0.00E+00
Nitrobenzene	----	----	----	----	----	----	----	----	----	----	0.00E+00
4-Nitrobiphenyl	----	----	----	----	----	----	----	----	----	----	0.00E+00
4-Nitrophenol	----	----	----	----	----	----	----	----	----	----	0.00E+00
2-Nitropropane	----	----	----	----	----	----	----	----	----	----	0.00E+00
N-Nitroso-N-methylurea	----	----	----	----	----	----	----	----	----	----	0.00E+00
N-Nitrosodimethylamine	----	----	----	----	----	----	----	----	----	----	0.00E+00
N-Nitrosomorpholine	----	----	----	----	----	----	----	----	----	----	0.00E+00
Parathion	----	----	----	----	----	----	----	----	----	----	0.00E+00
Pentachloromitrobenzene (Quintobenzene)	----	----	----	----	----	----	----	----	----	----	0.00E+00
Pentachlorophenol	----	----	----	----	----	----	----	----	----	----	0.00E+00
Phenol	----	7.74E-04	----	----	----	----	----	4.66E-03	----	----	5.43E-03
p-Phenylemediamine	----	----	----	----	----	----	----	----	----	----	0.00E+00
Phosgene	----	----	----	----	----	----	----	----	----	----	0.00E+00
Phosphine	----	----	----	----	----	----	----	----	----	----	0.00E+00
Phosphorus	----	----	----	----	----	----	----	----	----	----	0.00E+00
Phthalic anhydride	----	----	----	----	----	----	----	----	----	----	0.00E+00
Polychlorinated biphenyls (Aroclors)	----	----	----	----	----	----	2.53E-06	----	----	----	2.53E-06
Polycyclic Organic Matter (POM)	----	9.22E-04	2.30E-02	5.53E-04	2.12E-03	4.07E-02	----	----	----	5.95E-07	6.72E-02
Acenaphthene	----	----	----	----	----	----	----	----	----	----	
Acenaphthylene	----	----	----	----	----	----	----	----	----	----	
Anthracene	----	----	----	----	----	----	----	----	----	----	
Benzo(a)anthracene	----	----	----	----	----	----	----	----	----	----	
Benzo(a)pyrene	----	----	----	----	----	----	----	----	----	----	
Benzo(b)fluoranthene	----	----	----	----	----	----	----	----	----	----	
Benzo(g,h,i)perylene	----	----	----	----	----	----	----	----	----	----	
Benzo(k)fluoranthene	----	----	----	----	----	----	----	----	----	----	
Chrysene	----	----	----	----	----	----	----	----	----	----	
Dibenz(a,h)anthracene	----	----	----	----	----	----	----	----	----	----	
Acenaphthene	----	----	----	----	----	----	----	----	----	----	
Fluoranthene	----	----	----	----	----	----	----	----	----	----	

Hazardous Air Pollutant	HAP Emissions by Emission Unit Category (tons per year)[1]										Total HAP Emissions
	Storage Tank[2]	Coal-Fired Boilers	Diesel Boilers & Heaters (Except EU 4)	Natural Gas Boiler EU 3	Diesel Engines <=600 hp	EU 4 and EU 8	Waste Incinerators	Laboratory Hoods	Propane-Fired Kilns[3]	Pellet Stove	
Fluorene	----	----	----	----	----	----	----	----	----	----	
Indeno(1,2,3-cd)pyrene	----	----	----	----	----	----	----	----	----	----	
7,12-Dimethylbenz(a)anthracene	----	----	----	----	----	----	----	----	----	----	
Naphthalene	----	----	----	----	----	----	----	----	----	----	
Naphtalene	----	----	----	----	----	----	----	----	----	----	
Phenathrene	----	----	----	----	----	----	----	----	----	----	
Pyrene	----	----	----	----	----	----	----	----	----	----	
1,3-Propane sultone	----	----	----	----	----	----	----	----	----	----	0.00E+00
beta-Propiolactone	----	----	----	----	----	----	----	----	----	----	0.00E+00
Propionaldehyde	----	1.84E-02	----	----	----	----	----	----	----	----	1.84E-02
Propoxur (Baygon)	----	----	----	----	----	----	----	----	----	----	0.00E+00
Propylene dichloride (1,2-Dichloropropane)	----	----	----	----	----	----	----	----	----	----	0.00E+00
Propylene oxide	----	----	----	----	----	----	----	----	----	----	0.00E+00
1,2-Propylenimine (2-Methyl aziridine)	----	----	----	----	----	----	----	----	----	----	0.00E+00
Quinoline	----	----	----	----	----	----	----	----	----	----	0.00E+00
Quinone	----	----	----	----	----	----	----	----	----	----	0.00E+00
Styrene	----	1.21E-03	----	----	----	----	----	----	----	----	1.21E-03
Styrene oxide	----	----	----	----	----	----	----	----	----	----	0.00E+00
Chlorinated dibenzo-p-dioxins (Total)	----	6.77E-10	----	----	----	----	1.16E-06	----	----	----	1.16E-06
1,1,2,2-Tetrachloroethane	----	----	----	----	----	----	----	----	----	----	0.00E+00
Tetrachloroethylene (Perchloroethylene)	----	2.08E-03	----	----	----	----	----	----	----	----	2.08E-03
Titanium tetrachloride	----	----	----	----	----	----	----	----	----	----	0.00E+00
Toluene	----	1.16E-02	4.31E-02	2.69E-03	5.18E-03	2.70E-02	----	1.69E-01	----	----	2.58E-01
2,4-Toluene diamine	----	----	----	----	----	----	----	----	----	----	0.00E+00
2,4-Tolluene diisocyanate	----	----	----	----	----	----	----	----	----	----	0.00E+00
o-Toluidine	----	----	----	----	----	----	----	----	----	----	0.00E+00
Toxaphene (chlorinated camphene)	----	----	----	----	----	----	----	----	----	----	0.00E+00
1,2,4-Trichlorobenzene	----	----	----	----	----	----	----	----	----	----	0.00E+00
1,1,2-Trichloroethane	----	9.68E-04	1.64E-03	----	----	1.36E-04	----	----	----	----	2.75E-03
Trichloroethylene	----	----	----	----	----	----	----	----	----	----	0.00E+00
2,4,5-Trichlorophenol	----	----	----	----	----	----	----	----	----	----	0.00E+00
2,4,6-Trichlorophenol	----	----	----	----	----	----	----	----	----	----	0.00E+00
Triethylamine	----	----	----	----	----	----	----	----	----	----	0.00E+00
Trifluralin	----	----	----	----	----	----	----	----	----	----	0.00E+00
2,2,4-Trimethylpentane	----	----	----	----	----	----	----	----	----	----	0.00E+00
Vinyl acetate	----	3.68E-04	----	----	----	----	----	----	----	----	3.68E-04
Vinyl bromide	----	----	----	----	----	----	----	----	----	----	0.00E+00
Vinyl chloride	----	----	----	----	----	----	----	----	----	----	0.00E+00
Vinylidene chloride (1,1-Dichloroethylene)	----	----	----	----	----	----	----	----	----	----	0.00E+00
Xylenes (isomers and mixture)	----	1.79E-03	7.58E-04	----	3.61E-03	1.86E-02	----	4.09E-02	----	----	6.57E-02
Antimony Compounds	----	8.71E-04	----	----	----	----	6.98E-04	----	----	----	1.57E-03
Arsenic Compounds (inorganic including arsine)	----	1.98E-02	3.81E-03	1.58E-04	----	3.17E-04	1.32E-05	----	----	----	2.41E-02
Beryllium Compounds	----	1.02E-03	2.86E-03	9.51E-06	----	2.38E-04	3.41E-07	----	----	----	4.12E-03
Cadmium Compounds	----	2.47E-03	2.86E-03	8.72E-04	----	2.38E-04	2.99E-04	----	----	5.04E-07	6.74E-03
Chromium Compounds	----	1.64E-02	2.86E-03	1.11E-03	----	2.38E-04	4.22E-05	----	----	1.10E-08	2.07E-02
Cobalt Compounds	----	4.84E-03	----	6.66E-05	----	6.66E-06	----	----	----	----	4.91E-03
Coke Oven Emissions	----	----	----	----	----	----	----	----	----	----	0.00E+00
Cynaide Compounds	----	1.21E-01	----	----	----	----	----	----	----	----	1.21E-01
Glycol ethers	----	----	----	----	----	----	----	----	----	----	0.00E+00

Hazardous Air Pollutant	HAP Emissions by Emission Unit Category (tons per year)[1]										Total HAP Emissions
	Storage Tank[2]	Coal-Fired Boilers	Diesel Boilers & Heaters (Except EU 4)	Natural Gas Boiler EU 3	Diesel Engines <=600 hp	EU 4 and EU 8	Waste Incinerators	Laboratory Hoods	Propane-Fired Kilns[3]	Pellet Stove	
Lead Compounds	----	2.03E-02	8.58E-03	----	----	7.13E-04	3.97E-03	----	----	----	3.36E-02
Magnesium Compounds	----	5.32E-01	----	----	----	----	----	----	----	----	5.32E-01
Manganese Compounds	----	2.37E-02	5.72E-03	3.01E-04	----	4.75E-04	3.09E-05	----	----	2.41E-06	3.02E-02
Mercury Compounds	----	4.09E-03	2.86E-03	2.06E-04	----	2.38E-04	5.83E-03	----	----	----	1.32E-02
Fine mineral fibers	----	----	----	----	----	----	----	----	----	----	0.00E+00
Nickel Compounds	----	1.35E-02	2.86E-03	1.66E-03	----	2.38E-04	3.22E-05	----	----	2.41E-08	1.83E-02
Radionuclides (including radon)	----	----	----	----	----	----	----	----	----	----	0.00E+00
Selenium Compounds	----	6.29E-02	1.43E-02	1.90E-05	----	1.19E-03	----	----	----	----	7.84E-02
Total HAPs - Maximum Individual HAP	**0**	**6.725**	**0.244**	**1.426**	**0.015**	**0.143**	**1.826**	**0.457**	**0**	**2.4E-06**	**8.5**
Total HAPs - Unit Category/Source	**0**	**14.530**	**0.361**	**1.496**	**0.049**	**0.331**	**1.851**	**1.144**	**0**	**3.5E-06**	**19.8**

Notes:

[1] See individual emissions unit category emissions calculations for details on methodology and assumptions.

[2] HAP emissions from the storage tank are negligible.

[3] No listed HAP emission rates in AP-42

[4] HAP emissions for EU 4 and EU 8 are the worst-case potential emissions for each individual HAP based on the cumulative 40 tpy NO_X limit for these two emission units.

Table 2-10. Estimated Potential HAP Emissions - Coal-Fired Boilers
University of Alaska Fairbanks Campus

Source Category Emission Calculations			
Maximum Total Fuel Input		96,761 Tons of Coal/yr[1]	
CAS No.	**Chemical Name**	**Emission Factor[2]**	**Estimated Emissions**
79005	1,1,2-Trichloroethane	2.00E-05 lb/ton	9.68E-04 tpy
1746016	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1.40E-11 lb/ton	6.77E-10 tpy
121142	2,4-Dinitrotoluene	2.80E-07 lb/ton	1.35E-05 tpy
532274	2-Chloroacetophenone	7.00E-06 lb/ton	3.39E-04 tpy
75-07-0	Acetaldehyde	5.70E-04 lb/ton	2.76E-02 tpy
98862	Acetophenone	1.50E-05 lb/ton	7.26E-04 tpy
107-02-8	Acrolein	2.90E-04 lb/ton	1.40E-02 tpy
N/A	Antimony Compounds	1.80E-05 lb/ton	8.71E-04 tpy
N/A	Arsenic Compounds	4.10E-04 lb/ton	1.98E-02 tpy
71-43-2	Benzene	1.30E-03 lb/ton	6.29E-02 tpy
100447	Benzyl chloride	7.00E-04 lb/ton	3.39E-02 tpy
N/A	Beryllium Compounds	2.10E-05 lb/ton	1.02E-03 tpy
92524	Biphenyl	1.70E-06 lb/ton	8.22E-05 tpy
117817	Bis(2-ethylhexyl)phthalate (DEHP)	7.30E-05 lb/ton	3.53E-03 tpy
75252	Bromoform	3.90E-05 lb/ton	1.89E-03 tpy
N/A	Cadmium Compounds	5.10E-05 lb/ton	2.47E-03 tpy
75150	Carbon disulfide	1.30E-04 lb/ton	6.29E-03 tpy
108907	Chlorobenzene	2.20E-05 lb/ton	1.06E-03 tpy
67663	Chloroform	5.90E-05 lb/ton	2.85E-03 tpy
N/A	Chromium Compounds	3.39E-04 lb/ton	1.64E-02 tpy
N/A	Cobalt Compounds	1.00E-04 lb/ton	4.84E-03 tpy
98828	Cumene	5.30E-06 lb/ton	2.56E-04 tpy
N/A	Cyanide Compounds	2.50E-03 lb/ton	1.21E-01 tpy
132649	Dibenzofurans	1.09E-09 lb/ton	5.27E-08 tpy
77781	Dimethyl sulfate	4.80E-05 lb/ton	2.32E-03 tpy
100-41-4	Ethyl benzene	9.40E-05 lb/ton	4.55E-03 tpy
75003	Ethyl chloride (Chloroethane)	4.20E-05 lb/ton	2.03E-03 tpy
1006934	Ethylene dibromide (Dibromoethane)	1.20E-06 lb/ton	5.81E-05 tpy
107062	Ethylene dichloride (1,2-Dichloroethane)	4.00E-05 lb/ton	1.94E-03 tpy
50-00-0	Formaldehyde	2.40E-04 lb/ton	1.16E-02 tpy
110543	Hexane	6.70E-05 lb/ton	3.24E-03 tpy
7647010	Hydrochloric acid[3]	0.138 lb/ton	6.68 tpy
7664393	Hydrogen fluoride (Hydrofluoric acid)[3]	0.139 lb/ton	6.72 tpy
78591	Isophorone	5.80E-04 lb/ton	2.81E-02 tpy
N/A	Lead Compounds	4.20E-04 lb/ton	2.03E-02 tpy
N/A	Magnesium Compounds	1.10E-02 lb/ton	5.32E-01 tpy
N/A	Manganese Compounds	4.90E-04 lb/ton	2.37E-02 tpy
N/A	Mercury Compounds[3]	8.459E-05 lb/ton	4.09E-03 tpy
74839	Methyl bromide(Bromomethane)	1.60E-04 lb/ton	7.74E-03 tpy
78933	Methyl ethyl ketone (2-Butanone)	N/A	
60344	Methyl hydrazine	1.70E-04 lb/ton	8.22E-03 tpy
80626	Methyl methacrylate	2.00E-05 lb/ton	9.68E-04 tpy

Source Category Emission Calculations			
Maximum Total Fuel Input			96,761 Tons of Coal/yr[1]
CAS No.	**Chemical Name**	**Emission Factor[2]**	**Estimated Emissions**
1634044	Methyl tert butyl ether	3.50E-05 lb/ton	1.69E-03 tpy
74873	Methylchloride (chloromethane)	5.30E-04 lb/ton	2.56E-02 tpy
75092	Methylene chloride (Dichloromethane)	2.90E-04 lb/ton	1.40E-02 tpy
N/A	Nickel Compounds	2.80E-04 lb/ton	1.35E-02 tpy
108952	Phenol	1.60E-05 lb/ton	7.74E-04 tpy
N/A	Polycylic Organic Matter	1.91E-05 lb/ton	9.22E-04 tpy
83-32-9	Acenaphthene	5.10E-07 lb/ton	
203-96-8	Acenaphthylene	2.50E-07 lb/ton	
120-12-7	Anthracene	2.10E-07 lb/ton	
56-55-3	Benzo(a)anthracene	8.00E-08 lb/ton	
205-99-5	Benzo(b)fluoranthene	1.10E-07 lb/ton	
50-32-8	Benzo(a)pyrene	3.80E-08 lb/ton	
191-24-2	Benzo(g,h,i)perylene	2.70E-08 lb/ton	
218-01-9	Chrysene	1.00E-07 lb/ton	
206-44-0	Fluoranthene	7.10E-07 lb/ton	
86-73-7	Fluorene	9.10E-07 lb/ton	
193-39-5	Ideno(1,2,3-cd)pyrene	6.10E-08 lb/ton	
	5-methylchrysene	2.20E-08 lb/ton	
91-20-3	Naphthalene	1.30E-05 lb/ton	
85-01-8	Phenanathrene	2.70E-06 lb/ton	
129-00-0	Pyrene	3.30E-07 lb/ton	
123386	Propionaldehyde	3.80E-04 lb/ton	1.84E-02 tpy
N/A	Selenium Compounds	1.30E-03 lb/ton	6.29E-02 tpy
100425	Styrene	2.50E-05 lb/ton	1.21E-03 tpy
127184	Tetrachloroethylene (Perchloroethylene)	4.30E-05 lb/ton	2.08E-03 tpy
108-88-3	Toluene	2.40E-04 lb/ton	1.16E-02 tpy
108054	Vinyl acetate	7.60E-06 lb/ton	3.68E-04 tpy
1330-20-7	Xylenes (isomers and mixture)	3.70E-05 lb/ton	1.79E-03 tpy
		Total HAP Emissions	**14.530 tpy**

Notes:

[1] Total coal-fired boiler fuel consumption based on operation of the following:

(2) Erie City Coal-Fired Boiler 84.5 MMBtu/hr, each

Potential Fuel Use EU IDs 1 & 2 48,380 Ton of Coal/yr @ 8760 hrs/yr, each

Total Potential Fuel Use 96,761 Ton of Coal/yr

Annual fuel use converted to ton of coal/year based on a coal heat content of 15.3 MMBtu/ton.

[2] Reference: AP-42, Tables 1.1-12, 1.1-13, 1.1-14, 1.1-18

[3]Emission factors are from source test results from boilers of a similar design at Clear Air Force Station. The UAF and Clear AFS boilers both combust Usibelli coal.

Table 2-11. Estimated Potential HAP Emissions - Diesel-Fired External Combustion Units (Boilers and Heaters)
University of Alaska Fairbanks Campus

Source Category Emission Calculations			All Boilers Except EU 4	EU 4
		Maximum Total Fuel Use	13,917 kgal/yr [1]	1,157 kgal/yr [3]
		Maximum Total Heat Input	1.9066 10^{12} Btu/yr [1]	0.1585 10^{12} Btu/yr [3]
CAS No.	**Chemical Name**	**Emission Factor [2]**	**Estimated Emissions**	**Estimated Emissions**
79-00-5	1,1,2-Trichloroethane	2.36E-04 lb/kgal	1.642E-03 tpy	1.365E-04 tpy
N/A	Arsenic Compounds	4.0 lb/10^{12} Btu	3.813E-03 tpy	3.169E-04 tpy
71-43-2	Benzene	2.14E-04 lb/kgal	1.489E-03 tpy	1.238E-04 tpy
N/A	Beryllium Compounds	3 lb/10^{12} Btu	2.860E-03 tpy	2.377E-04 tpy
N/A	Cadmium Compounds	3 lb/10^{12} Btu	2.860E-03 tpy	2.377E-04 tpy
N/A	Chromium Compounds	3 lb/10^{12} Btu	2.860E-03 tpy	2.377E-04 tpy
100-41-4	Ethyl benzene	6.36E-05 lb/kgal	4.426E-04 tpy	3.678E-05 tpy
5-00-0	Formaldehyde	3.50E-02 lb/kgal	2.435E-01 tpy	2.024E-02 tpy
N/A	Lead Compounds	9 lb/10^{12} Btu	8.580E-03 tpy	7.131E-04 tpy
N/A	Manganese Compounds	6 lb/10^{12} Btu	5.720E-03 tpy	4.754E-04 tpy
N/A	Mercury Compounds	3 lb/10^{12} Btu	2.860E-03 tpy	2.377E-04 tpy
N/A	Nickel Compounds	3 lb/10^{12} Btu	2.860E-03 tpy	2.377E-04 tpy
N/A	Polycylic Organic Matter	3.30E-03 lb/kgal	2.296E-02 tpy	1.909E-03 tpy
N/A	Selenium Compounds	15 lb/10^{12} Btu	1.430E-02 tpy	1.189E-03 tpy
108-88-3	Toluene	6.20E-03 lb/kgal	4.314E-02 tpy	3.586E-03 tpy
1330-20-7	Xylenes (isomers and mixture)	1.09E-04 lb/kgal	7.585E-04 tpy	6.304E-05 tpy
		Total HAP Emissions	**0.361 tpy**	**0.030 tpy**

Notes:

[1] Total fuel consumption based on full-time or permit-limited operation of the following:

(1) Zurn Dual-Fired Boiler — 1,320 gal/hr
- Potential Fuel Use EU ID 3 — 11,567,036 gallons/yr @ 8760 hrs/yr

(2) Burnham/V9OGA AFES Boiler — 7.86 gal/hr, each
- Potential Fuel Use EU ID 10 — 68,886 gallons/yr @ 8760 hrs/yr
- Potential Fuel Use EU ID 11 — 68,886 gallons/yr @ 8760 hrs/yr

(2) Weil McLain/BL776-S-W Harper Boiler #1 — 4.67 gal/hr, each
- Potential Fuel Use EU ID 12 — 40,923 gallons/yr @ 8760 hrs/yr
- Potential Fuel Use EU ID 13 — 40,923 gallons/yr @ 8760 hrs/yr

(2) Energy Kinetics System 2000 Copper Lane Boiler — 0.99 gal/hr, each
- Potential Fuel Use EU ID 14 — 8,696 gallons/yr @ 8760 hrs/yr
- Potential Fuel Use EU ID 15 — 8,696 gallons/yr @ 8760 hrs/yr

(1) Weil McLain/P-WGO-5 Copper Lane (Honor's House) Boiler — 1.70 ga/hr
- Potential Fuel Use EU ID 16 — 14,920 gallons/yr @ 8760 hrs/yr

(2) Weil McLain/BL1688w-GPr10 West Ridge Research Building Boil — 35.99 gal/hr, each
- Potential Fuel Use EU ID 17 — 315,232 gallons/yr @ 8760 hrs/yr
- Potential Fuel Use EU ID 18 — 315,232 gallons/yr @ 8760 hrs/yr

(3) Weil McLain/2094W BiRD RM 100U3 Boiler #1			44.77	gal/hr, each	
	Potential Fuel Use	EU IDs 19-21		879,708	gallons/yr @ 19,650 hrs/yr
(1) Bryan/EB200-S-150-FDGO BiRD RM 100U3 Boiler #4			62.04	gal/hr	
	Potential Fuel Use	EU ID 22		543,504	gallons/yr @ 8760 hrs/yr
(1) Sunderman/L02OUF AFES Greenhouse Furnace			1.53	gal/hr	
	Potential Fuel Use	EU ID 30		13,385	gallons/yr @ 8760 hrs/yr
(1) Matzger Copper Lane Furnace			0.58	gal/hr	
	Potential Fuel Use	EU ID 31		5,115	gallons/yr @ 8760 hrs/yr
(1) Rheem/ROBC-084QPEB Skarland Cabin Furnace			1.02	gal/hr	
	Potential Fuel Use	EU ID 32		8,952	gallons/yr @ 8760 hrs/yr
(1) Unknown AFES Grain Dryer			17.71	gal/hr	
	Potential Fuel Use	EU ID 25		1,771	gallons/yr @ 100 hrs/yr
(1) Bock Harper Hot Water Heater			1.72	gal/hr	
	Potential Fuel Use	EU ID 33		15,090	gallons/yr @ 8760 hrs/yr
		Total Potential Fuel Use		**13,916,956**	**gal/yr**

Annual fuel use converted to MMBtu/yr based on a diesel fuel heat content of 137,000 Btu/gal.

[2] Reference: AP-42, Tables 1.3-8, 1.3-9, and 1.3-10.

