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DEC 09 2013  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
BOISE, IDAHO

November 21, 2013

Air Quality Program Office-Application Processing  
Department of Environmental Quality  
1410 N. Hilton  
Boise, ID 83706-1255

Re: Initial Construction and Operation Permit  
St. Joseph Regional Medical Center  
415 6<sup>th</sup> Street  
Lewiston, Idaho 83501

To Whom It May Concern:

Please find enclosed the Initial Construction and Operation Permit Application submitted by St. Joseph Regional Medical Center (St. Joseph) located in Lewiston, ID.

With this application, St. Joseph is requesting a permit to construct for three 6 MMBtu/hr boilers and three fuel storage tanks as new sources at the facility. The boilers will supply steam to the facility for heating and the fuel storage tanks will hold No. 2 diesel fuel as backup to the natural gas powered boilers to be used only in the case of natural gas curtailment or supply interruption.

St. Joseph is also requesting that their existing equipment be included in the permit. This includes two 1,250 kW diesel-fired engines, one 30 Hp diesel-fired fire pump engine, one 5,000 gal fuel oil tank, and four natural gas-fired boilers that are grouped into one combined process with a heat input capacity of 200 BHP and a fuel consumption of 8,205 CFH.

We appreciate the Department's consideration of this matter. If you have any questions or need additional information, please do not hesitate to contact me at (208) 799-5527 or our air consultant, Lisa Reed, at (334) 358-6389.

Respectfully submitted,  
St. Joseph Regional Medical Center

A handwritten signature in blue ink that reads "Curt Hibbard".

Curt Hibbard  
Owner-Director of Facilities Management

Enclosure



Please see instructions on back page before filling out the form. All information is required. If information is missing, the application will not be processed.

**Identification**

1. Facility name:  2. Existing facility identification number:   Check if new facility (not yet operating)

3. Brief project description:

**Facility Information**

4. Primary facility permitting contact name:  Contact type:   
 Telephone number:  E-mail:

5. Alternate facility permitting contact name:  Alternate contact type:   
 Telephone number:  E-mail:

6. Mailing address where permit will be sent (street/city/county/state/zip code):

7. Physical address of permitted facility (if different than mailing address) (street/city/county/state/zip code):

8. Is the equipment portable?  Yes\*  No \*If yes, complete and attach PERF; see instructions.

9. NAICS codes: Primary NAICS  Secondary NAICS

10. Brief business description and principal product produced:

11. Identify any adjacent or contiguous facility this company owns and/or operates:

12. Specify type of application  Permit to construct (PTC); application fee of \$1,000 required. See instructions.  
 Tier I permit  Tier II permit  Tier II/Permit to construct

For Tier I permitted facilities only: If you are applying for a PTC then you must also specify how the PTC will be incorporated into the Tier I permit.

Co-process Tier I modification and PTC  Incorporate PTC at the time of Tier I renewal  Administratively amend the Tier I permit to incorporate the PTC upon applicant's request (IDAPA 58.01.01.209.05.a, b, or c)

**Certification**

In accordance with IDAPA 58.01.01.123 (Rules for the Control of Air Pollution in Idaho), I certify based on information and belief formed after reasonable inquiry, the statements and information in the document(s) are true, accurate, and complete.

13. Responsible official's name:  Official's title:   
 Official's address:   
 Telephone number:  E-mail:   
 Official's signature:  Date:

14. Check here to indicate that you want to review the draft permit before final issuance.

# **Minor Source Permit to Construct Application**

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Prepared for:

**St. Joseph Regional Medical Center  
415 6<sup>th</sup> Street  
Lewiston, ID 83501**

Prepared by:

**GBM<sup>c</sup> & Associates  
219 Brown Lane  
Bryant, AR 72022**

**November 21, 2013**

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Modeling Summary

# **APPENDIX**

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Equipment Specifications – New Boiler Specifications and Existing Engine Specifications  
FRA – NSPS Subpart Dc  
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FRA – NESHAP Subpart ZZZZ

# **APPLICATION SUMMARY**

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St. Joseph Regional Medical Center (St. Joseph) is located in Lewiston, Idaho. St. Joseph is applying for the facility's initial construction and operation permit.

With this application, St. Joseph is requesting a permit to construct for three 6 MMBtu/hr boilers and three fuel storage tanks that will be new sources to the facility. The boilers will supply steam to the facility for heating and the fuel storage tanks will hold No. 2 diesel fuel as backup to the natural gas powered boilers to be used only in the case of natural gas curtailment or supply interruption.

St. Joseph is also requesting that their existing equipment be included in the permit. This includes two 1,250 kW diesel-fired engines, one 30 Hp diesel-fired fire pump engine, one 5,000 gal fuel oil tank, and four natural gas-fired boilers that are grouped into one combined process with a heat input capacity of 200 BHP and a fuel consumption of 8,205 CFH.

The facility's existing and proposed equipment are itemized on the attached Equipment List.

All three existing engines are exempt from NESHAP Subpart ZZZZ per §63.6585(f)(3) as institutional emergency stationary RICE located at an area source of HAP emissions. These engines meet the definition of emergency stationary RICE in §63.6675; they are existing engines as defined in §63.6590(a)(1)(iii) as they were constructed pre June 12, 2006; and they are institutional emergency stationary RICE as defined in §63.6675.

The existing boilers (OB04A – OB04D) are not subject to NSPS Subpart Dc as they are either below 10 MMBtu/hr heat input capacity or constructed before June 9, 1989. The new boilers (OB01 – OB03) are not subject to NSPS Subpart Dc as they are each below 10 MMBtu/hr heat input capacity.

All seven existing and proposed boilers are not subject to NESHAP Subpart JJJJJ (Boiler GACT) per §63.11195(e) as they each meet the definition of gas-fired boilers. All seven boilers can burn both natural gas and fuel oil, however, as allowed by the Boiler GACT, they will only burn fuel oil during periods of gas curtailment or supply interruption and no more than 48 hours per year for periodic testing.

The facility will commence construction upon approval from the department and construction will be completed by January 2014. After completion of construction, the facility will begin operation.

Equipment List

Source ID	Modeled Source ID	Equipment Name	Manufacturer	Model #	Serial #	Maximum Process Rate		Proposed Process Rate	Maximum Heat Input Capacity (MMBtu/hr)	Maximum Rated Horsepower (bhp)	Cylinders Displaced (1/cylinder)	Stack Height (ft)	Stack Diameter (ft)	Stack Gas Flow rate (acfm)	Stack Gas Temperature (°F)	Maximum Capacity (gal)
						Diesel Fuel #2 (gal/hr)	Natural Gas (cf/hr)									
OB04A		Existing Boiler #1	Amesteam	A1255	60719	74.8	10,256		10.46							
OB04B		Existing Boiler #2	Amesteam	A1255	60718	59.8	8,205		8.37							
OB04C	804	Existing Boiler #3	Cleaverbrooks	CB 200HP	I-60210	37.4	5,128	Combined 200 MBH Capacity				98.5	3	2326	370	
OB04D		Existing Boiler #4	Cleaverbrooks	CB 200-250HP	L-88552	37.4	5,128		5.23							
E01		Existing Engine 1	Cummins	DFLC	NA											
E02		Existing Engine 2	Cummins	DFLC	NA			Each Engine 500 operating hr/yr	12.95	30	<10	20	0.833	9100	887	
E03		Existing Fire Pump Engine	Cummins	DFLC	NA				12.95	30	<10	20	0.833	9100	887	
B01		New Boiler 1	Fulton	V7G-6000DF	TBD	42.8	5,882	Each New Boiler Max Capacity Natural Gas, 48 hr/yr Diesel for Testing*	6,000			23,021	1	1725	370	
B02		New Boiler 2	Fulton	V7G-6000DF	TBD	42.8	5,882		6,000			23,021	1	1725	370	
B03		New Boiler 3	Fulton	V7G-6000DF	TBD	42.8	5,882		6,000			23,021	1	1725	370	
DT1		Day Tank 1	TBD	TBD	TBD											
FT1		Fuel Oil Tank 1	N/A	N/A	N/A											400
FT2		Fuel Oil Tank 2	TBD	TBD	TBD											5,000
FT3		Fuel Oil Tank 3	TBD	TBD	TBD											12,000

Notes: NA = Not Available, TBD = to Be Determined  
 \*Testing of diesel at the new boilers is voluntarily restricted to one at a time



**DEQ AIR QUALITY PROGRAM**  
 1410 N. Hilton, Boise, ID 83706  
 For assistance, call the  
**Air Permit Hotline – 1-877-5PERMIT**

Cover Sheet for Air Permit Application – Permit to Construct **Form CSPTC**

Please see instructions on page 2 before filling out the form.

**COMPANY NAME, FACILITY NAME, AND FACILITY ID NUMBER**

1. Company Name	St. Joseph Regional Medical Center
2. Facility Name	3. Facility ID No.
4. Brief Project Description - One sentence or less Addition of 3 dual fuel boilers with 6 MMBtu/hr heat input capacity each and 3 diesel fuel tanks.	

**PERMIT APPLICATION TYPE**

5.  New Source  New Source at Existing Facility  PTC for a Tier I Source Processed Pursuant to IDAPA 58.01.01.209.05.c  
 Unpermitted Existing Source  Facility Emissions Cap  Modify Existing Source: Permit No.: \_\_\_\_\_ Date Issued: \_\_\_\_\_  
 Required by Enforcement Action: Case No.: \_\_\_\_\_

6.  Minor PTC  Major PTC

**FORMS INCLUDED**

Included	N/A	Forms	DEQ Verify
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Form CSPTC – Cover Sheet	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Form GI – Facility Information	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Form EU0 – Emissions Units General Please specify number of EU0s attached: <u>4</u>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Form EU1– Industrial Engine Information Please specify number of EU1s attached: <u>3</u>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form EU2– Nonmetallic Mineral Processing Plants Please specify number of EU2s attached: _____	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form EU3– Spray Paint Booth Information Please specify number of EU3s attached: _____	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form EU4– Cooling Tower Information Please specify number of EU3s attached: _____	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Form EU5 – Boiler Information Please specify number of EU4s attached: <u>7</u>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form CBP– Concrete Batch Plant Please specify number of CBPs attached: _____	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form HMAP – Hot Mix Asphalt Plant Please specify number of HMAPs attached: _____	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	PERF – Portable Equipment Relocation Form	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form AO – Afterburner/Oxidizer	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form CA – Carbon Adsorber	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form CYS – Cyclone Separator	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form ESP – Electrostatic Precipitator	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form BCE– Baghouses Control Equipment	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form SCE– Scrubbers Control Equipment	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form VSCE – Venturi Scrubber Control Equipment	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Form CAM – Compliance Assurance Monitoring	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Forms EI– Emissions Inventory	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	PP – Plot Plan	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Forms MI1 – MI4 – Modeling (Excel workbook, all 4 worksheets)	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Form FRA – Federal Regulation Applicability	<input type="checkbox"/>



Please see instructions on back page before filling out the form. All information is required. If information is missing, the application will not be processed.

**Identification**

1. Facility name  2. Existing facility identification number   Check if new facility (not yet operating)

3. Brief project description

**Facility Information**

4. Primary facility permitting contact name  Contact type   
 Telephone number  E-mail

5. Alternate facility permitting contact name  Alternate contact type   
 Telephone number  E-mail

6. Mailing address where permit will be sent (street/city/county/state/zip code)

7. Physical address of permitted facility (if different than mailing address) (street/city/county/state/zip code)

8. Is the equipment portable?  Yes\*  No \*If yes, complete and attach PERF; see instructions.

9. NAICS codes: Primary NAICS  Secondary NAICS

10. Brief business description and principal product produced

11. Identify any adjacent or contiguous facility this company owns and/or operates

12. Specify type of application  Permit to construct (PTC); application fee of \$1,000 required. See instructions.  
 Tier I permit  Tier II permit  Tier II/Permit to construct

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Co-process Tier I modification and PTC  Incorporate PTC at the time of Tier I renewal  Administratively amend the Tier I permit to incorporate the PTC upon applicant's request (IDAPA 58.01.01.209.05.a, b, or c)

**Certification**

In accordance with IDAPA 58.01.01.123 (Rules for the Control of Air Pollution in Idaho), I certify based on information and belief formed after reasonable inquiry, the statements and information in the document(s) are true, accurate, and complete.

13. Responsible official's name  Official's title   
 Official's address   
 Telephone number  E-mail   
 Official's signature  Date

14. Check here to indicate that you want to review the draft permit before final issuance.



Please see instructions on page 2 before filling out the form.

IDENTIFICATION						
1. Company Name: St. Joseph Regional Medical Center		2. Facility Name:		3. Facility ID No:		
4. Brief Project Description: Addition of 3 dual fuel boilers with 6 MMBtu/hr heat input capacity each and 3 diesel fuel tanks.						
EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION						
5. Emissions Unit (EU) Name:		DAY TANK 1				
6. EU ID Number:		DT1				
7. EU Type:		<input checked="" type="checkbox"/> New Source <input type="checkbox"/> Unpermitted Existing Source		<input type="checkbox"/> Modification to a Permitted Source – Previous Permit #:		Date Issued:
8. Manufacturer:						
9. Model:						
10. Maximum Capacity:		400 GALLONS				
11. Date of Construction:		2013				
12. Date of Modification (if any):						
13. Is this a Controlled Emission Unit? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes    If Yes, complete the following section. If No, go to line 22.						
EMISSIONS CONTROL EQUIPMENT						
14. Control Equipment Name and ID:						
15. Date of Installation:			16. Date of Modification (if any):			
17. Manufacturer and Model Number:						
18. ID(s) of Emission Unit Controlled:						
19. Is operating schedule different than emission units(s) involved? <input type="checkbox"/> Yes <input type="checkbox"/> No						
20. Does the manufacturer guarantee the control efficiency of the control equipment? <input type="checkbox"/> Yes <input type="checkbox"/> No (If Yes, attach and label manufacturer guarantee)						
Control Efficiency	Pollutant Controlled					
	PM	PM10	SO <sub>2</sub>	NO <sub>x</sub>	VOC	CO
21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.						
EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)						
22. Actual Operation:		8,760 HR/YEAR				
23. Maximum Operation:		8,760 HR/YEAR				
REQUESTED LIMITS						
24. Are you requesting any permit limits? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If Yes, indicate all that apply below)						
<input type="checkbox"/> Operation Hour Limit(s):						
<input type="checkbox"/> Production Limit(s):						
<input type="checkbox"/> Material Usage Limit(s):						
<input type="checkbox"/> Limits Based on Stack Testing:		Please attach all relevant stack testing summary reports				
<input type="checkbox"/> Other:						
25. Rationale for Requesting the Limit(s):						





Please see instructions on page 2 before filling out the form.

IDENTIFICATION							
1. Company Name: St. Joseph Regional Medical Center	2. Facility Name:			3. Facility ID No:			
4. Brief Project Description: Addition of 3 dual fuel boilers with 6 MMBtu/hr heat input capacity each and 3 diesel fuel tanks.							
EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION							
5. Emissions Unit (EU) Name: FUEL OIL TANK 2							
6. EU ID Number: FT2							
7. EU Type: <input checked="" type="checkbox"/> New Source <input type="checkbox"/> Unpermitted Existing Source <input type="checkbox"/> Modification to a Permitted Source -- Previous Permit #:      Date Issued:							
8. Manufacturer:							
9. Model:							
10. Maximum Capacity: 12,000 GALLONS							
11. Date of Construction: 2013							
12. Date of Modification (if any):							
13. Is this a Controlled Emission Unit? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes    If Yes, complete the following section. If No, go to line 22.							
EMISSIONS CONTROL EQUIPMENT							
14. Control Equipment Name and ID:							
15. Date of Installation:			16. Date of Modification (if any):				
17. Manufacturer and Model Number:							
18. ID(s) of Emission Unit Controlled:							
19. Is operating schedule different than emission units(s) involved? <input type="checkbox"/> Yes <input type="checkbox"/> No							
20. Does the manufacturer guarantee the control efficiency of the control equipment? <input type="checkbox"/> Yes <input type="checkbox"/> No (If Yes, attach and label manufacturer guarantee)							
Control Efficiency		Pollutant Controlled					
		PM	PM10	SO <sub>2</sub>	NOx	VOC	CO
21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.							
EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)							
22. Actual Operation: 8,760 HR/YEAR							
23. Maximum Operation: 8,760 HR/YEAR							
REQUESTED LIMITS							
24. Are you requesting any permit limits? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If Yes, indicate all that apply below)							
<input type="checkbox"/> Operation Hour Limit(s):							
<input type="checkbox"/> Production Limit(s):							
<input type="checkbox"/> Material Usage Limit(s):							
<input type="checkbox"/> Limits Based on Stack Testing:      Please attach all relevant stack testing summary reports							
<input type="checkbox"/> Other:							
25. Rationale for Requesting the Limit(s):							



Please see instructions on page 2 before filling out the form.

**IDENTIFICATION**

1. Company Name: St. Joseph Regional Medical Center	2. Facility Name:	3. Facility ID No:
4. Brief Project Description: Addition of 3 dual fuel boilers with 6 MMBtu/hr heat input capacity each and 3 diesel fuel tanks.		

**EMISSIONS UNIT (PROCESS) IDENTIFICATION & DESCRIPTION**

5. Emissions Unit (EU) Name:	FUEL OIL TANK 3
6. EU ID Number:	FT3
7. EU Type:	<input checked="" type="checkbox"/> New Source <input type="checkbox"/> Unpermitted Existing Source <input type="checkbox"/> Modification to a Permitted Source -- Previous Permit #:      Date Issued:
8. Manufacturer:	
9. Model:	
10. Maximum Capacity:	12,000 GALLONS
11. Date of Construction:	2013
12. Date of Modification (if any):	
13. Is this a Controlled Emission Unit?	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes    If Yes, complete the following section. If No, go to line 22.

**EMISSIONS CONTROL EQUIPMENT**

14. Control Equipment Name and ID:						
15. Date of Installation:	16. Date of Modification (if any):					
17. Manufacturer and Model Number:						
18. ID(s) of Emission Unit Controlled:						
19. Is operating schedule different than emission units(s) involved? <input type="checkbox"/> Yes <input type="checkbox"/> No						
20. Does the manufacturer guarantee the control efficiency of the control equipment? <input type="checkbox"/> Yes <input type="checkbox"/> No (If Yes, attach and label manufacturer guarantee)						
Control Efficiency	Pollutant Controlled					
	PM	PM10	SO <sub>2</sub>	NO <sub>x</sub>	VOC	CO

21. If manufacturer's data is not available, attach a separate sheet of paper to provide the control equipment design specifications and performance data to support the above mentioned control efficiency.

**EMISSION UNIT OPERATING SCHEDULE (hours/day, hours/year, or other)**

22. Actual Operation:	8,760 HR/YEAR
23. Maximum Operation:	8,760 HR/YEAR

**REQUESTED LIMITS**

24. Are you requesting any permit limits?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If Yes, indicate all that apply below)
<input type="checkbox"/> Operation Hour Limit(s):	
<input type="checkbox"/> Production Limit(s):	
<input type="checkbox"/> Material Usage Limit(s):	
<input type="checkbox"/> Limits Based on Stack Testing:	Please attach all relevant stack testing summary reports
<input type="checkbox"/> Other:	

25. Rationale for Requesting the Limit(s):
--



Please see instructions on page 2 before filling out the form.