[3] EU 4 total fuel consumption based on:

(1) Zurn Dual-Fired Boiler			1,320	gal/hr
	Potential Fuel Use	EU ID 4	1,156,704	gallons/yr @ 876 hrs/yr

Table 2-12. Estimated Potential HAP Emissions - Natural Gas-Fired Boilers
University of Alaska Fairbanks Campus

Source Category Emission Calculations				All Boiler's Except EU 4	EU 4
			Maximum Total Fuel Use	1,584.7 MMscf/yr[1]	158.5 MMscf/yr[3]
No.	**CAS No.**	**Chemical Name**	**Emission Factor[2]**	**Estimated Emissions**	**Estimated Emissions**
12	106467	1,4-Dichlorobenzene(p)	1.20E-03 lb/MMscf	9.51E-04 tpy	9.51E-05 tpy
46	N/A	Arsenic Compounds	2.00E-04 lb/MMscf	1.58E-04 tpy	1.58E-05 tpy
48	71432	Benzene	2.10E-03 lb/MMscf	1.66E-03 tpy	1.66E-04 tpy
52	N/A	Beryllium Compounds	1.20E-05 lb/MMscf	9.51E-06 tpy	9.51E-07 tpy
58	N/A	Cadmium Compounds	1.10E-03 lb/MMscf	8.72E-04 tpy	8.72E-05 tpy
75	N/A	Chromium Compounds	1.40E-03 lb/MMscf	1.11E-03 tpy	1.11E-04 tpy
76	N/A	Cobalt Compounds	8.40E-05 lb/MMscf	6.66E-05 tpy	6.66E-06 tpy
109	5000	Formaldehyde	7.52E-02 lb/MMscf	5.96E-02 tpy	5.96E-03 tpy
118	110543	Hexane	1.80E+00 lb/MMscf	1.43E+00 tpy	1.43E-01 tpy
127	N/A	Manganese Compounds	3.80E-04 lb/MMscf	3.01E-04 tpy	3.01E-05 tpy
128	N/A	Mercury Compounds	2.60E-04 lb/MMscf	2.06E-04 tpy	2.06E-05 tpy
146	N/A	Nickel Compounds	2.10E-03 lb/MMscf	1.66E-03 tpy	1.66E-04 tpy
162	N/A	Polycylic Organic Matter	6.98E-04 lb/MMscf	5.53E-04 tpy	5.53E-05 tpy
		2-Methylnaphthalene	2.4E-05 lb/MMscf		
		3-Methylchloranthrene	1.8E-06 lb/MMscf		
		7,12-Dimethylbenz(a)anthracene	1.6E-05 lb/MMscf		
		Acenaphthene	1.8E-06 lb/MMscf		
		Acenaphthylene	1.8E-06 lb/MMscf		
		Anthracene	2.4E-06 lb/MMscf		
		Benz(a)anthracene	1.8E-06 lb/MMscf		
		Benzo(a)pyrene	1.2E-06 lb/MMscf		
		Benzo(a)fluoranthene	1.8E-06 lb/MMscf		
		Benzo(g,h,i)perylene	1.2E-06 lb/MMscf		
		Benzo(k)fluroanthene	1.8E-06 lb/MMscf		
		Chrysene	1.8E-06 lb/MMscf		
		Dibenzo(a,h)anthracene	1.2E-06 lb/MMscf		
		Fluoranthene	3.0E-06 lb/MMscf		
		Fluorene	2.8E-06 lb/MMscf		
		Indeno(1,2,3-cd)pyrene	1.8E-06 lb/MMscf		
145	91203	Naphthalene	6.10E-04 lb/MMscf		
		Phenanathrene	1.7E-05 lb/MMscf		
		Pyrene	5.0E-06 lb/MMscf		
171	N/A	Selenium Compounds	2.4E-05 lb/MMscf	1.90E-05 tpy	1.90E-06 tpy
176	108883	Toluene	3.40E-03 lb/MMscf	2.69E-03 tpy	2.69E-04 tpy
			Total HAP Emissions	**1.50 tpy**	**0.15 tpy**

Notes:

[1] Total fuel use based on maximum full-time operation or permit-limited operation as noted below:

(1) Zurn Dual-Fired Boiler 180,900 scf/hr

Potential Fuel Use EU ID 3 1,585 MMscf/yr @ 8,760 hrs/yr

1,000 Btu/scf fuel gas heating value used.

[2] Reference: AP-42, Tables 1.4-3, 1.4-4.

[3] Total fuel use based on maximum full-time operation or permit-limited operation as noted below:

(1) Zurn Dual-Fired Boiler 180,900 scf/hr

Potential Fuel Use EU ID 4 158 MMscf/yr @ 876 hrs/yr

Table 2-13. Estimated Potential HAP Emissions - Diesel-Fired Engines Greater Than 600 Horsepower
University of Alaska Fairbanks Campus

Source Category Emission Calculations			
		Maximum Total Heat Input	192,281 MMBtu/yr[1]
CAS No.	**Chemical Name**	**Emission Factor[2]**	**Estimated Emissions**
75-07-0	Acetaldehyde	2.52E-05 lb/MMBtu	2.42E-03 tpy
107-02-8	Acrolein	7.88E-06 lb/MMBtu	7.58E-04 tpy
71-43-2	Benzene	7.76E-04 lb/MMBtu	7.46E-02 tpy
5-00-0	Formaldehyde	7.89E-05 lb/MMBtu	7.59E-03 tpy
108-88-3	Toluene	2.81E-04 lb/MMBtu	2.70E-02 tpy
1330-20-7	Xylenes (isomers and mixture)	1.93E-04 lb/MMBtu	1.86E-02 tpy
N/A	Polycylic Organic Matter	4.23E-04 lb/MMBtu	4.07E-02 tpy
	Polycyclic aromatic compounds(PAH)	2.12E-04 lb/MMBtu	
	Acenaphthene	4.68E-06 lb/MMBtu	
	Acenaphthylene	9.23E-06 lb/MMBtu	
	Anthracene	1.23E-06 lb/MMBtu	
	Benzo(a)anthracene	6.22E-07 lb/MMBtu	
	Benzo(b)fluoranthene	1.11E-06 lb/MMBtu	
	Benzo(k)fluoranthene	2.18E-07 lb/MMBtu	
	Benzo(a)pyrene	2.57E-07 lb/MMBtu	
	Benzo(g,h,l)perylene	5.56E-07 lb/MMBtu	
	Chrysene	1.53E-06 lb/MMBtu	
	Dibenz(a,h)anthracene	3.46E-07 lb/MMBtu	
	Fluoranthene	4.03E-06 lb/MMBtu	
	Fluorene	1.28E-05 lb/MMBtu	
	Ideno(1,2,3-cd)pyrene	4.14E-07 lb/MMBtu	
91-20-3	Naphthalene	1.30E-04 lb/MMBtu	
	Phenanthrene	4.08E-05 lb/MMBtu	
	Pyrene	3.71E-06 lb/MMBtu	
		Total HAP Emissions	**0.172 tpy**

Notes:

[1] Total heat consumption based on full-time or permit-limited operation of the following:

(1) Fairbanks Morse Colt-Pielstick PC2.6 Peaking/Backup Generator (DEG) Engine — 1,403,509 gal/yr

Potential Fuel Use EU ID 8 — 192,280.7 MMBtu/yr

Total Potential Fuel Use — 192,281 MMBtu/yr

Engine heat rate is assumed to be 7,000 Btu/hp-hr.

Maximum annual fuel use calculated in Table 2-4 and converted to MMBtu/yr based on a diesel fuel heat content of 137,000 Btu/gal.

[2] Reference: AP-42, Table 3.4-3.

Table 2-14. Estimated Potential HAP Emissions - Diesel-Fired Engines Less Than 600 Horsepower
University of Alaska Fairbanks Campus

Source Category Emission Calculations			
Maximum Total Heat Input			25,341 MMBtu/yr[1]
CAS No.	**Chemical Name**	**Emission Factor[2]**	**Estimated Emissions**
75-07-0	Acetaldehyde	7.67E-04 lb/MMBtu	9.72E-03 tpy
107-02-8	Acrolein	9.25E-05 lb/MMBtu	1.17E-03 tpy
71-43-2	Benzene	9.33E-04 lb/MMBtu	1.18E-02 tpy
106-99-0	1,3-Butadiene	3.91E-05 lb/MMBtu	4.95E-04 tpy
5-00-0	Formaldehyde	1.18E-03 lb/MMBtu	1.50E-02 tpy
108-88-3	Toluene	4.09E-04 lb/MMBtu	5.18E-03 tpy
1330-20-7	Xylenes (isomers and mixture)	2.85E-04 lb/MMBtu	3.61E-03 tpy
N/A	Polycylic Organic Matter	1.68E-04 lb/MMBtu	2.12E-03 tpy
	Polycyclic aromatic compounds(PAH)	1.68E-04 lb/MMBtu	
	Acenaphthene	1.42E-06 lb/MMBtu	
	Acenaphthylene	5.06E-06 lb/MMBtu	
	Anthracene	1.87E-06 lb/MMBtu	
	Benzo(a)anthracene	1.68E-06 lb/MMBtu	
	Benzo(b)fluoranthene	9.91E-08 lb/MMBtu	
	Benzo(k)fluoranthene	1.55E-07 lb/MMBtu	
	Benzo(a)pyrene	1.88E-07 lb/MMBtu	
	Chrysene	3.53E-07 lb/MMBtu	
	Dibenz(a,h)anthracene	5.83E-07 lb/MMBtu	
	Fluoranthene	7.61E-06 lb/MMBtu	
	Fluorene	2.92E-05 lb/MMBtu	
	Ideno(1,2,3-cd)pyrene	3.75E-07 lb/MMBtu	
91-20-3	Naphthalene	8.48E-05 lb/MMBtu	
	Phenanthrene	2.94E-05 lb/MMBtu	
	Pyrene	4.78E-06 lb/MMBtu	
		Total HAP Emissions	**0.049 tpy**

Notes:

[1] Total heat consumption based on full-time or permit-limited operation or EPA guidance of 500 hours per 12-month rolling period for emergency engines for the following:

~~(2) Arctic Health Research Bldg. Emergency Generator~~		~~0.0~~	~~gal/hr, each~~	
	~~Potential Fuel Use EU ID 6~~		~~0.0~~	~~MMBtu/yr @ 100 hrs/yr~~
	~~Potential Fuel Use EU ID 7~~		~~0.0~~	~~MMBtu/yr @ 100 hrs/yr~~
(1) Alaska Center for Energy and Power Generator Engine		16.1	gal/hr	
	Potential Fuel Use EU ID 23		9,662.0	MMBtu/yr @ 4,380 hrs/yr
(1) Cummins/4B3.9-G2 Old University Park Emergency Generator Engir		3.5	gal/hr	
	Potential Fuel Use EU ID 24		47.9	MMBtu/yr @ 100 hrs/yr
(1) Mitsubishi-Bosch Duckering Classroom Engine		3.1	gal/hr	
	Potential Fuel Use EU ID 26		41.8	MMBtu/yr @ 99 hrs/yr
(1) Alaska Center for Energy and Power Generator Engine		25.5	gal/hr	
	Potential Fuel Use EU ID 27		15,330.0	MMBtu/yr @ 4,380 hrs/yr
(1) Alaska Earthquake Information Center Engine		6.1	gal/hr	
	Potential Fuel Use EU ID 28		84.0	MMBtu/yr @ 100 hrs/yr
(1) Arctic Health Research Engine		12.8	gal/hr	
	Potential Fuel Use EU ID 29		175.4	MMBtu/yr @ 100 hrs/yr
	Total Potential Fuel Use		25,341.1	MMBtu/yr

Engine heat rate is assumed to be 7,000 Btu/hp-hr.
Annual fuel use converted to MMBtu/yr based on a diesel fuel heat content of 137,000 Btu/gal.

[2] Reference: AP-42, Table 3.3-2.

Table 2-15. Estimated Potential HAP Emissions - Incinerator
University of Alaska Fairbanks Campus

Source Category Emission Calculations			
Maximum Total Waste Input			109 Tons of Waste/yr[1]
CAS No.	**Chemical Name**	**Emission Factor [2]**	**Estimated Emissions**
1746016	Chlorinated dibenzo-p-dioxins (Total)	2.14E-05 lb/ton	1.16E-06 tpy
N/A	Antimony Compounds	1.28E-02 lb/ton	6.98E-04 tpy
N/A	Arsenic Compounds	2.42E-04 lb/ton	1.32E-05 tpy
N/A	Beryllium Compounds	6.25E-06 lb/ton	3.41E-07 tpy
N/A	Cadmium Compounds	5.48E-03 lb/ton	2.99E-04 tpy
7782505	Chlorine	1.05E-01 lb/ton	5.72E-03 tpy
N/A	Chromium Chompounds	7.75E-04 lb/ton	4.22E-05 tpy
132649	Dibenzofurans	7.16E-05 lb/ton	3.90E-06 tpy
7647010	Hydrochloric acid	33.5 lb/ton	1.83 tpy
7664393	Hydrogen fluoride (Hydrofluoric acid)	1.49E-01 lb/ton	0.01 tpy
N/A	Lead Compounds	7.28E-02 lb/ton	3.97E-03 tpy
N/A	Manganese Compounds	5.67E-04 lb/ton	3.09E-05 tpy
N/A	Mercury Compounds	1.07E-01 lb/ton	5.83E-03 tpy
N/A	Nickel Compounds	5.90E-04 lb/ton	3.22E-05 tpy
1336363	Polychlorinated biphenyls(Aroclors)	4.65E-05 lb/ton	2.53E-06 tpy
		Total HAP Emissions	**1.851 tpy**

Notes:

[1] Total waste combustion based on operation of the following:

(2) Therm-Tec/G-30P-1H BiRD Incinerator 83.3 lb/hr

Potential Waste Combustion EU ID 9A 109 Ton of Waste/yr (proposed ORL)

Total Potential Fuel Use 109 Ton of Waste/yr

[2] Reference: AP-42, Tables 2.3-2 through 2.3-6 and 2.3-9 through 2.3-13. Pathological waste incinerator emission factors are not available. Medical waste incineration emission factors are expected to be representative of emissions from a pathological waste incinerator.

Table 2-16. Estimated Potential HAP Emissions - Pellet Stove
University of Alaska Fairbanks Campus

		Source Category Emission Calculations	
CAS No.	**Chemical Name**	**Emission Factor[2]**	**Estimated Emissions**
N/A	Cadmium Compounds	4.60E-05 lb/ton	5.04E-07 tpy
N/A	Chromium Compounds	1.00E-06 lb/ton	1.10E-08 tpy
N/A	Manganese Compounds	2.20E-04 lb/ton	2.41E-06 tpy
N/A	Nickel Compounds	2.20E-06 lb/ton	2.41E-08 tpy
N/A	Polycylic Organic Matter	2.38E-04 lb/ton	5.95E-07 tpy
		Total HAP Emissions	**3.5E-06 tpy**

Notes:

[1] Total fuel consumption based on 8,760 hours per year of operation at 5 lb/hr:

SRC Pellet Stove fuel consumption	5.0 lb/hr =	21.9 ton/yr

[2] Reference: AP-42, Tables 1.10-3 and 1.10-4.

Table 2-17. Summary of Estimated Greenhouse Gas (GHG) Emissions[1]
University of Alaska Fairbanks Campus

GHG Pollutant	GHG Emissions by Emission Unit Category (tons per year)[2]						
	Storage Tanks[3]	Significant Coal Units	Significant Diesel and Dual Units	Significant Waste Units	Insignificant Wood Units	Insignificant Propane Units	Total
Carbon Dioxide	0	158,326	172,818	108.4	38.7	1,724	**333,015**
Nitrous Oxide	0	3	1.4	5.0E-03	1.7E-03	0.02	**4.04**
Methane	0	18	7.0	3.8E-02	1.3E-02	0.1	**25.1**
Hydrofluorocarbons	0	0	0	0	0	0	**0**
Perfluorocarbons	0	0	0	0	0	0	**0**
Sulfur Hexafluoride	0	0	0	0	0	0	**0**
Total GHG Emissions (CO_2e)[4]	**0**	**159,512**	**173,400**	**111**	**40**	**1,731**	**334,793**

Notes:

[1] GHG are the aggregate group of six greenhouse gases defined under 40 CFR 52.21(b)(49)(i) and 40 CFR 71.2.

[2] See individual emissions unit category emissions calculations for details on methodology and assumptions.

[3] GHG emissions from the storage tanks are negligible.

[4] GHG (CO_2e) emissions = CO_2 emissions + (21 * CH_4 emissions) + (310 * N_2O emissions).

Table 2-18. Potential Greenhouse Gases (GHG) Calculations - Carbon Dioxide (CO_2) Emissions
University of Alaska Fairbanks Campus

Emission Unit ID	Emission Unit Description	Fuel Type	CO_2 Emission Factor Reference	CO_2 Emission Factor	Emission Unit Rating/Capacity	Allowable Annual Operation[1]	Potential CO_2 Emissions[2]
Significant Emission Units							
1	Coal-Fired Boiler	Coal	40 CFR 98 Table C-1	97.02 kg/MMBtu	84.5 MMBtu/hr	8,760 hrs/yr	79,163 tpy
2	Coal-Fired Boiler	Coal	40 CFR 98 Table C-1	97.02 kg/MMBtu	84.5 MMBtu/hr	8,760 hrs/yr	79,163 tpy
3	Dual-Fired Boiler	Diesel	40 CFR 98 Table C-1	73.96 kg/MMBtu	180.9 MMBtu/hr	8,760 hrs/yr	129,193 tpy[5]
3	Dual-Fired Boiler	Natural Gas	40 CFR 98 Table C-1	53.02 kg/MMBtu	180.9 MMBtu/hr	8,760 hrs/yr	
~~6~~	~~Arctic Health Research Bldg. Emergency Generator~~	~~Diesel~~	~~40 CFR 98 Table C-1~~	~~73.96 kg/MMBtu~~	~~125 kW~~	~~0 hrs/yr~~	0 tpy
~~7~~	~~Arctic Health Research Bldg. Emergency Generator~~	~~Diesel~~	~~40 CFR 98 Table C-1~~	~~73.96 kg/MMBtu~~	~~125 kW~~	~~0 hrs/yr~~	0 tpy
4	Dual-Fired Boiler	Diesel	40 CFR 98 Table C-1	73.96 kg/MMBtu	180.9 MMBtu/hr	876 hrs/yr	15,676 tpy[6]
4	Dual-Fired Boiler	Natural Gas	40 CFR 98 Table C-1	53.02 kg/MMBtu	180.9 MMBtu/hr	876 hrs/yr	
8	Peaking/Backup Generator (DEG) Engine	Diesel	40 CFR 98 Table C-1	73.96 kg/MMBtu	13,266 hp	1,403,509 gal/yr	
9A	BiRD Incinerator	Medical/Infectious Waste	40 CFR 98 Table C-1	90.70 kg/MMBtu	83 lb/hr	109 ton/yr[7]	108 tpy
10	AFES Boiler	Diesel	40 CFR 98 Table C-1	73.96 kg/MMBtu	1.08 MMBtu/hr	8,760 hrs/yr	769 tpy
11	AFES Boiler	Diesel	40 CFR 98 Table C-1	73.96 kg/MMBtu	1.08 MMBtu/hr	8,760 hrs/yr	769 tpy
12	Harper Boiler #1	Diesel	40 CFR 98 Table C-1	73.96 kg/MMBtu	0.64 MMBtu/hr	8,760 hrs/yr	457 tpy
13	Harper Boiler #2	Diesel	40 CFR 98 Table C-1	73.96 kg/MMBtu	0.64 MMBtu/hr	8,760 hrs/yr	457 tpy
14	Copper Lane Boiler	Diesel	40 CFR 98 Table C-1	73.96 kg/MMBtu	0.136 MMBtu/hr	8,760 hrs/yr	97 tpy
15	Copper Lane Boiler	Diesel	40 CFR 98 Table C-1	73.96 kg/MMBtu	0.136 MMBtu/hr	8,760 hrs/yr	97 tpy
16	Copper Lane (Honor's House) Boiler	Diesel	40 CFR 98 Table C-1	73.96 kg/MMBtu	0.23 MMBtu/hr	8,760 hrs/yr	167 tpy
17	West Ridge Research Building Boiler #1	Diesel	40 CFR 98 Table C-1	73.96 kg/MMBtu	4.93 MMBtu/hr	8,760 hrs/yr	3,521 tpy
18	West Ridge Research Building Boiler #2	Diesel	40 CFR 98 Table C-1	73.96 kg/MMBtu	4.93 MMBtu/hr	8,760 hrs/yr	3,521 tpy
19	BiRD RM 100U3 Boiler #1	Diesel	40 CFR 98 Table C-1	73.96 kg/MMBtu	6.13 MMBtu/hr	19,650 hrs/yr[8]	9,826 tpy
20	BiRD RM 100U3 Boiler #2	Diesel	40 CFR 98 Table C-1	73.96 kg/MMBtu	6.13 MMBtu/hr		
21	BiRD RM 100U3 Boiler #3	Diesel	40 CFR 98 Table C-1	73.96 kg/MMBtu	6.13 MMBtu/hr		
22	BiRD RM 100U3 Boiler #4	Diesel	40 CFR 98 Table C-1	73.96 kg/MMBtu	8.5 MMBtu/hr	8,760 hrs/yr	6,070 tpy
23	Alaska Center for Energy and Power Generator Engine	Diesel	40 CFR 98 Table C-1	73.96 kg/MMBtu	235 kW	4,380 hrs/yr[9]	829 tpy
24	Old University Park Emergency Generator Engine	Diesel	40 CFR 98 Table C-1	73.96 kg/MMBtu	51 kW	100 hrs/yr[14]	4 tpy
25	AFES Grain Dryer	Diesel	40 CFR 98 Table C-1	73.96 kg/MMBtu	2.43 MMBtu/hr	100 hrs/yr[10]	20 tpy
26	Duckering Classroom Engine	Diesel	40 CFR 98 Table C-1	73.96 kg/MMBtu	45 kW	99 hrs/yr[11,15]	4 tpy
27	Alaska Center for Energy and Power Generator Engine	Diesel	40 CFR 98 Table C-1	73.96 kg/MMBtu	500 hp	4,380 hrs/yr[12]	1,316 tpy
28	Alaska Earthquake Information Center Emergency Generator Engine	Diesel	40 CFR 98 Table C-1	73.96 kg/MMBtu	120 hp	100 hrs/yr[13]	7 tpy
29	Arctic Health Research Emergency Generator Engine	Diesel	40 CFR 98 Table C-1	73.96 kg/MMBtu	314 hp	100 hrs/yr[3]	18 tpy
Significant Emission Units Total Potential to Emit Emissions - CO_2							**331,252 tpy**

Emission Unit ID	Emission Unit Description	Fuel Type	Factor Reference	CO_2 Emission Factor	Emission Unit Rating/Capacity	Allowable Annual Operation[1]	Potential CO_2 Emissions[2]
	Insignificant Emission Units						
30	AFES Greenhouse Furnace	Diesel	40 CFR 98 Table C-1	73.96 kg/MMBtu	0.209 MMBtu/hr	8,760 hrs/yr	149 tpy
31	Copper Lane Furnace	Diesel	40 CFR 98 Table C-1	73.96 kg/MMBtu	0.08 MMBtu/hr	8,760 hrs/yr	57 tpy
32	Skarland Cabin Furnace	Diesel	40 CFR 98 Table C-1	73.96 kg/MMBtu	0.14 MMBtu/hr	8,760 hrs/yr	100 tpy
33	Harper Hot Water Heater	Diesel	40 CFR 98 Table C-1	73.96 kg/MMBtu	0.236 MMBtu/hr	8,760 hrs/yr	169 tpy
	Coal Handling/Coal Crushing	Coal	N/A	N/A	N/A	8,760 hrs/yr	0 tpy
	Various Propane-Fired Kilns	Propane	40 CFR 98 Table C-1	61.46 kg/MMBtu	2.57 MMBtu/hr, total	8,760 hrs/yr	1,525 tpy
	Wood-Fired Kilns	Wood	40 CFR 98 Table C-1	93.80 kg/MMBtu	Unknown	1 cord/yr[4]	2 tpy
	Duckering Classroom Turbine	Propane	40 CFR 98 Table C-1	61.46 kg/MMBtu	0.33 MMBtu/hr	8,760 hrs/yr	196 tpy
	Graduation Flame	Propane	40 CFR 98 Table C-1	61.46 kg/MMBtu	0.005 MMBtu/hr	8,760 hrs/yr	3 tpy
	Various Paint Booths	N/A	N/A	N/A	N/A	8,760 hrs/yr	0.0 tpy
	Various Laboratory Fume Hoods	N/A	N/A	N/A	N/A	8,760 hrs/yr	0.0 tpy
	Power Plant Field-Erected Tank	Diesel	N/A	N/A	212,120 gallons	8,760 hrs/yr	0 tpy
	Ash Bin Vent filter	N/A	N/A	N/A	N/A	8,760 hrs/yr	0 tpy
	Ash Vacuum Pump Filter	N/A	N/A	N/A	N/A	8,760 hrs/yr	0 tpy
	Ash Loadout to Truck	N/A	N/A	N/A	N/A	8,225 hrs/yr	0 tpy
	SRC Pellet Stove	Wood Pellets	40 CFR 98 Table C-1	93.8 kg/MMBtu	0.041 MMBtu/hr	8,760 hrs/yr	37 tpy
						Insignificant Emission Units Total Potential to Emit Emissions - CO_2	**2,238 tpy**
						Total Potential to Emit Emissions - CO_2	**333,490 tpy**

Notes:

[1] Maximum annual operation for all units based on full-time operation or permit operating limits, where applicable.

[2] Conversion factors:

Engine Heat Rate:	7,000	Btu/hp-hr
Diesel Heating Value	0.137	MMBtu/gal
Waste Heating Value	9.95	MMBtu/ton
Engine horsepower	1.341	kW
Assumed drive shaft efficiency for engines	95%	Per Alan Schuler at ADEC

[3] New emergency stationary internal combustion engines are limited to maintenance checks and readiness testing to no more than 100 hours per year, per 40 CFR 60.4211(f).

[4] Approximate heat value of wood combusted in kilns is 15 MMBtu/cord, per http://www.hrt.msu.edu/energy/pdf/heating%20value%20of%20common%20fuels.pdf

[5] The higher potential emissions for natural gas or distillate firing is shown as the potential emissions for EU 3.

[6] The highest potential emissions for EU 4 and EU 8 is shown as the potential emissions.

[7] UAF is proposing an operating limit for EU 9A to avoid HAP major classification. Details are provided in Section 4 of this application.

[8] UAF is proposing operating limits for EU 19 through EU 21 to avoid minor permitting requirements for NO_X. Details are provided in Section 4 of this application.

[9] UAF is proposing an operating limit for EU 23 to avoid minor permitting requirements for NO_X. Details are provided in Section 4 of this application.

[10] UAF is proposing an operating limit for EU 25 to avoid PSD permitting requirements for SO_2. Details are provided in Section 4 of this application.

[11] UAF is proposing an operating limit for EU 26 to avoid PSD permitting requirements for NO_X. Details are provided in Section 4 of this application.

[12] Owner-requested limit of 4,380 hr/yr per AQ0316MSS03, currently being prepared by ADEC.

[13] Basis for EU 28 PTE calculated with 100 hr/yr: historical data indicating that engine operates approximately 13 hr/yr. A PTE basis of 100 hr/yr is conservatively high.

[14] Basis for EU 24 PTE calculated with 100 hr/yr. A PTE basis of 100 hr/yr is conservatively high; this engine is operated infrequently.

[15] Basis for EU 26 PTE calculated with 99 hr/yr. This engine is operated approximately 6 hours per year and is considered "limited use" under 40 CFR 63 Subpart ZZZZ.

Table 2-19. Potential Greenhouse Gases (GHG) Calculations - Nitrous Oxide (N_2O) Emissions
University of Alaska Fairbanks Campus

Emission Unit ID	Emission Unit Description	Fuel Type	N_2O Emission Factor Reference	N_2O Emission Factor	Emission Unit Rating/Capacity	Allowable Annual Operation[1]	Potential N_2O Emissions[2]
Significant Emission Units							
1	Coal-Fired Boiler	Coal	40 CFR 98 Table C-2	1.6E-03 kg/MMBtu	84.5 MMBtu/hr	8,760 hrs/yr	1.31 tpy
2	Coal-Fired Boiler	Coal	40 CFR 98 Table C-2	1.6E-03 kg/MMBtu	84.5 MMBtu/hr	8,760 hrs/yr	1.31 tpy
3	Dual-Fired Boiler	Diesel	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	180.9 MMBtu/hr	8,760 hrs/yr	1.05 tpy[5]
3	Dual-Fired Boiler	Natural Gas	40 CFR 98 Table C-2	1.0E-04 kg/MMBtu	180.9 MMBtu/hr	8,760 hrs/yr	
~~6~~	~~Arctic Health Research Bldg. Emergency Generator~~	~~Diesel~~	~~40 CFR 98 Table C-2~~	~~6.0E-04 kg/MMBtu~~	~~125 kW~~	~~0 hrs/yr~~	0.0 tpy
~~7~~	~~Arctic Health Research Bldg. Emergency Generator~~	~~Diesel~~	~~40 CFR 98 Table C-2~~	~~6.0E-04 kg/MMBtu~~	~~125 kW~~	~~0 hrs/yr~~	0.0 tpy
4	Dual-Fired Boiler	Diesel	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	180.9 MMBtu/hr	876 hrs/yr	0.13 tpy[6]
4	Dual-Fired Boiler	Natural Gas	40 CFR 98 Table C-2	1.0E-04 kg/MMBtu	180.9 MMBtu/hr	876 hrs/yr	
8	Peaking/Backup Generator (DEG) Engine	Diesel	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	13,266 hp	1,403,509 gal/yr	
9A	BiRD Incinerator	Medical/Infectious Waste	40 CFR 98 Table C-2	4.2E-03 kg/MMBtu	83 lb/hr	109 ton/yr[7]	5.02E-03 tpy
10	AFES Boiler	Diesel	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	1.08 MMBtu/hr	8,760 hrs/yr	6.24E-03 tpy
11	AFES Boiler	Diesel	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	1.08 MMBtu/hr	8,760 hrs/yr	6.24E-03 tpy
12	Harper Boiler #1	Diesel	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	0.64 MMBtu/hr	8,760 hrs/yr	3.71E-03 tpy
13	Harper Boiler #2	Diesel	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	0.64 MMBtu/hr	8,760 hrs/yr	3.71E-03 tpy
14	Copper Lane Boiler	Diesel	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	0.136 MMBtu/hr	8,760 hrs/yr	7.88E-04 tpy
15	Copper Lane Boiler	Diesel	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	0.136 MMBtu/hr	8,760 hrs/yr	7.88E-04 tpy
16	Copper Lane (Honor's House) Boiler	Diesel	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	0.23 MMBtu/hr	8,760 hrs/yr	1.35E-03 tpy
17	West Ridge Research Building Boiler #1	Diesel	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	4.93 MMBtu/hr	8,760 hrs/yr	2.86E-02 tpy
18	West Ridge Research Building Boiler #2	Diesel	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	4.93 MMBtu/hr	8,760 hrs/yr	2.86E-02 tpy
19	BiRD RM 100U3 Boiler #1	Diesel	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	6.13 MMBtu/hr	19,650 hrs/yr[8]	7.97E-02 tpy
20	BiRD RM 100U3 Boiler #2	Diesel	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	6.13 MMBtu/hr		
21	BiRD RM 100U3 Boiler #3	Diesel	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	6.13 MMBtu/hr		
22	BiRD RM 100U3 Boiler #4	Diesel	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	8.5 MMBtu/hr	8,760 hrs/yr	4.92E-02 tpy
23	Alaska Center for Energy and Power Generator Engine	Diesel	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	235 kW	4,380 hrs/yr[9]	6.73E-03 tpy
24	Old University Park Emergency Generator Engine	Diesel	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	51 kW	100 hrs/yr[14]	3.33E-05 tpy
25	AFES Grain Dryer	Diesel	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	2.43 MMBtu/hr	100 hrs/yr[10]	1.60E-04 tpy
26	Duckering Classroom Engine	Diesel	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	45 kW	99 hrs/yr[11,15]	2.91E-05 tpy
27	Alaska Center for Energy and Power Generator Engine	Diesel	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	500 hp	4,380 hrs/yr[12]	1.07E-02 tpy
28	Alaska Earthquake Information Center Emergency Generator Engine	Diesel	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	120 hp	100 hrs/yr[13]	5.85E-05 tpy
29	Arctic Health Research Emergency Generator Engine	Diesel	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	314 hp	100 hrs/yr[3]	1.45E-04 tpy
Significant Emission Units Total Potential to Emit Emissions - N_2O							**4.0 tpy**

Emission Unit ID	Emission Unit Description	Fuel Type	N_2O Emission Factor Reference	N_2O Emission Factor	Emission Unit Rating/Capacity	Allowable Annual Operation[1]	Potential N_2O Emissions[2]
Insignificant Emission Units							
30	AFES Greenhouse Furnace	Diesel	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	0.209 MMBtu/hr	8,760 hrs/yr	1.21E-03 tpy
31	Copper Lane Furnace	Diesel	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	0.08 MMBtu/hr	8,760 hrs/yr	4.63E-04 tpy
32	Skarland Cabin Furnace	Diesel	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	0.14 MMBtu/hr	8,760 hrs/yr	8.11E-04 tpy
33	Harper Hot Water Heater	Diesel	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	0.236 MMBtu/hr	8,760 hrs/yr	1.37E-03 tpy
	Coal Handling/Coal Crushing	Coal	N/A	N/A	N/A	8,760 hrs/yr	0.0 tpy
	Various Propane-Fired Kilns	Propane	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	2.57 MMBtu/hr, total	8,760 hrs/yr	1.5E-02 tpy
	Wood-Fired Kilns	Wood	40 CFR 98 Table C-2	4.2E-03 kg/MMBtu	Unknown	1 cord/yr[4]	6.9E-05 tpy
	Duckering Classroom Turbine	Propane	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	0.33 MMBtu/hr	8,760 hrs/yr	1.9E-03 tpy
	Graduation Flame	Propane	40 CFR 98 Table C-2	6.0E-04 kg/MMBtu	0.005 MMBtu/hr	8,760 hrs/yr	2.9E-05 tpy
	Various Paint Booths	N/A	N/A	N/A	N/A	8,760 hrs/yr	0.0 tpy
	Various Laboratory Fume Hoods	N/A	N/A	N/A	N/A	8,760 hrs/yr	0.0 tpy
	Power Plant Field-Erected Tank	Diesel	N/A	N/A	212,120 gallons	8,760 hrs/yr	0 tpy
	Ash Bin Vent filter	N/A	N/A	N/A	N/A	8,760 hrs/yr	0.0 tpy
	Ash Vacuum Pump Filter	N/A	N/A	N/A	N/A	8,760 hrs/yr	0.0 tpy
	Ash Loadout to Truck	N/A	N/A	N/A	N/A	8,225 hrs/yr	0.0 tpy
	SRC Pellet Stove	Wood Pellets	40 CFR 98 Table C-2	4.20E-03 kg/MMBtu	0.041 MMBtu/hr	8,760 hrs/yr	1.7E-03 tpy
						Insignificant Emission Units Total Potential to Emit Emissions - N_2O	**2.2E-02 tpy**
						Total Potential to Emit Emissions - N_2O	**4.0 tpy**

Notes:

[1] Maximum annual operation for all units based on full-time operation or permit operating limits, where applicable.

[2] Conversion factors:

Engine Heat Rate:	7,000	Btu/hp-hr
Diesel Heating Value	0.137	MMBtu/gal
Waste Heating Value	9.95	MMBtu/ton
Engine horsepower	1.341	kW
Assumed drive shaft efficiency for engines	95%	Per Alan Schuler at ADEC

[3] New emergency stationary internal combustion engines are limited to maintenance checks and readiness testing to no more than 100 hours per year, per 40 CFR 60.4211(f).

[4] Approximate heat value of wood combusted in kilns is 15 MMBtu/cord, per http://www.hrt.msu.edu/energy/pdf/heating%20value%20of%20common%20fuels.pdf

[5] The higher potential emissions for natural gas or distillate firing is shown as the potential emissions for EU 3.

[6] The highest potential emissions for EU 4 and EU 8 is shown as the potential emissions.

[7] UAF is proposing an operating limit for EU 9A to avoid HAP major classification. Details are provided in Section 4 of this application.

[8] UAF is proposing operating limits for EU 19 through EU 21 to avoid minor permitting requirements for NO_X. Details are provided in Section 4 of this application.

[9] UAF is proposing an operating limit for EU 23 to avoid minor permitting requirements for NO_X. Details are provided in Section 4 of this application.

[10] UAF is proposing an operating limit for EU 25 to avoid PSD permitting requirements for SO_2. Details are provided in Section 4 of this application.

[11] UAF is proposing an operating limit for EU 26 to avoid PSD permitting requirements for NO_X. Details are provided in Section 4 of this application.

[12] Owner-requested limit of 4,380 hr/yr per AQ0316MSS03, currently being prepared by ADEC.

[13] Basis for EU 28 PTE calculated with 100 hr/yr: historical data indicating that engine operates approximately 13 hr/yr. A PTE basis of 100 hr/yr is conservatively high.

[14] Basis for EU 24 PTE calculated with 100 hr/yr. A PTE basis of 100 hr/yr is conservatively high; this engine is operated infrequently.

[15] Basis for EU 26 PTE calculated with 99 hr/yr. This engine is operated approximately 6 hours per year and is considered "limited use" under 40 CFR 63 Subpart ZZZZ.

Table 2-20. Potential Greenhouse Gases (GHG) Calculations - Methane (CH_4) Emissions
University of Alaska Fairbanks Campus

Emission Unit ID	Emission Unit Description	Fuel Type	Factor Reference	CH_4 Emission Factor	Emission Unit Rating/Capacity	Allowable Annual Operation[1]	Potential CH_4 Emissions[2]
Significant Emission Units							
1	Coal-Fired Boiler	Coal	40 CFR 98 Table C-2	1.1E-02 kg/MMBtu	84.5 MMBtu/hr	8,760 hrs/yr	8.98 tpy
2	Coal-Fired Boiler	Coal	40 CFR 98 Table C-2	1.1E-02 kg/MMBtu	84.5 MMBtu/hr	8,760 hrs/yr	8.98 tpy
3	Dual-Fired Boiler	Diesel	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	180.9 MMBtu/hr	8,760 hrs/yr	5.24 tpy[5]
3	Dual-Fired Boiler	Natural Gas	40 CFR 98 Table C-2	1.0E-03 kg/MMBtu	180.9 MMBtu/hr	8,760 hrs/yr	
~~6~~	~~Arctic Health Research Bldg. Emergency Generator~~	~~Diesel~~	~~40 CFR 98 Table C-2~~	~~3.0E-03 kg/MMBtu~~	~~125 kW~~	~~0 hrs/yr~~	0.0 tpy
~~7~~	~~Arctic Health Research Bldg. Emergency Generator~~	~~Diesel~~	~~40 CFR 98 Table C-2~~	~~3.0E-03 kg/MMBtu~~	~~125 kW~~	~~0 hrs/yr~~	0.0 tpy
4	Dual-Fired Boiler	Diesel	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	180.9 MMBtu/hr	876 hrs/yr	0.64 tpy[6]
4	Dual-Fired Boiler	Natural Gas	40 CFR 98 Table C-2	1.0E-03 kg/MMBtu	180.9 MMBtu/hr	876 hrs/yr	
8	Peaking/Backup Generator (DEG) Engine	Diesel	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	13,266 hp	1,403,509 gal/yr	
9A	BiRD Incinerator	Medical/Infectious Waste	40 CFR 98 Table C-2	3.2E-02 kg/MMBtu	83 lb/hr	109 ton/yr[7]	3.83E-02 tpy
10	AFES Boiler	Diesel	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	1.08 MMBtu/hr	8,760 hrs/yr	3.12E-02 tpy
11	AFES Boiler	Diesel	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	1.08 MMBtu/hr	8,760 hrs/yr	3.12E-02 tpy
12	Harper Boiler #1	Diesel	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	0.64 MMBtu/hr	8,760 hrs/yr	1.85E-02 tpy
13	Harper Boiler #2	Diesel	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	0.64 MMBtu/hr	8,760 hrs/yr	1.85E-02 tpy
14	Copper Lane Boiler	Diesel	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	0.136 MMBtu/hr	8,760 hrs/yr	3.94E-03 tpy
15	Copper Lane Boiler	Diesel	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	0.136 MMBtu/hr	8,760 hrs/yr	3.94E-03 tpy
16	Copper Lane (Honor's House) Boiler	Diesel	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	0.23 MMBtu/hr	8,760 hrs/yr	6.76E-03 tpy
17	West Ridge Research Building Boiler #1	Diesel	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	4.93 MMBtu/hr	8,760 hrs/yr	1.43E-01 tpy
18	West Ridge Research Building Boiler #2	Diesel	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	4.93 MMBtu/hr	8,760 hrs/yr	1.43E-01 tpy
19	BiRD RM 100U3 Boiler #1	Diesel	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	6.13 MMBtu/hr	19,650 hrs/yr[8]	3.99E-01 tpy
20	BiRD RM 100U3 Boiler #2	Diesel	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	6.13 MMBtu/hr		
21	BiRD RM 100U3 Boiler #3	Diesel	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	6.13 MMBtu/hr		
22	BiRD RM 100U3 Boiler #4	Diesel	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	8.5 MMBtu/hr	8,760 hrs/yr	2.46E-01 tpy
23	Alaska Center for Energy and Power Generator Engine	Diesel	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	235 kW	4,380 hrs/yr[9]	3.36E-02 tpy
24	Old University Park Emergency Generator Engine	Diesel	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	51 kW	100 hrs/yr[14]	1.67E-04 tpy
25	AFES Grain Dryer	Diesel	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	2.43 MMBtu/hr	100 hrs/yr[10]	7.53E-06 tpy
26	Duckering Classroom Engine	Diesel	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	45 kW	99 hrs/yr[11,15]	1.46E-04 tpy
27	Alaska Center for Energy and Power Generator Engine	Diesel	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	500 hp	4,380 hrs/yr[12]	5.34E-02 tpy
28	Alaska Earthquake Information Center Emergency Generator Engine	Diesel	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	120 hp	100 hrs/yr[13]	2.92E-04 tpy
29	Arctic Health Research Emergency Generator Engine	Diesel	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	314.0 hp	100 hrs/yr[3]	7.27E-04 tpy
Significant Emission Units Total Potential to Emit Emissions - CH_4							**25.0 tpy**

Emission Unit ID	Emission Unit Description	Fuel Type	CH_4 Emission Factor Reference	CH_4 Emission Factor	Emission Unit Rating/Capacity	Allowable Annual Operation[1]	Potential CH_4 Emissions[2]
Insignificant Emission Units							
30	AFES Greenhouse Furnace	Diesel	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	0.209 MMBtu/hr	8,760 hrs/yr	5.69E-05 tpy
31	Copper Lane Furnace	Diesel	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	0.08 MMBtu/hr	8,760 hrs/yr	2.17E-05 tpy
32	Skarland Cabin Furnace	Diesel	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	0.14 MMBtu/hr	8,760 hrs/yr	3.80E-05 tpy
33	Harper Hot Water Heater	Diesel	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	0.236 MMBtu/hr	8,760 hrs/yr	6.41E-05 tpy
	Coal Handling/Coal Crushing	Coal	N/A	N/A	N/A	8,760 hrs/yr	0 tpy
	Various Propane-Fired Kilns	Propane	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	2.57 MMBtu/hr, total	8,760 hrs/yr	7.4E-02 tpy
	Wood-Fired Kilns	Wood	40 CFR 98 Table C-2	3.20E-02 kg/MMBtu	Unknown	1 cord/yr[4]	5.3E-04 tpy
	Duckering Classroom Turbine	Propane	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	0.33 MMBtu/hr	8,760 hrs/yr	9.6E-03 tpy
	Graduation Flame	Propane	40 CFR 98 Table C-2	3.0E-03 kg/MMBtu	0.005 MMBtu/hr	8,760 hrs/yr	1.4E-04 tpy
	Various Paint Booths	N/A	N/A	N/A	N/A	8,760 hrs/yr	0.0 tpy
	Various Laboratory Fume Hoods	N/A	N/A	N/A	N/A	8,760 hrs/yr	0.0 tpy
	Power Plant Field-Erected Tank	Diesel	N/A	N/A	212,120 gallons	8,760 hrs/yr	0.0 tpy
	Ash Bin Vent filter	N/A	N/A	N/A	N/A	8,760 hrs/yr	0 tpy
	Ash Vacuum Pump Filter	N/A	N/A	N/A	N/A	8,760 hrs/yr	0 tpy
	Ash Loadout to Truck	N/A	N/A	N/A	N/A	8,225 hrs/yr	0 tpy
	SRC Pellet Stove	Wood Pellets	40 CFR 98 Table C-2	3.20E-02 kg/MMBtu	0.041 MMBtu/hr	8,760 hrs/yr	1.3E-02 tpy
						Insignificant Emission Units Total Potential to Emit Emissions - CH_4	**9.8E-02 tpy**
						Total Potential to Emit Emissions - CH_4	**25.1 tpy**

Notes:

[1] Maximum annual operation for all units based on full-time operation or permit operating limits, where applicable.

[2] Conversion factors:

Engine Heat Rate:	7,000	Btu/hp-hr
Diesel Heating Value	0.137	MMBtu/gal
Waste Heating Value	9.95	MMBtu/ton
Engine horsepower	1.341	kW
Assumed drive shaft efficiency for engines	95%	Per Alan Schuler at ADEC

[3] New emergency stationary internal combustion engines are limited to maintenance checks and readiness testing to no more than 100 hours per year, per 40 CFR 60.4211(f).

[4] Approximate heat value of wood combusted in kilns is 15 MMBtu/cord, per http://www.hrt.msu.edu/energy/pdf/heating%20value%20of%20common%20fuels.pdf

[5] The higher potential emissions for natural gas or distillate firing is shown as the potential emissions for EU 3.

[6] The highest potential emissions for EU 4 and EU 8 is shown as the potential emissions.

[7] UAF is proposing an operating limit for EU 9A to avoid HAP major classification. Details are provided in Section 4 of this application.

[8] UAF is proposing operating limits for EU 19 through EU 21 to avoid minor permitting requirements for NO_X. Details are provided in Section 4 of this application.

[9] UAF is proposing an operating limit for EU 23 to avoid minor permitting requirements for NO_X. Details are provided in Section 4 of this application.

[10] UAF is proposing an operating limit for EU 25 to avoid PSD permitting requirements for SO_2. Details are provided in Section 4 of this application.

[11] UAF is proposing an operating limit for EU 26 to avoid PSD permitting requirements for NO_X. Details are provided in Section 4 of this application.

[12] Owner-requested limit of 4,380 hr/yr per AQ0316MSS03, currently being prepared by ADEC.

[13] Basis for EU 28 PTE calculated with 100 hr/yr: historical data indicating that engine operates approximately 13 hr/yr. A PTE basis of 100 hr/yr is conservatively high.

[14] Basis for EU 24 PTE calculated with 100 hr/yr. A PTE basis of 100 hr/yr is conservatively high; this engine is operated infrequently.

[15] Basis for EU 26 PTE calculated with 99 hr/yr. This engine is operated approximately 6 hours per year and is considered "limited use" under 40 CFR 63 Subpart ZZZZ.

Table 2-21. Maximum Heat Input Calculations for Existing Boilers
University of Alaska Fairbanks Campus

Parameter Description			Data Source or Calculation Method
Maximum fuel input per boiler	5.46	ton/hr	Measured during PM source test, November 2010
Maximum fuel input to system	10.92	ton/hr	Boilers are identical; maximum possible input assumed the same for both
Maximum fuel input to system	21,840	lb/hr	(Maximum fuel input, ton/hr) x (2,000 lb/ton)
Heat content of coal combusted, as received	7,737	Btu/lb	UCM Rail Sample analysis for 11/3/2010
Heat content of coal combusted, as received	15.47	MMBtu/ton	(Heat content, Btu/lb as received) / (2,000 lb/ton)
Heat input to system	169.0	MMBtu/hr	(Max fuel input, lb/hr) x (Heat content, Btu/lb as received) / 10^6 Btu/MMBtu
Heat input per boiler	84.5	MMBtu/hr	Two identical boilers in system

Attachment 4
Updated Applicable Requirements for Stationary Engines

Table B-1. UAF - Reciprocating Engine Inventory

Emission Unit No.	Emission Unit	Installation Date	Make/Model	Rating	Classification	Existing or New Unit?	40 CFR 63 Subpart ZZZZ	40 CFR 60 Subpart IIII
8	Power Plant Backup/Peaking Generator (DEG) Engine	1999	Fairbanks Morse Colt-Pielstick PC2.6	13,266 hp	Non-Emergency	Existing	Note 1 - Table B-2	Not subject
23	Alaska Center for Energy and Power Research Generator Engine	2003	Detroit Diesel/6043-TK35	235 kW	Non-Emergency	Existing	Subject - Table B-3	Not subject
24	Old University Park Emergency Generator Engine	2003	Cummins/4B3.9-G2	51 kW	Emergency	Existing	Note 1 - Table B-2	Not subject
26	Duckering Classroom Engine	1987	Detroit	45 kW	Limited Use	Existing	Subject - Table B-4	Not subject
27	Alaska Center for Energy and Power Generator Engine	TBD	Caterpillar C-15	500 hp	Non-Emergency	New	Note 2 - Table B-2	Subject - Table B-5
28	Alaska Earthquake Information Center Emergency Generator Engine	1998	Detroit Diesel	120 hp	Emergency	Existing	Note 1 - Table B-2	Not subject
29	Arctic Health Research Emergency Generator Engine	TBD	Cummins/QSB7-G3	314 hp	Emergency	New	Note 2 - Table B-2	Subject - Table B-6

Subpart ZZZZ Applicability Notes:

1 EU IDs 24 and 28 are emergency CI RICE that are not subject to 40 CFR Part 63 Subpart ZZZZ per §63.6585(f): "The emergency stationary RICE listed in paragraphs (f)(1) through (3) of this section are not subject to this subpart. The stationary RICE must meet the definition of an emergency stationary RICE in § 63.6675, which includes operating according to the provisions specified in § 63.6640(f). (3) Existing institutional emergency stationary RICE located at an area source of HAP emissions that do not operate or are not contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in § 63.6640(f)(2)(ii) and (iii) and that do not operate for the purpose specified in § 63.6640(f)(4)(ii)." UAF is currently operating EU 8 as an emergency engine. Until UAF reclassifies this engine as non-emergency, EU 8 is not subject to 40 CFR 63 Subpart ZZZZ per §63.6585(f) as described here.

2 EU IDs 27 and 29 are a new, non-emergency CI RICE which are required to meet the requirements of 40 CFR 60 Subpart IIII per §63.6590(c): "Stationary RICE subject to Regulations under 40 CFR Part 60. An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part. (1) A new or reconstructed stationary RICE located at an area source"
These units are subject to requirements under 40 CFR 60 Subpart IIII. Please see attached applicability analysis for new non-emergency CI RICE in Table B-5 and for new emergency CI RICE in Table B-6.

3 Please note that in Note 1 above.

Please note that EU IDs 6 and 7, which were existing emergency engines, have been permanently removed from service.