**IDENTIFICATION**

1. Company Name: <u>St. Joseph Regional Medical Center</u>		2. Facility Name: <u>St. Joseph Regional Medical Center</u>	
3. Brief Project Description: <u>Addition of 3 dual fuel boilers with 6 MMBtu/hr heat input capacity each and 3 diesel fuel tanks.</u>			

**IC ENGINE DESCRIPTION AND SPECIFICATIONS**

4. Type of unit:

New unit  Unpermitted existing unit  Modification to an existing permitted unit? Permit number: \_\_\_\_\_

Full-time operation (non-emergency standby use)?

Emergency standby use only (operation limited to 100 hrs/yr for maintenance and testing and emergency use only)?

Emergency fire pump use only?

Stationary test cell/stand operation only (as defined in NSPS Subpart ZZZZ)?

National security operation only (as defined in NSPS Subpart ZZZZ)?

Institutional emergency standby IC engine (as defined in NSPS Subpart ZZZZ)?

**IC ENGINE SPECIFICATIONS**

Questions 5 through 15 apply to all IC engines.

5. IC Engine Manufacturer: Cummins 6. Model: DFLC 7. Date manufactured: 1995 8. Model year: 1995

9. Date of installation (if an existing IC engine): 1996 10. IC Engine cylinder displacement: 3.15 liters per cylinder

11. Maximum rated horsepower (per the data plate/manufacture specifications): 1850 bhp

12. EPA Certification: Tier certification number \_\_\_\_\_ or  None/not tier certified

13. Ignition type:  Spark  Compression

14. Fuel combusted in the IC engine?  Distillate fuel oil  Natural gas/LNG  LPG/propane  
 If distillate fuel oil (#1, #2, or a mixture) is used, what is the maximum sulfur content?  15 ppm (0.0015% by weight)  500 ppm (0.05% by weight)

15. IC engine exhaust stack parameters: Diameter 10 inches Height 20 feet Temperature 887 °F Flow rate 9100 acfm

**IC ENGINE EMISSIONS PARAMETERS**

Questions 16 through 27 apply to full-time non-Tier certified IC engines or Tier certified IC engines manufactured prior to July 11, 2005. If you are proposing a Tier certified IC engine manufactured on and after July 11, 2005 or an emergency standby IC engine do not answer questions 17 through 27.

16. Testing schedule (for emergency standby IC engines only): 0.5 hrs/day 0.5 hrs/mon 1.5 hrs/qtr 6 hrs/yr \*

17. Maximum daily operation: 24 hrs/day 18. Maximum annual operation: 250 hrs/yr **Note:** These operational limits will be placed in the permit.

19. Will CO emissions be limited to a specific ppmvd (i.e. 49 or 23 ppmvd)?  Yes  No 20. What will the CO emissions limit be? \_\_\_\_\_ ppmvd

21. Will CO emissions be reduced by 70% or more?  Yes  No

22. Will a CEMS (Continuous Emissions Monitoring System) be used to measure pollutants in the IC engine exhaust stream?  Yes  No

23. Will a CPMS (Continuous Parameters Monitoring System) be used to measure parameters of the IC engine exhaust stream?  Yes  No

24. Will the IC engine be equipped with an oxidation catalyst?  Yes  No

25. If applicable, will the oxidation catalyst be equipped with a temperature measurement system to ensure it is operating properly?  Yes  No

26. Will the IC engine be equipped with a diesel particulate filter?  Yes  No

27. If applicable, will the diesel particulate filter be equipped with a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is approached?  Yes  No

\*Every 3 years, 4 hours one time



Please see instructions on page 2 before filling out the form.

**IDENTIFICATION**

<b>1. Company Name</b> St. Joseph Regional Medical Center	<b>2. Facility Name</b> St. Joseph Regional Medical Center
<b>3. Brief Project Description</b> Addition of 3 dual fuel boilers with 6 MMBtu/hr heat input capacity each and 3 diesel fuel tanks.	

**IC ENGINE DESCRIPTION AND SPECIFICATIONS**

**4. Type of unit**

New unit  Unpermitted existing unit  Modification to an existing permitted unit? Permit number: \_\_\_\_\_

Full-time operation (non-emergency standby use)?

Emergency standby use only (operation limited to 100 hrs/yr for maintenance and testing and emergency use only)?

Emergency fire pump use only?

Stationary test cell/stand operation only (as defined in NSPS Subpart ZZZZ)?

National security operation only (as defined in NSPS Subpart ZZZZ)?

Institutional emergency standby IC engine (as defined in NSPS Subpart ZZZZ)?

**IC ENGINE SPECIFICATIONS**

Questions 5 through 15 apply to all IC engines.

5. IC Engine Manufacturer: Cummins 6. Model: DFLC 7. Date manufactured: 1995 8. Model year: 1995

9. Date of installation (if an existing IC engine): 1996 10. IC Engine cylinder displacement: 3.15 liters per cylinder

11. Maximum rated horsepower (per the data plate/manufacture specifications): 1850 bhp

12. EPA Certification: Tier certification number \_\_\_\_\_ or  None/not tier certified

13. Ignition type:  Spark  Compression

14. Fuel combusted in the IC engine?  Distillate fuel oil  Natural gas/LNG  LPG/propane  
 If distillate fuel oil (#1, #2, or a mixture) is used, what is the maximum sulfur content?  15 ppm (0.0015% by weight)  500 ppm (0.05% by weight)

15. IC engine exhaust stack parameters: Diameter 10 inches Height 20 feet Temperature 887 °F Flow rate 9100 acfm

**IC ENGINE EMISSIONS PARAMETERS**

Questions 16 through 27 apply to full-time non-Tier certified IC engines or Tier certified IC engines manufactured prior to July 11, 2005. If you are proposing a Tier certified IC engine manufactured on and after July 11, 2005 or an emergency standby IC engine do not answer questions 17 through 27.

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24. Will the IC engine be equipped with an oxidation catalyst?  Yes  No

25. If applicable, will the oxidation catalyst be equipped with a temperature measurement system to ensure it is operating properly?  Yes  No

26. Will the IC engine be equipped with a diesel particulate filter?  Yes  No

27. If applicable, will the diesel particulate filter be equipped with a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is approached?  Yes  No

\*Every 3 years, 4 hours one time



Please see instructions on page 2 before filling out the form.

**IDENTIFICATION**

<b>1. Company Name</b>	<b>2. Facility Name</b>
St. Joseph Regional Medical Center	
<b>3. Brief Project Description:</b>	Addition of 3 dual fuel boilers with 6 MMBtu/hr heat input capacity each and 3 diesel fuel tanks.

**IC ENGINE DESCRIPTION AND SPECIFICATIONS**

<b>4. Type of unit</b>	<input type="checkbox"/> New unit <input checked="" type="checkbox"/> Unpermitted existing unit <input type="checkbox"/> Modification to an existing permitted unit? Permit number: _____ <input type="checkbox"/> Full-time operation (non-emergency standby use)? <input type="checkbox"/> Emergency standby use only (operation limited to 100 hrs/yr for maintenance and testing and emergency use only)? <input checked="" type="checkbox"/> Emergency fire pump use only? <input type="checkbox"/> Stationary test cell/stand operation only (as defined in NSPS Subpart ZZZZ)? <input type="checkbox"/> National security operation only (as defined in NSPS Subpart ZZZZ)? <input checked="" type="checkbox"/> Institutional emergency standby IC engine (as defined in NSPS Subpart ZZZZ)?
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**IC ENGINE SPECIFICATIONS**

Questions 5 through 15 apply to all IC engines.

5. IC Engine Manufacturer: N/A 6. Model: N/A 7. Date manufactured: Pre 2006 8. Model year: Pre 2006  
 9. Date of installation (if an existing IC engine): Pre 2006 10. IC Engine cylinder displacement: <10 liters per cylinder  
 11. Maximum rated horsepower (per the data plate/manufacture specifications): 30 bhp  
 12. EPA Certification: Tier certification number \_\_\_\_\_ or  None/not tier certified  
 13. Ignition type:  Spark  Compression  
 14. Fuel combusted in the IC engine?  Distillate fuel oil  Natural gas/LNG  LPG/propane  
 If distillate fuel oil (#1, #2, or a mixture) is used, what is the maximum sulfur content?  15 ppm (0.0015% by weight)  500 ppm (0.05% by weight)  
 15. IC engine exhaust stack parameters: Diameter 10 inches Height 20 feet Temperature 600 °F Flow rate 75 acfm

**IC ENGINE EMISSIONS PARAMETERS**

Questions 16 through 27 apply to full-time non-Tier certified IC engines or Tier certified IC engines manufactured prior to July 11, 2005. If you are proposing a Tier certified IC engine manufactured on and after July 11, 2005 or an emergency standby IC engine do not answer questions 17 through 27.

16. Testing schedule (for emergency standby IC engines only): 0.5 hrs/day 0.5 hrs/mon 1.5 hrs/qtr 6 hrs/yr \*  
 17. Maximum daily operation: 24 hrs/day 18. Maximum annual operation: 250 hrs/yr **Note:** These operational limits will be placed in the permit.  
 19. Will CO emissions be limited to a specific ppmvd (i.e. 49 or 23 ppmvd)?  Yes  No 20. What will the CO emissions limit be? \_\_\_\_\_ ppmvd  
 21. Will CO emissions be reduced by 70% or more?  Yes  No  
 22. Will a CEMS (Continuous Emissions Monitoring System) be used to measure pollutants in the IC engine exhaust stream?  Yes  No  
 23. Will a CPMS (Continuous Parameters Monitoring System) be used to measure parameters of the IC engine exhaust stream?  Yes  No  
 24. Will the IC engine be equipped with an oxidation catalyst?  Yes  No  
 25. If applicable, will the oxidation catalyst be equipped with a temperature measurement system to ensure it is operating properly?  Yes  No  
 26. Will the IC engine be equipped with a diesel particulate filter?  Yes  No  
 27. If applicable, will the diesel particulate filter be equipped with a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is approached?  Yes  No

\*Every 3 years, 4 hours one time



Please see instructions on page 2 before filling out the form.

IDENTIFICATION				
1. Company Name: St. Joseph Regional Medical Center		2. Facility Name:		3 Facility ID No:
4. Brief Project Description: Addition of 3 dual fuel boilers with 6 MMBtu/hr heat input capacity each and 3 diesel fuel tanks.				
EXEMPTION				
Please see IDAPA 58.01.01.222 for a list of industrial boilers that are exempt from Permit to Construct requirements.				
BOILER (EMISSION UNIT) DESCRIPTION AND SPECIFICATIONS				
5. Type of Request: <input type="checkbox"/> New Unit <input checked="" type="checkbox"/> Unpermitted Existing Unit <input type="checkbox"/> Modification to a Unit with Permit #:				
6. Use of Boiler: <input checked="" type="checkbox"/> % Used For Process <input checked="" type="checkbox"/> % Used For Space Heat <input type="checkbox"/> % Used For Generating Electricity <input type="checkbox"/> Other:				
7. Boiler ID Number: OB04A		8. Rated Capacity: <input checked="" type="checkbox"/> 10.46 Million British Thermal Units Per Hour (MMBtu/hr) <input type="checkbox"/> 1,000 Pounds Steam Per Hour (1,000 lb steam/hr)		
9. Construction Date: 1961		10. Manufacturer: Amesteam		11. Model: A1255
12. Date of Modification (if applicable):		13. Serial Number (if available): 60719		14. Control Device (if any): <b>Note: Attach applicable control equipment form(s)</b>
FUEL DESCRIPTION AND SPECIFICATIONS				
15. Fuel Type	<input checked="" type="checkbox"/> Diesel Fuel (# 2 ) gal/hr (gal/hr)	<input checked="" type="checkbox"/> Natural Gas scf/hr (cf/hr)	<input type="checkbox"/> Coal (unit: /hr)	<input type="checkbox"/> Other Fuels (unit: /hr)
16. Full Load Consumption Rate	74.8	10,256		
17. Actual Consumption Rate	74.8	10,256		
18. Fuel Heat Content (Btu/unit, LHV)	140	1020		
19. Sulfur Content wt%	0.05			
20. Ash Content wt%		N/A		
STEAM DESCRIPTION AND SPECIFICATIONS				
21. Steam Heat Content	NA	NA		
22. Steam Temperature (°F)	N/A	N/A		
23. Steam Pressure (psi)	N/A	N/A		
24 Steam Type	N/A	N/A	<input type="checkbox"/> Saturated <input type="checkbox"/> Superheated	<input type="checkbox"/> Saturated <input type="checkbox"/> Superheated
OPERATING LIMITS & SCHEDULE				
25. Imposed Operating Limits (hours/year, or gallons fuel/year, etc.):		48 hours/year of operation with diesel fuel for testing and maintenance, unless during periods of natural gas curtailment or supply interruption. Note: OB04A, OB04B, OB04C, and OB04D share a total maximum load of 200MBH.		
26. Operating Schedule (hours/day, months/year, etc.):		8,760 hours/year		
27. NSPS Applicability: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		If Yes, which subpart:		



Please see instructions on page 2 before filling out the form.

IDENTIFICATION				
1. Company Name: St. Joseph Regional Medical Center		2. Facility Name:		3 Facility ID No:
4. Brief Project Description: Addition of 3 dual fuel boilers with 6 MMBtu/hr heat input capacity each and 3 diesel fuel tanks.				
EXEMPTION				
Please see IDAPA 58.01.01.222 for a list of industrial boilers that are exempt from Permit to Construct requirements.				
BOILER (EMISSION UNIT) DESCRIPTION AND SPECIFICATIONS				
5. Type of Request: <input type="checkbox"/> New Unit <input checked="" type="checkbox"/> Unpermitted Existing Unit <input type="checkbox"/> Modification to a Unit with Permit #:				
6. Use of Boiler: <input checked="" type="checkbox"/> % Used For Process <input checked="" type="checkbox"/> % Used For Space Heat <input type="checkbox"/> % Used For Generating Electricity <input type="checkbox"/> Other:				
7. Boiler ID Number: OB04B		8. Rated Capacity: <input checked="" type="checkbox"/> 8.37 Million British Thermal Units Per Hour (MMBtu/hr) <input type="checkbox"/> 1,000 Pounds Steam Per Hour (1,000 lb steam/hr)		
9. Construction Date: 1961		10. Manufacturer: Amesteam		11. Model: A1255
12. Date of Modification (if applicable):		13. Serial Number (if available): 60718		14. Control Device (if any): <b>Note: Attach applicable control equipment form(s)</b>
FUEL DESCRIPTION AND SPECIFICATIONS				
15. Fuel Type	<input checked="" type="checkbox"/> Diesel Fuel (# 2 ) gal/hr (gal/hr)	<input checked="" type="checkbox"/> Natural Gas scf/hr (cf/hr)	<input type="checkbox"/> Coal (unit: /hr)	<input type="checkbox"/> Other Fuels (unit: /hr)
16. Full Load Consumption Rate	59.8	8,205		
17. Actual Consumption Rate	59.8	8,205		
18. Fuel Heat Content (Btu/unit, LHV)	140	1020		
19. Sulfur Content wt%	0.05			
20. Ash Content wt%		N/A		
STEAM DESCRIPTION AND SPECIFICATIONS				
21. Steam Heat Content	NA	NA		
22. Steam Temperature (°F)	N/A	N/A		
23. Steam Pressure (psi)	N/A	N/A		
24 Steam Type	N/A	N/A	<input type="checkbox"/> Saturated <input type="checkbox"/> Superheated	<input type="checkbox"/> Saturated <input type="checkbox"/> Superheated
OPERATING LIMITS & SCHEDULE				
25. Imposed Operating Limits (hours/year, or gallons fuel/year, etc.):		48 hours/year of operation with diesel fuel for testing and maintenance, unless during periods of natural gas curtailment or supply interruption. Note: OB04A, OB04B, OB04C, and OB04D share a total maximum load of 200MBH.		
26. Operating Schedule (hours/day, months/year, etc.):		8,760 hours/year		
27. NSPS Applicability: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		If Yes, which subpart:		



Please see instructions on page 2 before filling out the form.

IDENTIFICATION				
1. Company Name: St. Joseph Regional Medical Center		2. Facility Name:		3 Facility ID No:
4. Brief Project Description: Addition of 3 dual fuel boilers with 6 MMBtu/hr heat input capacity each and 3 diesel fuel tanks.				
EXEMPTION				
Please see IDAPA 58.01.01.222 for a list of industrial boilers that are exempt from Permit to Construct requirements.				
BOILER (EMISSION UNIT) DESCRIPTION AND SPECIFICATIONS				
5. Type of Request: <input type="checkbox"/> New Unit <input checked="" type="checkbox"/> Unpermitted Existing Unit <input type="checkbox"/> Modification to a Unit with Permit #:				
6. Use of Boiler: <input checked="" type="checkbox"/> % Used For Process <input checked="" type="checkbox"/> % Used For Space Heat <input type="checkbox"/> % Used For Generating Electricity <input type="checkbox"/> Other:				
7. Boiler ID Number: OB04C		8. Rated Capacity: <input checked="" type="checkbox"/> 5.23 Million British Thermal Units Per Hour (MMBtu/hr) <input type="checkbox"/> 1,000 Pounds Steam Per Hour (1,000 lb steam/hr)		
9. Construction Date: 1975		10. Manufacturer: Cleaverbrooks		11. Model: CB 200HP
12. Date of Modification (if applicable):		13. Serial Number (if available): L-60210		14. Control Device (if any): <b>Note: Attach applicable control equipment form(s)</b>
FUEL DESCRIPTION AND SPECIFICATIONS				
15. Fuel Type	<input checked="" type="checkbox"/> Diesel Fuel (# 2 ) gal/hr (gal/hr)	<input checked="" type="checkbox"/> Natural Gas scf/hr (cf/hr)	<input type="checkbox"/> Coal (unit: /hr)	<input type="checkbox"/> Other Fuels (unit: /hr)
16. Full Load Consumption Rate	37.4	5,128		
17. Actual Consumption Rate	37.4	5,128		
18. Fuel Heat Content (Btu/unit, LHV)	140	1020		
19. Sulfur Content wt%	0.05			
20. Ash Content wt%		N/A		
STEAM DESCRIPTION AND SPECIFICATIONS				
21. Steam Heat Content	NA	NA		
22. Steam Temperature (°F)	N/A	N/A		
23. Steam Pressure (psi)	N/A	N/A		
24 Steam Type	N/A	N/A	<input type="checkbox"/> Saturated <input type="checkbox"/> Superheated	<input type="checkbox"/> Saturated <input type="checkbox"/> Superheated
OPERATING LIMITS & SCHEDULE				
25. Imposed Operating Limits (hours/year, or gallons fuel/year, etc.):		48 hours/year of operation with diesel fuel for testing and maintenance, unless during periods of natural gas curtailment or supply interruption. Note: OB04A, OB04B, OB04C, and OB04D share a total maximum load of 200MBH.		
26. Operating Schedule (hours/day, months/year, etc.):		8,760 hours/year		
27. NSPS Applicability: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		If Yes, which subpart:		



Please see instructions on page 2 before filling out the form.