Table B-2. 40 CFR 63 Subpart ZZZZ Applicable Citations for Emergency Engines (UAF EU IDs 8, 24, 27, 28, and 29)

Applicable Requirements in Tables 1 - 8 to 40 CFR 63 Subpart ZZZZ:

None

Heading	Citation	Description of Requirement	Applicable Emission Units
Subject to this Subpart	63.6585(f)(1)	The emergency stationary RICE listed in paragraphs (f)(1) through (3) of this section are not subject to this subpart. The stationary RICE must meet the definition of an emergency stationary RICE in § 63.6675, which includes operating according to the provisions specified in § 63.6640(f). (3) Existing institutional emergency stationary RICE located at an area source of HAP emissions that do not operate or are not contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in § 63.6640(f)(2)(ii) and (iii) and that do not operate for the purpose specified in § 63.6640(f)(4)(ii).	8, 24, 28
Stationary RICE subject to Regulations under 40 CFR Part 60	63.6590(c)(1)	An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part. (1) A new or reconstructed stationary RICE located at an area source;	27, 29
Continuous Compliance Requirements	63.6640(f)	(f) If you own or operate an emergency stationary RICE, you must operate the emergency stationary RICE according to the requirements in paragraphs (f)(1) through (4) of this section. In order for the engine to be considered an emergency stationary RICE under this subpart, any operation other than emergency operation, maintenance and testing, emergency demand response, and operation in non-emergency situations for 50 hours per year, as described in paragraphs (f)(1) through (4) of this section, is prohibited. If you do not operate the engine according to the requirements in paragraphs (f)(1) through (4) of this section, the engine will not be considered an emergency engine under this subpart and must meet all requirements for non-emergency engines. (1) There is no time limit on the use of emergency stationary RICE in emergency situations. (2) You may operate your emergency stationary RICE for any combination of the purposes specified in paragraphs (f)(2)(i) through (iii) of this section for a maximum of 100 hours per calendar year. Any operation for non-emergency situations as allowed by paragraphs (f)(3) and (4) of this section counts as part of the 100 hours per calendar year allowed by this paragraph (f)(2). (i) Emergency stationary RICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. (4) Emergency stationary RICE located at area sources of HAP may be operated for up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing and emergency demand response provided in paragraph (f)(2) of this section. Except as provided in paragraphs (f)(4)(i) and (ii) of this section, the 50 hours per year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to an electric grid or otherwise supply power as part of a financial arrangement with another entity.	8, 24, 28

Table B-3. 40 CFR 63 Subpart ZZZZ Applicable Citations for Non-Emergency Engine ≤ 500 HP (UAF EU ID 23)

Applicable Requirements in Tables 1 - 8 to 40 CFR 63 Subpart ZZZZ:

Table 2d, Item 2 (a or b)
Table 4, Item 1 or 3 (Depending on compliance method)
Table 5, Item 11 or 12 (Depending on compliance method)
Table 7, Item 1
Table 8

Heading	Citation	Description of Requirement
Subject to this Subpart	63.6585	You are subject to this subpart if you own or operate a stationary RICE at a major or area source of HAP emissions, except if the stationary RICE is being tested at a stationary RICE test cell/stand.
Affected Source	63.6590(a)(1)(iii)	For stationary RICE located at an area source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before June 12, 2006.
Compliance Date	63.6595(a)(1)	If you have an existing stationary CI RICE located at an area source of HAP emissions, you must comply with the applicable emission limitations and operating limitations no later than May 3, 2013.
	63.6595(c)	If you own or operate an affected source, you must meet the applicable notification requirements in §63.6645 and in 40 CFR part 63, subpart A.
	63.6603	Compliance with the numerical emission limitations established in this subpart is based on the results of testing the average of three 1-hour runs using the testing requirements and procedures in §63.6620 and Table 4 to this subpart.
Emission and Operating Limitations	63.6603(a)	If you own or operate an existing stationary RICE located at an area source of HAP emissions, you must comply with the requirements in Table 2d to this subpart and the operating limitations in Table 2b to this subpart which apply to you.
Fuel Requirements	63.6604(a)	If you own or operate an existing non-emergency, non-black start CI stationary RICE with a site rating of more than 300 brake HP with a displacement of less than 30 liters per cylinder that uses diesel fuel, you must use diesel fuel that meets the requirements in 40 CFR 80.510(b) for nonroad diesel fuel.
General Compliance Requirements	63.6605	(a) You must be in compliance with the emission limitations and operating limitations in this subpart that apply to you at all times. (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. The general duty to minimize emissions does not require you to make any further efforts to reduce emissions if levels required by this 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, review of operation and maintenance records, and inspection of the source.

Testing and Initial Compliance Requirements	63.6612	If you own or operate an existing stationary RICE located at an area source of HAP emissions you are subject to the requirements of this section. (a) You must conduct any initial performance test or other initial compliance demonstration according to Tables 4 and 5 to this subpart that apply to you within 180 days after the compliance date that is specified for your stationary RICE in §63.6595 and according to the provisions in §63.7(a)(2). (b) An owner or operator is not required to conduct an initial performance test on a unit for which a performance test has been previously conducted, but the test must meet all of the conditions described in paragraphs (b)(1) through (4) of this section. (1) The test must have been conducted using the same methods specified in this subpart, and these methods must have been followed correctly. (2) The test must not be older than 2 years. (3) The test must be reviewed and accepted by the Administrator. (4) Either no process or equipment changes must have been made since the test was performed, or the owner or operator must be able to demonstrate that the results of the performance test, with or without adjustments, reliably demonstrate compliance despite process or equipment changes.
Testing and Initial Compliance Requirements	63.6615	If you must comply with the emission limitations and operating limitations, you must conduct subsequent performance tests as specified in Table 3 of this subpart.
Testing and Initial Compliance Requirements	63.6620	(a) You must conduct each performance test in Tables 3 and 4 of this subpart that applies to you. (b) Each performance test must be conducted according to the requirements that this subpart specifies in Table 4 to this subpart. If you own or operate a non-operational stationary RICE that is subject to performance testing, you do not need to start up the engine solely to conduct the performance test. Owners and operators of a non-operational engine can conduct the performance test when the engine is started up again. See attached excerpt following Table B-6.
Testing and Initial Compliance Requirements	63.6625(g)	If you own or operate an existing non-emergency, non-black start CI engine greater than or equal to 300 HP that is not equipped with a closed crankcase ventilation system, you must comply with either paragraph (g)(1) or paragraph (2) of this section. Owners and operators must follow the manufacturer's specified maintenance requirements for operating and maintaining the open or closed crankcase ventilation systems and replacing the crankcase filters, or can request the Administrator to approve different maintenance requirements that are as protective as manufacturer requirements. Existing CI engines located at area sources in areas of Alaska that meet either § 63.6603(b)(1) or § 63.6603(b)(2) do not have to meet the requirements of this paragraph (g). Existing CI engines located on offshore vessels that meet § 63.6603(c) do not have to meet the requirements of this paragraph (g). (1) Install a closed crankcase ventilation system that prevents crankcase emissions from being emitted to the atmosphere, or (2) Install an open crankcase filtration emission control system that reduces emissions from the crankcase by filtering the exhaust stream to remove oil mist, particulates and metals.

	63.6625(h)	If you operate a new, reconstructed, or existing stationary engine, you must minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the emission standards applicable to all times other than startup in Tables 1a, 2a, 2c, and 2d to this subpart apply.
	63.6630	(a) You must demonstrate initial compliance with each emission and operating limitation that applies to you according to Table 5 of this subpart. (b) During the initial performance test, you must establish each operating limitation in Tables 1b and 2b of this subpart that applies to you. (c) You must submit the Notification of Compliance Status containing the results of the initial compliance demonstration according to the requirements in §63.6645.
Continuous Compliance Requirements	63.6635(a)	If you must comply with emission and operating limitations, you must monitor and collect data according to this section.
Continuous Compliance Requirements	63.6635(b)-(c)	(b) Except for monitor malfunctions, associated repairs, required performance evaluations, and required quality assurance or control activities, you must monitor continuously at all times that the stationary RICE is operating. A monitoring malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring to provide valid data. Monitoring failures that are caused in part by poor maintenance or careless operation are not malfunctions. (c) You may not use data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities in data averages and calculations used to report emission or operating levels. You must, however, use all the valid data collected during all other periods.
Continuous Compliance Requirements	63.6640	(a) You must demonstrate continuous compliance with each emission limitation and operating limitation in Tables 1a and 1b, Tables 2a and 2b, Table 2c, and Table 2d to this subpart that apply to you according to methods specified in Table 6 to this subpart. (b) You must report each instance in which you did not meet each emission limitation or operating limitation in Tables 1a and 1b, Tables 2a and 2b, Table 2c, and Table 2d to this subpart that apply to you. These instances are deviations from the emission and operating limitations in this subpart. These deviations must be reported according to the requirements in §63.6650. If you change your catalyst, you must reestablish the values of the operating parameters measured during the initial performance test. When you reestablish the values of your operating parameters, you must also conduct a performance test to demonstrate that you are meeting the required emission limitation applicable to your stationary RICE.
Continuous Compliance Requirements		(e) You must also report each instance in which you did not meet the requirements in Table 8 to this subpart that apply to you.
Notifications, Reports, and Records		(a) You must submit all of the notifications in §§63.7(b) and (c), 63.8(e), (f)(4) and (f)(6), 63.9(b) through (e), and (g) and (h) that apply to you by the dates specified if you own or operate any of the following; (2) An existing stationary RICE located at an area source of HAP emissions.

Notifications, Reports, and Records	63.6645	(g) If you are required to conduct a performance test, you must submit a Notification of Intent to conduct a performance test at least 60 days before the performance test is scheduled to begin as required in §63.7(b)(1). (h) If you are required to conduct a performance test or other initial compliance demonstration as specified in Tables 4 and 5 to this subpart, you must submit a Notification of Compliance Status according to §63.9(h)(2)(ii). (1) For each initial compliance demonstration required in Table 5 to this subpart that does not include a performance test, you must submit the Notification of Compliance Status before the close of business on the 30th day following the completion of the initial compliance demonstration. (2) For each initial compliance demonstration required in Table 5 to this subpart that includes a performance test conducted according to the requirements in Table 3 to this subpart, you must submit the Notification of Compliance Status, including the performance test results, before the close of business on the 60th day following the completion of the performance test according to §63.10(d)(2).
Notifications, Reports, and Records	63.6650(a)	You must submit each report in Table 7 of this subpart that applies to you.
Notifications, Reports, and Records	63.6650	(b) through (e) apply, depending on compliance method. See attached excerpt following Table B-6.
Notifications, Reports, and Records	63.6650(f)	Each affected source that has obtained a title V operating permit pursuant to 40 CFR part 70 or 71 must report all deviations as defined in this subpart in the semiannual monitoring report required by 40 CFR 70.6 (a)(3)(iii)(A) or 40 CFR 71.6(a)(3)(iii)(A). If an affected source submits a Compliance report pursuant to Table 7 of this subpart along with, or as part of, the semiannual monitoring report required by 40 CFR 70.6(a)(3)(iii)(A) or 40 CFR 71.6(a)(3)(iii)(A), and the Compliance report includes all required information concerning deviations from any emission or operating limitation in this subpart, submission of the Compliance report shall be deemed to satisfy any obligation to report the same deviations in the semiannual monitoring report. However, submission of a Compliance report shall not otherwise affect any obligation the affected source may have to report deviations from permit requirements to the permit authority.
Notifications, Reports, and Records	63.6655(a)	If you must comply with the emission and operating limitations, you must keep the records described in paragraphs (a)(1) through (a)(5), (b)(1) through (b)(3) and (c) of this section. (1) A copy of each notification and report that you submitted to comply with this subpart, including all documentation supporting any Initial Notification or Notification of Compliance Status that you submitted, according to the requirement in §63.10(b)(2)(xiv). (2) Records of the occurrence and duration of each malfunction of operation (i.e., process equipment) or the air pollution control and monitoring equipment. (3) Records of performance tests and performance evaluations as required in §63.10(b)(2)(viii). (4) Records of all required maintenance performed on the air pollution control and monitoring equipment. (5) Records of actions taken during periods of malfunction to minimize emissions in accordance with §63.6605(b), including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation.

Notifications, Reports, and Records	63.6655(d)	You must keep the records required in Table 6 of this subpart to show continuous compliance with each emission or operating limitation that applies to you.
Notifications, Reports, and Records	63.6660	(a) Your records must be in a form suitable and readily available for expeditious review according to §63.10(b)(1). (b) As specified in §63.10(b)(1), you must keep each record for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. (c) You must keep each record readily accessible in hard copy or electronic form for at least 5 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record, according to §63.10(b)(1).
Other Requirements and Information	63.6665	Table 8 to this subpart shows which parts of the General Provisions in §§63.1 through 63.15 apply to you.

Table B-4. 40 CFR 63 Subpart ZZZZ Applicable Citations for Limited Use Engine < 300 HP (UAF EU ID 26)

Applicable Requirements in Tables 1 - 8 to 40 CFR 63 Subpart ZZZZ:

Table 2d, Item 1
Table 6, Item 9
Table 8

Heading	Citation	Description of Requirement
Subject to this Subpart	63.6585	You are subject to this subpart if you own or operate a stationary RICE at a major or area source of HAP emissions.
Affected Source	63.6590(a)(1)(iii)	For stationary RICE located at an area source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before June 12, 2006.
Compliance Date	63.6595(a)(1)	If you have an existing stationary CI RICE located at an area source of HAP emissions, you must comply with the applicable emission limitations and operating limitations no later than May 3, 2013.
Emission and Operating Limitations	63.6603(a)	If you own or operate an existing stationary RICE located at an area source of HAP emissions, you must comply with the requirements in Table 2d to this subpart and the operating limitations in Table 2b to this subpart which apply to you. *NOTE: Item 1 of Table 2d applies.*
General Compliance Requirements	63.6605	(a) You must be in compliance with the emission limitations and operating limitations in this subpart that apply to you at all times. (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. The general duty to minimize emissions does not require you to make any further efforts to reduce emissions if levels required by this 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, review of operation and maintenance records, and inspection of the source.
Testing and Initial Compliance Requirements	63.6612	If you own or operate an existing stationary RICE located at an area source of HAP emissions you are subject to the requirements of this section. *NOTE: No requirements apply.*
Monitoring, Installation, Collection, Operation, and Maintenance Requirements	63.6625(e)(4)	If you own or operate any of the following stationary RICE, you must operate and maintain the stationary RICE and after-treatment control device (if any) according to the manufacturer's emission-related written instructions or develop your own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions (4) An existing non-emergency, non-black start stationary CI RICE with a site rating less than or equal to 300 HP located at an area source of HAP emissions;
Monitoring, Installation, Collection, Operation, and Maintenance Requirements	63.6625(h)	If you operate a new, reconstructed, or existing stationary engine, you must minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the emission standards applicable to all times other than startup in Tables 1a, 2a, 2c, and 2d to this subpart apply.

Monitoring, Installation, Collection, Operation, and Maintenance Requirements	63.6625(i)	If you own or operate a stationary CI engine that is subject to the work, operation or management practices in items 1 or 2 of Table 2c to this subpart or in items 1 or 4 of Table 2d to this subpart, you have the option of utilizing an oil analysis program in order to extend the specified oil change requirement in Tables 2c and 2d to this subpart. The oil analysis must be performed at the same frequency specified for changing the oil in Table 2c or 2d to this subpart. The analysis program must at a minimum analyze the following three parameters: Total Base Number, viscosity, and percent water content. The condemning limits for these parameters are as follows: Total Base Number is less than 30 percent of the Total Base Number of the oil when new; viscosity of the oil has changed by more than 20 percent from the viscosity of the oil when new; or percent water content (by volume) is greater than 0.5. If all of these condemning limits are not exceeded, the engine owner or operator is not required to change the oil. If any of the limits are exceeded, the engine owner or operator must change the oil within 2 business days of receiving the results of the analysis; if the engine is not in operation when the results of the analysis are received, the engine owner or operator must change the oil within 2 business days or before commencing operation, whichever is later. The owner or operator must keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for the engine. The analysis program must be part of the maintenance plan for the engine.
Continuous Compliance	63.6640	(a) You must demonstrate continuous compliance with each emission limitation and operating limitation in Tables 1a and 1b, Tables 2a and 2b, Table 2c, and Table 2d to this subpart that apply to you according to methods specified in Table 6 to this subpart. (b) You must report each instance in which you did not meet each emission limitation or operating limitation in Tables 1a and 1b, Tables 2a and 2b, Table 2c, and Table 2d to this subpart that apply to you. These instances are deviations from the emission and operating limitations in this subpart. These deviations must be reported according to the requirements in §63.6650. If you change your catalyst, you must reestablish the values of the operating parameters measured during the initial performance test. When you reestablish the values of your operating parameters, you must also conduct a performance test to demonstrate that you are meeting the required emission limitation applicable to your stationary RICE. (e) You must also report each instance in which you did not meet the requirements in Table 8 to this subpart that apply to you.
Notifications, Reports, and	63.6645	(a) You must submit all of the notifications in §§63.7(b) and (c), 63.8(e), (f)(4) and (f)(6), 63.9(b) through (e), and (g) and (h) that apply to you by the dates specified if you own or operate any of the following; (5) This requirement does not apply if you own or operate an existing stationary RICE less than 100 HP, an existing stationary emergency RICE, or an existing stationary RICE that is not subject to any numerical emission standards.
	63.6650(f)	Each affected source that has obtained a title V operating permit pursuant to 40 CFR part 70 or 71 must report all deviations as defined in this subpart in the semiannual monitoring report required by 40 CFR 70.6 (a)(3)(iii)(A) or 40 CFR 71.6(a)(3)(iii)(A). If an affected source submits a Compliance report pursuant to Table 7 of this subpart along with, or as part of, the semiannual monitoring report required by 40 CFR 70.6(a)(3)(iii)(A) or 40 CFR 71.6(a)(3)(iii)(A), and the Compliance report includes all required information concerning deviations from any emission or operating limitation in this subpart, submission of the Compliance report shall be deemed to satisfy any obligation to report the same deviations in the semiannual monitoring report. However, submission of a Compliance report shall not otherwise affect any obligation the affected source may have to report deviations from permit requirements to the permit authority.

Records	63.6655(e)	You must keep records of the maintenance conducted on the stationary RICE in order to demonstrate that you operated and maintained the stationary RICE and after-treatment control device (if any) according to your own maintenance plan if you own or operate any of the following stationary RICE; (3) An existing stationary RICE located at an area source of HAP emissions subject to management practices as shown in Table 2d to this subpart.
	63.6660	(a) Your records must be in a form suitable and readily available for expeditious review according to §63.10(b)(1). (b) As specified in §63.10(b)(1), you must keep each record for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. (c) You must keep each record readily accessible in hard copy or electronic form for at least 5 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record, according to §63.10(b)(1).
Other Requirements and Information	63.6665	Table 8 to this subpart shows which parts of the General Provisions in §§63.1 through 63.15 apply to you.
	63.6675	Definitions - all apply.

Table B-5. 40 CFR 60 Subpart IIII Applicable Citations for Non-Emergency Engine (EU 27)

Heading	Citation	Description of Requirement
Affected Source	63.6590(c)(1)	The engine must meet the requirements of this subpart by meeting the requirements of 40 CFR Part 60 Subpart IIII. No further requirements apply for such engines under this subpart.
Subject to this Subpart	60.4200(a)	The provisions of this subpart are applicable to owners, and operators of stationary compression ignition (CI) internal combustion engines (ICE) and other persons as specified in paragraphs (a)(1) through (4) of this section. For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator. (2) Owners and operators of stationary CI ICE that commence construction after July 11, 2005, where the stationary CI ICE are: (i) Manufactured after April 1, 2006, and are not fire pump engines, or (ii) Manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006.
Emission Standards	60.4204(b)	Comply with the emission standards for new CI engines in §60.4201 for 2007 model year and later stationary CI ICE, as applicable. *NOTE: 40 CFR 60.4201(a) requires that this engine be certified to the emission standards in 40 CFR 89.112 and 89.113.*
Emission Standards	60.4206	Owners and operators of stationary CI ICE must operate and maintain stationary CI ICE that achieve the emission standards as required in §60.4204 over the entire life of the engine.
Fuel Requirements	60.4207(b)	Beginning October 1, 2010, owners and operators of stationary CI ICE subject to this subpart with a displacement of less than 30 liters per cylinder that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel, except that any existing diesel fuel purchased (or otherwise obtained) prior to October 1, 2010, may be used until depleted. *NOTE: The standards in 40 CFR 80.510(b) are a fuel sulfur content of 15 ppm maximum and a minimum centane index of 40; or a maximum aromatic content of 35 percent volume.*
Compliance Requirements	60.4211(a)	If you are an owner or operator and must comply with the emission standards specified in this subpart, you must do all of the following, except as permitted under paragraph (g) of this section: (1) Operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's emission-related written instructions; (2) Change only those emission-related settings that are permitted by the manufacturer; and (3) Meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply to you.
Compliance Requirements	60.4211(c)	If you are an owner or operator of a 2007 model year and later stationary CI internal combustion engine and must comply with the emission standards specified in §60.4204(b), you must comply by purchasing an engine certified to the emission standards in §60.4204(b) for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's emission-related specifications, except as permitted in paragraph (g) of this section.

Compliance Requirements	60.4211(g)(2)	If you do not install, configure, operate, and maintain your engine and control device according to the manufacturer's emission-related written instructions, or you change emission-related settings in a way that is not permitted by the manufacturer, you must demonstrate compliance as follows: If you are an owner or operator of a stationary CI internal combustion engine greater than or equal to 100 HP and less than or equal to 500 HP, you must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test to demonstrate compliance with the applicable emission standards within 1 year of startup, or within 1 year after an engine and control device is no longer installed, configured, operated, and maintained in accordance with the manufacturer's emission-related written instructions, or within 1 year after you change emission-related settings in a way that is not permitted by the manufacturer
General Provisions	60.4218	Table 8 to this subpart shows which parts of the General Provisions in §§ 60.1 through 60.19 apply

Table B-6. 40 CFR 60 Subpart IIII Applicable Citations for Emergency Engine (UAF EU 29)

Heading	Citation	Description of Requirement
Affected Source	63.6590(c)(1)	The engine must meet the requirements of this subpart by meeting the requirements of 40 CFR Part 60 Subpart IIII. No further requirements apply for such engines under this subpart.
Subject to this Subpart	60.4200(a)	The provisions of this subpart are applicable to owners, and operators of stationary compression ignition (CI) internal combustion engines (ICE) and other persons as specified in paragraphs (a)(1) through (4) of this section. For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator. (2) Owners and operators of stationary CI ICE that commence construction after July 11, 2005, where the stationary CI ICE are: (i) Manufactured after April 1, 2006, and are not fire pump engines, or (ii) Manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006.
Emission Standards	60.4205(b)	Owners and operators of 2007 model year and later emergency stationary CI ICE with a displacement of less than 30 liters per cylinder that are not fire pump engines must comply with the emission standards for new nonroad CI engines in § 60.4202, for all pollutants, for the same model year and maximum engine power for their 2007 model year and later emergency stationary CI ICE. *NOTE: 40 CFR 60.4202(a)(2) requires that this engine be certified to the emission standards in 40 CFR 89.112 and 89.113.*
Emission Standards	60.4206	Owners and operators of stationary CI ICE must operate and maintain stationary CI ICE that achieve the emission standards as required in § 60.4205 over the entire life of the engine.
Fuel Requirements	60.4207(b)	Beginning October 1, 2010, owners and operators of stationary CI ICE subject to this subpart with a displacement of less than 30 liters per cylinder that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel, except that any existing diesel fuel purchased (or otherwise obtained) prior to October 1, 2010, may be used until depleted. *NOTE: The standards in 40 CFR 80.510(b) are a fuel sulfur content of 15 ppm maximum and a minimum centane index of 40; or a maximum aromatic content of 35 percent volume.*
Installation Deadline	60.4208(e)	After December 31, 2012, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 130 KW (175 HP), including those above 560 KW (750 HP), that do not meet the applicable requirements for 2011 model year non-emergency engines. *NOTE: EU 33 is certified to Tier 4 interim standards, which meet the applicable requirements for 2011 model year non-emergency engines.*
Compliance Requirements	60.4211(a)	If you are an owner or operator and must comply with the emission standards specified in this subpart, you must do all of the following, except as permitted under paragraph (g) of this section: (1) Operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's emission-related written instructions; (2) Change only those emission-related settings that are permitted by the manufacturer; and (3) Meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply to you.

Compliance Requirements	60.4211(c)	If you are an owner or operator of a 2007 model year and later stationary CI internal combustion engine and must comply with the emission standards specified in §60.4205(b), you must comply by purchasing an engine certified to the emission standards in §60.4205(b) for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's emission-related specifications, except as permitted in paragraph (g) of this section.
Compliance Requirements	60.4211(f)	If you own or operate an emergency stationary ICE, you must operate the emergency stationary ICE according to the requirements in paragraphs (f)(1) through (3) of this section. In order for the engine to be considered an emergency stationary ICE under this subpart, any operation other than emergency operation, maintenance and testing, emergency demand response, and operation in non-emergency situations for 50 hours per year, as described in paragraphs (f)(1) through (3) of this section, is prohibited. If you do not operate the engine according to the requirements in paragraphs (f)(1) through (3) of this section, the engine will not be considered an emergency engine under this subpart and must meet all requirements for non-emergency engines.
Compliance Requirements	60.4211(f)(1)	There is no time limit on the use of emergency stationary ICE in emergency situations.
Compliance Requirements	60.4211(f)(2)	You may operate your emergency stationary ICE for any combination of the purposes specified in paragraphs (f)(2)(i) through (iii) of this section for a maximum of 100 hours per calendar year. Any operation for non-emergency situations as allowed by paragraph (f)(3) of this section counts as part of the 100 hours per calendar year allowed by this paragraph (f)(2). (i) Emergency stationary ICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that federal, state, or local standards require maintenance and testing of emergency ICE beyond 100 hours per calendar year.
Compliance Requirements	60.4211(f)(3)	Emergency stationary ICE may be operated for up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing and emergency demand response provided in paragraph (f)(2) of this section. Except as provided in paragraph (f)(3)(i) of this section, the 50 hours per calendar year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to an electric grid or otherwise supply power as part of a financial arrangement with another entity.
Compliance Requirements	60.4211(g)(2)	If you do not install, configure, operate, and maintain your engine and control device according to the manufacturer's emission-related written instructions, or you change emission-related settings in a way that is not permitted by the manufacturer, you must demonstrate compliance as follows: If you are an owner or operator of a stationary CI internal combustion engine greater than or equal to 100 HP and less than or equal to 500 HP, you must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test to demonstrate compliance with the applicable emission standards within 1 year of startup, or within 1 year after an engine and control device is no longer installed, configured, operated, and maintained in accordance with the manufacturer's emission-related written instructions, or within 1 year after you change emission-related settings in a way that is not permitted by the manufacturer.

Notification, Reporting, and Recordkeeping	60.4214(b)	If the stationary CI internal combustion engine is an emergency stationary internal combustion engine, the owner or operator is not required to submit an initial notification. Starting with the model years in table 5 to this subpart, if the emergency engine does not meet the standards applicable to non-emergency engines in the applicable model year, the owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The owner must record the time of operation of the engine and the reason the engine was in operation during that time. *NOTE: EU 33 <u>does</u> meet the standards applicable to non-emergency engines in the applicable model year.*
General Provisions	60.4218	Table 8 to this subpart shows which parts of the General Provisions in §§ 60.1 through 60.19 apply

Excerpts Supporting Table B-3

Performance Tests and Other Procedures

§63.6620 **What performance tests and other procedures must I use?**

(a) You must conduct each performance test in Tables 3 and 4 of this subpart that applies to you.

(b) Each performance test must be conducted according to the requirements that this subpart specifies in Table 4 to this subpart. If you own or operate a non-operational stationary RICE that is subject to performance testing, you do not need to start up the engine solely to conduct the performance test. Owners and operators of a non-operational engine can conduct the performance test when the engine is started up again. The test must be conducted at any load condition within plus or minus 10 percent of 100 percent load for the stationary RICE listed in paragraphs (b)(1) through (4) of this section.

(1) Non-emergency 4SRB stationary RICE with a site rating of greater than 500 brake HP located at a major source of HAP emissions.

(2) New non-emergency 4SLB stationary RICE with a site rating of greater than or equal to 250 brake HP located at a major source of HAP emissions.

(3) New non-emergency 2SLB stationary RICE with a site rating of greater than 500 brake HP located at a major source of HAP emissions.

(4) New non-emergency CI stationary RICE with a site rating of greater than 500 brake HP located at a major source of HAP emissions.

(c) [Reserved]

(d) You must conduct three separate test runs for each performance test required in this section, as specified in § 63.7(e)(3). Each test run must last at least 1 hour, unless otherwise specified in this subpart.

(e)(1) You must use Equation 1 of this section to determine compliance with the percent reduction requirement:

$$\frac{C_i - C_o}{C_i} \times 100 = R \quad (Eq. 1)$$

Where:

C_i = concentration of carbon monoxide (CO), total hydrocarbons (THC), or formaldehyde at the control device inlet,

C_o = concentration of CO, THC, or formaldehyde at the control device outlet, and

R = percent reduction of CO, THC, or formaldehyde emissions.

(2) You must normalize the CO, THC, or formaldehyde concentrations at the inlet and outlet of the control device to a dry basis and to 15 percent oxygen, or an equivalent percent carbon dioxide (CO_2). If pollutant concentrations are to be corrected to 15 percent oxygen and CO_2 concentration is measured in lieu of oxygen concentration measurement, a CO_2 correction factor is needed. Calculate the CO_2 correction factor as described in paragraphs (e)(2)(i) through (iii) of this section.

(i) Calculate the fuel-specific F_o value for the fuel burned during the test using values obtained from Method 19, Section 5.2, and the following equation:

$$F_o = \frac{0.209\ F_d}{F_c} \quad (Eq.\ 2)$$

Where:

F_o = Fuel factor based on the ratio of oxygen volume to the ultimate CO_2 volume produced by the fuel at zero percent excess air.

0.209 = Fraction of air that is oxygen, percent/100.

F_d = Ratio of the volume of dry effluent gas to the gross calorific value of the fuel from Method 19, dsm^3 /J (dscf/10^6 Btu).

F_c = Ratio of the volume of CO_2 produced to the gross calorific value of the fuel from Method 19, dsm^3 /J (dscf/10^6 Btu)

(ii) Calculate the CO_2 correction factor for correcting measurement data to 15 percent O_2 , as follows:

$$X_{CO2} = \frac{5.9}{F_o} \quad (Eq.\ 3)$$

Where:

X_{CO2} = CO_2 correction factor, percent.

5.9 = 20.9 percent O_2 —15 percent O_2 , the defined O_2 correction value, percent.

(iii) Calculate the CO, THC, and formaldehyde gas concentrations adjusted to 15 percent O_2 using CO_2 as follows:

$$C_{adj} = C_d \frac{X_{CO2}}{\%CO_2} \quad (Eq.\ 4)$$

Where:

C_{adj} = Calculated concentration of CO, THC, or formaldehyde adjusted to 15 percent O_2.

C_d = Measured concentration of CO, THC, or formaldehyde, uncorrected.

X_{CO2} = CO_2 correction factor, percent.

%CO_2 = Measured CO_2 concentration measured, dry basis, percent.

(f) If you comply with the emission limitation to reduce CO and you are not using an oxidation catalyst, if you comply with the emission limitation to reduce formaldehyde and you are not using NSCR, or if you comply with the emission limitation to limit the concentration of formaldehyde in the stationary RICE exhaust and you are not using an oxidation catalyst or NSCR, you must petition the Administrator for operating limitations to be established during the initial performance test and continuously monitored thereafter; or for approval of no operating limitations. You must not conduct the initial performance test until after the petition has been approved by the Administrator.

(g) If you petition the Administrator for approval of operating limitations, your petition must include the information described in paragraphs (g)(1) through (5) of this section.

(1) Identification of the specific parameters you propose to use as operating limitations;

(2) A discussion of the relationship between these parameters and HAP emissions, identifying how HAP emissions change with changes in these parameters, and how limitations on these parameters will serve to limit HAP emissions;

(3) A discussion of how you will establish the upper and/or lower values for these parameters which will establish the limits on these parameters in the operating limitations;

(4) A discussion identifying the methods you will use to measure and the instruments you will use to monitor these parameters, as well as the relative accuracy and precision of these methods and instruments; and

(5) A discussion identifying the frequency and methods for recalibrating the instruments you will use for monitoring these parameters.

(h) If you petition the Administrator for approval of no operating limitations, your petition must include the information described in paragraphs (h)(1) through (7) of this section.

(1) Identification of the parameters associated with operation of the stationary RICE and any emission control device which could change intentionally (*e.g.,* operator adjustment, automatic controller adjustment, etc.) or unintentionally (*e.g.,* wear and tear, error, etc.) on a routine basis or over time;

(2) A discussion of the relationship, if any, between changes in the parameters and changes in HAP emissions;

(3) For the parameters which could change in such a way as to increase HAP emissions, a discussion of whether establishing limitations on the parameters would serve to limit HAP emissions;

(4) For the parameters which could change in such a way as to increase HAP emissions, a discussion of how you could establish upper and/or lower values for the parameters which would establish limits on the parameters in operating limitations;

(5) For the parameters, a discussion identifying the methods you could use to measure them and the instruments you could use to monitor them, as well as the relative accuracy and precision of the methods and instruments;

(6) For the parameters, a discussion identifying the frequency and methods for recalibrating the instruments you could use to monitor them; and

(7) A discussion of why, from your point of view, it is infeasible or unreasonable to adopt the parameters as operating limitations.

(i) The engine percent load during a performance test must be determined by documenting the calculations, assumptions, and measurement devices used to measure or estimate the percent load in a specific application. A written report of the average percent load determination must be included in the notification of compliance status. The following information must be included in the written report: the engine model number, the engine manufacturer, the year of purchase, the manufacturer's site-rated brake horsepower, the ambient temperature, pressure, and humidity during the performance test, and all assumptions that were made to estimate or calculate percent load during the performance test must be clearly explained. If measurement devices such as flow meters, kilowatt meters, beta analyzers, stain gauges, etc. are used, the model number of the measurement device, and an estimate of its accurate in percentage of true value must be provided.

[69 FR 33506, June 15, 2004, as amended at 75 FR 9676, Mar. 3, 2010; 78 FR 6702, Jan. 30, 2013]

Monitoring, Installation, Collection, Operation, and Maintenance Requirements

§63.6625(b) What are my monitoring, installation, collection, operation, and maintenance requirements?

(b) If you are required to install a continuous parameter monitoring system (CPMS) as specified in Table 5 of this subpart, you must install, operate, and maintain each CPMS according to the requirements in paragraphs (b)(1) through (6) of this section. For an affected source that is complying with the emission limitations and operating limitations on March 9, 2011, the requirements in paragraph (b) of this section are applicable September 6, 2011.

(1) You must prepare a site-specific monitoring plan that addresses the monitoring system design, data collection, and the quality assurance and quality control elements outlined in paragraphs (b)(1)(i) through (v) of this section and in § 63.8(d). As specified in § 63.8(f)(4), you may request approval of monitoring system quality assurance and quality control procedures alternative to those specified in paragraphs (b)(1) through (5) of this section in your site-specific monitoring plan.

(i) The performance criteria and design specifications for the monitoring system equipment, including the sample interface, detector signal analyzer, and data acquisition and calculations;

(ii) Sampling interface (*e.g.,* thermocouple) location such that the monitoring system will provide representative measurements;

(iii) Equipment performance evaluations, system accuracy audits, or other audit procedures;

(iv) Ongoing operation and maintenance procedures in accordance with provisions in § 63.8(c)(1)(ii) and (c)(3); and

(v) Ongoing reporting and recordkeeping procedures in accordance with provisions in § 63.10(c), (e)(1), and (e)(2)(i).

(2) You must install, operate, and maintain each CPMS in continuous operation according to the procedures in your site-specific monitoring plan.

(3) The CPMS must collect data at least once every 15 minutes (see also § 63.6635).

(4) For a CPMS for measuring temperature range, the temperature sensor must have a minimum tolerance of 2.8 degrees Celsius (5 degrees Fahrenheit) or 1 percent of the measurement range, whichever is larger.

(5) You must conduct the CPMS equipment performance evaluation, system accuracy audits, or other audit procedures specified in your site-specific monitoring plan at least annually.

(6) You must conduct a performance evaluation of each CPMS in accordance with your site-specific monitoring plan.

Report Submitting

§63.6650 What reports must I submit and when?

(a) You must submit each report in Table 7 of this subpart that applies to you.

(b) Unless the Administrator has approved a different schedule for submission of reports under § 63.10(a), you must submit each report by the date in Table 7 of this subpart and according to the requirements in paragraphs (b)(1) through (b)(9) of this section.

(1) For semiannual Compliance reports, the first Compliance report must cover the period beginning on the compliance date that is specified for your affected source in § 63.6595 and ending on June 30 or December 31, whichever date is the first date following the end of the first calendar half after the compliance date that is specified for your source in § 63.6595.

(2) For semiannual Compliance reports, the first Compliance report must be postmarked or delivered no later than July 31 or January 31, whichever date follows the end of the first calendar half after the compliance date that is specified for your affected source in § 63.6595.

(3) For semiannual Compliance reports, each subsequent Compliance report must cover the semiannual reporting period from January 1 through June 30 or the semiannual reporting period from July 1 through December 31.

(4) For semiannual Compliance reports, each subsequent Compliance report must be postmarked or delivered no later than July 31 or January 31, whichever date is the first date following the end of the semiannual reporting period.

(5) For each stationary RICE that is subject to permitting regulations pursuant to 40 CFR part 70 or 71, and if the permitting authority has established dates for submitting semiannual reports pursuant to 40 CFR 70.6(a)(3)(iii)(A) or 40 CFR 71.6 (a)(3)(iii)(A), you may submit the first and subsequent Compliance reports according to the dates the permitting authority has established instead of according to the dates in paragraphs (b)(1) through (b)(4) of this section.

(6) For annual Compliance reports, the first Compliance report must cover the period beginning on the compliance date that is specified for your affected source in § 63.6595 and ending on December 31.

(7) For annual Compliance reports, the first Compliance report must be postmarked or delivered no later than January 31 following the end of the first calendar year after the compliance date that is specified for your affected source in § 63.6595.

(8) For annual Compliance reports, each subsequent Compliance report must cover the annual reporting period from January 1 through December 31.

(9) For annual Compliance reports, each subsequent Compliance report must be postmarked or delivered no later than January 31.

(c) The Compliance report must contain the information in paragraphs (c)(1) through (6) of this section.

(1) Company name and address.

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

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

(4) If you had a malfunction during the reporting period, the compliance report 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 § 63.6605(b), including actions taken to correct a malfunction.

(5) If there are no deviations from any emission or operating limitations that apply to you, a statement that there were no deviations from the emission or operating limitations during the reporting period.

(6) If there were no periods during which the continuous monitoring system (CMS), including CEMS and CPMS, was out-of-control, as specified in § 63.8(c)(7), a statement that there were no periods during which the CMS was out-of-control during the reporting period.

(d) For each deviation from an emission or operating limitation that occurs for a stationary RICE where you are not using a CMS to comply with the emission or operating limitations in this subpart, the Compliance report must contain the information in paragraphs (c)(1) through (4) of this section and the information in paragraphs (d)(1) and (2) of this section.

(1) The total operating time of the stationary RICE at which the deviation occurred during the reporting period.

(2) Information on the number, duration, and cause of deviations (including unknown cause, if applicable), as applicable, and the corrective action taken.

(e) For each deviation from an emission or operating limitation occurring for a stationary RICE where you are using a CMS to comply with the emission and operating limitations in this subpart, you must include information in paragraphs (c)(1) through (4) and (e)(1) through (12) of this section.

(1) The date and time that each malfunction started and stopped.

(2) The date, time, and duration that each CMS was inoperative, except for zero (low-level) and high-level checks.

(3) The date, time, and duration that each CMS was out-of-control, including the information in § 63.8(c)(8).

(4) The date and time that each deviation started and stopped, and whether each deviation occurred during a period of malfunction or during another period.

(5) A summary of the total duration of the deviation during the reporting period, and the total duration as a percent of the total source operating time during that reporting period.

(6) A breakdown of the total duration of the deviations during the reporting period into those that are due to control equipment problems, process problems, other known causes, and other unknown causes.

(7) A summary of the total duration of CMS downtime during the reporting period, and the total duration of CMS downtime as a percent of the total operating time of the stationary RICE at which the CMS downtime occurred during that reporting period.

(8) An identification of each parameter and pollutant (CO or formaldehyde) that was monitored at the stationary RICE.

(9) A brief description of the stationary RICE.

(10) A brief description of the CMS.

(11) The date of the latest CMS certification or audit.

(12) A description of any changes in CMS, processes, or controls since the last reporting period.

(f) Each affected source that has obtained a title V operating permit pursuant to 40 CFR part 70 or 71 must report all deviations as defined in this subpart in the semiannual monitoring report required by 40 CFR 70.6 (a)(3)(iii)(A) or 40 CFR 71.6(a)(3)(iii)(A). If an affected source submits a Compliance report pursuant to Table 7 of this subpart along with, or as part of, the semiannual monitoring report required by 40 CFR 70.6(a)(3)(iii)(A) or 40 CFR 71.6(a)(3)(iii)(A), and the Compliance report includes all required information concerning deviations from any emission or operating limitation in this subpart, submission of the Compliance report shall be deemed to satisfy any obligation to report the same deviations in the semiannual monitoring report. However, submission of a Compliance report shall not otherwise affect any obligation the affected source may have to report deviations from permit requirements to the permit authority.

(g) If you are operating as a new or reconstructed stationary RICE which fires landfill gas or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis, you must submit an annual report according to Table 7 of this subpart by the date specified unless the Administrator has approved a different schedule, according to the information described in paragraphs (b)(1) through (b)(5) of this section. You must report the data specified in (g)(1) through (g)(3) of this section.

(1) Fuel flow rate of each fuel and the heating values that were used in your calculations. You must also demonstrate that the percentage of heat input provided by landfill gas or digester gas is equivalent to 10 percent or more of the total fuel consumption on an annual basis.

(2) The operating limits provided in your federally enforceable permit, and any deviations from these limits.

(3) Any problems or errors suspected with the meters.

(h) If you own or operate an emergency stationary RICE with a site rating of more than 100 brake HP that operates or is contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in § 63.6640(f)(2)(ii) and (iii) or that operates for the purpose specified in § 63.6640(f)(4)(ii), you must submit an annual report according to the requirements in paragraphs (h)(1) through (3) of this section.

(1) The report must contain the following information:

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

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

(iii) Engine site rating and model year.

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

(v) Hours operated for the purposes specified in § 63.6640(f)(2)(ii) and (iii), including the date, start time, and end time for engine operation for the purposes specified in § 63.6640(f)(2)(ii) and (iii).

(vi) Number of hours the engine is contractually obligated to be available for the purposes specified in § 63.6640(f)(2)(ii) and (iii).

(vii) Hours spent for operation for the purpose specified in § 63.6640(f)(4)(ii), including the date, start time, and end time for engine operation for the purposes specified in § 63.6640(f)(4)(ii). The report must also identify the entity that dispatched the engine and the situation that necessitated the dispatch of the engine.

(viii) If there were no deviations from the fuel requirements in § 63.6604 that apply to the engine (if any), a statement that there were no deviations from the fuel requirements during the reporting period.

(ix) If there were deviations from the fuel requirements in § 63.6604 that apply to the engine (if any), information on the number, duration, and cause of deviations, and the corrective action taken.

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

(3) The annual report must be submitted electronically using the subpart specific reporting form in the Compliance and Emissions Data Reporting Interface (CEDRI) that is accessed through EPA's Central Data Exchange (CDX) (*www.epa.gov/cdx*). However, if the reporting form specific to this subpart is not available in CEDRI at the time that the report is due, the written report must be submitted to the Administrator at the appropriate address listed in § 63.13.

[69 FR 33506, June 15, 2004, as amended at 75 FR 9677, Mar. 3, 2010; 78 FR 6705, Jan. 30, 2013]

Attachment 5
Updated Applicable Requirements for Boilers

Table C-1. UAF - 40 CFR 63 Subpart JJJJJJ Affected Boiler Inventory

Emission Unit No.	Emission Unit	Installation Date	Manufacturer	Fuel Type	Rating	Limits	Existing or New Unit?	40 CFR 63 Subpart JJJJJJ	JJJJJJ Initial Notification?
1	Coal Fired Power Plant Boiler	1962	Erie City	Coal	84.5 MMBtu/hr		Existing	Note 1	Complete*
2	Coal Fired Power Plant Boiler	1962	Erie City	Coal	84.5 MMBtu/hr		Existing	Note 1	Complete*
3	Dual Fired Power Plant Boiler	1970	Zurn	NG	180.9 MMBtu/hr		Existing	Note 2	Complete*
				Diesel	180.9 MMBtu/hr				
4	Dual Fired Power Plant Boiler	1987	Zurn	NG	180.9 MMBtu/hr		Existing	Note 2	Complete*
				Diesel	180.9 MMBtu/hr				
10	AFES Farm	2000	Burnham/V9OGA	Diesel	1.08 MMBtu/hr		Existing	Note 3	Complete*
11	AFES Farm	2000	Burnham/V9OGA	Diesel	1.08 MMBtu/hr		Existing	Note 3	Complete*
12	Harper #1	Est. 1985	Weil McLain/BL776-S-W	Diesel	0.64 MMBtu/hr		Existing	Note 3	Complete*
13	Harper #2	Est. 1985	Weil McLain/BL776-S-W	Diesel	0.64 MMBtu/hr		Existing	Note 3	Complete*
14	Copper Lane	Est. 1985	Energy Kinetics System 2000	Diesel	0.136 MMBtu/hr		Existing	Note 3	Complete*
15	Copper Lane	Est. 1985	Energy Kinetics System 2000	Diesel	0.136 MMBtu/hr		Existing	Note 3	Complete*
16	Copper Lane (Honors House)	Est. 2005	Weil McLain/P-WGO-5	Diesel	0.233 MMBtu/hr		Existing	Note 3	Complete*
17	West Ridge Research Building #1	2003	Weil-McLain/BL1688w-GPr10	Diesel	4.93 MMBtu/hr	500 hr/yr	Existing	Note 3	Complete*
18	West Ridge Research Building #2	2003	Weil-McLain/BL1688w-GPr10	Diesel	4.93 MMBtu/hr	500 hr/yr	Existing	Note 3	Complete*
19	BiRD RM 100U3 #1	2004	Weil-McLain/2094W	Diesel	6.13 MMBtu/hr	Used Seasonally	Existing	Note 3	Complete*
20	BiRD RM 100U3 #2	2004	Weil-McLain/2094W	Diesel	6.13 MMBtu/hr	Used Seasonally	Existing	Note 3	Complete*
21	BiRD RM 100U3 #3	2004	Weil-McLain/2094W	Diesel	6.13 MMBtu/hr	Used Seasonally	Existing	Note 3	Complete*
22	BiRD RM 100U3 #4	2005	Bryan/900	Diesel	8.5 MMBtu/hr		Existing	Note 3	Complete*

Subpart JJJJJJ Applicablity Notes

1 These units are subject to the requirements of 40 CFR 63 Subpart JJJJJJ. Please see the attached applicability for coal-fired boilers > 10 MMBtu/hr in Table C-2. Additionally, the rating of the coal-fired boilers as shown in Permit No. AQ0316TVP02 is incorrect. UAF has calculated the correct maximum heat input capacity. These calculations are provided in Section 2, Table 2-20 of this application.

2 These units are subject to the requirements of 40 CFR 63 Subpart JJJJJJ. Please see the attached applicability for oil-fired boilers > 10 MMBtu/hr in Table C-3. The external combustion units EU IDs 10-16 have nameplates which list the ratings in gross output or do not specify whether the rating is output or input. A 75 percent efficiency has been assumed for these units to conservatively calculate the heat input rating.

3 These units are subject to the requirements of 40 CFR 63 Subpart JJJJJJ. Please see the attached applicability for oil-fired boilers $\leq$ 10 MMBtu/hr in Tables C-4a and C-4b. The external combustion units EU IDs 19-21 have nameplates which list the ratings in gross output or do not specify whether the rating is output or input. A 75 percent efficiency has been assumed for these units to conservatively calculate the heat input rating.

*UAF submitted the initial notification required under 63.11225(a)(2) on September 15, 2011.

Emission Unit 4 is configured to burn diesel and NG. Under 40 CFR 63 Subpart JJJJJJ, the unit meets the definition of an oil subcategory boiler. Emission Unit 3 is permitted for dual-fired operations, but is currently configured to burn diesel only.

Table C-2. UAF - 40 CFR 63 Subpart JJJJJJ Applicable Citations for Existing Coal-Fired Boilers ≥ 10 MMBtu/hr

Applicable Requirements in Tables 1 - 8 to 40 CFR 63 Subpart JJJJJJ

Table 1, Item 6
Table 2, Items 1, 14 and 16
Table 3, Items 1, 6 if using fuel analysis, and 7
Table 4, Items 2 if not using fuel analysis, and 3
Table 5, Item 1 if using fuel analysis
Table 6, Items 3 and 4
Table 7, Items 1 or 2, 6a and 6b if using fuel analysis, 6b if not using fuel analysis, and 9
Table 8

Heading	Citation	Description of Requirement
Subject to this Subpart	63.11193	You are subject to this subpart if you own or operate an industrial, commercial, or institutional boiler as defined in §63.11237 that is located at, or is part of, an area source of hazardous air pollutants (HAP), as defined in §63.2, except as specified in §63.11195.
Affected Source	63.11194(a)	This subpart applies to each new, reconstructed, or existing affected source as defined in paragraphs (a)(1) and (2) of this section. (1) The affected source is the collection of all existing industrial, commercial, and institutional boilers within a subcategory (coal, biomass, oil), as listed in §63.11200 and defined in §63.11237, located at an area source.
Affected Source	63.11194(b)	An affected source is an existing source if you commenced construction or reconstruction of the affected source on or before June 4, 2010.
Compliance Dates	63.11196(a)	If you own or operate an existing affected boiler, you must achieve compliance with the applicable provisions in this subpart as specified in paragraphs (a)(1) through (3) of this section. (1) If the existing affected boiler is subject to a work practice or management practice standard of a tune-up, you must achieve compliance with the work practice or management standard no later than March 21, 2014. (2) If the existing affected boiler is subject to emission limits, you must achieve compliance with the emission limits no later than March 21, 2014. (3) If the existing affected boiler is subject to the energy assessment requirement, you must achieve compliance with the energy assessment requirement no later than March 21, 2014.
Boiler Subcategories	63.11200	The subcategories of boilers as defined in §63.11237 are: (a) coal… (f) Boilers with an oxygen trim system that maintains an optimum air-to-fuel ratio that would otherwise be subject to a biennial tune-up.

Heading	Citation	Description of Requirement
Emissions Standards	63.11201	(a) You must comply with each emission limit specified in Table 1 to this subpart that applies to your boiler. (b) You must comply with each work practice standard, emission reduction measure, and management practice specified in Table 2 to this subpart that applies to your boiler. An energy assessment completed on or after January 1, 2008 that meets the requirements in Table 2 to this subpart satisfies the energy assessment portion of this requirement. (c) You must comply with each operating limit specified in Table 3 to this subpart that applies to your boiler. (d) These standards apply at all times the affected boiler is operating, except during periods of startup and shutdown as defined in §63.11237, during which time you must comply only with Table 2 to this subpart.
General Compliance Requirements	63.11205(a)	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. The general duty to minimize emissions does not require you to make any further efforts to reduce emissions if levels required by this standard have been achieved. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator that 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.
General Compliance Requirements	63.11205(b)	You must demonstrate compliance with all applicable emission limits using performance stack testing, fuel analysis, or a continuous monitoring system (CMS), including a continuous emission monitoring system (CEMS), a continuous opacity monitoring system (COMS), or a continuous parameter monitoring system (CPMS), where applicable. You may demonstrate compliance with the applicable mercury emission limit using fuel analysis if the emission rate calculated according to § 63.11211(c) is less than the applicable emission limit. Otherwise, you must demonstrate compliance using stack testing.
General Compliance Requirements	63.11205(c)	If you demonstrate compliance with any applicable emission limit through performance stack testing and subsequent compliance with operating limits (including the use of CPMS), with a CEMS, or with a COMS, you must develop a site-specific monitoring plan according to the requirements in paragraphs (c)(1) through (3) of this section for the use of any CEMS, COMS, or CPMS. This requirement also applies to you if you petition the EPA Administrator for alternative monitoring parameters under § 63.8(f).
General Compliance Requirements	63.11205(c)(1) - (3)	All subparagraphs apply if following provisions of 63.11205(c).
Initial Compliance Requirements	63.11210(a)	You must demonstrate initial compliance with each emission limit specified in Table 1 to this subpart that applies to you by either conducting performance (stack) tests, as applicable, according to §63.11212 and Table 4 to this subpart or, for mercury, conducting fuel analyses, as applicable, according to §63.11213 and Table 5 to this subpart.