IDENTIFICATION				
1. Company Name: St. Joseph Regional Medical Center		2. Facility Name:		3 Facility ID No:
4. Brief Project Description: Addition of 3 dual fuel boilers with 6 MMBtu/hr heat input capacity each and 3 diesel fuel tanks.				
EXEMPTION				
Please see IDAPA 58.01.01.222 for a list of industrial boilers that are exempt from Permit to Construct requirements.				
BOILER (EMISSION UNIT) DESCRIPTION AND SPECIFICATIONS				
5. Type of Request: <input type="checkbox"/> New Unit <input checked="" type="checkbox"/> Unpermitted Existing Unit <input type="checkbox"/> Modification to a Unit with Permit #:				
6. Use of Boiler: <input checked="" type="checkbox"/> % Used For Process <input checked="" type="checkbox"/> % Used For Space Heat <input type="checkbox"/> % Used For Generating Electricity <input type="checkbox"/> Other:				
7. Boiler ID Number: OB04D		8. Rated Capacity: <input checked="" type="checkbox"/> 5.23 Million British Thermal Units Per Hour (MMBtu/hr) <input type="checkbox"/> 1,000 Pounds Steam Per Hour (1,000 lb steam/hr)		
9. Construction Date: 1990		10. Manufacturer: Cleaverbrooks		11. Model: CB 200-250HP
12. Date of Modification (if applicable):		13. Serial Number (if available): L-88552		14. Control Device (if any): <b>Note: Attach applicable control equipment form(s)</b>
FUEL DESCRIPTION AND SPECIFICATIONS				
15. Fuel Type	<input checked="" type="checkbox"/> Diesel Fuel (# 2 ) gal/hr (gal/hr)	<input checked="" type="checkbox"/> Natural Gas scf/hr (cf/hr)	<input type="checkbox"/> Coal (unit: /hr)	<input type="checkbox"/> Other Fuels (unit: /hr)
16. Full Load Consumption Rate	37.4	5,128		
17. Actual Consumption Rate	37.4	5,128		
18. Fuel Heat Content (Btu/unit, LHV)	140	1020		
19. Sulfur Content wt%	0.05			
20. Ash Content wt%		N/A		
STEAM DESCRIPTION AND SPECIFICATIONS				
21. Steam Heat Content	NA	NA		
22. Steam Temperature (°F)	N/A	N/A		
23. Steam Pressure (psi)	N/A	N/A		
24 Steam Type	N/A	N/A	<input type="checkbox"/> Saturated <input type="checkbox"/> Superheated	<input type="checkbox"/> Saturated <input type="checkbox"/> Superheated
OPERATING LIMITS & SCHEDULE				
25. Imposed Operating Limits (hours/year, or gallons fuel/year, etc.):		48 hours/year of operation with diesel fuel for testing and maintenance, unless during periods of natural gas curtailment or supply interruption. Note: OB04A, OB04B, OB04C, and OB04D share a total maximum load of 200MBH.		
26. Operating Schedule (hours/day, months/year, etc.):		8,760 hours/year		
27. NSPS Applicability: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		If Yes, which subpart:		



Please see instructions on page 3 before filling out the form.

IDENTIFICATION		
1. Company Name: St. Joseph Regional Medical Center	2. Facility Name:	3 Facility ID No:
4. Brief Project Description: Addition of 3 dual fuel boilers with 6 MMBtu/hr heat input capacity each and 3 diesel fuel tanks.		

**EXEMPTION**

Please see IDAPA 58.01.01.222 for a list of industrial boilers that are exempt from Permit to Construct requirements.

BOILER (EMISSION UNIT) DESCRIPTION AND SPECIFICATIONS		
5. Type of Request: <input checked="" type="checkbox"/> New Unit <input type="checkbox"/> Unpermitted Existing Unit <input type="checkbox"/> Modification to a Unit with Permit #:		
6. Use of Boiler: <input checked="" type="checkbox"/> % Used For Process <input checked="" type="checkbox"/> % Used For Space Heat <input type="checkbox"/> % Used For Generating Electricity <input type="checkbox"/> Other:		
7. Boiler ID Number: OB01	8. Rated Capacity: <input checked="" type="checkbox"/> 6 Million British Thermal Units Per Hour (MMBtu/hr) <input type="checkbox"/> 1,000 Pounds Steam Per Hour (1,000 lb steam/hr)	
9. Construction Date: 2013	10. Manufacturer: Fulton	11. Model: VTG-600DF
12. Date of Modification (if applicable):	13. Serial Number (if available):	14. Control Device (if any): <b>Note: Attach applicable control equipment form(s)</b>

FUEL DESCRIPTION AND SPECIFICATIONS				
15. Fuel Type	<input checked="" type="checkbox"/> Diesel Fuel (# 2 ) gal/hr (gal/hr)	<input checked="" type="checkbox"/> Natural Gas scf/hr (cf/hr)	<input type="checkbox"/> Coal (unit: /hr)	<input type="checkbox"/> Other Fuels (unit: /hr)
16. Full Load Consumption Rate	42.8	5,882		
17. Actual Consumption Rate	42.8	5,882		
18. Fuel Heat Content (Btu/unit, LHV)	140	1020		
19. Sulfur Content wt%	0.05			
20. Ash Content wt%		N/A		

STEAM DESCRIPTION AND SPECIFICATIONS				
21. Steam Heat Content	NA	NA		
22. Steam Temperature (°F)	N/A	N/A		
23. Steam Pressure (psi)	N/A	N/A		
24. Steam Type	N/A	N/A	<input type="checkbox"/> Saturated <input type="checkbox"/> Superheated	<input type="checkbox"/> Saturated <input type="checkbox"/> Superheated

OPERATING LIMITS & SCHEDULE	
25. Imposed Operating Limits (hours/year, or gallons fuel/year, etc.):	48 hours/year of operation with diesel fuel for testing and maintenance, unless during periods of natural gas curtailment or supply interruption.  Only one of the new boilers (OB01, OB02, or OB03) will using diesel fuel at any given time.  Additionally the facility will only operate two of the new boilers (OB01, OB02, or OB03) at any given time.
26. Operating Schedule (hours/day, months/year, etc.):	8,760 hours/year

27. NSPS Applicability: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If Yes, which subpart:
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**DEQ AIR QUALITY PROGRAM**  
 1410 N. Hilton, Boise, ID 83706  
 For assistance, call the  
**Air Permit Hotline - 1-877-5PERMIT**

**Emissions Units - Industrial Boiler Information Form EU5**

Revision 5  
 08/28/08

Please see instructions on page 3 before filling out the form.

IDENTIFICATION				
1. Company Name: St. Joseph Regional Medical Center		2. Facility Name:		3 Facility ID No:
4. Brief Project Description: Addition of 3 dual fuel boilers with 6 MMBtu/hr heat input capacity each and 3 diesel fuel tanks.				
EXEMPTION				
Please see IDAPA 58.01.01.222 for a list of industrial boilers that are exempt from Permit to Construct requirements.				
BOILER (EMISSION UNIT) DESCRIPTION AND SPECIFICATIONS				
5. Type of Request: <input checked="" type="checkbox"/> New Unit <input type="checkbox"/> Unpermitted Existing Unit <input type="checkbox"/> Modification to a Unit with Permit #:				
6. Use of Boiler: <input checked="" type="checkbox"/> % Used For Process <input checked="" type="checkbox"/> % Used For Space Heat <input type="checkbox"/> % Used For Generating Electricity <input type="checkbox"/> Other:				
7. Boiler ID Number: OB02		8. Rated Capacity: <input checked="" type="checkbox"/> 6 Million British Thermal Units Per Hour (MMBtu/hr) <input type="checkbox"/> 1,000 Pounds Steam Per Hour (1,000 lb steam/hr)		
9. Construction Date: 2013		10. Manufacturer: Fulton		11. Model: VTG-600DF
12. Date of Modification (if applicable):		13. Serial Number (if available):		14. Control Device (if any): <b>Note: Attach applicable control equipment form(s)</b>
FUEL DESCRIPTION AND SPECIFICATIONS				
15. Fuel Type	<input checked="" type="checkbox"/> Diesel Fuel (# 2 ) gal/hr (gal/hr)	<input checked="" type="checkbox"/> Natural Gas scf/hr (cf/hr)	<input type="checkbox"/> Coal (unit: /hr)	<input type="checkbox"/> Other Fuels (unit: /hr)
16. Full Load Consumption Rate	42.8	5,882		
17. Actual Consumption Rate	42.8	5,882		
18. Fuel Heat Content (Btu/unit, LHV)	140	1020		
19. Sulfur Content wt%	0.05			
20. Ash Content wt%		N/A		
STEAM DESCRIPTION AND SPECIFICATIONS				
21. Steam Heat Content	NA	NA		
22. Steam Temperature (°F)	N/A	N/A		
23. Steam Pressure (psi)	N/A	N/A		
24 Steam Type	N/A	N/A	<input type="checkbox"/> Saturated <input type="checkbox"/> Superheated	<input type="checkbox"/> Saturated <input type="checkbox"/> Superheated
OPERATING LIMITS & SCHEDULE				
25. Imposed Operating Limits (hours/year, or gallons fuel/year, etc.):		48 hours/year of operation with diesel fuel for testing and maintenance, unless during periods of natural gas curtailment or supply interruption. Only one of the new boilers (OB01, OB02, or OB03) will using diesel fuel at any given time. Additioanly the facility will only operate two of the new boilers (OB01, OB02, or OB03) at any given time		
26. Operating Schedule (hours/day, months/year, etc.):		8,760 hours/year		

27. NSPS Applicability:  Yes  No

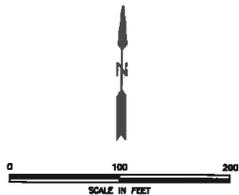
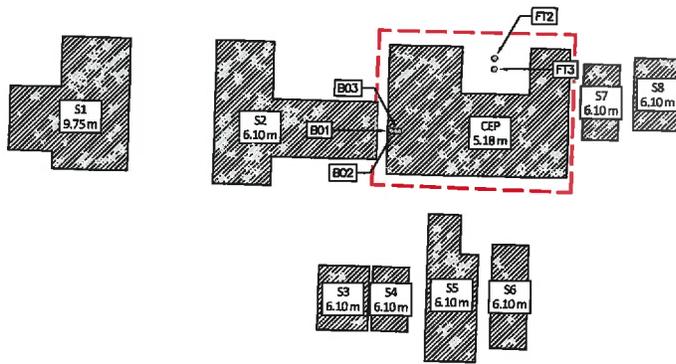
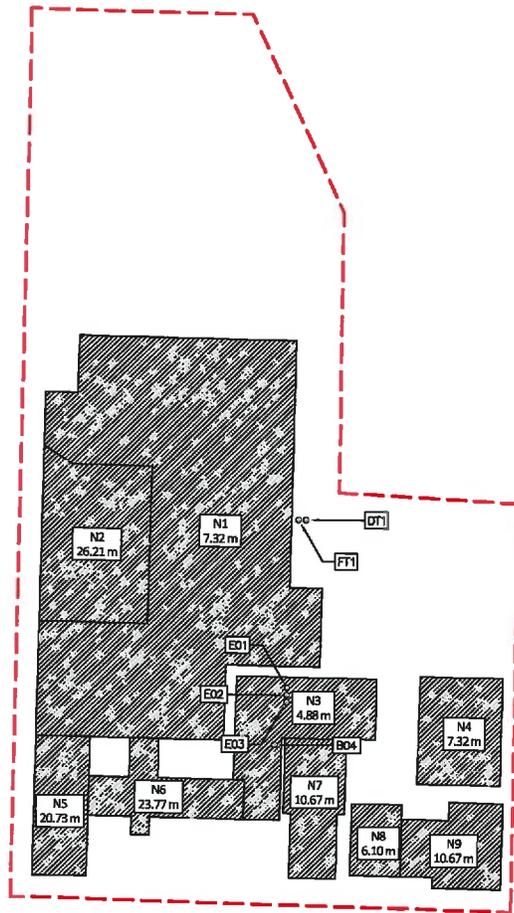
If Yes, which subpart:



Please see instructions on page 3 before filling out the form.

IDENTIFICATION				
1. Company Name: St. Joseph Regional Medical Center		2. Facility Name:		3 Facility ID No:
4. Brief Project Description: Addition of 3 dual fuel boilers with 6 MMBtu/hr heat input capacity each and 3 diesel fuel tanks.				
EXEMPTION				
Please see IDAPA 58.01.01.222 for a list of industrial boilers that are exempt from Permit to Construct requirements.				
BOILER (EMISSION UNIT) DESCRIPTION AND SPECIFICATIONS				
5. Type of Request: <input checked="" type="checkbox"/> New Unit <input type="checkbox"/> Unpermitted Existing Unit <input type="checkbox"/> Modification to a Unit with Permit #:				
6. Use of Boiler: <input checked="" type="checkbox"/> % Used For Process <input checked="" type="checkbox"/> % Used For Space Heat <input type="checkbox"/> % Used For Generating Electricity <input type="checkbox"/> Other:				
7. Boiler ID Number: OB03		8. Rated Capacity: <input checked="" type="checkbox"/> 6 Million British Thermal Units Per Hour (MMBtu/hr) <input type="checkbox"/> 1,000 Pounds Steam Per Hour (1,000 lb steam/hr)		
9. Construction Date: 2013		10. Manufacturer: Fulton		11. Model: VTG-600DF
12. Date of Modification (if applicable):		13. Serial Number (if available):		14. Control Device (if any): <b>Note: Attach applicable control equipment form(s)</b>
FUEL DESCRIPTION AND SPECIFICATIONS				
15. Fuel Type	<input checked="" type="checkbox"/> Diesel Fuel (# 2 ) gal/hr (gal/hr)	<input checked="" type="checkbox"/> Natural Gas scf/hr (cf/hr)	<input type="checkbox"/> Coal (unit: /hr)	<input type="checkbox"/> Other Fuels (unit: /hr)
16. Full Load Consumption Rate	42.8	5,882		
17. Actual Consumption Rate	42.8	5,882		
18. Fuel Heat Content (Btu/unit, LHV)	140	1020		
19. Sulfur Content wt%	0.05			
20. Ash Content wt%		N/A		
STEAM DESCRIPTION AND SPECIFICATIONS				
21. Steam Heat Content	NA	NA		
22. Steam Temperature (°F)	N/A	N/A		
23. Steam Pressure (psi)	N/A	N/A		
24 Steam Type	N/A	N/A	<input type="checkbox"/> Saturated <input type="checkbox"/> Superheated	<input type="checkbox"/> Saturated <input type="checkbox"/> Superheated
OPERATING LIMITS & SCHEDULE				
25. Imposed Operating Limits (hours/year, or gallons fuel/year, etc.):		48 hours/year of operation with diesel fuel for testing and maintenance, unless during periods of natural gas curtailment or supply interruption. Only one of the new boilers (OB01, OB02, or OB03) will using diesel fuel at any given time. Additionally the facility will only operate two of the new boilers (OB01, OB02, or OB03) at any given time		
26. Operating Schedule (hours/day, months/year, etc.):		8,760 hours/year		

27. NSPS Applicability: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If Yes, which subpart:
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LEGEND	
	PROPERTY BOUNDARY
	BUILDINGS
	SOURCES

<b>2560.000.G1</b>	
<b>PLOT PLAN</b>	
ST. JOSEPH CENTRAL ENERGY PLANT LEWISTON, IDAHO	
Approved by:	JLH
Checked by:	JLH
Drawn by:	IT
<b>GBM<sup>c</sup></b> <small>STRATEGIC ENVIRONMENTAL SERVICES 218 Brown Lane Bozeman, MT 59722</small>	Project No.: 2056-13-030
	Date: 11/04/2013
	Scale: SHOWN

	DEQ AIR QUALITY PROGRAM 1410 N. Hilton, Boise, ID 83706 For assistance, call the Air Permit Hotline - 1-877-5PERMIT	<b>PERMIT TO CONSTRUCT APPLICATION</b> Revision 3 4/5/2007
	Please see instructions on page 2 before filling out the form.	

Company Name: St. Joseph Regional Medical Center

Facility Name:

Facility ID No.:

Brief Project Description: Addition of 3 dual fuel boilers with 6 MMBtu/hr heat input capacity each and 3 diesel fuel tanks.

SUMMARY OF AIR IMPACT ANALYSIS RESULTS - CRITERIA POLLUTANTS				
	1.	2.	3.	5.
Criteria Pollutants	Significant Impact Analysis Results (µg/m3)	Full Impact Analysis Results (µg/m3)	Background Concentration (µg/m3)	Percent of NAAQS
NO <sub>2</sub>	1-hr	125.92	54.60	188
	Annual	86.59	7.60	100
			Total Ambient Impact (µg/m3)	96%
				94%

Section 1 Note: Significant Impact Analysis was not performed. As this is an initial permit application, a full impact analysis was required.

Section 2 Note: Full Impact Analysis result for NO<sub>2</sub> 1-hr includes the default ambient NO<sub>2</sub>/NO<sub>x</sub> ratio of 0.8 per EPA's Tier 2 option for NO<sub>x</sub>.

Section 2 Note: Full Impact Analysis result for NO<sub>2</sub> annual does not include the default ambient NO<sub>2</sub>/NO<sub>x</sub> ratio of 0.75 per EPA's Tier 2 option for NO<sub>x</sub>.



DEQ AIR QUALITY PROGRAM  
1410 N. Hilton, Boise, ID 83706  
For assistance, call the  
Air Permit Hotline - 1-877-5PERMIT

**PERMIT TO CONSTRUCT APPLICATION**

Revision 3  
3/27/2007

*Please see instructions on page 2 before filling out the form.*

Company Name: St. Joseph Regional Medical Center  
 Facility Name:  
 Facility ID No.:

Brief Project Description: Addition of 3 dual fuel boilers with 6 MMbtu/hr heat input capacity each and 3 diesel fuel tanks.

**POINT SOURCE STACK PARAMETERS**

1.	2.	3a.	3b.	4.	5.	6.	7.	8.	9.	10.
Emissions units	Stack ID	UTM Easting (m)	UTM Northing (m)	Base Elevation (m)	Stack Height (m)	Modeled Diameter (m)	Stack Exit Temperature (K)	Stack Exit Flowrate (acfm)	Stack Exit Velocity (m/s)	Stack orientation (e.g., horizontal, rain cap)
<b>Point Source(s)</b>										
New Boiler 1	B01	498139	5140185	258.58	7.02	0.305	460.93	1,725.00	11.16	Vertical
New Boiler 2	B02	498140	5140185	258.65	7.02	0.305	460.93	1,725.00	11.16	Vertical
New Boiler 3	B03	498141	5140185	258.67	7.02	0.305	460.93	1,725.00	11.16	Vertical
Existing Boilers	B04	498156	5140276	256.93	30.02	0.814	460.93	2,326.00	1.67	Vertical
Existing Engine 1	E01	498159	5140292	255.3	6.10	0.254	748.15	9,100.00	84.83	Rain cap
Existing Engine 2	E02	498159	5140290	255.55	6.10	0.254	748.15	9,100.00	84.83	Rain cap
Existing Fire Pump Engine	E03	498159	5140288	255.8	6.10	0.254	568.71	75.00	0.70	Rain cap



DEQ AIR QUALITY PROGRAM  
 1410 N. Hilton, Boise, ID 83706  
 For assistance, call the  
 Air Permit Hotline - 1-877-6PERMIT

**PERMIT TO CONSTRUCT APPLICATION**

Revision 3  
 4/5/2007

*Please see instructions on page 2 before filling out the form.*

Company Name: St. Joseph Regional Medical Center

Facility Name:

Facility ID No.:

Brief Project Description: Addition of 3 dual fuel boilers with 6 MMBtu/hr heat input capacity each and 3 diesel fuel tanks.

**FUGITIVE SOURCE PARAMETERS**

1.	2.	3a.	3b.	4.	5.	6.	7.	8.	9.	10.
Emissions units	Stack ID	UTM Easting (m)	UTM Northing (m)	Base Elevation (m)	Release Height (m)	Easterly Length (m)	Northerly Length (m)	Angle from North (°)	Initial Vertical Dimension (m)	Initial Horizontal Dimension (m)
Area Source(s)										
Volume Source(s)										

No Fugitive Source

No Fugitive Source



DEQ AIR QUALITY PROGRAM  
1410 N. Hilton, Boise, ID 83706  
For assistance, call the  
Air Permit Hotline - 1-877-SPERMIT

**PERMIT TO CONSTRUCT APPLICATION**  
Revision 3  
4/5/2007

Please see instructions on page 2 before filling out the form.

Company Name: St. Joseph Regional Medical Center  
Facility Name:  
Facility ID No.:

Brief Project Description: Addition of 3 dual fuel boilers with 6 MMBtu/hr heat input capacity each and 3 diesel fuel tanks.

**BUILDING AND STRUCTURE INFORMATION**

1.	2.	3.	4.	5.	6.	7.
Building ID Number	Length (ft)	Width (ft)	Base Elevation (m)	Building Height (m)	Number of Tiers	Description/Comments
CEP	*	*	258.21	5.18	1	New CEOP/Polygonal
S1	*	*	258.67	9.75	1	Office South of 5th Ave/Polygonal
S2	*	*	258.62	6.10	1	Office South of 5th Ave/Polygonal
S3	45.93	59.06	258.88	6.10	1	Office South of 5th Ave
S4	32.81	59.06	258.96	6.10	1	Office South of 5th Ave
S5	*	*	259.22	6.10	1	Office South of 5th Ave/Polygonal
S6	32.81	95.14	259.07	6.10	1	Office South of 5th Ave
S7	32.81	68.90	258.63	6.10	1	Office South of 5th Ave
S8	42.65	65.62	258.70	6.10	1	Office South of 5th Ave
N1	*	*	255.09	7.32	1	Hospital Building North of 5th Ave/Polygonal
N2	*	*	255.01	26.21	1	Hospital Building North of 5th Ave/Polygonal
N3	*	*	257.16	4.88	1	Hospital Building North of 5th Ave/Polygonal
N4	75.46	98.43	257.48	7.32	1	Hospital Building North of 5th Ave
N5	49.21	127.95	257.82	20.73	1	Hospital Building North of 5th Ave
N6	*	*	256.16	23.77	1	Hospital Building North of 5th Ave/Polygonal
N7	*	*	257.82	10.67	1	Hospital Building North of 5th Ave/Polygonal
N8	45.93	65.62	257.67	6.10	1	Hospital Building North of 5th Ave
N9	*	*	257.34	10.67	1	Hospital Building North of 5th Ave/Polygonal

Section 1 and 2 note: Several buildings are not rectangular (denoted with a \*) and therefore the length and width are not provided here. Detailed building dimensions can be found within the attached building input file or provided upon request.



**DEQ AIR QUALITY PROGRAM**  
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 For assistance, call the  
**Air Permit Hotline – 1-877-5PERMIT**

# AIR PERMIT APPLICATION

Revision 6  
 10/7/09

For each box in the table below, CTRL+click on the blue underlined text for instructions and information.

IDENTIFICATION	
1. Company Name:  St. Joseph Regional Medical Center	2. Facility Name:
3. Brief Project Description:      Addition of 3 dual fuel boilers with 6 MMBtu/hr heat input capacity each and 3 diesel fuel tanks.	
APPLICABILITY DETERMINATION	
4. List applicable subparts of the New Source Performance Standards (NSPS) ( <a href="#">40 CFR part 60</a> ).  Examples of NSPS affected emissions units include internal combustion engines, boilers, turbines, etc. The applicant must thoroughly review the list of affected emissions units.	List of applicable subpart(s):  <input checked="" type="checkbox"/> Not Applicable
5. List applicable subpart(s) of the National Emission Standards for Hazardous Air Pollutants (NESHAP) found in <a href="#">40 CFR part 61</a> and <a href="#">40 CFR part 63</a> .  Examples of affected emission units include solvent cleaning operations, industrial cooling towers, paint stripping and miscellaneous surface coating. <a href="#">EPA has a web page dedicated to NESHAP</a> that should be useful to applicants.	List of applicable subpart(s):  <input checked="" type="checkbox"/> Not Applicable
6. For each subpart identified above, conduct a complete a regulatory analysis using the instructions and referencing the example provided on the following pages.  <b>Note</b> - Regulatory reviews must be submitted with sufficient detail so that DEQ can verify applicability and document in legal terms why the regulation applies. Regulatory reviews that are submitted with insufficient detail will be determined incomplete.	<input type="checkbox"/> A detailed regulatory review is provided (Follow instructions and example).  <input checked="" type="checkbox"/> DEQ has already been provided a detailed regulatory review. Give a reference to the document including the date.
<p><b>IF YOU ARE UNSURE HOW TO ANSWER ANY OF THESE QUESTIONS, CALL THE AIR PERMIT HOTLINE AT 1-877-5PERMIT</b></p> <p><i>It is emphasized that it is the applicant's responsibility to satisfy all technical and regulatory requirements, and that DEQ will help the applicant understand what those requirements are <u>prior</u> to the application being submitted but that DEQ will not perform the required technical or regulatory analysis on the applicant's behalf.</i></p>	

**Facility-wide Emission Summary**

	Source	PM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	VOC	CO	NO <sub>x</sub>	Pb
Limited Emissions (tpy)	Generators	0.23	0.19	0.19	0.19	0.34	2.57	11.22	--
	Boilers	0.68	0.68	0.68	0.08	0.49	7.29	6.21	4.95E-05
	Diesel Tank	--	--	--	--	0.0124	--	--	--
	<b>Total</b>	<b>0.92</b>	<b>0.87</b>	<b>0.87</b>	<b>0.27</b>	<b>0.84</b>	<b>9.86</b>	<b>17.43</b>	<b>4.95E-05</b>
Limited Emissions (lb/hr)	Generators	1.87	1.55	1.51	1.56	2.68	20.55	89.73	--
	Boilers	0.48	0.34	0.25	1.03	0.14	1.66	3.13	2.20E-04
	Diesel Tank	--	--	--	--	0.5902	--	--	--
	<b>Total</b>	<b>2.35</b>	<b>1.89</b>	<b>1.76</b>	<b>2.59</b>	<b>3.41</b>	<b>22.21</b>	<b>92.86</b>	<b>2.20E-04</b>
Maximum Capacity Emissions (tpy)	Generators	0.23	0.19	0.19	0.19	0.34	2.57	11.22	--
	Boilers	4.88	3.46	2.54	10.50	1.14	16.92	31.04	2.23E-03
	Diesel Tank	--	--	--	--	0.0124	--	--	--
	<b>Total</b>	<b>5.11</b>	<b>3.66</b>	<b>2.73</b>	<b>10.69</b>	<b>1.48</b>	<b>19.49</b>	<b>42.26</b>	<b>2.23E-03</b>

Boilers Maximum Emissions

Fuel	Emission Factors	NO <sub>x</sub>	CO	SO <sub>2</sub>	VOC	PM	PM <sub>10</sub>	PM <sub>2.5</sub>	Lead	Benzene	Dichlorobenzene	Ethylbenzene	Formaldehyde	Hexane	3-Methylchlorobenzene	Naphthalene	Pentane
Natural Gas	lb/MMscf <sup>1</sup>	100	84	0.6	5.5	7.6	7.6	7.6	0.0005	0.00210	0.00120	--	0.0750	1.8	0.0000018	0.00061	2.6
	New Boilers (manufacturer provided) <sup>2</sup>	30 ppm	50 ppm	--	0.0330 lb/hr	--	--	--	--	--	--	--	--	--	--	--	--
Fuel Oil	lb/Mgal (boilers <100 MMBtu/hr) <sup>3</sup>	20	5	7.1	0.556	3.3	2.343	1.716	1.51E-03	0.000214	--	0.0000636	0.033	--	--	0.00113	--
	New Boilers (manufacturer provided) <sup>2</sup>	100 ppm	50 ppm	--	0.0338 lb/hr	--	--	--	--	--	--	--	--	--	--	--	--

Equipment	Fuel	Heat Input Capacity (MMBtu/hr)	Heat Input Capacity (MMBtu/hr)	Fuel Consumption 100% load	Criteria Pollutant Calculations								Non-Criteria Pollutant Calculations								
					NO <sub>x</sub> (lb/hr)	CO (lb/hr)	SO <sub>2</sub> (lb/hr)	VOC (lb/hr)	PM (lb/hr)	PM <sub>10</sub> (lb/hr)	PM <sub>2.5</sub> (lb/hr)	Lead (lb/hr)	Benzene (lb/hr)	Dichlorobenzene (lb/hr)	Ethylbenzene (lb/hr)	Formaldehyde (lb/hr)	Hexane (lb/hr)	3-Methylchlorobenzene (lb/hr)	Naphthalene (lb/hr)	Pentane (lb/hr)	
Existing Boiler #1	Natural Gas	250 BHP	10.46	10,256 scf/hr	1.03	0.86	0.0062	0.056	0.08	0.08	0.08	0.08	5.13E-06	2.15E-05	1.23E-05	0.00	7.69E-04	1.85E-02	1.85E-08	6.26E-06	2.67E-02
Existing Boiler #2	Natural Gas	200 BHP	8.37	8,205 scf/hr	0.82	0.69	0.0049	0.045	0.06	0.06	0.06	0.06	4.10E-06	1.72E-05	9.85E-06	0.00	6.15E-04	1.48E-02	1.48E-08	5.00E-06	2.13E-02
Existing Boiler #3	Natural Gas	125 BHP	5.23	5,128 scf/hr	0.51	0.43	0.0031	0.028	0.04	0.04	0.04	0.04	2.56E-06	1.08E-05	6.15E-06	0.00	3.85E-04	9.23E-03	9.23E-09	3.13E-06	1.33E-02
Existing Boiler #4	Natural Gas	125 BHP	5.23	5,128 scf/hr	0.51	0.43	0.0031	0.028	0.04	0.04	0.04	0.04	2.56E-06	1.08E-05	6.15E-06	0.00	3.85E-04	9.23E-03	9.23E-09	3.13E-06	1.33E-02
Combined Existing Boiler Load	Natural Gas	200 BHP	8.37	8,205 scf/hr	0.82	0.69	0.0049	0.045	0.06	0.06	0.06	0.06	4.10E-06	1.72E-05	9.85E-06	0.00	6.15E-04	1.48E-02	1.48E-08	5.00E-06	2.13E-02
New Boiler #1	Natural Gas	6,000 MBH	6	6,000 scf/hr	0.29	0.48	0.0036	0.033	0.05	0.05	0.05	0.05	3.00E-06	1.26E-05	7.20E-06	0.00	4.50E-04	1.08E-02	1.08E-08	3.66E-06	1.56E-02
New Boiler #2	Natural Gas	6,000 MBH	6	6,000 scf/hr	0.29	0.48	0.0036	0.033	0.05	0.05	0.05	0.05	3.00E-06	1.26E-05	7.20E-06	0.00	4.50E-04	1.08E-02	1.08E-08	3.66E-06	1.56E-02
New Boiler #3	Natural Gas	6,000 MBH	6	6,000 scf/hr	0.29	0.48	0.0036	0.033	0.05	0.05	0.05	0.05	3.00E-06	1.26E-05	7.20E-06	0.00	4.50E-04	1.08E-02	1.08E-08	3.66E-06	1.56E-02

Equipment	Fuel	Heat Input Capacity (MMBtu/hr)	Heat Input Capacity (MMBtu/hr)	Fuel Consumption 100% load	Criteria Pollutant Calculations								Non-Criteria Pollutant Calculations								
					NO <sub>x</sub> (lb/hr)	CO (lb/hr)	SO <sub>2</sub> (lb/hr)	VOC (lb/hr)	PM (lb/hr)	PM <sub>10</sub> (lb/hr)	PM <sub>2.5</sub> (lb/hr)	Lead (lb/hr)	Benzene (lb/hr)	Dichlorobenzene (lb/hr)	Ethylbenzene (lb/hr)	Formaldehyde (lb/hr)	Hexane (lb/hr)	3-Methylchlorobenzene (lb/hr)	Naphthalene (lb/hr)	Pentane (lb/hr)	
Existing Boiler #1	Fuel Oil	250 BHP	10.46	0.0747 Mgal/Hr	1.49	0.37	0.53	0.042	0.25	0.18	0.13	0.13	1.13E-04	1.60E-05	0.00	4.75E-06	2.47E-03	0.00	0.00	8.44E-05	0.00
Existing Boiler #2	Fuel Oil	200 BHP	8.37	0.0598 Mgal/Hr	1.20	0.30	0.42	0.033	0.20	0.14	0.10	0.10	9.03E-05	1.28E-05	0.00	3.80E-06	1.97E-03	0.00	0.00	6.75E-05	0.00
Existing Boiler #3	Fuel Oil	125 BHP	5.23	0.0374 Mgal/Hr	0.75	0.19	0.27	0.021	0.12	0.09	0.06	0.06	5.64E-05	8.00E-06	0.00	2.38E-06	1.23E-03	0.00	0.00	4.22E-05	0.00
Existing Boiler #4	Fuel Oil	125 BHP	5.23	0.0374 Mgal/Hr	0.75	0.19	0.27	0.021	0.12	0.09	0.06	0.06	5.64E-05	8.00E-06	0.00	2.38E-06	1.23E-03	0.00	0.00	4.22E-05	0.00
Combined Existing Boiler Load	Fuel Oil	200 BHP	8.37	0.0598 Mgal/Hr	1.20	0.30	0.42	0.033	0.20	0.14	0.10	0.10	9.03E-05	1.28E-05	0.00	3.80E-06	1.97E-03	0.00	0.00	6.75E-05	0.00
New Boiler #1	Fuel Oil	6,000 MBH	6	0.0428 Mgal/Hr	0.97	0.48	0.30	0.034	0.14	0.10	0.07	0.07	6.46E-05	9.16E-06	0.00	2.72E-06	1.41E-03	0.00	0.00	4.84E-05	0.00
New Boiler #2	Fuel Oil	6,000 MBH	6	0.0428 Mgal/Hr	0.97	0.48	0.30	0.034	0.14	0.10	0.07	0.07	6.46E-05	9.16E-06	0.00	2.72E-06	1.41E-03	0.00	0.00	4.84E-05	0.00
New Boiler #3	Fuel Oil	6,000 MBH	6	0.0428 Mgal/Hr	0.97	0.48	0.30	0.034	0.14	0.10	0.07	0.07	6.46E-05	9.16E-06	0.00	2.72E-06	1.41E-03	0.00	0.00	4.84E-05	0.00

Equipment	Fuel	Heat Input Capacity (MMBtu/hr)	Heat Input Capacity (MMBtu/hr)	Fuel Consumption 100% load	Criteria Pollutant Calculations								Non-Criteria Pollutant Calculations								
					NO <sub>x</sub> (lb/hr)	CO (lb/hr)	SO <sub>2</sub> (lb/hr)	VOC (lb/hr)	PM (lb/hr)	PM <sub>10</sub> (lb/hr)	PM <sub>2.5</sub> (lb/hr)	Lead (lb/hr)	Benzene (lb/hr)	Dichlorobenzene (lb/hr)	Ethylbenzene (lb/hr)	Formaldehyde (lb/hr)	Hexane (lb/hr)	3-Methylchlorobenzene (lb/hr)	Naphthalene (lb/hr)	Pentane (lb/hr)	
Existing Boiler #1	Natural Gas/Fuel Oil	250 BHP	10.46	--	1.49	0.86	0.53	0.06	0.25	0.18	0.13	0.13	1.13E-04	2.15E-05	1.23E-05	4.75E-06	2.47E-03	1.85E-02	1.85E-08	6.26E-06	2.67E-02
Existing Boiler #2	Natural Gas/Fuel Oil	200 BHP	8.37	--	1.20	0.69	0.42	0.05	0.20	0.14	0.10	0.10	9.03E-05	1.72E-05	9.85E-06	3.80E-06	1.97E-03	1.48E-02	1.48E-08	5.00E-06	2.13E-02
Existing Boiler #3	Natural Gas/Fuel Oil	125 BHP	5.23	--	0.75	0.43	0.27	0.03	0.12	0.09	0.06	0.06	5.64E-05	1.08E-05	6.15E-06	2.38E-06	1.23E-03	9.23E-03	9.23E-09	4.22E-05	1.33E-02
Existing Boiler #4	Natural Gas/Fuel Oil	125 BHP	5.23	--	0.75	0.43	0.27	0.03	0.12	0.09	0.06	0.06	5.64E-05	1.08E-05	6.15E-06	2.38E-06	1.23E-03	9.23E-03	9.23E-09	4.22E-05	1.33E-02
New Boiler #1	Natural Gas/Fuel Oil	6,000 MBH	6	--	0.97	0.48	0.30	0.03	0.14	0.10	0.07	0.07	6.46E-05	1.26E-05	7.20E-06	2.72E-06	1.41E-03	1.08E-02	1.08E-08	4.84E-05	1.56E-02
New Boiler #2	Natural Gas/Fuel Oil	6,000 MBH	6	--	0.97	0.48	0.30	0.03	0.14	0.10	0.07	0.07	6.46E-05	1.26E-05	7.20E-06	2.72E-06	1.41E-03	1.08E-02	1.08E-08	4.84E-05	1.56E-02
New Boiler #3	Natural Gas/Fuel Oil	6,000 MBH	6	--	0.97	0.48	0.30	0.03	0.14	0.10	0.07	0.07	6.46E-05	1.26E-05	7.20E-06	2.72E-06	1.41E-03	1.08E-02	1.08E-08	4.84E-05	1.56E-02
Boilers Hourly Maximum Emissions (lb/hr)					7.09	3.86	2.40	0.26	1.11	0.79	0.58	0.58	5.10E-04	9.81E-05	5.61E-05	2.15E-05	1.11E-02	8.41E-02	8.41E-08	3.82E-04	1.21E-01
Boilers Annual Maximum Emissions (tpy)					31.04	16.92	10.50	1.14	4.88	3.46	2.54	2.54	2.23E-03	4.30E-04	2.46E-04	9.40E-05	4.88E-02	3.68E-01	3.68E-07	1.67E-03	5.32E-01

Notes:

- Factors for Criteria Pollutants from AP-42 Section 1.4 (1998) Tables 1.4-1 and 1.4-2, Uncontrolled small boilers <100 MMBtu/hr. Factors for HAPs from AP-42 Tables 1.4-3 and 1.4-4.
- Manufacture guaranteed emission rate for NO<sub>x</sub> and CO. Converted to lb/hr based on a manufacturer provided flow rate of 1,373 dscf.
- Factors for Criteria Pollutants from AP-42 Section 1.3 (1998) Tables 1.3-1, 1.3-2, and 1.3-3. Factors for HAPs from AP-42 Tables 1.3-8, 1.3-9, and 1.3-11. Factor for SO<sub>2</sub> assumes a max of 0.05% sulfur. Factor for PM/PM<sub>10</sub> includes filterable and condensable PM.
- New Boiler #1 - #3 fuel consumption and heat input rate based on manufacturer provided specifications. Existing Boiler fuel consumption based on default HHV's of 1,020 scf/btu and 140 btu/gal and heat input on 33,475 btu/BHP and a boiler thermal efficiency of 80%.
- NO<sub>x</sub> hourly emission rates calculated from manufacturer provided ppm values for new boilers (#1 - #3) are converted based on the conservative assumption that all NO<sub>x</sub> is NO<sub>2</sub>.
- Hourly emissions are calculated from the max of either hourly diesel or hourly natural gas emissions.
- Annual emissions assume 8,760 operating hours per year.