Heading	Citation	Description of Requirement
Initial Compliance Requirements	63.11210(b)	For existing affected boilers that have applicable emission limits, you must demonstrate initial compliance no later than 180 days after the compliance date that is specified in §63.11196 and according to the applicable provisions in §63.7(a)(2).
Initial Compliance Requirements	63.11210(c)	For existing affected boilers that have applicable work practice standards, management practices, or emission reduction measures, you must demonstrate initial compliance no later than the compliance date that is specified in §63.11196 and according to the applicable provisions in §63.7(a)(2).
Initial Compliance Requirements	63.11211(a)	For affected boilers that demonstrate compliance with any of the emission limits of this subpart through performance (stack) testing, your initial compliance requirements include conducting performance tests according to §63.11212 and Table 4 to this subpart, conducting a fuel analysis for each type of fuel burned in your boiler according to §63.11213 and Table 5 to this subpart, establishing operating limits according to §63.11222, Table 6 to this subpart and paragraph (b) of this section, as applicable, and conducting continuous monitoring system (CMS) performance evaluations according to §63.11224. For affected boilers that burn a single type of fuel, you are exempted from the compliance requirements of conducting a fuel analysis for each type of fuel burned in your boiler. For purposes of this subpart, boilers that use a supplemental fuel only for startup, unit shutdown, and transient flame stability purposes still qualify as affected boilers that burn a single type of fuel, and the supplemental fuel is not subject to the fuel analysis requirements under §63.11213 and Table 5 to this subpart.
Initial Compliance Requirements	63.11211(b)(4)	You must establish parameter operating limits according to paragraphs (b)(1) through (4) of this section…. The operating limit for boilers with fabric filters that demonstrate continuous compliance through bag leak detection systems is that a bag leak detection system be installed according to the requirements of 63.11224, and that each fabric filter must be operated such that the bag leak detection system alarm does not sound more than 5 percen tof the operating time during a 6-month period. Note: This requirement applies if using bag leak detection system as opposed to COMS.
Initial Compliance Requirements	63.11211(c)	If you elect to demonstrate compliance with an applicable mercury emission limit through fuel analysis, you must conduct fuel analyses according to §63.11213 and Table 5 to this subpart and follow the procedures in paragraphs (c)(1) through (3) of this section.
Initial Compliance Requirements	63.11211(c)(1) - (3)	All subparagraphs apply if you elect to demonstrate compliance with an applicable mercury emission limit through fuel analysis, you must conduct fuel analyses according to § 63.11213 and Table 5 to this subpart and follow the procedures in paragraphs (c)(1) through (3) of this section.
Initial Compliance Requirements	63.11214(c)	If you own or operate an existing affected boiler with a heat input capacity of 10 million Btu per hour or greater, you must submit a signed certification in the Notification of Compliance Status report that an energy assessment of the boiler and its energy use systems was completed according to Table 2 to this subpart and is an accurate depiction of your facility.

Heading	Citation	Description of Requirement
Initial Compliance Requirements	63.11214(d)	If you own or operate a boiler subject to emission limits in Table 1 of this subpart, you must minimize the boiler's startup and shutdown periods following the manufacturer's recommended procedures, if available. If manufacturer's recommended procedures are not available, you must follow recommended procedures for a unit of similar design for which manufacturer's recommended procedures are available. You must submit a signed statement in the Notification of Compliance Status report that indicates that you conducted startups and shutdowns according to the manufacturer's recommended procedures or procedures specified for a boiler of similar design if manufacturer's recommended procedures are not available.
Performance Testing Requirements	63.11212	(a) You must conduct all performance tests according to § 63.7(c), (d), (f), and (h). You must also develop a site-specific test plan according to the requirements in § 63.7(c). (b) You must conduct each stack test according to the requirements in Table 4 to this subpart. Boilers that use a CEMS for carbon monoxide (CO) are exempt from the initial CO performance testing in Table 4 to this subpart and the oxygen concentration operating limit requirement specified in Table 3 to this subpart. (c) You must conduct performance stack tests at the representative operating load conditions while burning the type of fuel or mixture of fuels that have the highest emissions potential for each regulated pollutant, and you must demonstrate initial compliance and establish your operating limits based on these performance stack tests. For subcategories with more than one emission limit, these requirements could result in the need to conduct more than one performance stack test. Following each performance stack test and until the next performance stack test, you must comply with the operating limit for operating load conditions specified in Table 3 to this subpart. (d) You must conduct a minimum of three separate test runs for each performance stack test required in this section, as specified in § 63.7(e)(3) and in accordance with the provisions in Table 4 to this subpart.
Performance Testing Requirements	63.11213	(a) You must conduct fuel analyses according to the procedures in paragraphs (b) and (c) of this section and Table 5 to this subpart, as applicable. You are not required to conduct fuel analyses for fuels used for only startup, unit shutdown, and transient flame stability purposes. You are required to conduct fuel analyses only for fuels and units that are subject to emission limits for mercury in Table 1 of this subpart. (b) At a minimum, you must obtain three composite fuel samples for each fuel type according to the procedures in Table 5 to this subpart. Each composite sample must consist of a minimum of three samples collected at approximately equal intervals during a test run period. (c) Determine the concentration of mercury in the fuel in units of pounds per million Btu of each composite sample for each fuel type according to the procedures in Table 5 to this subpart.
Performance Testing Requirements	63.11220(a)	If your boiler has a heat input capacity of 10 million British thermal units per hour or greater, you must conduct all applicable performance (stack) tests according to § 63.11212 on a triennial basis, except as specified in paragraphs (b) through (d) of this section. Triennial performance tests must be completed no more than 37 months after the previous performance test.

Heading	Citation	Description of Requirement
Performance Testing Requirements	63.11220(c)	If you demonstrate compliance with the mercury emission limit based on fuel analysis, you must conduct a fuel analysis according to § 63.11213 for each type of fuel burned as specified in paragraphs (c)(1) and (2) of this section. If you plan to burn a new type of fuel or fuel mixture, you must conduct a fuel analysis before burning the new type of fuel or mixture in your boiler. You must recalculate the mercury emission rate using Equation 1 of § 63.11211. The recalculated mercury emission rate must be less than the applicable emission limit. (1) When demonstrating initial compliance with the mercury emission limit, if the mercury constituents in the fuel or fuel mixture are measured to be equal to or less than half of the mercury emission limit, you do not need to conduct further fuel analysis sampling but must continue to comply with all applicable operating limits and monitoring requirements. (2) When demonstrating initial compliance with the mercury emission limit, if the mercury constituents in the fuel or fuel mixture are greater than half of the mercury emission limit, you must conduct quarterly sampling.
Performance Testing Requirements	63.11220(d)	For existing affected boilers that have not operated since the previous compliance demonstration and more than 3 years have passed since the previous compliance demonstration, you must complete your subsequent compliance demonstration no later than 180 days after the re-start of the affected boiler.

Heading	Citation	Description of Requirement
Continuous Compliance Requirements	63.11221	(a) You must monitor and collect data according to this section and the site-specific monitoring plan required by § 63.11205(c). (b) You must operate the monitoring system and collect data at all required intervals at all times the affected source is operating and compliance is required, except for periods of monitoring system malfunctions or out-of-control periods (see § 63.8(c)(7) of this part), repairs associated with monitoring system malfunctions or out-of-control periods, and required monitoring system quality assurance or quality control activities including, as applicable, calibration checks, required zero and span adjustments, and scheduled CMS maintenance as defined in your site-specific monitoring plan. A monitoring system malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring system to provide valid data. Monitoring system failures that are caused in part by poor maintenance or careless operation are not malfunctions. You are required to complete monitoring system repairs in response to monitoring system malfunctions or out-of-control periods and to return the monitoring system to operation as expeditiously as practicable. (c) You may not use data collected during monitoring system malfunctions or out-of-control periods, repairs associated with monitoring system malfunctions or out-of-control periods, or required monitoring system quality assurance or quality control activities in calculations used to report emissions or operating levels. Any such periods must be reported according to the requirements in § 63.11225. You must use all the data collected during all other periods in assessing the operation of the control device and associated control system. (d) Except for periods of monitoring system malfunctions or monitoring system out-of-control periods, repairs associated with monitoring system malfunctions or monitoring system out-of-control periods, and required monitoring system quality assurance or quality control activities (including, as applicable, calibration checks, required zero and span adjustments, and scheduled CMS maintenance as defined in your site-specific monitoring plan), failure to collect required data is a deviation of the monitoring requirements.
Continuous Compliance Requirements	63.11222(a)	You must demonstrate continuous compliance with each emission limit and operating limit in Tables 1 and 3 to this subpart that applies to you according to the methods specified in Table 7 to this subpart and to paragraphs (a)(1) through (4) of this section. (1) Following the date on which the initial compliance demonstration is completed or is required to be completed under §§ 63.7 and 63.11196, whichever date comes first, you must continuously monitor the operating parameters. Operation above the established maximum, below the established minimum, or outside the allowable range of the operating limits specified in paragraph (a) of this section constitutes a deviation from your operating limits established under this subpart, except during performance tests conducted to determine compliance with the emission and operating limits or to establish new operating limits. Operating limits are confirmed or reestablished during performance tests. (2) If you have an applicable mercury or PM emission limit, you must keep records of the type and amount of all fuels burned in each boiler during the reporting period to demonstrate that all fuel types and mixtures of fuels burned would result in lower emissions of mercury than the applicable emission limit (if

Heading	Citation	Description of Requirement
Continuous Compliance Requirements	63.11222(a)	(3) If you have an applicable mercury emission limit and you plan to burn a new type of fuel, you must determine the mercury concentration for any new fuel type in units of pounds per million Btu, using the procedures in Equation 1 of § 63.11211 based on supplier data or your own fuel analysis, and meet the requirements in paragraphs (a)(3)(i) or (ii) of this section. (i) The recalculated mercury emission rate must be less than the applicable emission limit. (ii) If the mercury concentration is higher than mercury fuel input during the previous performance test, then you must conduct a new performance test within 60 days of burning the new fuel type or fuel mixture according to the procedures in § 63.11212 to demonstrate that the mercury emissions do not exceed the emission limit. (4) If your unit is controlled with a fabric filter, and you demonstrate continuous compliance using a bag leak detection system, you must initiate corrective action within 1 hour of a bag leak detection system alarm and operate and maintain the fabric filter system such that the alarm does not sound more than 5 percent of the operating time during a 6-month period. You must also keep records of the date, time, and
Continuous Compliance Requirements	63.11222(b)	You must report each instance in which you did not meet each emission limit and operating limit in Tables 1 and 3 to this subpart that apply to you. These instances are deviations from the emission limits in this subpart. These deviations must be reported according to the requirements in § 63.11225.
Continuous Compliance Requirements	63.11223(a)	For affected sources subject to the work practice standard or the management practices of a tune-up, you must conduct a performance tune-up according to paragraph (b) of this section and keep records as required in § 63.11225(c) to demonstrate continuous compliance. You must conduct the tune-up while burning the type of fuel (or fuels in the case of boilers that routinely burn two types of fuels at the same time) that provided the majority of the heat input to the boiler over the 12 months prior to the tune-up.
Continuous Compliance Requirements	63.11223(b)	Except as specified in paragraphs (c) through (f) of this section, you must conduct a tune-up of the boiler biennially to demonstrate continuous compliance as specified in paragraphs (b)(1) through (7) of this section. Each biennial tune-up must be conducted no more than 25 months after the previous tune-up. For a new or reconstructed boiler, the first biennial tune-up must be no later than 25 months after the initial startup of the new or reconstructed boiler. §63.11223(b)(1) through (7) are applicable.
Continuous Compliance Requirements	63.11223(c)	Boilers with an oxygen trim system that maintains an optimum air-to-fuel ratio that would otherwise be subject to a biennial tune-up must conduct a tune-up of the boiler every 5 years as specified in paragraphs (b)(1) through (7) of this section. Each 5-year tune-up must be conducted no more than 61 months after the previous tune-up. For a new or reconstructed boiler with an oxygen trim system, the first 5-year tune-up must be no later than 61 months after the initial startup. You may delay the burner inspection specified in paragraph (b)(1) of this section and inspection of the system controlling the air-to-fuel ratio specified in paragraph (b)(3) of this section until the next scheduled unit shutdown, but you must inspect each burner and system controlling the air-to-fuel ratio at least once every 72 months

Heading	Citation	Description of Requirement
Continuous Compliance Requirements	63.11223(g)	If you own or operate a boiler subject to emission limits in Table 1 of this subpart, you must minimize the boiler's startup and shutdown periods following the manufacturer's recommended procedures, if available. If manufacturer's recommended procedures are not available, you must follow recommended procedures for a unit of similar design for which manufacturer's recommended procedures are available. You must submit a signed statement in the Notification of Compliance Status report that indicates that you conducted startups and shutdowns according to the manufacturer's recommended procedures or procedures specified for a boiler of similar design if manufacturer's recommended procedures are not available
Monitoring, Installation, Operation, and Maintenance Requirements	63.11224(a)	If your boiler is subject to a CO emission limit in Table 1 to this subpart, you must either install, operate, and maintain a CEMS for CO and oxygen according to the procedures in paragraphs (a)(1) through (6) of this section, or install, calibrate, operate, and maintain an oxygen analyzer system, as defined in § 63.11237, according to the manufacturer's recommendations and paragraphs (a)(7) and (d) of this section, as applicable, by the compliance date specified in § 63.11196. Where a certified CO CEMS is used, the CO level shall be monitored at the outlet of the boiler, after any add-on controls or flue gas recirculation system and before release to the atmosphere. Boilers that use a CO CEMS are exempt from the initial CO performance testing and oxygen concentration operating limit requirements specified in § 63.11211(a) of this subpart. Oxygen monitors and oxygen trim systems must be installed to monitor oxygen in the boiler flue gas, boiler firebox, or other appropriate intermediate location.
Monitoring, Installation, Operation, and Maintenance Requirements	63.11224(a)(1) - (7)	All subparagraphs apply.
Monitoring, Installation, Operation, and Maintenance Requirements	63.11224(b)	If you are using a control device to comply with the emission limits specified in Table 1 to this subpart, you must maintain each operating limit in Table 3 to this subpart that applies to your boiler as specified in Table 7 to this subpart. If you use a control device not covered in Table 3 to this subpart, or you wish to establish and monitor an alternative operating limit and alternative monitoring parameters, you must apply to the United States Environmental Protection Agency (EPA) Administrator for approval of alternative monitoring under §63.8(f).
Monitoring, Installation, Operation, and Maintenance Requirements	63.11224(c)	If you demonstrate compliance with any applicable emission limit through stack testing and subsequent compliance with operating limits, you must develop a site-specific monitoring plan according to the requirements in paragraphs (c)(1) through (4) of this section. This requirement also applies to you if you petition the EPA Administrator for alternative monitoring parameters under §63.8(f).
Monitoring, Installation, Operation, and Maintenance Requirements	63.11224(c)(1) - (4)	All subparagraphs apply.

Heading	Citation	Description of Requirement
Monitoring, Installation, Operation, and Maintenance	63.11224(d)	If you have an operating limit that requires the use of a CMS, you must install, operate, and maintain each continuous parameter monitoring system according to the procedures in paragraphs (d)(1) through (4) of this section.
Monitoring, Installation, Operation, and Maintenance Requirements	63.11224(d)(1) - (4)	All subparagraphs apply.
Monitoring, Installation, Operation, and Maintenance	63.11224(e)	If you have an applicable opacity operating limit under this rule, you must install, operate, certify and maintain each COMS according to the procedures in paragraphs (e)(1) through (8) of this section by the compliance date specified in § 63.11196.
Monitoring, Installation, Operation, and Maintenance Requirements	63.11224(e)(1) - (8)	All subparagraphs apply.
Monitoring, Installation, Operation, and Maintenance	63.11224(f)	If you use a fabric filter bag leak detection system to comply with the requirements of this subpart, you must install, calibrate, maintain, and continuously operate the bag leak detection system as specified in paragraphs (f)(1) through (8) of this section.
Monitoring, Installation, Operation, and Maintenance Requirements	63.11224(f)(1) - (8)	All subparagraphs apply.
Notification, Reporting, and Recordkeeping	63.11225(a)	You must submit the notifications specified in paragraphs (a)(1) through (5) of this section to the administrator.
Notification, Reporting, and Recordkeeping Requirements	63.11225(a)(1)	You must submit all of the notifications in §§ 63.7(b); 63.8(e) and (f); and 63.9(b) through (e), (g), and (h) that apply to you by the dates specified in those sections except as specified in paragraphs (a)(2) and (4) of this section.
Notification, Reporting, and Recordkeeping Requirements	63.11225(a)(2)	An Initial Notification must be submitted no later than January 20, 2014 or within 120 days after the source becomes subject to the standard.
Notification, Reporting, and Recordkeeping Requirements	63.11225(a)(3)	If you are required to conduct a performance stack test you must submit a Notification of Intent to conduct a performance test at least 60 days before the performance stack test is scheduled to begin.

Heading	Citation	Description of Requirement
Notification, Reporting, and Recordkeeping Requirements	63.11225(a)(4)	You must submit the Notification of Compliance Status no later than 120 days after the applicable compliance date specified in § 63.11196 unless you must conduct a performance stack test. If you must conduct a performance stack test, you must submit the Notification of Compliance Status within 60 days of completing the performance stack test. You must submit the Notification of Compliance Status in accordance with paragraphs (a)(4)(i) and (vi) of this section. The Notification of Compliance Status must include the information and certification(s) of compliance in paragraphs (a)(4)(i) through (v) of this section, as applicable, and signed by a responsible official. (i) You must submit the information required in § 63.9(h)(2), except the information listed in § 63.9(h)(2)(i)(B), (D), (E), and (F). If you conduct any performance tests or CMS performance evaluations, you must submit that data as specified in paragraph (e) of this section. If you conduct any opacity or visible emission observations, or other monitoring procedures or methods, you must submit that data to the Administrator at the appropriate address listed in § 63.13. (ii) “This facility complies with the requirements in § 63.11214 to conduct an initial tune-up of the boiler.” (iii) “This facility has had an energy assessment performed according to § 63.11214(c).” (iv) For units that install bag leak detection systems: “This facility complies with the requirements in § 63.11224(f).” (v) For units that do not qualify for a statutory exemption as provided in section 129(g)(1) of the Clean Air Act: “No secondary materials that are solid waste were combusted in any affected unit.”
Notification, Reporting, and Recordkeeping Requirements	63.11225(a)(5)	If you are using data from a previously conducted emission test to serve as documentation of conformance with the emission standards and operating limits of this subpart, you must include in the Notification of Compliance Status the date of the test and a summary of the results, not a complete test report, relative to this subpart.
Notification, Reporting, and Recordkeeping Requirements	63.11225(b)	You must prepare, by March 1 of each year, and submit to the delegated authority upon request, an annual compliance certification report for the previous calendar year containing the information specified in paragraphs (b)(1) through (4) of this section. You must submit the report by March 15 if you had any instance described by paragraph (b)(3) of this section. For boilers that are subject only to a requirement to conduct a biennial or 5-year tune-up according to § 63.11223(a) and not subject to emission limits or operating limits, you may prepare only a biennial or 5-year compliance report as specified in paragraphs (b)(1) and (2) of this section. (1) Company name and address. (2) Statement by a responsible official, with the official's name, title, phone number, email address, and signature, certifying the truth, accuracy and completeness of the notification and a statement of whether the source has complied with all the relevant standards and other requirements of this subpart. Your notification must include the following certification(s) of compliance, as applicable, and signed by a responsible official: (i) “This facility complies with the requirements in § 63.11223 to conduct a biennial or 5-year tune-up, as applicable, of each boiler.” (ii) For units that do not qualify for a statutory exemption as provided in section 129(g)(1) of the Clean Air

Heading	Citation	Description of Requirement
Notification, Reporting, and Recordkeeping Requirements	63.11225(b)	(3) If the source experiences any deviations from the applicable requirements during the reporting period, include a description of deviations, the time periods during which the deviations occurred, and the corrective actions taken. (4) The total fuel use by each affected boiler subject to an emission limit, for each calendar month within the reporting period, including, but not limited to, a description of the fuel, whether the fuel has received a non-waste determination by you or EPA through a petition process to be a non-waste under § 241.3(c), whether the fuel(s) were processed from discarded non-hazardous secondary materials within the meaning of § 241.3, and the total fuel usage amount with units of measure.
Notification, Reporting, and Recordkeeping Requirements	63.11225(c)	You must maintain the records specified in paragraphs (c)(1) through (7) of this section.
Notification, Reporting, and Recordkeeping Requirements	63.11225(c)(1)	As required in §63.10(b)(2)(xiv), you must keep a copy of each notification and report that you submitted to comply with this subpart and all documentation supporting any Initial Notification or Notification of Compliance Status that you submitted.
Notification, Reporting, and Recordkeeping Requirements	63.11225(c)(2)	You must keep records to document conformance with the work practices, emission reduction measures, and management practices required by § 63.11214 and § 63.11223 as specified in paragraphs (c)(2)(i) through (vi) of this section. (i) Records must identify each boiler, the date of tune-up, the procedures followed for tune-up, and the manufacturer's specifications to which the boiler was tuned. (ii) For operating units that combust non-hazardous secondary materials that have been determined not to be solid waste pursuant to § 241.3(b)(1) of this chapter, you must keep a record which documents how the secondary material meets each of the legitimacy criteria under § 241.3(d)(1). If you combust a fuel that has been processed from a discarded non-hazardous secondary material pursuant to § 241.3(b)(4) of this chapter, you must keep records as to how the operations that produced the fuel satisfies the definition of processing in § 241.2 and each of the legitimacy criteria in § 241.3(d)(1) of this chapter. If the fuel received a non-waste determination pursuant to the petition process submitted under § 241.3(c) of this chapter, you must keep a record that documents how the fuel satisfies the requirements of the petition process. For operating units that combust non-hazardous secondary materials as fuel per § 241.4, you must keep records documenting that the material is a listed non-waste under § 241.4(a). (iii) For each boiler required to conduct an energy assessment, you must keep a copy of the energy assessment report. (iv) For each boiler subject to an emission limit in Table 1 to this subpart, you must also keep records of monthly fuel use by each boiler, including the type(s) of fuel and amount(s) used. (v) For each boiler that meets the definition of seasonal boiler, you must keep records of days of operation per year. (vi) For each boiler that meets the definition of limited-use boiler, you must keep a copy of the federally enforceable permit that limits the annual capacity factor to less than or equal to 10 percent and records of fuel use for the days the boiler is operating.

Heading	Citation	Description of Requirement
Notification, Reporting, and Recordkeeping Requirements	63.11225(c)(3)	For sources that demonstrate compliance through fuel analysis, a copy of all calculations and supporting documentation that were done to demonstrate compliance with the mercury emission limits. Supporting documentation should include results of any fuel analyses. You can use the results from one fuel analysis for multiple boilers provided they are all burning the same fuel type.
Notification, Reporting, and Recordkeeping Requirements	63.11225(c)(4)	Records of the occurrence and duration of each malfunction of the boiler, or of the associated air pollution control and monitoring equipment.
Notification, Reporting, and Recordkeeping Requirements	63.11225(c)(5)	Records of actions taken during periods of malfunction to minimize emissions in accordance with the general duty to minimize emissions in §63.11205(a), including corrective actions to restore the malfunctioning boiler, air pollution control, or monitoring equipment to its normal or usual manner of operation.
Notification, Reporting, and Recordkeeping Requirements	63.11225(c)(6)	You must keep the records of all inspection and monitoring data required by §§63.11221 and 63.11222, and the information identified in paragraphs (c)(6)(i) through (vi) of this section for each required inspection or monitoring. (i) The date, place, and time of the monitoring event. (ii) Person conducting the monitoring. (iii) Technique or method used. (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. (vi) Maintenance or corrective action taken (if applicable).
Notification, Reporting, and Recordkeeping Requirements	63.11225(c)(7)	If you use a bag leak detection system, you must keep the records specified in paragraphs (c)(7)(i) through (iii) of this section. (i) Records of the bag leak detection system output. (ii) Records of bag leak detection system adjustments, including the date and time of the adjustment, the initial bag leak detection system settings, and the final bag leak detection system settings. (iii) The date and time of all bag leak detection system alarms, and for each valid alarm, the time you initiated corrective action, the corrective action taken, and the date on which corrective action was completed.
Notification, Reporting, and Recordkeeping Requirements	63.11225(d)	Your records must be in a form suitable and readily available for expeditious review. You must keep each record for 5 years following the date of each recorded action. You must keep each record on-site or be accessible from a central location by computer or other means that instantly provide access at the site for at least 2 years after the date of each recorded action. You may keep the records off site for the remaining 3 years.