Boilers Limited Emissions

Boilers Maximum Emissions

Fuel	Emission Factor	1,1,1-Trichloroethane	Toluene	p-Xylene	Anthracene	Arsenic	Beryllium	Cadmium	Chromium	Chromium VI	Cobalt	Manganese	Mercury	Nickel	Phosphorus	Selenium	Total POM	POM (7-PAH group)	Acenaphthene	Acenaphthylene
Natural Gas	lb/MMscf	0.000236	0.0034	0.000109	0.00525	0.0013	0.0000278	0.000398	0.000845	0.000248	0.00602	0.003	0.000113	0.0845	0.00946	0.000683	0.0033	0.000211	0.0000018	0.0000018
Fuel Oil	lb/Mgal (boilers <100 MMBtu/hr) <sup>2</sup>	0.000236	0.0062	0.000109	0.00525	0.0013	0.0000278	0.000398	0.000845	0.000248	0.00602	0.003	0.000113	0.0845	0.00946	0.000683	0.0033	0.000211	0.0000018	0.0000018
Fuel Oil	New Boilers (manufacturer provided) <sup>2</sup>	0.000236	0.0062	0.000109	0.00525	0.0013	0.0000278	0.000398	0.000845	0.000248	0.00602	0.003	0.000113	0.0845	0.00946	0.000683	0.0033	0.000211	0.0000018	0.0000018

Equipment	Fuel	Heat Input Capacity (MMBtu/hr)	Heat Input Capacity (MMBtu/hr)	Fuel Consumption 100% load	Non-Criteria Pollutant Calculations										Non-Criteria Pollutant Calculations										Speciate	
					1,1,1-Trichloroethane (lb/hr)	Toluene (lb/hr)	p-Xylene (lb/hr)	Anthracene (lb/hr)	Arsenic (lb/hr)	Beryllium (lb/hr)	Cadmium (lb/hr)	Chromium (lb/hr)	Chromium VI (lb/hr)	Cobalt (lb/hr)	Manganese (lb/hr)	Mercury (lb/hr)	Nickel (lb/hr)	Phosphorus (lb/hr)	Selenium (lb/hr)	Total POM (lb/hr)	POM (7-PAH group) (lb/hr)	Acenaphthene (lb/hr)	Acenaphthylene (lb/hr)			
Existing Boiler #1	Natural Gas	250 BHP	10.46	10,256 scf/hr	0.00	3.49E-05	0.00	0.00	2.05E-06	1.23E-07	1.13E-05	1.44E-05	0.00	8.61E-07	3.90E-06	2.67E-06	2.15E-05	0.00	2.46E-07	9.05E-07	1.17E-07	1.85E-08	1.85E-08			
Existing Boiler #2	Natural Gas	200 BHP	8.37	8,205 scf/hr	0.00	2.79E-05	0.00	0.00	1.64E-06	9.85E-08	9.03E-06	1.15E-05	0.00	6.89E-07	3.12E-06	2.13E-06	1.72E-05	0.00	1.97E-07	7.24E-07	9.35E-08	1.48E-08	1.48E-08			
Existing Boiler #3	Natural Gas	125 BHP	5.23	5,128 scf/hr	0.00	1.74E-05	0.00	0.00	1.03E-06	6.15E-08	5.64E-06	7.18E-06	0.00	4.31E-07	1.85E-06	1.33E-06	1.08E-05	0.00	1.23E-07	4.52E-07	5.85E-08	9.23E-09	9.23E-09			
Existing Boiler #4	Natural Gas	125 BHP	5.23	5,128 scf/hr	0.00	1.74E-05	0.00	0.00	1.03E-06	6.15E-08	5.64E-06	7.18E-06	0.00	4.31E-07	1.85E-06	1.33E-06	1.08E-05	0.00	1.23E-07	4.52E-07	5.85E-08	9.23E-09	9.23E-09			
Combined Existing Boiler Load	Natural Gas	200 BHP	8.37	8,205 scf/hr	0.00	2.79E-05	0.00	0.00	1.64E-06	9.85E-08	9.03E-06	1.15E-05	0.00	6.89E-07	3.12E-06	2.13E-06	1.72E-05	0.00	1.97E-07	7.24E-07	9.35E-08	1.48E-08	1.48E-08			
New Boiler #1	Natural Gas	6,000 MBH	6	6,000 scf/hr	0.00	2.04E-05	0.00	0.00	1.20E-06	7.20E-08	6.60E-06	8.40E-06	0.00	5.04E-07	2.28E-06	1.56E-06	1.26E-05	0.00	1.44E-07	5.29E-07	6.84E-08	1.08E-08	1.08E-08			
New Boiler #2	Natural Gas	6,000 MBH	6	6,000 scf/hr	0.00	2.04E-05	0.00	0.00	1.20E-06	7.20E-08	6.60E-06	8.40E-06	0.00	5.04E-07	2.28E-06	1.56E-06	1.26E-05	0.00	1.44E-07	5.29E-07	6.84E-08	1.08E-08	1.08E-08			
New Boiler #3	Natural Gas	6,000 MBH	6	6,000 scf/hr	0.00	2.04E-05	0.00	0.00	1.20E-06	7.20E-08	6.60E-06	8.40E-06	0.00	5.04E-07	2.28E-06	1.56E-06	1.26E-05	0.00	1.44E-07	5.29E-07	6.84E-08	1.08E-08	1.08E-08			

Equipment	Fuel	Heat Input Capacity (MMBtu/hr)	Heat Input Capacity (MMBtu/hr)	Fuel Consumption 100% load	Non-Criteria Pollutant Calculations										Non-Criteria Pollutant Calculations										Speciate	
					1,1,1-Trichloroethane (lb/hr)	Toluene (lb/hr)	p-Xylene (lb/hr)	Anthracene (lb/hr)	Arsenic (lb/hr)	Beryllium (lb/hr)	Cadmium (lb/hr)	Chromium (lb/hr)	Chromium VI (lb/hr)	Cobalt (lb/hr)	Manganese (lb/hr)	Mercury (lb/hr)	Nickel (lb/hr)	Phosphorus (lb/hr)	Selenium (lb/hr)	Total POM (lb/hr)	POM (7-PAH group) (lb/hr)	Acenaphthene (lb/hr)	Acenaphthylene (lb/hr)			
Existing Boiler #1	Fuel Oil	250 BHP	10.46	0.0747 Mgal/Hr	1.76E-05	4.63E-04	8.14E-06	3.92E-04	9.88E-05	2.08E-06	2.97E-05	6.31E-05	1.85E-05	4.50E-04	2.24E-04	8.44E-06	6.31E-03	7.07E-04	5.10E-05	2.47E-04	9.83E-07	1.58E-06	1.89E-08			
Existing Boiler #2	Fuel Oil	200 BHP	8.37	0.0598 Mgal/Hr	1.41E-05	3.71E-04	6.52E-06	3.14E-04	7.89E-05	1.66E-06	2.38E-05	5.05E-05	1.48E-05	3.60E-04	1.79E-04	6.75E-06	5.05E-03	5.65E-04	4.08E-05	1.97E-04	7.87E-07	1.26E-06	1.51E-08			
Existing Boiler #3	Fuel Oil	125 BHP	5.23	0.0374 Mgal/Hr	8.82E-06	2.32E-04	4.07E-06	1.96E-04	4.93E-05	1.04E-06	1.49E-05	3.16E-05	9.27E-06	2.25E-04	1.12E-04	4.22E-06	3.16E-03	3.53E-04	2.55E-05	1.23E-04	4.92E-07	7.88E-07	9.45E-09			
Existing Boiler #4	Fuel Oil	125 BHP	5.23	0.0374 Mgal/Hr	8.82E-06	2.32E-04	4.07E-06	1.96E-04	4.93E-05	1.04E-06	1.49E-05	3.16E-05	9.27E-06	2.25E-04	1.12E-04	4.22E-06	3.16E-03	3.53E-04	2.55E-05	1.23E-04	4.92E-07	7.88E-07	9.45E-09			
Combined Existing Boiler Load	Fuel Oil	200 BHP	8.37	0.0598 Mgal/Hr	1.41E-05	3.71E-04	6.52E-06	3.14E-04	7.89E-05	1.66E-06	2.38E-05	5.05E-05	1.48E-05	3.60E-04	1.79E-04	6.75E-06	5.05E-03	5.65E-04	4.08E-05	1.97E-04	7.87E-07	1.26E-06	1.51E-08			
New Boiler #1	Fuel Oil	6,000 MBH	6	0.0428 Mgal/Hr	1.01E-05	2.65E-04	4.67E-06	2.25E-04	5.65E-05	1.19E-06	1.70E-05	3.62E-05	1.06E-05	2.58E-04	1.28E-04	4.84E-06	3.62E-03	4.05E-04	2.92E-05	1.41E-04	5.63E-07	9.03E-07	1.08E-08			
New Boiler #2	Fuel Oil	6,000 MBH	6	0.0428 Mgal/Hr	1.01E-05	2.65E-04	4.67E-06	2.25E-04	5.65E-05	1.19E-06	1.70E-05	3.62E-05	1.06E-05	2.58E-04	1.28E-04	4.84E-06	3.62E-03	4.05E-04	2.92E-05	1.41E-04	5.63E-07	9.03E-07	1.08E-08			
New Boiler #3	Fuel Oil	6,000 MBH	6	0.0428 Mgal/Hr	1.01E-05	2.65E-04	4.67E-06	2.25E-04	5.65E-05	1.19E-06	1.70E-05	3.62E-05	1.06E-05	2.58E-04	1.28E-04	4.84E-06	3.62E-03	4.05E-04	2.92E-05	1.41E-04	5.63E-07	9.03E-07	1.08E-08			

Equipment	Fuel	Heat Input Capacity (MMBtu/hr)	Heat Input Capacity (MMBtu/hr)	Fuel Consumption 100% load	Non-Criteria Pollutant Calculations										Non-Criteria Pollutant Calculations										Speciate	
					1,1,1-Trichloroethane (lb/hr)	Toluene (lb/hr)	p-Xylene (lb/hr)	Anthracene (lb/hr)	Arsenic (lb/hr)	Beryllium (lb/hr)	Cadmium (lb/hr)	Chromium (lb/hr)	Chromium VI (lb/hr)	Cobalt (lb/hr)	Manganese (lb/hr)	Mercury (lb/hr)	Nickel (lb/hr)	Phosphorus (lb/hr)	Selenium (lb/hr)	Total POM (lb/hr)	POM (7-PAH group) (lb/hr)	Acenaphthene (lb/hr)	Acenaphthylene (lb/hr)			
Existing Boiler #1	Natural Gas/Fuel Oil	250 BHP	10.46	--	1.76E-05	4.63E-04	8.14E-06	3.92E-04	9.88E-05	2.08E-06	2.97E-05	6.31E-05	1.85E-05	4.50E-04	2.24E-04	8.44E-06	6.31E-03	7.07E-04	5.10E-05	2.47E-04	9.96E-07	1.58E-06	1.89E-08			
Existing Boiler #2	Natural Gas/Fuel Oil	200 BHP	8.37	--	1.41E-05	3.71E-04	6.52E-06	3.14E-04	7.89E-05	1.66E-06	2.38E-05	5.05E-05	1.48E-05	3.60E-04	1.79E-04	6.75E-06	5.05E-03	5.65E-04	4.08E-05	1.97E-04	7.97E-07	1.26E-06	1.51E-08			
Existing Boiler #3	Natural Gas/Fuel Oil	125 BHP	5.23	--	8.82E-06	2.32E-04	4.07E-06	1.96E-04	4.93E-05	1.04E-06	1.49E-05	3.16E-05	9.27E-06	2.25E-04	1.12E-04	4.22E-06	3.16E-03	3.53E-04	2.55E-05	1.23E-04	4.98E-07	7.88E-07	9.45E-09			
Existing Boiler #4	Natural Gas/Fuel Oil	125 BHP	5.23	--	8.82E-06	2.32E-04	4.07E-06	1.96E-04	4.93E-05	1.04E-06	1.49E-05	3.16E-05	9.27E-06	2.25E-04	1.12E-04	4.22E-06	3.16E-03	3.53E-04	2.55E-05	1.23E-04	4.98E-07	7.88E-07	9.45E-09			
New Boiler #1	Natural Gas/Fuel Oil	6,000 MBH	6	--	1.01E-05	2.65E-04	4.67E-06	2.25E-04	5.65E-05	1.19E-06	1.70E-05	3.62E-05	1.06E-05	2.58E-04	1.28E-04	4.84E-06	3.62E-03	4.05E-04	2.92E-05	1.41E-04	5.70E-07	9.03E-07	1.08E-08			
New Boiler #2	Natural Gas/Fuel Oil	6,000 MBH	6	--	1.01E-05	2.65E-04	4.67E-06	2.25E-04	5.65E-05	1.19E-06	1.70E-05	3.62E-05	1.06E-05	2.58E-04	1.28E-04	4.84E-06	3.62E-03	4.05E-04	2.92E-05	1.41E-04	5.70E-07	9.03E-07	1.08E-08			
New Boiler #3	Natural Gas/Fuel Oil	6,000 MBH	6	--	1.01E-05	2.65E-04	4.67E-06	2.25E-04	5.65E-05	1.19E-06	1.70E-05	3.62E-05	1.06E-05	2.58E-04	1.28E-04	4.84E-06	3.62E-03	4.05E-04	2.92E-05	1.41E-04	5.70E-07	9.03E-07	1.08E-08			
Boilers Peak Maximum Emissions (lb/hr)					7.97E-05	2.09E-03	3.68E-05	1.77E-03	4.48E-04	9.39E-06	1.34E-04	2.89E-04	8.37E-05	2.03E-03	1.01E-03	3.82E-05	2.85E-02	3.19E-03	2.31E-04	1.11E-03	4.50E-06	7.12E-06	8.54E-08			
Boilers Annual Maximum Emissions (lb/yr)					3.49E-04	9.17E-03	1.61E-04	7.76E-03	1.95E-03	4.11E-05	5.89E-04	1.25E-03	3.67E-04	8.90E-03	4.44E-03	1.67E-04	1.25E-01	1.40E-02	1.01E-03	4.88E-03	1.97E-05	3.12E-05	3.74E-07			

- Notes:
- Factors for Criteria Pollutants from AP-42 Section 1.4 (1998) Tables 1.4-1 and 1.4-2, Uncontrolled small boilers <100 MMBtu/hr. Factors for HAPs from AP-42 Tables 1.4-3 and 1.4-4.
  - Manufacture guaranteed emission rate for NOx and CO. Converted to lb/hr based on a manufacturer provided flow rate of 1,373 dscf.
  - Factors for Criteria Pollutants from AP-42 Section 1.3 (1998) Tables 1.3-1, 1.3-2, and 1.3-3. Factors for HAPs from AP-42 Tables 1.3-8, 1.3-9, and 1.3-11. Factor for SO<sub>2</sub> assumes a max of 0.05% sulfur. Factor for PM/PM<sub>10</sub> includes filterable and condensable PM.
  - New Boiler #1 - #3 fuel consumption and heat input rate based on manufacturer provided specifications. Existing Boiler fuel consumption based on default HHV's of 1,020 scf/btu and 140 btu/gal and heat input on 33,475 btu/BHP and a boiler thermal efficiency of 80%.
  - NO<sub>x</sub> hourly emission rates calculated from manufacturer provided ppm values for new boilers (#1 - #3) are converted based on the conservative assumption that all NO<sub>x</sub> is NO<sub>2</sub>.
  - Hourly emissions are calculated from the max of either hourly diesel or hourly natural gas emissions.
  - Annual emissions assume 8,760 operating hours per year.