Heading	Citation	Description of Requirement
Notification, Reporting, and Recordkeeping Requirements	63.11225(e)	(1) Within 60 days after the date of completing each performance test (defined in § 63.2) as required by this subpart you must submit the results of the performance tests, including any associated fuel analyses, required by this subpart to EPA's WebFIRE database by using CEDRI that is accessed through EPA's CDX (www.epa.gov/cdx). Performance test data must be submitted in the file format generated through use of EPA's Electronic Reporting Tool (ERT) (see http://www.epa.gov/ttn/chief/ert/index.html). Only data collected using test methods on the ERT Web site are subject to this requirement for submitting reports electronically to WebFIRE. Owners or operators who claim that some of the information being submitted for performance tests is confidential business information (CBI) must submit a complete ERT file including information claimed to be CBI on a compact disk or other commonly used electronic storage media (including, but not limited to, flash drives) to EPA. The electronic media must be clearly marked as CBI and mailed to U.S. EPA/OAPQS/CORE CBI Office, Attention: WebFIRE Administrator, MD C404-02, 4930 Old Page Rd., Durham, NC 27703. The same ERT file with the CBI omitted must be submitted to EPA via CDX as described earlier in this paragraph. At the discretion of the delegated authority, you must also submit these reports, including CBI, to the delegated authority in the format specified by the delegated authority. For any performance test conducted using test methods that are not listed on the ERT Web site, the owner or operator shall submit the results of the performance test in paper submissions to the Administrator at the appropriate address listed in § 63.13. (2) Within 60 days after the date of completing each CEMS performance evaluation test as defined in § 63.2, you must submit relative accuracy test audit (RATA) data to EPA's CDX by using CEDRI in accordance with paragraph (e)(1) of this section. Only RATA pollutants that can be documented with the ERT (as listed on the ERT Web site) are subject to this requirement. For any performance evaluations with no corresponding RATA pollutants listed on the ERT Web site, the owner or operator shall submit the results of the performance evaluation in paper submissions to the Administrator at the appropriate address listed in § 63.13.
Affirmative Defense of Emission Exceedance during Malfunction	63.11226	In response to an action to enforce the standards set forth in paragraph §63.11201 you may assert an affirmative defense to a claim for civil penalties for exceedances of numerical emission limits that are caused by malfunction, as defined at §63.2. Appropriate penalties may be assessed, however, if you fail to meet your burden of proving all of the requirements in the affirmative defense. The affirmative defense shall not be available for claims for injunctive relief.

Heading	Citation	Description of Requirement
Affirmative Defense of Emission Exceedance during Malfunction	63.11226(a)	Assertion of affirmative defense. To establish the affirmative defense in any action to enforce such a standard, you must timely meet the reporting requirements in paragraph (b) of this section, and must prove by a preponderance of evidence that: (1) The violation: (i) Was caused by a sudden, infrequent, and unavoidable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner; and (ii) Could not have been prevented through careful planning, proper design or better operation and maintenance practices; and (iii) Did not stem from any activity or event that could have been foreseen and avoided, or planned for; and (iv) Was not part of a recurring pattern indicative of inadequate design, operation, or maintenance; and
Affirmative Defense of Emission Exceedance during Malfunction	63.11226(a)	(2) Repairs were made as expeditiously as possible when a violation occurred; and (3) The frequency, amount, and duration of the violation (including any bypass) were minimized to the maximum extent practicable; and (4) If the violation resulted from a bypass of control equipment or a process, then the bypass was unavoidable to prevent loss of life, personal injury, or severe property damage; and (5) All possible steps were taken to minimize the impact of the violation on ambient air quality, the environment, and human health; and (6) All emissions monitoring and control systems were kept in operation if at all possible, consistent with safety and good air pollution control practices; and (7) All of the actions in response to the violation were documented by properly signed, contemporaneous operating logs; and (8) At all times, the affected source was operated in a manner consistent with good practices for minimizing emissions; and (9) A written root cause analysis has been prepared, the purpose of which is to determine, correct, and eliminate the primary causes of the malfunction and the violation resulting from the malfunction event at
Affirmative Defense of Emission Exceedance during Malfunction	63.11226(b)	Report. The owner or operator seeking to assert an affirmative defense shall submit a written report to the Administrator with all necessary supporting documentation, that it has met the requirements set forth in paragraph (a) of this section. This affirmative defense report shall be included in the first periodic compliance, deviation report or excess emission report otherwise required after the initial occurrence of the violation of the relevant standard (which may be the end of any applicable averaging period). If such compliance, deviation report or excess emission report is due less than 45 days after the initial occurrence of the violation, the affirmative defense report may be included in the second compliance, deviation report or excess emission report due after the initial occurrence of the violation of the relevant standard.
General Provisions	63.11235	Table 8 to this subpart shows which parts of the General Provisions in §§63.1 through 63.15 apply to you.

Table C-3. UAF - 40 CFR 63 Subpart JJJJJJ Applicable Citations for Existing Oil-Fired Boilers ≥ 10 MMBtu/hr

Applicable Requirements in Tables 1 - 8 to 40 CFR 63 Subpart JJJJJJ

Table 2, Item 4 and 16 (for units >10 MMBtu/hr)
Table 8

Heading	Citation	Description of Requirement
Subject to this Subpart	63.11193	You are subject to this subpart if you own or operate an industrial, commercial, or institutional boiler as defined in § 63.11237 that is located at, or is part of, an area source of hazardous air pollutants (HAP), as defined in § 63.2, except as specified in § 63.11195.
Affected Source	63.11194(a)	This subpart applies to each new, reconstructed, or existing affected source as defined in paragraphs (a)(1) and (2) of this section. (1) The affected source of this subpart is the collection of all existing industrial, commercial, and institutional boilers within a subcategory, as listed in § 63.11200 and defined in § 63.11237, located at an area source.
	63.11194(b)	An affected source is an existing source if you commenced construction or reconstruction of the affected source on or before June 4, 2010.
Compliance Dates	63.11196(a)	If you own or operate an existing affected boiler, you must achieve compliance with the applicable provisions in this subpart as specified in paragraphs (a)(1) through (3) of this section. (1) If the existing affected boiler is subject to a work practice or management practice standard of a tune-up, you must achieve compliance with the work practice or management practice standard no later than March 21, 2014. (3) If the existing affected boiler is subject to the energy assessment requirement, you must achieve compliance with the energy assessment requirement no later than March 21, 2014.
Boiler Subcategories	63.11200	The subcategories of boilers, as defined in § 63.11237 are: (c) Oil. (f) Boilers with an oxygen trim system that maintains an optimum air-to-fuel ratio that would otherwise be subject to a biennial tune-up.
Emissions Standards	63.11201(b)	You must comply with each work practice standard, emission reduction measure, and management practice specified in Table 2 to this subpart that applies to your boiler. An energy assessment completed on or after January 1, 2008 that meets or is amended to meet the energy assessment requirements in Table 2 to this subpart satisfies the energy assessment requirement. A facility that operates under an energy management program established through energy management systems compatible with ISO 50001, that includes the affected units, also satisfies the energy assessment requirement.
	63.11201(d)	These standards apply at all times the affected boiler is operating, except during periods of startup and shutdown as defined in § 63.11237, during which time you must comply only with Table 2 to this subpart.

General Compliance Requirements	63.11205(a)	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. The general duty to minimize emissions does not require you to make any further efforts to reduce emissions if levels required by this standard have been achieved. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator that 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.
Initial Compliance Requirements	63.11210(c)	For existing affected boilers that have applicable work practice standards, management practices, or emission reduction measures, you must demonstrate initial compliance no later than the compliance date that is specified in § 63.11196 and according to the applicable provisions in § 63.7(a)(2), except as provided in paragraph (j) of this section.
	63.11214(b)	If you own or operate an existing or new biomass-fired boiler or an existing or new oil-fired boiler, you must conduct a performance tune-up according to §63.11223(b) and you must submit a signed statement in the Notification of Compliance Status report that indicates that you conducted a tune-up of the boiler.
	63.11214(c)	If you own or operate an existing affected boiler with a heat input capacity of 10 million Btu per hour or greater, you must submit a signed certification in the Notification of Compliance Status report that an energy assessment of the boiler and its energy use systems was completed according to Table 2 to this subpart and is an accurate depiction of your facility.
Continuous Compliance Requirements	63.11223(a)	For affected sources subject to the work practice standard or the management practices of a tune-up, you must conduct a performance tune-up according to paragraph (b) of this section and keep records as required in § 63.11225(c) to demonstrate continuous compliance. You must conduct the tune-up while burning the type of fuel (or fuels in the case of boilers that routinely burn two types of fuels at the same time) that provided the majority of the heat input to the boiler over the 12 months prior to the tune-up.
Continuous Compliance Requirements	63.11223(b)	Except as specified in paragraphs (c) through (f) of this section, you must conduct a tune-up of the boiler biennially to demonstrate continuous compliance as specified in paragraphs (b)(1) through (7) of this section. Each biennial tune-up must be conducted no more than 25 months after the previous tune-up. For a new or reconstructed boiler, the first biennial tune-up must be no later than 25 months after the initial startup of the new or reconstructed boiler.

Continuous Compliance Requirements	63.11223(b)	(1) As applicable, inspect the burner, and clean or replace any components of the burner as necessary (you may delay the burner inspection until the next scheduled unit shutdown, not to exceed 36 months from the previous inspection). Units that produce electricity for sale may delay the burner inspection until the first outage, not to exceed 36 months from the previous inspection. (2) Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if available. (3) Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly (you may delay the inspection until the next scheduled unit shutdown, not to exceed 36 months from the previous inspection). Units that produce electricity for sale may delay the inspection until the first outage, not to exceed 36 months from the previous inspection. (4) Optimize total emissions of CO. This optimization should be consistent with the manufacturer's specifications, if available, and with any nitrogen oxide requirement to which the unit is subject.
Continuous Compliance Requirements	63.11223(b)	(5) Measure the concentrations in the effluent stream of CO in parts per million, by volume, and oxygen in volume percent, before and after the adjustments are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made). Measurements may be taken using a portable CO analyzer. (6) Maintain on-site and submit, if requested by the Administrator, a report containing the information in paragraphs (b)(6)(i) through (iii) of this section. (i) The concentrations of CO in the effluent stream in parts per million, by volume, and oxygen in volume percent, measured at high fire or typical operating load, before and after the tune-up of the boiler. (ii) A description of any corrective actions taken as a part of the tune-up of the boiler. (iii) The type and amount of fuel used over the 12 months prior to the tune-up of the boiler, but only if the unit was physically and legally capable of using more than one type of fuel during that period. Units sharing a fuel meter may estimate the fuel use by each unit. (7) If the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 days of startup
Notification, Reporting, and Recordkeeping Requirements	63.11225(a)	You must submit the notifications specified in paragraphs (a)(1) through (5) of this section to the administrator.
Notification, Reporting, and Recordkeeping Requirements	63.11225(a)(1)	You must submit all of the notifications in §§ 63.7(b); 63.8(e) and (f); and 63.9(b) through (e), (g), and (h) that apply to you by the dates specified in those sections except as specified in paragraphs (a)(2) and (4) of this section.

Notification, Reporting, and Recordkeeping Requirements	63.11225(a)(2)	An Initial Notification must be submitted no later than January 20, 2014 or within 120 days after the source becomes subject to the standard.
Notification, Reporting, and Recordkeeping Requirements	63.11225(a)(4)	You must submit the Notification of Compliance Status no later than 120 days after the applicable compliance date specified in § 63.11196 unless you must conduct a performance stack test. If you must conduct a performance stack test, you must submit the Notification of Compliance Status within 60 days of completing the performance stack test. You must submit the Notification of Compliance Status in accordance with paragraphs (a)(4)(i) and (vi) of this section. The Notification of Compliance Status must include the information and certification(s) of compliance in paragraphs (a)(4)(i) through (v) of this section, as applicable, and signed by a responsible official. (i) You must submit the information required in § 63.9(h)(2), except the information listed in § 63.9(h)(2)(i)(B), (D), (E), and (F). If you conduct any performance tests or CMS performance evaluations, you must submit that data as specified in paragraph (e) of this section. If you conduct any opacity or visible emission observations, or other monitoring procedures or methods, you must submit that data to the Administrator at the appropriate address listed in § 63.13. (ii) “This facility complies with the requirements in § 63.11214 to conduct an initial tune-up of the boiler.” (iii) “This facility has had an energy assessment performed according to § 63.11214(c).” (iv) For units that install bag leak detection systems: “This facility complies with the requirements in § 63.11224(f).” (v) For units that do not qualify for a statutory exemption as provided in section 129(g)(1) of the Clean Air Act: “No secondary materials that are solid waste were combusted in any affected unit.” (vi) The notification must be submitted electronically using the Compliance and Emissions Data Reporting Interface (CEDRI) that is accessed through EPA’s Central Data Exchange (CDX) (www.epa.gov/cdx). However, if the reporting form specific to this subpart is not available in CEDRI at the time that the report is due, the written Notification of Compliance Status must be submitted to the Administrator at the appropriate address listed in § 63.13.

Notification, Reporting, and Recordkeeping Requirements	63.11225(b)	You must prepare, by March 1 of each year, and submit to the delegated authority upon request, an annual compliance certification report for the previous calendar year containing the information specified in paragraphs (b)(1) through (4) of this section. You must submit the report by March 15 if you had any instance described by paragraph (b)(3) of this section. For boilers that are subject only to a requirement to conduct a biennial or 5-year tune-up according to § 63.11223(a) and not subject to emission limits or operating limits, you may prepare only a biennial or 5-year compliance report as specified in paragraphs (b)(1) and (2) of this section. (1) Company name and address. (2) Statement by a responsible official, with the official's name, title, phone number, email address, and signature, certifying the truth, accuracy and completeness of the notification and a statement of whether the source has complied with all the relevant standards and other requirements of this subpart. Your notification must include the following certification(s) of compliance, as applicable, and signed by a responsible official: (i) “This facility complies with the requirements in § 63.11223 to conduct a biennial or 5-year tune-up, as applicable, of each boiler.” (ii) For units that do not qualify for a statutory exemption as provided in section 129(g)(1) of the Clean Air Act: “No secondary materials that are solid waste were combusted in any affected unit.” (iii) “This facility complies with the requirement in §§ 63.11214(d) and 63.11223(g) to minimize the boiler's time spent during startup and shutdown and to conduct startups and shutdowns according to the manufacturer's recommended procedures or procedures specified for a boiler of similar design if manufacturer's recommended procedures are not available.”
Notification, Reporting, and Recordkeeping Requirements	63.11225(b)	(3) If the source experiences any deviations from the applicable requirements during the reporting period, include a description of deviations, the time periods during which the deviations occurred, and the corrective actions taken. (4) The total fuel use by each affected boiler subject to an emission limit, for each calendar month within the reporting period, including, but not limited to, a description of the fuel, whether the fuel has received a non-waste determination by you or EPA through a petition process to be a non-waste under § 241.3(c), whether the fuel(s) were processed from discarded non-hazardous secondary materials within the meaning of § 241.3, and the total fuel usage amount with units of measure.
Notification, Reporting, and Recordkeeping Requirements	63.11225(c)	You must maintain the records specified in paragraphs (c)(1) through (7) of this section.
Notification, Reporting, and Recordkeeping Requirements	63.11225(c)(1)	As required in § 63.10(b)(2)(xiv), you must keep a copy of each notification and report that you submitted to comply with this subpart and all documentation supporting any Initial Notification or Notification of Compliance Status that you submitted.

Notification, Reporting, and Recordkeeping Requirements	63.11225(c)(2)	You must keep records to document conformance with the work practices, emission reduction measures, and management practices required by § 63.11214 and § 63.11223 as specified in paragraphs (c)(2)(i) through (vi) of this section. (i) Records must identify each boiler, the date of tune-up, the procedures followed for tune-up, and the manufacturer's specifications to which the boiler was tuned. (ii) For operating units that combust non-hazardous secondary materials that have been determined not to be solid waste pursuant to § 241.3(b)(1) of this chapter, you must keep a record which documents how the secondary material meets each of the legitimacy criteria under § 241.3(d)(1). If you combust a fuel that has been processed from a discarded non-hazardous secondary material pursuant to § 241.3(b)(4) of this chapter, you must keep records as to how the operations that produced the fuel satisfies the definition of processing in § 241.2 and each of the legitimacy criteria in § 241.3(d)(1) of this chapter. If the fuel received a non-waste determination pursuant to the petition process submitted under § 241.3(c) of this chapter, you must keep a record that documents how the fuel satisfies the requirements of the petition process. For operating units that combust non-hazardous secondary materials as fuel per § 241.4, you must keep records documenting that the material is a listed non-waste under § 241.4(a). (iii) For each boiler required to conduct an energy assessment, you must keep a copy of the energy assessment report.
Notification, Reporting, and Recordkeeping Requirements	63.11225(c)(2)	(iv) For each boiler subject to an emission limit in Table 1 to this subpart, you must also keep records of monthly fuel use by each boiler, including the type(s) of fuel and amount(s) used. (v) For each boiler that meets the definition of seasonal boiler, you must keep records of days of operation per year. (vi) For each boiler that meets the definition of limited-use boiler, you must keep a copy of the federally enforceable permit that limits the annual capacity factor to less than or equal to 10 percent and records of fuel use for the days the boiler is operating.
Notification, Reporting, and Recordkeeping Requirements	63.11225(c)(4)	Records of the occurrence and duration of each malfunction of the boiler, or of the associated air pollution control and monitoring equipment.
Notification, Reporting, and Recordkeeping Requirements	63.11225(c)(5)	Records of actions taken during periods of malfunction to minimize emissions in accordance with the general duty to minimize emissions in § 63.11205(a), including corrective actions to restore the malfunctioning boiler, air pollution control, or monitoring equipment to its normal or usual manner of operation.

Notification, Reporting, and Recordkeeping Requirements	63.11225(c)(6)	You must keep the records of all inspection and monitoring data required by §§ 63.11221 and 63.11222, and the information identified in paragraphs (c)(6)(i) through (vi) of this section for each required inspection or monitoring. (i) The date, place, and time of the monitoring event. (ii) Person conducting the monitoring. (iii) Technique or method used. (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. (vi) Maintenance or corrective action taken (if applicable).
Notification, Reporting, and Recordkeeping Requirements	63.11225(d)	Your records must be in a form suitable and readily available for expeditious review. You must keep each record for 5 years following the date of each recorded action. You must keep each record on-site or be accessible from a central location by computer or other means that instantly provide access at the site for at least 2 years after the date of each recorded action. You may keep the records off site for the remaining 3 years.
Notification, Reporting, and Recordkeeping Requirements	63.11225(g)	If you have switched fuels or made a physical change to the boiler and the fuel switch or change resulted in the applicability of a different subcategory within subpart JJJJJJ, in the boiler becoming subject to subpart JJJJJJ, or in the boiler switching out of subpart JJJJJJ due to a change to 100 percent natural gas, or you have taken a permit limit that resulted in you being subject to subpart JJJJJJ, you must provide notice of the date upon which you switched fuels, made the physical change, or took a permit limit within 30 days of the change. The notification must identify: (1) The name of the owner or operator of the affected source, the location of the source, the boiler(s) that have switched fuels, were physically changed, or took a permit limit, and the date of the notice. (2) The date upon which the fuel switch, physical change, or permit limit occurred.
General Provisions	63.11235	Table 8 to this subpart shows which parts of the General Provisions in §§ 63.1 through 63.15 apply to you.

Table C-4a. UAF - 40 CFR 63 Subpart JJJJJJ Applicable Citations for Existing Oil-Fired Boilers ≤ 5 MMBtu/hr

Applicable Requirements in Tables 1 - 8 to 40 CFR 63 Subpart JJJJJJ

Table 2, Item 12
Table 8

Heading	Citation	Description of Requirement
Subject to this Subpart	63.11193	You are subject to this subpart if you own or operate an industrial, commercial, or institutional boiler as defined in § 63.11237 that is located at, or is part of, an area source of hazardous air pollutants (HAP), as defined in § 63.2, except as specified in § 63.11195.
Affected Source	63.11194(a)	This subpart applies to each new, reconstructed, or existing affected source as defined in paragraphs (a)(1) and (2) of this section. (1) The affected source of this subpart is the collection of all existing industrial, commercial, and institutional boilers within a subcategory, as listed in § 63.11200 and defined in § 63.11237, located at an area source.
	63.11194(b)	An affected source is an existing source if you commenced construction or reconstruction of the affected source on or before June 4, 2010.
Compliance Dates	63.11196(a)	If you own or operate an existing affected boiler, you must achieve compliance with the applicable provisions in this subpart as specified in paragraphs (a)(1) through (3) of this section. (1) If the existing affected boiler is subject to a work practice or management practice standard of a tune-up, you must achieve compliance with the work practice or management practice standard no later than March 21, 2014. (3) If the existing affected boiler is subject to the energy assessment requirement, you must achieve compliance with the energy assessment requirement no later than March 21, 2014.
Boiler Subcategories	63.11200	The subcategories of boilers, as defined in § 63.11237 are: (c) Oil. (e) Oil-fired boilers with heat input capacity of equal to or less than 5 million British thermal units (Btu) per hour. (f) Boilers with an oxygen trim system that maintains an optimum air-to-fuel ratio that would otherwise be subject to a biennial tune-up. (g) Limited-use boilers.

Emissions Standards	63.11201(b)	You must comply with each work practice standard, emission reduction measure, and management practice specified in Table 2 to this subpart that applies to your boiler. An energy assessment completed on or after January 1, 2008 that meets or is amended to meet the energy assessment requirements in Table 2 to this subpart satisfies the energy assessment requirement. A facility that operates under an energy management program established through energy management systems compatible with ISO 50001, that includes the affected units, also satisfies the energy assessment requirement.
	63.11201(d)	These standards apply at all times the affected boiler is operating, except during periods of startup and shutdown as defined in § 63.11237, during which time you must comply only with Table 2 to this subpart.
General Compliance Requirements	63.11205(a)	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. The general duty to minimize emissions does not require you to make any further efforts to reduce emissions if levels required by this standard have been achieved. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator that 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.
Initial Compliance Requirements	63.11210(c)	For existing affected boilers that have applicable work practice standards, management practices, or emission reduction measures, you must demonstrate initial compliance no later than the compliance date that is specified in § 63.11196 and according to the applicable provisions in § 63.7(a)(2), except as provided in paragraph (j) of this section.
	63.11214(b)	If you own or operate an existing or new biomass-fired boiler or an existing or new oil-fired boiler, you must conduct a performance tune-up according to §63.11223(b) and you must submit a signed statement in the Notification of Compliance Status report that indicates that you conducted a tune-up of the boiler.
	63.11214(c)	If you own or operate an existing affected boiler with a heat input capacity of 10 million Btu per hour or greater, you must submit a signed certification in the Notification of Compliance Status report that an energy assessment of the boiler and its energy use systems was completed according to Table 2 to this subpart and is an accurate depiction of your facility.
Continuous Compliance Requirements	63.11223(a)	For affected sources subject to the work practice standard or the management practices of a tune-up, you must conduct a performance tune-up according to paragraph (b) of this section and keep records as required in § 63.11225(c) to demonstrate continuous compliance. You must conduct the tune-up while burning the type of fuel (or fuels in the case of boilers that routinely burn two types of fuels at the same time) that provided the majority of the heat input to the boiler over the 12 months prior to the tune-up.
Continuous Compliance Requirements	63.11223(b)	Except as specified in paragraphs (c) through (f) of this section, you must conduct a tune-up of the boiler biennially to demonstrate continuous compliance as specified in paragraphs (b)(1) through (7) of this section. Each biennial tune-up must be conducted no more than 25 months after the previous tune-up. For a new or reconstructed boiler, the first biennial tune-up must be no later than 25 months after the initial startup of the new or reconstructed boiler.

Continuous Compliance Requirements	63.11223(b)	(1) As applicable, inspect the burner, and clean or replace any components of the burner as necessary (you may delay the burner inspection until the next scheduled unit shutdown, not to exceed 36 months from the previous inspection). Units that produce electricity for sale may delay the burner inspection until the first outage, not to exceed 36 months from the previous inspection. (2) Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if available. (3) Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly (you may delay the inspection until the next scheduled unit shutdown, not to exceed 36 months from the previous inspection). Units that produce electricity for sale may delay the inspection until the first outage, not to exceed 36 months from the previous inspection. (4) Optimize total emissions of CO. This optimization should be consistent with the manufacturer's specifications, if available, and with any nitrogen oxide requirement to which the unit is subject.

Continuous Compliance Requirements	63.11223(b)	(5) Measure the concentrations in the effluent stream of CO in parts per million, by volume, and oxygen in volume percent, before and after the adjustments are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made). Measurements may be taken using a portable CO analyzer. (6) Maintain on-site and submit, if requested by the Administrator, a report containing the information in paragraphs (b)(6)(i) through (iii) of this section. (i) The concentrations of CO in the effluent stream in parts per million, by volume, and oxygen in volume percent, measured at high fire or typical operating load, before and after the tune-up of the boiler. (ii) A description of any corrective actions taken as a part of the tune-up of the boiler. (iii) The type and amount of fuel used over the 12 months prior to the tune-up of the boiler, but only if the unit was physically and legally capable of using more than one type of fuel during that period. Units sharing a fuel meter may estimate the fuel use by each unit. (7) If the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30
Continuous Compliance Requirements	63.11223(e)	Oil-fired boilers with a heat input capacity of equal to or less than 5 million Btu per hour must conduct a tune-up every 5 years as specified in paragraphs (b)(1) through (7) of this section. Each 5-year tune-up must be conducted no more than 61 months after the previous tune-up. For a new or reconstructed oil-fired boiler with a heat input capacity of equal to or less than 5 million Btu per hour, the first 5-year tune-up must be no later than 61 months after the initial startup. You may delay the burner inspection specified in paragraph (b)(1) of this section and inspection of the system controlling the air-to-fuel ratio specified in paragraph (b)(3) of this section until the next scheduled unit shutdown, but you must inspect each burner and system controlling the air-to-fuel ratio at least once every 72 months.
Notification, Reporting, and Recordkeeping Requirements	63.11225(a)	You must submit the notifications specified in paragraphs (a)(1) through (5) of this section to the administrator.
Notification, Reporting, and Recordkeeping Requirements	63.11225(a)(1)	You must submit all of the notifications in §§ 63.7(b); 63.8(e) and (f); and 63.9(b) through (e), (g), and (h) that apply to you by the dates specified in those sections except as specified in paragraphs (a)(2) and (4) of this section.
Notification, Reporting, and Recordkeeping Requirements	63.11225(a)(2)	An Initial Notification must be submitted no later than January 20, 2014 or within 120 days after the source becomes subject to the standard.