Boilers Limited Emissions

**Boilers Maximum Emissions**

Fuel	Emission Factors	PAH (Included in Total POM)					Speciated PAH (Included in Total POM)									
		Anthracene	Benzo(a)anthracene	Benzo(b)fluoranthene	2-Methylanthracene	7,12-Dimethylbenzo(a)anthracene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Benzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene
Natural Gas	lb/MMscf <sup>1</sup>	0.0000024	0.0000018	0.0000012	0.0000240	0.0000160	0.0000018	0.0000012	0.0000018	0.0000018	0.0000030	0.0000028	0.0000018	0.0000170	0.0000050	
	New Boilers (manufacturer provided) <sup>2</sup>	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Fuel Oil	lb/Mgal (boilers <100 MMBtu/hr) <sup>3</sup>	0.00000122	0.00000401	--	--	--	0.00000148	0.00000226	0.00000148	0.00000238	0.00000167	0.00000464	0.00000214	0.00001050	0.00000425	
	New Boilers (manufacturer provided) <sup>2</sup>	--	--	--	--	--	--	--	--	--	--	--	--	--	--	

Equipment	Fuel	Heat Input Capacity (MMBtu/hr)	Heat Input Capacity (MMBtu/hr)	Fuel Consumption (100% load)	PAH (Included in Total POM)					Speciated PAH (Included in Total POM)									
					Anthracene (lb/hr)	Benzo(a)anthracene (lb/hr)	Benzo(b)fluoranthene (lb/hr)	Methylanthracene (lb/hr)	7,12-Dimethylbenzo(a)anthracene (lb/hr)	Benzo(k)fluoranthene (lb/hr)	Benzo(g,h,i)perylene (lb/hr)	Benzo(k)fluoranthene (lb/hr)	Chrysene (lb/hr)	Benzo(a,h)anthracene (lb/hr)	Fluoranthene (lb/hr)	Fluorene (lb/hr)	Indeno(1,2,3-cd)pyrene (lb/hr)	Phenanthrene (lb/hr)	Pyrene (lb/hr)
Existing Boiler #1	Natural Gas	250 BHP	10.46	10,256 scf/hr	2.46E-08	1.85E-08	1.23E-08	2.46E-07	1.64E-07	1.85E-08	1.23E-08	1.85E-08	1.85E-08	1.23E-08	3.08E-08	2.87E-08	1.85E-08	1.74E-07	5.13E-08
Existing Boiler #2	Natural Gas	200 BHP	8.37	8,205 scf/hr	1.97E-08	1.48E-08	9.85E-09	1.97E-07	1.31E-07	1.48E-08	9.85E-09	1.48E-08	1.48E-08	9.85E-09	2.46E-08	2.30E-08	1.48E-08	1.39E-07	4.10E-08
Existing Boiler #3	Natural Gas	125 BHP	5.23	5,128 scf/hr	1.23E-08	9.23E-09	6.15E-09	1.23E-07	8.20E-08	9.23E-09	6.15E-09	9.23E-09	9.23E-09	6.15E-09	1.54E-08	1.44E-08	9.23E-09	8.72E-08	2.56E-08
Existing Boiler #4	Natural Gas	125 BHP	5.23	5,128 scf/hr	1.23E-08	9.23E-09	6.15E-09	1.23E-07	8.20E-08	9.23E-09	6.15E-09	9.23E-09	9.23E-09	6.15E-09	1.54E-08	1.44E-08	9.23E-09	8.72E-08	2.56E-08
Combined Existing Boiler Load	Natural Gas	200 BHP	8.37	8,205 scf/hr	1.97E-08	1.48E-08	9.85E-09	1.97E-07	1.31E-07	1.48E-08	9.85E-09	1.48E-08	1.48E-08	9.85E-09	2.46E-08	2.30E-08	1.48E-08	1.39E-07	4.10E-08
New Boiler #1	Natural Gas	6,000 MBH	6	6,000 scf/hr	1.44E-08	1.08E-08	7.20E-09	1.44E-07	9.60E-08	1.08E-08	7.20E-09	1.08E-08	1.08E-08	7.20E-09	1.80E-08	1.68E-08	1.08E-08	1.02E-07	3.00E-08
New Boiler #2	Natural Gas	6,000 MBH	6	6,000 scf/hr	1.44E-08	1.08E-08	7.20E-09	1.44E-07	9.60E-08	1.08E-08	7.20E-09	1.08E-08	1.08E-08	7.20E-09	1.80E-08	1.68E-08	1.08E-08	1.02E-07	3.00E-08
New Boiler #3	Natural Gas	6,000 MBH	6	6,000 scf/hr	1.44E-08	1.08E-08	7.20E-09	1.44E-07	9.60E-08	1.08E-08	7.20E-09	1.08E-08	1.08E-08	7.20E-09	1.80E-08	1.68E-08	1.08E-08	1.02E-07	3.00E-08

Equipment	Fuel	Heat Input Capacity (MMBtu/hr)	Heat Input Capacity (MMBtu/hr)	Fuel Consumption (100% load)	PAH (Included in Total POM)					Speciated PAH (Included in Total POM)									
					Anthracene (lb/hr)	Benzo(a)anthracene (lb/hr)	Benzo(b)fluoranthene (lb/hr)	Methylanthracene (lb/hr)	7,12-Dimethylbenzo(a)anthracene (lb/hr)	Benzo(k)fluoranthene (lb/hr)	Benzo(g,h,i)perylene (lb/hr)	Benzo(k)fluoranthene (lb/hr)	Chrysene (lb/hr)	Benzo(a,h)anthracene (lb/hr)	Fluoranthene (lb/hr)	Fluorene (lb/hr)	Indeno(1,2,3-cd)pyrene (lb/hr)	Phenanthrene (lb/hr)	Pyrene (lb/hr)
Existing Boiler #1	Fuel Oil	250 BHP	10.46	0.0747 Mgal/Hr	9.12E-08	3.00E-07	0.00	0.00	0.00	1.11E-07	1.69E-07	1.11E-07	1.78E-07	1.25E-07	3.62E-07	3.34E-07	1.60E-07	7.85E-07	3.18E-07
Existing Boiler #2	Fuel Oil	200 BHP	8.37	0.0598 Mgal/Hr	7.29E-08	2.40E-07	0.00	0.00	0.00	8.85E-08	1.35E-07	8.85E-08	1.42E-07	9.98E-08	2.89E-07	2.67E-07	1.28E-07	6.28E-07	2.54E-07
Existing Boiler #3	Fuel Oil	125 BHP	5.23	0.0374 Mgal/Hr	4.56E-08	1.50E-07	0.00	0.00	0.00	5.53E-08	8.44E-08	5.53E-08	8.89E-08	6.24E-08	1.81E-07	1.67E-07	8.00E-08	3.92E-07	1.59E-07
Existing Boiler #4	Fuel Oil	125 BHP	5.23	0.0374 Mgal/Hr	4.56E-08	1.50E-07	0.00	0.00	0.00	5.53E-08	8.44E-08	5.53E-08	8.89E-08	6.24E-08	1.81E-07	1.67E-07	8.00E-08	3.92E-07	1.59E-07
Combined Existing Boiler Load	Fuel Oil	200 BHP	8.37	0.0598 Mgal/Hr	7.29E-08	2.40E-07	0.00	0.00	0.00	8.85E-08	1.35E-07	8.85E-08	1.42E-07	9.98E-08	2.89E-07	2.67E-07	1.28E-07	6.28E-07	2.54E-07
New Boiler #1	Fuel Oil	6,000 MBH	6	0.0428 Mgal/Hr	5.22E-08	1.72E-07	0.00	0.00	0.00	6.33E-08	9.67E-08	6.33E-08	1.02E-07	7.15E-08	2.07E-07	1.91E-07	9.16E-08	4.49E-07	1.82E-07
New Boiler #2	Fuel Oil	6,000 MBH	6	0.0428 Mgal/Hr	5.22E-08	1.72E-07	0.00	0.00	0.00	6.33E-08	9.67E-08	6.33E-08	1.02E-07	7.15E-08	2.07E-07	1.91E-07	9.16E-08	4.49E-07	1.82E-07
New Boiler #3	Fuel Oil	6,000 MBH	6	0.0428 Mgal/Hr	5.22E-08	1.72E-07	0.00	0.00	0.00	6.33E-08	9.67E-08	6.33E-08	1.02E-07	7.15E-08	2.07E-07	1.91E-07	9.16E-08	4.49E-07	1.82E-07

Equipment	Fuel	Heat Input Capacity (MMBtu/hr)	Heat Input Capacity (MMBtu/hr)	Fuel Consumption (100% load)	PAH (Included in Total POM)					Speciated PAH (Included in Total POM)									
					Anthracene (lb/hr)	Benzo(a)anthracene (lb/hr)	Benzo(b)fluoranthene (lb/hr)	Methylanthracene (lb/hr)	7,12-Dimethylbenzo(a)anthracene (lb/hr)	Benzo(k)fluoranthene (lb/hr)	Benzo(g,h,i)perylene (lb/hr)	Benzo(k)fluoranthene (lb/hr)	Chrysene (lb/hr)	Benzo(a,h)anthracene (lb/hr)	Fluoranthene (lb/hr)	Fluorene (lb/hr)	Indeno(1,2,3-cd)pyrene (lb/hr)	Phenanthrene (lb/hr)	Pyrene (lb/hr)
Existing Boiler #1	Natural Gas/Fuel Oil	250 BHP	10.46	--	9.12E-08	3.00E-07	1.23E-08	2.46E-07	1.64E-07	1.11E-07	1.69E-07	1.11E-07	1.78E-07	1.25E-07	3.62E-07	3.34E-07	1.60E-07	7.85E-07	3.18E-07
Existing Boiler #2	Natural Gas/Fuel Oil	200 BHP	8.37	--	7.29E-08	2.40E-07	9.85E-09	1.97E-07	1.31E-07	8.85E-08	1.35E-07	8.85E-08	1.42E-07	9.98E-08	2.89E-07	2.67E-07	1.28E-07	6.28E-07	2.54E-07
Existing Boiler #3	Natural Gas/Fuel Oil	125 BHP	5.23	--	4.56E-08	1.50E-07	6.15E-09	1.23E-07	8.20E-08	5.53E-08	8.44E-08	5.53E-08	8.89E-08	6.24E-08	1.81E-07	1.67E-07	8.00E-08	3.92E-07	1.59E-07
Existing Boiler #4	Natural Gas/Fuel Oil	125 BHP	5.23	--	4.56E-08	1.50E-07	6.15E-09	1.23E-07	8.20E-08	5.53E-08	8.44E-08	5.53E-08	8.89E-08	6.24E-08	1.81E-07	1.67E-07	8.00E-08	3.92E-07	1.59E-07
New Boiler #1	Natural Gas/Fuel Oil	6,000 MBH	6	--	5.22E-08	1.72E-07	7.20E-09	1.44E-07	9.60E-08	6.33E-08	9.67E-08	6.33E-08	1.02E-07	7.15E-08	2.07E-07	1.91E-07	9.16E-08	4.49E-07	1.82E-07
New Boiler #2	Natural Gas/Fuel Oil	6,000 MBH	6	--	5.22E-08	1.72E-07	7.20E-09	1.44E-07	9.60E-08	6.33E-08	9.67E-08	6.33E-08	1.02E-07	7.15E-08	2.07E-07	1.91E-07	9.16E-08	4.49E-07	1.82E-07
New Boiler #3	Natural Gas/Fuel Oil	6,000 MBH	6	--	5.22E-08	1.72E-07	7.20E-09	1.44E-07	9.60E-08	6.33E-08	9.67E-08	6.33E-08	1.02E-07	7.15E-08	2.07E-07	1.91E-07	9.16E-08	4.49E-07	1.82E-07
<b>Boilers Hourly Maximum Emissions (lb/hr)</b>					<b>4.12E-07</b>	<b>1.35E-06</b>	<b>5.61E-08</b>	<b>1.12E-06</b>	<b>7.47E-07</b>	<b>5.00E-07</b>	<b>7.63E-07</b>	<b>5.00E-07</b>	<b>8.04E-07</b>	<b>5.64E-07</b>	<b>1.63E-06</b>	<b>1.51E-06</b>	<b>7.23E-07</b>	<b>3.54E-06</b>	<b>1.43E-06</b>
<b>Boilers Annual Maximum Emissions (lb/yr)</b>					<b>1.80E-06</b>	<b>5.93E-06</b>	<b>2.46E-07</b>	<b>4.91E-06</b>	<b>3.27E-06</b>	<b>2.19E-06</b>	<b>3.34E-06</b>	<b>2.19E-06</b>	<b>3.52E-06</b>	<b>2.47E-06</b>	<b>7.16E-06</b>	<b>6.61E-06</b>	<b>3.16E-06</b>	<b>1.55E-05</b>	<b>6.28E-06</b>

- Notes:**
- Factors for Criteria Pollutants from AP-42 Section 1.4 (1998) Tables 1.4-1 and 1.4-2, Uncontrolled small boilers <100 MMBtu/hr. Factors for HAPs from AP-42 Tables 1.4-3 and 1.4-4.
  - Manufacturer guaranteed emission rate for NOx and CO. Converted to lb/hr based on a manufacturer provided flow rate of 1,373 dscf.
  - Factors for Criteria Pollutants from AP-42 Section 1.3 (1998) Tables 1.3-1, 1.3-2, and 1.3-3. Factors for HAPs from AP-42 Tables 1.3-8, 1.3-9, and 1.3-11. Factor for SO<sub>2</sub> assumes a max of 0.05% sulfur. Factor for PM/PM<sub>10</sub> includes filterable and condensable PM.
  - New Boiler #1 - #3 fuel consumption and heat input rate based on manufacturer provided specifications. Existing Boiler fuel consumption based on default HHV's of 1,020 scf/btu and 140 btu/gal and heat input on 33,475 btu/BHP and a boiler thermal efficiency of 80%.
  - NO<sub>x</sub> hourly emission rates calculated from manufacturer provided ppm values for new boilers (#1 - #3) are converted based on the conservative assumption that all NO<sub>x</sub> is NO<sub>2</sub>.
  - Hourly emissions are calculated from the max of either hourly diesel or hourly natural gas emissions.
  - Annual emissions assume 8,760 operating hours per year.

**Boilers Limited Emissions**

Equipment	Annual Limited Emissions															
	NO <sub>x</sub> (tpy)	CO (tpy)	SO <sub>x</sub> (tpy)	VOC (tpy)	PM (tpy)	PM <sub>10</sub> (tpy)	PM <sub>2.5</sub> (tpy)	Lead (tpy)	Benzene (tpy)	Dichlorobenzene (tpy)	Ethylbenzene (tpy)	Formaldehyde (tpy)	Hexane (tpy)	3-Methylchlorobenzene (tpy)	Naphthalene (tpy)	Pentane (tpy)
New Boiler #1	1.295	2.131	0.023	0.145	0.203	0.202	0.201	1.47E-05	5.54E-05	3.15E-05	6.53E-08	2.00E-03	4.73E-02	4.73E-08	1.72E-05	6.83E-02
New Boiler #2	1.295	2.131	0.023	0.145	0.203	0.202	0.201	1.47E-05	5.54E-05	3.15E-05	6.53E-08	2.00E-03	4.73E-02	4.73E-08	1.72E-05	6.83E-02
New Boiler #3	1.295	2.131	0.023	0.145	0.203	0.202	0.201	1.47E-05	5.54E-05	3.15E-05	6.53E-08	2.00E-03	4.73E-02	4.73E-08	1.72E-05	6.83E-02
Combined Existing Boiler Load	3.622	3.026	0.032	0.198	0.278	0.276	0.276	2.01E-05	7.58E-05	4.31E-05	9.12E-08	2.74E-03	6.47E-02	6.47E-08	2.35E-05	9.34E-02
<b>Boilers Annual Limited Emissions (tpy)</b>	<b>6.21</b>	<b>7.29</b>	<b>0.08</b>	<b>0.49</b>	<b>0.68</b>	<b>0.68</b>	<b>0.68</b>	<b>4.95E-05</b>	<b>1.87E-04</b>	<b>1.06E-04</b>	<b>2.22E-07</b>	<b>6.75E-03</b>	<b>1.59E-01</b>	<b>1.59E-07</b>	<b>5.79E-05</b>	<b>2.30E-01</b>

Equipment	Hourly Limited Emissions															
	NO <sub>x</sub> (lb/hr)	CO (lb/hr)	SO <sub>x</sub> (lb/hr)	VOC (lb/hr)	PM (lb/hr)	PM <sub>10</sub> (lb/hr)	PM <sub>2.5</sub> (lb/hr)	Lead (lb/hr)	Benzene (lb/hr)	Dichlorobenzene (lb/hr)	Ethylbenzene (lb/hr)	Formaldehyde (lb/hr)	Hexane (lb/hr)	3-Methylchlorobenzene (lb/hr)	Naphthalene (lb/hr)	Pentane (lb/hr)
New Boiler #1	0.968	0.484	0.304	0.045	0.141	0.100	0.073	6.46E-05	1.72E-05	9.85E-06	2.72E-06	1.41E-03	1.48E-02	1.48E-08	4.84E-05	2.13E-02
New Boiler #2	0.968	0.484	0.304	0.045	0.141	0.100	0.073	6.46E-05	1.72E-05	9.85E-06	2.72E-06	1.41E-03	1.48E-02	1.48E-08	4.84E-05	2.13E-02
New Boiler #3	0.968	0.484	0.304	0.045	0.141	0.100	0.073	6.46E-05	1.72E-05	9.85E-06	2.72E-06	1.41E-03	1.48E-02	1.48E-08	4.84E-05	2.13E-02
Combined Existing Boiler Load	1.196	0.689	0.424	0.045	0.197	0.140	0.103	9.03E-05	1.72E-05	9.85E-06	3.80E-06	1.97E-03	1.48E-02	1.48E-08	6.75E-05	2.13E-02
<b>Boilers Hourly Limited Emissions (lb/hr)</b>	<b>3.13</b>	<b>1.66</b>	<b>1.03</b>	<b>0.14</b>	<b>0.48</b>	<b>0.34</b>	<b>0.25</b>	<b>2.20E-04</b>	<b>5.17E-05</b>	<b>2.95E-05</b>	<b>9.25E-06</b>	<b>4.80E-03</b>	<b>4.43E-02</b>	<b>4.43E-08</b>	<b>1.64E-04</b>	<b>6.40E-02</b>

Equipment	Annualized Hourly Emissions															
	NO <sub>x</sub> (lb/hr)	CO (lb/hr)	SO <sub>x</sub> (lb/hr)	VOC (lb/hr)	PM (lb/hr)	PM <sub>10</sub> (lb/hr)	PM <sub>2.5</sub> (lb/hr)	Lead (lb/hr)	Benzene (lb/hr)	Dichlorobenzene (lb/hr)	Ethylbenzene (lb/hr)	Formaldehyde (lb/hr)	Hexane (lb/hr)	3-Methylchlorobenzene (lb/hr)	Naphthalene (lb/hr)	Pentane (lb/hr)
New Boiler #1	0.296	0.486	0.005	0.033	0.046	0.046	0.046	3.35E-06	1.27E-05	7.20E-06	1.49E-08	4.58E-04	1.08E-02	1.08E-08	3.93E-06	1.56E-02
New Boiler #2	0.296	0.486	0.005	0.033	0.046	0.046	0.046	3.35E-06	1.27E-05	7.20E-06	1.49E-08	4.58E-04	1.08E-02	1.08E-08	3.93E-06	1.56E-02
New Boiler #3	0.296	0.486	0.005	0.033	0.046	0.046	0.046	3.35E-06	1.27E-05	7.20E-06	1.49E-08	4.58E-04	1.08E-02	1.08E-08	3.93E-06	1.56E-02
Combined Existing Boiler Load	0.827	0.691	0.007	0.045	0.063	0.063	0.063	4.80E-06	1.73E-05	9.85E-06	2.08E-08	6.26E-04	1.48E-02	1.48E-08	5.37E-06	2.13E-02
<b>Boilers Annualized Hourly Emissions (lb/hr)</b>	<b>1.42</b>	<b>1.66</b>	<b>0.02</b>	<b>0.11</b>	<b>0.16</b>	<b>0.16</b>	<b>0.15</b>	<b>1.13E-05</b>	<b>4.26E-05</b>	<b>2.42E-05</b>	<b>5.07E-08</b>	<b>1.54E-03</b>	<b>3.64E-02</b>	<b>3.64E-08</b>	<b>1.32E-05</b>	<b>5.25E-02</b>

**Notes:**  
 8. Annual emissions assume 8,760 operating hours per year for natural gas and 48 hours per year diesel. Previous boiler limited emission calculations were developed to estimate hourly and annual emissions for the boilers as a whole. In order to calculate limited emissions per boiler, the hourly emission rates used in the previous calculations are weighted by the max operating hours under each fuel to obtain an annual emission rate. Subsequently, these annual rates can be divided over an operating year to obtain hourly emissions per boiler. One of the three new boilers is redundant and is not included.  
 9. Hourly emissions are calculated from the max of either hourly diesel or hourly natural gas emissions. One of the three new boilers is redundant and is not included.  
 10. For use in the TAP evaluation, annual emissions of air toxics are converted to hourly in order to average them over 8,760 hours per year.

Equipment	Annual Limited Emissions															Annual Limited Emissions			
	1,1,1-Trichloroethane (tpy)	Toluene (tpy)	o-Xylene (tpy)	Anthracene (tpy)	Arsenic (tpy)	Beryllium (tpy)	Cadmium (tpy)	Chromium (tpy)	Chromium VI (tpy)	Cobalt (tpy)	Manganese (tpy)	Mercury (tpy)	Nickel (tpy)	Phosphorus (tpy)	Selenium (tpy)	Total POM (tpy)	POM (7-PAH) group (tpy)	Acenaphthene (tpy)	Acenaphthylene (tpy)
New Boiler #1	2.42E-07	9.57E-05	1.12E-07	5.39E-06	6.61E-06	3.44E-07	2.93E-05	3.77E-05	2.55E-07	8.39E-06	1.31E-05	6.95E-06	1.42E-04	9.72E-06	1.33E-06	5.71E-06	3.13E-07	6.90E-08	4.76E-08
New Boiler #2	2.42E-07	9.57E-05	1.12E-07	5.39E-06	6.61E-06	3.44E-07	2.93E-05	3.77E-05	2.55E-07	8.39E-06	1.31E-05	6.95E-06	1.42E-04	9.72E-06	1.33E-06	5.71E-06	3.13E-07	6.90E-08	4.76E-08
New Boiler #3	2.42E-07	9.57E-05	1.12E-07	5.39E-06	6.61E-06	3.44E-07	2.93E-05	3.77E-05	2.55E-07	8.39E-06	1.31E-05	6.95E-06	1.42E-04	9.72E-06	1.33E-06	5.71E-06	3.13E-07	6.90E-08	4.76E-08
Combined Existing Boiler Load	3.39E-07	1.31E-04	1.56E-07	7.53E-06	9.08E-06	4.71E-07	4.01E-05	5.15E-05	3.56E-07	1.17E-05	1.80E-05	9.51E-06	1.97E-04	1.36E-05	1.84E-06	7.90E-06	4.29E-07	9.50E-08	6.50E-08
Boilers Annual Limited Emissions (tpy)	8.23E-07	3.23E-04	3.80E-07	1.83E-05	2.23E-05	1.16E-06	9.87E-05	1.27E-04	8.65E-07	2.84E-05	4.41E-05	2.34E-05	4.81E-04	3.30E-05	4.51E-06	1.93E-05	1.05E-06	2.33E-07	1.60E-07

Equipment	Hourly Limited Emissions															Hourly Limited Emissions			
	1,1,1-Trichloroethane (lb/hr)	Toluene (lb/hr)	o-Xylene (lb/hr)	Anthracene (lb/hr)	Arsenic (lb/hr)	Beryllium (lb/hr)	Cadmium (lb/hr)	Chromium (lb/hr)	Chromium VI (lb/hr)	Cobalt (lb/hr)	Manganese (lb/hr)	Mercury (lb/hr)	Nickel (lb/hr)	Phosphorus (lb/hr)	Selenium (lb/hr)	Total POM (lb/hr)	POM (7-PAH) group (lb/hr)	Acenaphthene (lb/hr)	Acenaphthylene (lb/hr)
New Boiler #1	1.01E-05	2.65E-04	4.67E-06	2.25E-04	5.65E-05	1.19E-06	1.70E-05	3.62E-05	1.06E-05	2.58E-04	1.28E-04	4.84E-06	3.62E-03	4.05E-04	2.92E-05	1.41E-04	5.73E-07	9.03E-07	1.48E-08
New Boiler #2	1.01E-05	2.65E-04	4.67E-06	2.25E-04	5.65E-05	1.19E-06	1.70E-05	3.62E-05	1.06E-05	2.58E-04	1.28E-04	4.84E-06	3.62E-03	4.05E-04	2.92E-05	1.41E-04	5.73E-07	9.03E-07	1.48E-08
New Boiler #3	1.01E-05	2.65E-04	4.67E-06	2.25E-04	5.65E-05	1.19E-06	1.70E-05	3.62E-05	1.06E-05	2.58E-04	1.28E-04	4.84E-06	3.62E-03	4.05E-04	2.92E-05	1.41E-04	5.73E-07	9.03E-07	1.48E-08
Combined Existing Boiler Load	1.41E-05	3.71E-04	6.52E-06	3.14E-04	7.89E-05	1.66E-06	2.38E-05	5.05E-05	1.48E-05	3.60E-04	1.79E-04	6.75E-06	5.05E-03	5.65E-04	4.08E-05	1.97E-04	7.97E-07	1.26E-06	1.51E-08
Boilers Hourly Limited Emissions (lb/hr)	3.43E-05	9.01E-04	1.58E-05	7.63E-04	1.92E-04	4.04E-06	5.79E-05	1.23E-04	3.61E-05	8.75E-04	4.36E-04	1.64E-05	1.23E-02	1.38E-03	9.93E-05	4.80E-04	1.94E-06	3.07E-06	4.47E-08

Equipment	Annualized Hourly Emissions															Annualized Hourly Emissions			
	1,1,1-Trichloroethane (lb/yr)	Toluene (lb/yr)	o-Xylene (lb/yr)	Anthracene (lb/yr)	Arsenic (lb/yr)	Beryllium (lb/yr)	Cadmium (lb/yr)	Chromium (lb/yr)	Chromium VI (lb/yr)	Cobalt (lb/yr)	Manganese (lb/yr)	Mercury (lb/yr)	Nickel (lb/yr)	Phosphorus (lb/yr)	Selenium (lb/yr)	Total POM (lb/yr)	POM (7-PAH) group (lb/yr)	Acenaphthene (lb/yr)	Acenaphthylene (lb/yr)
New Boiler #1	5.53E-08	2.19E-05	2.56E-08	1.23E-06	1.51E-06	7.85E-08	6.69E-06	8.60E-06	5.82E-08	1.92E-06	2.98E-06	1.59E-06	3.24E-05	2.22E-06	3.04E-07	1.30E-06	7.15E-08	1.57E-08	1.09E-08
New Boiler #2	5.53E-08	2.19E-05	2.56E-08	1.23E-06	1.51E-06	7.85E-08	6.69E-06	8.60E-06	5.82E-08	1.92E-06	2.98E-06	1.59E-06	3.24E-05	2.22E-06	3.04E-07	1.30E-06	7.15E-08	1.57E-08	1.09E-08
New Boiler #3	5.53E-08	2.19E-05	2.56E-08	1.23E-06	1.51E-06	7.85E-08	6.69E-06	8.60E-06	5.82E-08	1.92E-06	2.98E-06	1.59E-06	3.24E-05	2.22E-06	3.04E-07	1.30E-06	7.15E-08	1.57E-08	1.09E-08
Combined Existing Boiler Load	7.73E-08	2.99E-05	3.57E-08	1.72E-06	2.07E-06	1.08E-07	9.16E-06	1.18E-05	8.12E-08	2.66E-06	4.10E-06	2.17E-06	4.49E-05	3.10E-06	4.21E-07	1.80E-06	9.78E-08	2.17E-08	1.49E-08
Boilers Annualized Hourly Emissions (lb/yr)	1.88E-07	7.36E-05	8.68E-08	4.18E-06	5.09E-06	2.65E-07	2.25E-05	2.90E-05	1.98E-07	6.49E-06	1.01E-05	5.34E-06	1.10E-04	7.54E-06	1.03E-06	4.41E-06	2.41E-07	5.32E-08	3.66E-08

Notes:  
 8. Annual emissions assume 8,760 operating hours per year for natural gas and 48 hours per year diesel. Previous boiler limited emission calculations were developed to estimate hourly and annual emissions for the boilers as a whole. In order to calculate limited emissions per boiler, the hourly emission rates used in the previous calculations are weighted by the max operating hours under each fuel to obtain an annual emission rate. Subsequently, these annual rates can be divided over an operating year to obtain hourly emissions per boiler. One of the three new boilers is redundant and is not included.  
 9. Hourly emissions are calculated from the max of either hourly diesel or hourly natural gas emissions. One of the three new boilers is redundant and is not included.  
 10. For use in the TAP evaluation, annual emissions of air toxics are converted to hourly in order to average them over 8,760 hours per year.

Equipment	Annual Limited Emissions														
	Anthracene (tpy)	Benz(a)anthracene (tpy)	Benzo(a)pyren (tpy)	Methylanthralene (tpy)	Dimethylbenz(a)anthracene (tpy)	Benzo(b)fluoranthene (tpy)	Benzo(k)fluoranthene (tpy)	Benzo(e)fluoranthene (tpy)	Chrysene (tpy)	Dibenz(a,h)anthracene (tpy)	Fluoranthene (tpy)	Fluorene (tpy)	Indeno(1,2,3-cd)pyrene (tpy)	Phenanthrene (tpy)	Pyrene (tpy)
New Boiler #1	6.43E-08	5.14E-08	3.15E-08	6.31E-07	4.20E-07	4.88E-08	3.39E-08	4.88E-08	4.97E-08	3.33E-08	8.38E-08	7.82E-08	4.95E-08	4.58E-07	1.36E-07
New Boiler #2	6.43E-08	5.14E-08	3.15E-08	6.31E-07	4.20E-07	4.88E-08	3.39E-08	4.88E-08	4.97E-08	3.33E-08	8.38E-08	7.82E-08	4.95E-08	4.58E-07	1.36E-07
New Boiler #3	6.43E-08	5.14E-08	3.15E-08	6.31E-07	4.20E-07	4.88E-08	3.39E-08	4.88E-08	4.97E-08	3.33E-08	8.38E-08	7.82E-08	4.95E-08	4.58E-07	1.36E-07
Combined Existing Boiler Load	8.80E-08	7.04E-08	4.31E-08	8.52E-07	5.75E-07	6.68E-08	4.64E-08	6.68E-08	6.81E-08	4.55E-08	1.15E-07	1.07E-07	6.78E-08	6.26E-07	1.86E-07
Boilers Annual Limited Emissions (tpy)	2.17E-07	1.73E-07	1.06E-07	2.12E-06	1.42E-06	1.64E-07	1.14E-07	1.64E-07	1.68E-07	1.12E-07	2.82E-07	2.63E-07	1.67E-07	1.54E-06	4.57E-07

Equipment	Hourly Limited Emissions														
	Anthracene (lb/hr)	Benz(a)anthracene (lb/hr)	Benzo(a)pyren (lb/hr)	Methylanthralene (lb/hr)	Dimethylbenz(a)anthracene (lb/hr)	Benzo(b)fluoranthene (lb/hr)	Benzo(k)fluoranthene (lb/hr)	Benzo(e)fluoranthene (lb/hr)	Chrysene (lb/hr)	Dibenz(a,h)anthracene (lb/hr)	Fluoranthene (lb/hr)	Fluorene (lb/hr)	Indeno(1,2,3-cd)pyrene (lb/hr)	Phenanthrene (lb/hr)	Pyrene (lb/hr)
New Boiler #1	5.22E-08	1.72E-07	9.85E-09	1.97E-07	1.31E-07	6.33E-08	9.67E-08	6.33E-08	1.02E-07	7.15E-08	2.07E-07	1.91E-07	9.16E-08	4.49E-07	1.82E-07
New Boiler #2	5.22E-08	1.72E-07	9.85E-09	1.97E-07	1.31E-07	6.33E-08	9.67E-08	6.33E-08	1.02E-07	7.15E-08	2.07E-07	1.91E-07	9.16E-08	4.49E-07	1.82E-07
New Boiler #3	5.22E-08	1.72E-07	9.85E-09	1.97E-07	1.31E-07	6.33E-08	9.67E-08	6.33E-08	1.02E-07	7.15E-08	2.07E-07	1.91E-07	9.16E-08	4.49E-07	1.82E-07
Combined Existing Boiler Load	7.29E-08	2.40E-07	9.85E-09	1.97E-07	1.31E-07	8.85E-08	1.35E-07	8.85E-08	1.42E-07	9.98E-08	2.89E-07	2.67E-07	1.28E-07	6.28E-07	2.54E-07
Boilers Hourly Limited Emissions (lb/hr)	1.77E-07	5.83E-07	2.95E-08	5.91E-07	3.94E-07	2.15E-07	3.29E-07	2.15E-07	3.46E-07	2.43E-07	7.04E-07	6.50E-07	3.11E-07	1.53E-06	6.18E-07

Equipment	Annualized Hourly Emissions														
	Anthracene (lb/hr)	Benz(a)anthracene (lb/hr)	Benzo(a)pyren (lb/hr)	Methylanthralene (lb/hr)	Dimethylbenz(a)anthracene (lb/hr)	Benzo(b)fluoranthene (lb/hr)	Benzo(k)fluoranthene (lb/hr)	Benzo(e)fluoranthene (lb/hr)	Chrysene (lb/hr)	Dibenz(a,h)anthracene (lb/hr)	Fluoranthene (lb/hr)	Fluorene (lb/hr)	Indeno(1,2,3-cd)pyrene (lb/hr)	Phenanthrene (lb/hr)	Pyrene (lb/hr)
New Boiler #1	1.47E-08	1.17E-08	7.20E-09	1.44E-07	9.60E-08	1.11E-08	7.73E-09	1.11E-08	1.14E-08	7.59E-09	1.91E-08	1.78E-08	1.13E-08	1.04E-07	3.10E-08
New Boiler #2	1.47E-08	1.17E-08	7.20E-09	1.44E-07	9.60E-08	1.11E-08	7.73E-09	1.11E-08	1.14E-08	7.59E-09	1.91E-08	1.78E-08	1.13E-08	1.04E-07	3.10E-08
New Boiler #3	1.47E-08	1.17E-08	7.20E-09	1.44E-07	9.60E-08	1.11E-08	7.73E-09	1.11E-08	1.14E-08	7.59E-09	1.91E-08	1.78E-08	1.13E-08	1.04E-07	3.10E-08
Combined Existing Boiler Load	2.01E-08	1.61E-08	9.85E-09	1.97E-07	1.31E-07	1.53E-08	1.06E-08	1.53E-08	1.55E-08	1.04E-08	2.62E-08	2.44E-08	1.55E-08	1.43E-07	4.24E-08
Boilers Annualized Hourly Emissions (lb/hr)	4.95E-08	3.96E-08	2.42E-08	4.85E-07	3.23E-07	3.75E-08	2.60E-08	3.75E-08	3.83E-08	2.56E-08	6.45E-08	6.01E-08	3.81E-08	3.52E-07	1.04E-07

**Notes:**  
 8. Annual emissions assume 8,760 operating hours per year for natural gas and 48 hours per year diesel. Previous boiler limited emission calculations were developed to estimate hourly and annual emissions for the boilers as a whole. In order to calculate limited emissions per boiler, the hourly emission rates used in the previous calculations are weighted by the max operating hours under each fuel to obtain an annual emission rate. Subsequently, these annual rates can be divided over an operating year to obtain hourly emissions per boiler. One of the three new boilers is redundant and is not included.  
 9. Hourly emissions are calculated from the max of either hourly diesel or hourly natural gas emissions. One of the three new boilers is redundant and is not included.  
 10. For use in the TAP evaluation, annual emissions of air toxics are converted to hourly in order to average them over 8,760 hours per year.

**Engines**

Pollutant	Engine < 600 hp		Engine > 600 hp		Existing Engine 1 1250 kw 1850.00 Hp 12.95 MMBtu/hr <sup>3</sup> 260 hr/year	Existing Engine 2 1250 kw 1850.00 Hp 12.95 MMBtu/hr <sup>3</sup> 260 hr/year	Existing Fire Pump Engine 30.00 Hp 0.21 MMBtu/hr <sup>3</sup> 260 hr/year	Annualized Hourly Emissions			Total Hourly Limited Emissions (lb/hr)
	Factor <sup>1</sup> (lb/MMBtu)	Factor <sup>2</sup> (lb/hp-hr)	Factor <sup>1</sup> (lb/MMBtu)	Factor <sup>2</sup> (lb/hp-hr)				Existing Engine 1 (lb/hr)	Existing Engine 2 (lb/hr)	Existing Fire Pump (lb/hr)	
PM	2.20E-03	0.0687	0.903	0.113	0.903	0.113	0.068	0.026	0.026	0.053	1.871
PM <sub>10</sub>	2.20E-03	0.0573	0.742	0.083	0.742	0.083	0.068	0.021	0.021	0.044	1.550
PM <sub>2.5</sub>	2.20E-03	0.0556	0.720	0.090	0.720	0.090	0.068	0.021	0.021	0.043	1.506
SO <sub>2</sub>	2.08E-03	---	0.748	0.094	0.748	0.094	0.062	0.021	0.021	0.044	1.558
VOC <sup>5</sup>	2.51E-04	---	1.304	0.163	1.304	0.163	0.075	0.037	0.037	0.077	2.884
CO	6.88E-03	---	10.175	1.272	10.175	1.272	0.200	0.290	0.290	0.586	20.550
NO <sub>x</sub>	0.031	---	44.400	5.550	44.400	5.550	0.930	1.267	1.267	2.561	89.730
Acetaldehyde	7.67E-04	2.52E-05	3.28E-04	4.08E-05	3.28E-04	4.08E-05	1.61E-04	9.31E-06	9.31E-06	4.60E-06	8.14E-04
Acrolein	9.25E-05	7.88E-06	1.02E-04	1.28E-05	1.02E-04	1.28E-05	1.94E-05	2.91E-06	2.91E-06	5.54E-07	2.24E-04
Benzene	9.33E-04	7.78E-04	1.00E-02	1.28E-03	1.00E-02	1.28E-03	1.96E-04	2.87E-04	2.87E-04	5.79E-04	2.03E-02
1,3-Butadiene	3.91E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.21E-06	0.00E+00	0.00E+00	2.34E-07	8.21E-06
Formaldehyde	1.18E-03	7.89E-05	1.02E-03	1.28E-04	1.02E-03	1.28E-04	2.48E-04	2.92E-05	2.92E-05	7.07E-06	2.29E-03
Naphthalene	6.48E-05	1.30E-04	1.68E-03	2.10E-04	1.68E-03	2.10E-04	1.78E-05	4.80E-05	4.80E-05	5.08E-07	3.38E-03
PAH	1.88E-04	2.12E-04	2.75E-03	3.43E-04	2.75E-03	3.43E-04	3.59E-05	7.84E-05	7.84E-05	1.01E-06	5.53E-03
Toluene	4.09E-04	2.81E-04	3.64E-03	4.55E-04	3.64E-03	4.55E-04	8.59E-05	1.04E-04	1.04E-04	2.45E-06	7.36E-03
Xylenes	2.85E-04	1.93E-04	2.50E-03	3.12E-04	2.50E-03	3.12E-04	5.99E-05	7.13E-05	7.13E-05	1.71E-06	5.06E-03

1. Emission Factor per AP-42 Section 3.3, Tables 3.3-1, 3.3-2 (10/96).

2. Emission factor per AP-42 Section 3.4, Tables 3.4-1, 3.4-2, 3.4-3, and 3.4-4 (10/96).

3. MMBtu/hr estimated using AP-42 conversion factor of 7,000 Btu/hp-hr from Section 3.3 Table 3.3-1 (10/96).

4. Factor for hp > 600 is 8.09E-03\*S1, where S1 = 0.05 % sulfur in fuel oil. If sulfur content is 500 ppm, 0.05% (wt), then S1 = 0.05.