Notification, Reporting, and Recordkeeping Requirements	63.11225(a)(4)	You must submit the Notification of Compliance Status no later than 120 days after the applicable compliance date specified in § 63.11196 unless you must conduct a performance stack test. If you must conduct a performance stack test, you must submit the Notification of Compliance Status within 60 days of completing the performance stack test. You must submit the Notification of Compliance Status in accordance with paragraphs (a)(4)(i) and (vi) of this section. The Notification of Compliance Status must include the information and certification(s) of compliance in paragraphs (a)(4)(i) through (v) of this section, as applicable, and signed by a responsible official. (i) You must submit the information required in § 63.9(h)(2), except the information listed in § 63.9(h)(2)(i)(B), (D), (E), and (F). If you conduct any performance tests or CMS performance evaluations, you must submit that data as specified in paragraph (e) of this section. If you conduct any opacity or visible emission observations, or other monitoring procedures or methods, you must submit that data to the Administrator at the appropriate address listed in § 63.13. (ii) “This facility complies with the requirements in § 63.11214 to conduct an initial tune-up of the boiler.” (iii) “This facility has had an energy assessment performed according to § 63.11214(c).” (iv) For units that install bag leak detection systems: “This facility complies with the requirements in § 63.11224(f).” (v) For units that do not qualify for a statutory exemption as provided in section 129(g)(1) of the Clean Air Act: “No secondary materials that are solid waste were combusted in any affected unit.” (vi) The notification must be submitted electronically using the Compliance and Emissions Data Reporting Interface (CEDRI) that is accessed through EPA's Central Data Exchange (CDX) (www.epa.gov/cdx). However, if the reporting form specific to this subpart is not available in CEDRI at the time that the report is due, the written Notification of Compliance Status must be submitted to the Administrator at the appropriate address listed in § 63.13.

Notification, Reporting, and Recordkeeping Requirements	63.11225(b)	You must prepare, by March 1 of each year, and submit to the delegated authority upon request, an annual compliance certification report for the previous calendar year containing the information specified in paragraphs (b)(1) through (4) of this section. You must submit the report by March 15 if you had any instance described by paragraph (b)(3) of this section. For boilers that are subject only to a requirement to conduct a biennial or 5-year tune-up according to § 63.11223(a) and not subject to emission limits or operating limits, you may prepare only a biennial or 5-year compliance report as specified in paragraphs (b)(1) and (2) of this section. (1) Company name and address. (2) Statement by a responsible official, with the official's name, title, phone number, email address, and signature, certifying the truth, accuracy and completeness of the notification and a statement of whether the source has complied with all the relevant standards and other requirements of this subpart. Your notification must include the following certification(s) of compliance, as applicable, and signed by a responsible official: (i) “This facility complies with the requirements in § 63.11223 to conduct a biennial or 5-year tune-up, as applicable, of each boiler.” (ii) For units that do not qualify for a statutory exemption as provided in section 129(g)(1) of the Clean Air Act: “No secondary materials that are solid waste were combusted in any affected unit.” (iii) “This facility complies with the requirement in §§ 63.11214(d) and 63.11223(g) to minimize the boiler's time spent during startup and shutdown and to conduct startups and shutdowns according to the manufacturer's recommended procedures or procedures specified for a boiler of similar design if manufacturer's recommended procedures are not available.”
Notification, Reporting, and Recordkeeping Requirements	63.11225(b)	(3) If the source experiences any deviations from the applicable requirements during the reporting period, include a description of deviations, the time periods during which the deviations occurred, and the corrective actions taken. (4) The total fuel use by each affected boiler subject to an emission limit, for each calendar month within the reporting period, including, but not limited to, a description of the fuel, whether the fuel has received a non-waste determination by you or EPA through a petition process to be a non-waste under § 241.3(c), whether the fuel(s) were processed from discarded non-hazardous secondary materials within the meaning of § 241.3, and the total fuel usage amount with units of measure.
Notification, Reporting, and Recordkeeping Requirements	63.11225(c)	You must maintain the records specified in paragraphs (c)(1) through (7) of this section.
Notification, Reporting, and Recordkeeping Requirements	63.11225(c)(1)	As required in § 63.10(b)(2)(xiv), you must keep a copy of each notification and report that you submitted to comply with this subpart and all documentation supporting any Initial Notification or Notification of Compliance Status that you submitted.

Notification, Reporting, and Recordkeeping Requirements	63.11225(c)(2)	You must keep records to document conformance with the work practices, emission reduction measures, and management practices required by § 63.11214 and § 63.11223 as specified in paragraphs (c)(2)(i) through (vi) of this section. (i) Records must identify each boiler, the date of tune-up, the procedures followed for tune-up, and the manufacturer's specifications to which the boiler was tuned. (ii) For operating units that combust non-hazardous secondary materials that have been determined not to be solid waste pursuant to § 241.3(b)(1) of this chapter, you must keep a record which documents how the secondary material meets each of the legitimacy criteria under § 241.3(d)(1). If you combust a fuel that has been processed from a discarded non-hazardous secondary material pursuant to § 241.3(b)(4) of this chapter, you must keep records as to how the operations that produced the fuel satisfies the definition of processing in § 241.2 and each of the legitimacy criteria in § 241.3(d)(1) of this chapter. If the fuel received a non-waste determination pursuant to the petition process submitted under § 241.3(c) of this chapter, you must keep a record that documents how the fuel satisfies the requirements of the petition process. For operating units that combust non-hazardous secondary materials as fuel per § 241.4, you must keep records documenting that the material is a listed non-waste under § 241.4(a). (iii) For each boiler required to conduct an energy assessment, you must keep a copy of the energy assessment report.
Notification, Reporting, and Recordkeeping Requirements	63.11225(c)(2)	(iv) For each boiler subject to an emission limit in Table 1 to this subpart, you must also keep records of monthly fuel use by each boiler, including the type(s) of fuel and amount(s) used. (v) For each boiler that meets the definition of seasonal boiler, you must keep records of days of operation per year. (vi) For each boiler that meets the definition of limited-use boiler, you must keep a copy of the federally enforceable permit that limits the annual capacity factor to less than or equal to 10 percent and records of fuel use for the days the boiler is operating.

Notification, Reporting, and Recordkeeping Requirements	63.11225(c)(4)	Records of the occurrence and duration of each malfunction of the boiler, or of the associated air pollution control and monitoring equipment.
Notification, Reporting, and Recordkeeping Requirements	63.11225(c)(5)	Records of actions taken during periods of malfunction to minimize emissions in accordance with the general duty to minimize emissions in § 63.11205(a), including corrective actions to restore the malfunctioning boiler, air pollution control, or monitoring equipment to its normal or usual manner of operation.
Notification, Reporting, and Recordkeeping Requirements	63.11225(c)(6)	You must keep the records of all inspection and monitoring data required by §§ 63.11221 and 63.11222, and the information identified in paragraphs (c)(6)(i) through (vi) of this section for each required inspection or monitoring. (i) The date, place, and time of the monitoring event. (ii) Person conducting the monitoring. (iii) Technique or method used. (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. (vi) Maintenance or corrective action taken (if applicable).
Notification, Reporting, and Recordkeeping Requirements	63.11225(d)	Your records must be in a form suitable and readily available for expeditious review. You must keep each record for 5 years following the date of each recorded action. You must keep each record on-site or be accessible from a central location by computer or other means that instantly provide access at the site for at least 2 years after the date of each recorded action. You may keep the records off site for the remaining 3 years.
Notification, Reporting, and Recordkeeping Requirements	63.11225(g)	If you have switched fuels or made a physical change to the boiler and the fuel switch or change resulted in the applicability of a different subcategory within subpart JJJJJJ, in the boiler becoming subject to subpart JJJJJJ, or in the boiler switching out of subpart JJJJJJ due to a change to 100 percent natural gas, or you have taken a permit limit that resulted in you being subject to subpart JJJJJJ, you must provide notice of the date upon which you switched fuels, made the physical change, or took a permit limit within 30 days of the change. The notification must identify: (1) The name of the owner or operator of the affected source, the location of the source, the boiler(s) that have switched fuels, were physically changed, or took a permit limit, and the date of the notice. (2) The date upon which the fuel switch, physical change, or permit limit occurred.
General Provisions	63.11235	Table 8 to this subpart shows which parts of the General Provisions in §§ 63.1 through 63.15 apply to you.

Table C-4b. UAF - 40 CFR 63 Subpart JJJJJJ Applicable Citations for Existing Oil-Fired Boilers ≥5 and <10 MMBtu/hr

Applicable Requirements in Tables 1 - 8 to 40 CFR 63 Subpart JJJJJJ

Table 2, Item 4
Table 8

Heading	Citation	Description of Requirement
Subject to this Subpart	63.11193	You are subject to this subpart if you own or operate an industrial, commercial, or institutional boiler as defined in § 63.11237 that is located at, or is part of, an area source of hazardous air pollutants (HAP), as defined in § 63.2, except as specified in § 63.11195.
Affected Source	63.11194(a)	This subpart applies to each new, reconstructed, or existing affected source as defined in paragraphs (a)(1) and (2) of this section. (1) The affected source of this subpart is the collection of all existing industrial, commercial, and institutional boilers within a subcategory, as listed in § 63.11200 and defined in § 63.11237, located at an area source.
	63.11194(b)	An affected source is an existing source if you commenced construction or reconstruction of the affected source on or before June 4, 2010.
Compliance Dates	63.11196(a)	If you own or operate an existing affected boiler, you must achieve compliance with the applicable provisions in this subpart as specified in paragraphs (a)(1) through (3) of this section. (1) If the existing affected boiler is subject to a work practice or management practice standard of a tune-up, you must achieve compliance with the work practice or management practice standard no later than March 21, 2014. (3) If the existing affected boiler is subject to the energy assessment requirement, you must achieve compliance with the energy assessment requirement no later than March 21, 2014.
Boiler Subcategories	63.11200	The subcategories of boilers, as defined in § 63.11237 are: (c) Oil. (d) Seasonal boilers. (f) Boilers with an oxygen trim system that maintains an optimum air-to-fuel ratio that would otherwise be subject to a biennial tune-up. (g) Limited-use boilers.

Emissions Standards	63.11201(b)	You must comply with each work practice standard, emission reduction measure, and management practice specified in Table 2 to this subpart that applies to your boiler. An energy assessment completed on or after January 1, 2008 that meets or is amended to meet the energy assessment requirements in Table 2 to this subpart satisfies the energy assessment requirement. A facility that operates under an energy management program established through energy management systems compatible with ISO 50001, that includes the affected units, also satisfies the energy assessment requirement.
	63.11201(d)	These standards apply at all times the affected boiler is operating, except during periods of startup and shutdown as defined in § 63.11237, during which time you must comply only with Table 2 to this subpart.
General Compliance Requirements	63.11205(a)	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. The general duty to minimize emissions does not require you to make any further efforts to reduce emissions if levels required by this standard have been achieved. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator that 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.
Initial Compliance Requirements	63.11210(c)	For existing affected boilers that have applicable work practice standards, management practices, or emission reduction measures, you must demonstrate initial compliance no later than the compliance date that is specified in § 63.11196 and according to the applicable provisions in § 63.7(a)(2), except as provided in paragraph (j) of this section.
	63.11214(b)	If you own or operate an existing or new biomass-fired boiler or an existing or new oil-fired boiler, you must conduct a performance tune-up according to §63.11223(b) and you must submit a signed statement in the Notification of Compliance Status report that indicates that you conducted a tune-up of the boiler.
	63.11214(c)	If you own or operate an existing affected boiler with a heat input capacity of 10 million Btu per hour or greater, you must submit a signed certification in the Notification of Compliance Status report that an energy assessment of the boiler and its energy use systems was completed according to Table 2 to this subpart and is an accurate depiction of your facility.
Continuous Compliance Requirements	63.11223(a)	For affected sources subject to the work practice standard or the management practices of a tune-up, you must conduct a performance tune-up according to paragraph (b) of this section and keep records as required in § 63.11225(c) to demonstrate continuous compliance. You must conduct the tune-up while burning the type of fuel (or fuels in the case of boilers that routinely burn two types of fuels at the same time) that provided the majority of the heat input to the boiler over the 12 months prior to the tune-up.
Continuous Compliance Requirements	63.11223(b)	Except as specified in paragraphs (c) through (f) of this section, you must conduct a tune-up of the boiler biennially to demonstrate continuous compliance as specified in paragraphs (b)(1) through (7) of this section. Each biennial tune-up must be conducted no more than 25 months after the previous tune-up. For a new or reconstructed boiler, the first biennial tune-up must be no later than 25 months after the initial startup of the new or reconstructed boiler.

Continuous Compliance Requirements	63.11223(b)	(1) As applicable, inspect the burner, and clean or replace any components of the burner as necessary (you may delay the burner inspection until the next scheduled unit shutdown, not to exceed 36 months from the previous inspection). Units that produce electricity for sale may delay the burner inspection until the first outage, not to exceed 36 months from the previous inspection. (2) Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if available. (3) Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly (you may delay the inspection until the next scheduled unit shutdown, not to exceed 36 months from the previous inspection). Units that produce electricity for sale may delay the inspection until the first outage, not to exceed 36 months from the previous inspection. (4) Optimize total emissions of CO. This optimization should be consistent with the manufacturer's specifications, if available, and with any nitrogen oxide requirement to which the unit is subject.

Continuous Compliance Requirements	63.11223(b)	(5) Measure the concentrations in the effluent stream of CO in parts per million, by volume, and oxygen in volume percent, before and after the adjustments are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made). Measurements may be taken using a portable CO analyzer. (6) Maintain on-site and submit, if requested by the Administrator, a report containing the information in paragraphs (b)(6)(i) through (iii) of this section. (i) The concentrations of CO in the effluent stream in parts per million, by volume, and oxygen in volume percent, measured at high fire or typical operating load, before and after the tune-up of the boiler. (ii) A description of any corrective actions taken as a part of the tune-up of the boiler. (iii) The type and amount of fuel used over the 12 months prior to the tune-up of the boiler, but only if the unit was physically and legally capable of using more than one type of fuel during that period. Units sharing a fuel meter may estimate the fuel use by each unit. (7) If the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 days of startup
Notification, Reporting, and Recordkeeping Requirements	63.11225(a)	You must submit the notifications specified in paragraphs (a)(1) through (5) of this section to the administrator.
Notification, Reporting, and Recordkeeping Requirements	63.11225(a)(1)	You must submit all of the notifications in §§ 63.7(b); 63.8(e) and (f); and 63.9(b) through (e), (g), and (h) that apply to you by the dates specified in those sections except as specified in paragraphs (a)(2) and (4) of this section.
Notification, Reporting, and Recordkeeping Requirements	63.11225(a)(2)	An Initial Notification must be submitted no later than January 20, 2014 or within 120 days after the source becomes subject to the standard.

Notification, Reporting, and Recordkeeping Requirements	63.11225(a)(4)	You must submit the Notification of Compliance Status no later than 120 days after the applicable compliance date specified in § 63.11196 unless you must conduct a performance stack test. If you must conduct a performance stack test, you must submit the Notification of Compliance Status within 60 days of completing the performance stack test. You must submit the Notification of Compliance Status in accordance with paragraphs (a)(4)(i) and (vi) of this section. The Notification of Compliance Status must include the information and certification(s) of compliance in paragraphs (a)(4)(i) through (v) of this section, as applicable, and signed by a responsible official. (i) You must submit the information required in § 63.9(h)(2), except the information listed in § 63.9(h)(2)(i)(B), (D), (E), and (F). If you conduct any performance tests or CMS performance evaluations, you must submit that data as specified in paragraph (e) of this section. If you conduct any opacity or visible emission observations, or other monitoring procedures or methods, you must submit that data to the Administrator at the appropriate address listed in § 63.13. (ii) “This facility complies with the requirements in § 63.11214 to conduct an initial tune-up of the boiler.” (iii) “This facility has had an energy assessment performed according to § 63.11214(c).” (iv) For units that install bag leak detection systems: “This facility complies with the requirements in § 63.11224(f).” (v) For units that do not qualify for a statutory exemption as provided in section 129(g)(1) of the Clean Air Act: “No secondary materials that are solid waste were combusted in any affected unit.” (vi) The notification must be submitted electronically using the Compliance and Emissions Data Reporting Interface (CEDRI) that is accessed through EPA's Central Data Exchange (CDX) (www.epa.gov/cdx). However, if the reporting form specific to this subpart is not available in CEDRI at the time that the report is due, the written Notification of Compliance Status must be submitted to the Administrator at the appropriate address listed in § 63.13.

Notification, Reporting, and Recordkeeping Requirements	63.11225(b)	You must prepare, by March 1 of each year, and submit to the delegated authority upon request, an annual compliance certification report for the previous calendar year containing the information specified in paragraphs (b)(1) through (4) of this section. You must submit the report by March 15 if you had any instance described by paragraph (b)(3) of this section. For boilers that are subject only to a requirement to conduct a biennial or 5-year tune-up according to § 63.11223(a) and not subject to emission limits or operating limits, you may prepare only a biennial or 5-year compliance report as specified in paragraphs (b)(1) and (2) of this section. (1) Company name and address. (2) Statement by a responsible official, with the official's name, title, phone number, email address, and signature, certifying the truth, accuracy and completeness of the notification and a statement of whether the source has complied with all the relevant standards and other requirements of this subpart. Your notification must include the following certification(s) of compliance, as applicable, and signed by a responsible official: (i) “This facility complies with the requirements in § 63.11223 to conduct a biennial or 5-year tune-up, as applicable, of each boiler.” (ii) For units that do not qualify for a statutory exemption as provided in section 129(g)(1) of the Clean Air Act: “No secondary materials that are solid waste were combusted in any affected unit.” (iii) “This facility complies with the requirement in §§ 63.11214(d) and 63.11223(g) to minimize the boiler's time spent during startup and shutdown and to conduct startups and shutdowns according to the manufacturer's recommended procedures or procedures specified for a boiler of similar design if
Notification, Reporting, and Recordkeeping Requirements	63.11225(b)	(3) If the source experiences any deviations from the applicable requirements during the reporting period, include a description of deviations, the time periods during which the deviations occurred, and the corrective actions taken. (4) The total fuel use by each affected boiler subject to an emission limit, for each calendar month within the reporting period, including, but not limited to, a description of the fuel, whether the fuel has received a non-waste determination by you or EPA through a petition process to be a non-waste under § 241.3(c), whether the fuel(s) were processed from discarded non-hazardous secondary materials within the meaning of § 241.3, and the total fuel usage amount with units of measure.
Notification, Reporting, and Recordkeeping Requirements	63.11225(c)	You must maintain the records specified in paragraphs (c)(1) through (7) of this section.
Notification, Reporting, and Recordkeeping Requirements	63.11225(c)(1)	As required in § 63.10(b)(2)(xiv), you must keep a copy of each notification and report that you submitted to comply with this subpart and all documentation supporting any Initial Notification or Notification of Compliance Status that you submitted.

Notification, Reporting, and Recordkeeping Requirements	63.11225(c)(2)	You must keep records to document conformance with the work practices, emission reduction measures, and management practices required by § 63.11214 and § 63.11223 as specified in paragraphs (c)(2)(i) through (vi) of this section. (i) Records must identify each boiler, the date of tune-up, the procedures followed for tune-up, and the manufacturer's specifications to which the boiler was tuned. (ii) For operating units that combust non-hazardous secondary materials that have been determined not to be solid waste pursuant to § 241.3(b)(1) of this chapter, you must keep a record which documents how the secondary material meets each of the legitimacy criteria under § 241.3(d)(1). If you combust a fuel that has been processed from a discarded non-hazardous secondary material pursuant to § 241.3(b)(4) of this chapter, you must keep records as to how the operations that produced the fuel satisfies the definition of processing in § 241.2 and each of the legitimacy criteria in § 241.3(d)(1) of this chapter. If the fuel received a non-waste determination pursuant to the petition process submitted under § 241.3(c) of this chapter, you must keep a record that documents how the fuel satisfies the requirements of the petition process. For operating units that combust non-hazardous secondary materials as fuel per § 241.4, you must keep records documenting that the material is a listed non-waste under § 241.4(a). (iii) For each boiler required to conduct an energy assessment, you must keep a copy of the energy assessment report.
Notification, Reporting, and Recordkeeping Requirements	63.11225(c)(2)	(iv) For each boiler subject to an emission limit in Table 1 to this subpart, you must also keep records of monthly fuel use by each boiler, including the type(s) of fuel and amount(s) used. (v) For each boiler that meets the definition of seasonal boiler, you must keep records of days of operation per year. (vi) For each boiler that meets the definition of limited-use boiler, you must keep a copy of the federally enforceable permit that limits the annual capacity factor to less than or equal to 10 percent and records of fuel use for the days the boiler is operating.
Notification, Reporting, and Recordkeeping Requirements	63.11225(c)(4)	Records of the occurrence and duration of each malfunction of the boiler, or of the associated air pollution control and monitoring equipment.
Notification, Reporting, and Recordkeeping Requirements	63.11225(c)(5)	Records of actions taken during periods of malfunction to minimize emissions in accordance with the general duty to minimize emissions in § 63.11205(a), including corrective actions to restore the malfunctioning boiler, air pollution control, or monitoring equipment to its normal or usual manner of operation.

Notification, Reporting, and Recordkeeping Requirements	63.11225(c)(6)	You must keep the records of all inspection and monitoring data required by §§ 63.11221 and 63.11222, and the information identified in paragraphs (c)(6)(i) through (vi) of this section for each required inspection or monitoring. (i) The date, place, and time of the monitoring event. (ii) Person conducting the monitoring. (iii) Technique or method used. (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. (vi) Maintenance or corrective action taken (if applicable).
Notification, Reporting, and Recordkeeping Requirements	63.11225(d)	Your records must be in a form suitable and readily available for expeditious review. You must keep each record for 5 years following the date of each recorded action. You must keep each record on-site or be accessible from a central location by computer or other means that instantly provide access at the site for at least 2 years after the date of each recorded action. You may keep the records off site for the remaining 3 years.

Notification, Reporting, and Recordkeeping Requirements	63.11225(g)	If you have switched fuels or made a physical change to the boiler and the fuel switch or change resulted in the applicability of a different subcategory within subpart JJJJJJ, in the boiler becoming subject to subpart JJJJJJ, or in the boiler switching out of subpart JJJJJJ due to a change to 100 percent natural gas, or you have taken a permit limit that resulted in you being subject to subpart JJJJJJ, you must provide notice of the date upon which you switched fuels, made the physical change, or took a permit limit within 30 days of the change. The notification must identify: (1) The name of the owner or operator of the affected source, the location of the source, the boiler(s) that have switched fuels, were physically changed, or took a permit limit, and the date of the notice. (2) The date upon which the fuel switch, physical change, or permit limit occurred.
General Provisions	63.11235	Table 8 to this subpart shows which parts of the General Provisions in §§ 63.1 through 63.15 apply to you.

Attachment 6
Update to Table 4-4, Requested ORLs

Table 4-4 lists the owner-requested limits (ORLs) proposed by UAF in the Compliance Plan portion of Section 4 of the UAF Operating Permit Renewal application. This table is updated here to reflect revised emission unit ID numbers and the updated operating hour limit for EU 26.

Table 4-4
UAF – Requested ORLs

EU ID	Hours Restriction	Fuel Restriction	Comments
12 through 18	None	ULSD	The proposed ORL fuel sulfur restriction avoids PSD permitting otherwise triggered by SO_2.
19 through 21	19,650 total hrs per year combined	ULSD	The proposed ORL hour restriction avoids minor permitting otherwise triggered by NO_X and the proposed ORL fuel sulfur restriction avoids PSD permitting otherwise triggered by SO_2.
22	None	ULSD	The proposed ORL fuel sulfur restriction avoids PSD permitting otherwise triggered by SO_2.
23	4,380 hr/yr	ULSD	The proposed ORL hour restriction avoids PSD permitting otherwise triggered by NO_X and the proposed ORL fuel sulfur restriction avoids PSD permitting otherwise triggered by SO_2.
24 and 28	None	ULSD	The proposed fuel sulfur restriction ORL avoids PSD permitting otherwise triggered by SO_2.
25	100 hr/yr	NA	The proposed ORL hour restriction avoids PSD permitting otherwise triggered by SO_2.
26	99 hr/yr	ULSD	The proposed ORL hour restriction avoids PSD permitting otherwise triggered by NO_X and the proposed fuel sulfur restriction ORL avoids PSD permitting otherwise triggered by SO_2.

Note: ULSD is "ultra low sulfur diesel." ULSD has a maximum sulfur content of 0.0015 percent by weight.

UAF is rescinding the request for an ORL requiring the use of ultra-low sulfur diesel (ULSD) fuel in EU 31 through 33. Following the self-reporting of several emission units which did not appear to have been properly permitted prior to installation, UAF requested guidance from ADEC regarding what permit actions were necessary to resolve the compliance concern. UAF proposed the ORL to require ULSD as a possible solution. ADEC has recently indicated that the ULSD ORL for EU 31 through 33 is not necessary.

Additionally, UAF understands that a minor permit is required to establish the ORL. Because a minor permit has not been issued, the ORL cannot be incorporated into the Title V permit at this time. In order to allow the Title V permit renewal to move forward, UAF rescinds the request for the ULSD ORL for EU 31 through 33. If ADEC determines in the future that an ORL is necessary, UAF will prepare the appropriate permit application(s) at that time.