5. VOC is sum of TOC emissions (as CH4 - methane).

**Engines Continued**

**Speciated PAH Emissions**

Pollutant	Engine < 600 hp		Engine > 600 hp		Existing Engine 1 1250 kw 1850.00 Hp 12.95 MMBtu/hr <sup>3</sup> 500 hr/yr		Existing Engine 2 1250 kw 1850.00 Hp 12.95 MMBtu/hr <sup>3</sup> 500 hr/yr		Existing Fire Pump 30.00 Hp 0.21 MMBtu/hr <sup>3</sup> 500 hr/yr		Annualized Hourly Emissions				Total Hourly Limited Emissions (lb/hr)
	Factor <sup>1</sup> (lb/MMBtu)	Factor <sup>2</sup> (lb/np-hr)	Factor <sup>3</sup> (lb/MMBtu)	Factor <sup>4</sup> (lb/np-hr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	Existing Engine 1 (lb/hr)	Existing Engine 2 (lb/hr)	Existing Fire Pump (lb/hr)	Total all engines (lb/hr)	
Acenaphthylene	5.06E-05	--	9.23E-06	--	1.20E-04	1.49E-05	1.20E-04	1.49E-05	1.06E-05	1.33E-06	3.41E-06	3.41E-06	3.03E-07	7.13E-06	2.50E-04
Acenaphthene	1.42E-06	--	4.68E-06	--	6.06E-05	7.58E-06	6.06E-05	7.58E-06	2.98E-07	3.73E-08	1.73E-06	1.73E-06	8.51E-09	3.47E-06	1.22E-04
Fluorene	2.92E-05	--	1.28E-05	--	1.69E-04	2.07E-05	1.69E-04	2.07E-05	6.13E-06	7.67E-07	4.73E-06	4.73E-06	1.75E-07	9.64E-06	3.38E-04
Phenanthrene	2.94E-05	--	4.08E-05	--	5.28E-04	6.80E-05	5.28E-04	6.80E-05	6.17E-06	7.72E-07	1.51E-05	1.51E-05	1.76E-07	3.03E-05	1.08E-03
Anthracene	1.87E-06	--	1.23E-06	--	1.59E-05	1.99E-06	1.59E-05	1.99E-06	3.93E-07	4.91E-08	4.56E-07	4.56E-07	1.12E-08	9.20E-07	3.22E-05
Fluoranthene	7.81E-06	--	4.03E-06	--	5.22E-05	6.52E-06	5.22E-05	6.52E-06	1.60E-06	2.00E-07	1.49E-06	1.49E-06	4.56E-08	3.02E-06	1.06E-04
Pyrene	4.78E-06	--	3.71E-06	--	4.80E-05	6.01E-06	4.80E-05	6.01E-06	1.00E-06	1.25E-07	1.37E-06	1.37E-06	2.86E-08	2.77E-06	9.71E-05
POM (7-PAH group)	--	--	--	--	5.82E-05	7.28E-06	5.82E-05	7.28E-06	7.21E-07	9.01E-08	1.66E-06	1.66E-06	2.06E-08	3.34E-06	1.17E-04
Benz(a)anthracene	1.68E-06	--	6.22E-07	--	8.08E-06	1.01E-06	8.08E-06	1.01E-06	3.53E-07	4.41E-08	2.30E-07	2.30E-07	1.01E-08	4.70E-07	1.65E-05
Chrysene	3.53E-07	--	1.53E-06	--	1.98E-05	2.48E-06	1.98E-05	2.48E-06	7.41E-08	9.27E-09	5.66E-07	5.66E-07	1.21E-09	1.13E-06	3.97E-05
Benzo(b)fluoranthene	9.91E-06	--	1.11E-06	--	1.44E-05	1.80E-06	1.44E-05	1.80E-06	2.08E-08	2.60E-09	4.10E-07	4.10E-07	5.94E-10	8.21E-07	2.88E-05
Benzo(k)fluoranthene	1.55E-07	--	2.18E-07	--	2.82E-06	3.53E-07	2.82E-06	3.53E-07	3.26E-08	4.07E-09	8.08E-08	8.08E-08	9.29E-10	1.62E-07	5.68E-06
Benzo(a)pyrene	1.88E-07	--	2.57E-07	--	3.39E-06	4.16E-07	3.39E-06	4.16E-07	3.95E-08	4.94E-09	9.50E-08	9.50E-08	1.13E-09	1.91E-07	6.70E-06
Indeno(1,2,3-cd)pyrene	3.75E-07	--	4.14E-07	--	5.36E-06	6.70E-07	5.36E-06	6.70E-07	7.88E-08	9.84E-09	1.53E-07	1.53E-07	2.25E-09	3.08E-07	1.08E-05
Dibenzo(a,h)anthracene	5.83E-07	--	3.46E-07	--	4.49E-06	5.60E-07	4.49E-06	5.60E-07	1.22E-07	1.53E-08	1.28E-07	1.28E-07	3.49E-08	2.59E-07	9.08E-06
Benzo(g,h,i)pyrene	4.89E-07	--	5.56E-07	--	7.20E-06	9.00E-07	7.20E-06	9.00E-07	1.03E-07	1.28E-08	2.05E-07	2.05E-07	2.93E-08	4.14E-07	1.45E-05

**Calculations for Modeled Flow Rates of Boilers and Engines**

**Estimation of flow from Existing Fire Pump Engine**

Descriptor	Value	Units
F-Factor <sup>6</sup>	10,610	wscf/MMBtu
Existing Fire Pump Engine Heat Input	0.21	MMBtu/hr
Exit Flow Rate (@68 °F)	37.135	wscf/min
Exit Flow Rate (@600 °F)	75	wscf/min

**Estimation of flow from Existing Boilers at 200 MBH Combined Load**

Descriptor	Value <sup>6</sup>	Units
F-Factor <sup>6</sup>	10,610	wscf/MMBtu
Input	8.37	MMBtu/hr
Exit Flow Rate (@68 °F)	1479.874	wscf/min
Exit Flow Rate (@370 °F)	2,326	wscf/min

6. EPA Method 19 (@ 68 °F) and 29.92 in Hg using wet (w) scf.

**Tanks**

Phase	Equipment	Equipment Served	Volume (gal)	Maximum Throughput <sup>1</sup> (gal/yr)	TANKS report emissions (lb/yr)	Hourly VOC Emissions (lb/hr)	Annual VOC Emissions (tpy)
1	Fuel Oil Tank 1	Existing Boilers and Engines	5,000	206,524	7.18	0.1710	0.00359
1	Fuel Oil Tank 2	New Boilers	12,000	495,657	8.66	0.2062	0.00433
1	Fuel Oil Tank 3	New Boilers	12,000	495,657	8.66	0.2062	0.00433
1	Day Tank 1	New Boilers	400	16,522	0.29	0.0069	0.000145
						Total VOC (tpy)	0.012395

**Notes:**

1. Maximum throughput is calculated assuming all equipment served by the tank operate at capacity for 8,760 hours per year.



PTC TAP Modeled Emission Rates

Substance	Scenario: PTC TAP (2008)						
	New Boiler 1 B01	New Boiler 2 B02	New Boiler 3 B03	Existing Boilers B04	Existing Boilers 1 B01	Existing Boilers 2 B02	Existing Pine Process Boilers B01
Formaldehyde	4.58E-04	4.58E-04	4.58E-04	6.28E-04	2.92E-05	2.92E-05	7.07E-08
Arsenic	1.51E-06	1.51E-06	1.51E-06	2.07E-06	-	-	-
Cadmium	6.89E-06	6.89E-06	6.89E-06	9.16E-06	-	-	-
Nickel	3.24E-05	3.24E-05	3.24E-05	4.49E-05	-	-	-
PM (7-PAH group)	7.18E-08	7.18E-08	7.18E-08	9.78E-08	1.88E-06	1.88E-06	2.06E-06

Note: One of three new boilers is redundant. To be conservative, all boilers were modeled.

**PTC Criteria Pollutants Evaluation and Modeled Emission Rates**

	PM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	CO	NO <sub>x</sub>	Pb
Maximum Capacity Emissions (tpy)	5.11	3.66	2.73	10.69	19.49	42.26	2.23E-03
Maximum Emissions < 100 tpy?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Limited Emissions <sup>1</sup> (tpy)	0.92	0.87	0.87	0.27	9.86	17.43	4.95E-05
Below Regulatory Concern (BRC) (tpy)	2.50	1.50	1.00	4.00	10.00	4.00	6.00E-02
Limited Emissions BRC?	Yes	Yes	Yes	Yes	Yes	No	Yes
Limited Emissions <sup>1</sup> (tpy)	--	--	--	--	--	17.43	--
Limited Emissions <sup>1</sup> (lb/hr)	--	--	--	--	--	92.86	--
Threshold I (tpy)	--	--	--	--	--	1.20	--
Threshold I (lb/hr)	--	--	--	--	--	0.20	--
Limited Emissions Below Threshold I Annual?	--	--	--	--	--	No	--
Limited Emissions Below Threshold I Hourly?	--	--	--	--	--	No	--
Averaging Periods Requiring Evaluation	None	None	None	None	None	1-hr, Annual	None

**Notes:**

1. Limited emissions consider only 48 hours per year use of diesel fuel in the boilers for testing. Existing boilers cycle on standby as the current facilities they serve require a maximum of 200 MBH at any one time. One of three new boilers is a redundant unit - this unit is not considered within the limited emissions.

Modeled Emission Rate (lb/hr)									
Pollutant	Averaging Period	Operating Scenario	New Boiler 1 B01	New Boiler 2 B02	New Boiler 3 B03	Existing Boilers B04	Existing Engine 1 E01	Existing Engine 2 E02	EXISTING Fire Pump Engine E03
NO <sub>2</sub> <sup>1</sup>	1-hr	OS1D2	--	0.9676	0.2903	1.1955	--	--	--
		OS1D3	--	0.2903	0.9676	1.1955	--	--	--
		OS2D1	0.9676	--	0.2903	1.1955	--	--	--
		OS2D3	0.2903	--	0.9676	1.1955	--	--	--
		OS3D1	0.9676	0.2903	--	1.1955	--	--	--
		OS3D2	0.2903	0.9676	--	1.1955	--	--	--
NO <sub>2</sub> <sup>2</sup>	Annual	N/A	0.2956	0.2956	0.2956	0.8270	1.267	1.267	0.0265

1. NO<sub>2</sub> 1-hr boiler emission rates assume diesel fuel use during testing and new boilers will be tested one at a time. Existing boilers are assumed to use diesel as worst case. Additionally, one of three new boilers is redundant and not operated. This results in six possible operating scenarios. Engines are not included in this model.

2. NO<sub>2</sub> annual emission rates for engines are based on the annual emissions spread over 8,760 hours per year.

# MODELING SUMMARY

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St. Joseph Regional Medical Center (St. Joseph) is located in Lewiston, Idaho. St. Joseph is applying for the facility's initial construction and operation permit.

## Project Description:

St. Joseph is preparing to modify the facility with the addition of 3 dual fuel boilers with 6 MMBtu/hr heat input capacity each and 3 diesel fuel tanks. The boilers will be limited to 48 hours/year of operation with diesel fuel for testing and maintenance purposes, unless during periods of natural gas curtailment or supply interruption. This testing will take place for a single boiler at a time. Two of the tanks proposed hold 12,000 gallons of diesel with the third tank holding 400 gallons of diesel.

St. Joseph is also requesting that their existing equipment be included in the permit. This includes two 1,250 kW diesel-fired engines, one 30 Hp diesel-fired fire pump engine, one 5,000 gal fuel oil tank, and four natural gas-fired boilers; the existing boilers are lumped into one combined process with a heat input capacity of 200 BHP and a fuel consumption of 8,205 CFH.

## Modeling Analysis:

St. Joseph communicated with Cheryl Robinson of the Idaho Department of Environmental Quality (Idaho DEQ) and received modeling guidance<sup>1</sup> that were considered "akin to a modeling proposal approval". Per this modeling guidance, all sources included in the permit to construct (PTC) application were evaluated for modeling requirements. As a non-PSD source, if

1. the maximum capacity of the source (i.e., the post-project facility-wide emissions) to emit any regulated air pollutant under its physical and operational design without consideration of limitations on emissions such as air pollution control equipment, restrictions on hours of operation, and restrictions on the type and amount of material combusted, stored, or processed facility-wide is below 100 tons per year, and
2. the maximum capacity of the source (i.e., the post-project facility-wide emissions) to emit a particular criteria pollutant under its physical and operational design considering limitations on emissions such as air pollution control equipment, restrictions on hours of operation, and restrictions on the type and amount of material combusted, stored, or processed are less than 10% of the significant emission rates set out in Section 006 of the Idaho Air Rules (i.e., are below regulatory concern, BRC),

dispersion modeling is not required for any averaging time for that criteria pollutant<sup>1</sup>. The results of this evaluation can be found below in Table 1.

Criteria pollutants emitted in excess of BRC levels are compared to hourly and annual Idaho DEQ modeling thresholds. Because of the relatively low emissions release height and close proximity to the ambient air boundary, increases in criteria pollutant emissions are compared to the "Threshold I" values found in the State of Idaho Guideline for Performing Air Quality Impact Analyses, Section 3.3 Table 2. The results of this evaluation can be found below in Table 1.

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<sup>1</sup> Email correspondence from Cheryl Robinson of Idaho DEQ to Jacob Post of GBMc & Associates on 10/23/13 and 10/30/13.

**Table 1. Criteria Pollutant Screening<sup>2</sup>**

	PM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	CO	NO <sub>x</sub>	Pb
Maximum Capacity Emissions (tpy)	5.11	3.66	2.73	10.69	19.49	42.26	2.23E-03
Maximum Emissions < 100 tpy?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Limited Emissions <sup>3</sup> (tpy)	0.92	0.87	0.87	0.27	9.86	17.43	4.95E-05
Below Regulatory Concern (BRC) (tpy)	2.50	1.50	1.00	4.00	10.00	4.00	6.00E-02
Limited Emissions BRC?	Yes	Yes	Yes	Yes	Yes	No	Yes
Limited Emissions <sup>3</sup> (tpy)	--	--	--	--	--	17.43	--
Limited Emissions <sup>3</sup> (lb/hr)	--	--	--	--	--	92.86	--
Threshold <sup>4</sup> (tpy)	--	--	--	--	--	1.20	--
Threshold <sup>4</sup> (lb/hr)	--	--	--	--	--	0.20	--
Limited Emissions Below Threshold I Annual?	--	--	--	--	--	No	--
Limited Emissions Below Threshold I Hourly?	--	--	--	--	--	No	--
Averaging Periods Requiring Evaluation	None	None	None	None	None	1-hr, Annual	None

Limited emissions of all toxic air pollutants (TAP) were evaluated against the appropriate emission levels (EL) within Idaho Administrative Code IDAPA 28.01.01 sections 585 and 586. Section 585 pollutants were compared against the hourly limited emission rates and section 586 pollutants were compared against the annualized hourly emission rates. This evaluation is shown below in Table 2.

<sup>2</sup> Per email correspondence from Cheryl Robinson of Idaho DEQ to Jacob Post of GBMc & Associates on 10/23/13, Modeling of VOCs is not required for this facility.

<sup>3</sup> Limited emissions consider only 48 hours per year diesel fuel use in the boilers (B01 – B04) for testing and maintenance. Existing gas-fired boilers (B04) cycle on standby as the current requirement is a maximum of 200 MBH at any one time. One of three new boilers (B01 – B03) is a redundant unit, and only two new boilers will operate at any given time.

<sup>4</sup> Threshold I values obtained from State of Idaho Guideline for Performing Air Quality Impact Analyses, Section 3.3 Table 2.

Table 2. TAP Screening

Substance	Annualized Hourly Emission Rate All Boilers (lb/hr)	Limited Emission Rate All Boilers (lb/hr)	Annualized Hourly Emission Rate All Engines <sup>5</sup> (lb/hr)	Limited Emission Rate All Engines (lb/hr)	Total Annualized Hourly Emission Rate (lb/hr)	Total Limited Hourly Emission Rate (lb/hr)	Source	EL (lb/hr)	Below Regulatory Concern? (10% of EL)	Below EL?
Benzene	4.26E-05	5.17E-05	5.79E-04	2.03E-02	6.22E-04	--	Section 586	8.00E-04	NO	YES
Dichlorobenzene	2.42E-05	2.95E-05	--	--	--	--	N/A	--	--	--
Ethylbenzene	5.07E-08	9.25E-06	--	--	--	9.25E-06	Section 585	29	YES	--
Formaldehyde	1.54E-03	4.80E-03	6.54E-05	2.29E-03	1.61E-03	--	Section 586	5.10E-04	NO	NO
Hexane	3.64E-02	4.43E-02	--	--	--	4.43E-02	Section 585	12	YES	--
Naphthalene <sup>5</sup>	1.32E-05	1.64E-04	--	--	1.32E-05	--	Section 586	9.10E-05	NO	YES
Pentane	5.25E-02	6.40E-02	--	--	--	--	Section 585	1.18E+02	YES	--
1,1,1-Trichloroethane	1.88E-07	3.43E-05	--	--	--	3.43E-05	Section 585	127	YES	--
Toluene	7.36E-05	9.01E-04	2.10E-04	7.36E-03	--	8.27E-03	Section 585	25	YES	--
Xylenes	8.68E-08	1.58E-05	1.44E-04	5.06E-03	--	5.07E-03	Section 585	29	YES	--
Antimony	4.18E-06	7.63E-04	--	--	--	7.63E-04	Section 585	0.033	YES	--
Arsenic	5.09E-06	1.92E-04	--	--	5.09E-06	--	Section 586	1.50E-06	NO	NO
Beryllium	2.65E-07	4.04E-06	--	--	2.65E-07	--	Section 586	2.80E-05	YES	--
Cadmium	2.25E-05	5.79E-05	--	--	2.25E-05	--	Section 586	3.70E-06	NO	NO
Chromium	2.90E-05	1.23E-04	--	--	--	1.23E-04	Section 585	3.30E-02	YES	--
Chromium VI	1.98E-07	3.61E-05	--	--	1.98E-07	--	Section 586	5.60E-07	NO	YES
Cobalt	6.49E-06	8.75E-04	--	--	--	8.75E-04	Section 585	0.0033	NO	YES
Manganese	1.01E-05	4.36E-04	--	--	--	4.36E-04	Section 585	0.333	YES	--
Mercury	5.34E-06	1.64E-05	--	--	--	--	N/A	--	--	--
Nickel	1.10E-04	1.23E-02	--	--	1.10E-04	--	Section 586	2.70E-05	NO	NO
Phosphorus	7.54E-06	1.38E-03	--	--	--	1.38E-03	Section 585	0.007	NO	YES
Selenium	1.03E-06	9.93E-05	--	--	--	9.93E-05	Section 585	0.013	YES	--
POM (7-PAH group)	2.41E-07	1.94E-06	3.34E-06	1.17E-04	3.59E-06	--	Section 586	0.000002	NO	NO
Acetaldehyde	--	--	2.32E-05	8.14E-04	2.32E-05	--	Section 586	3.00E-03	YES	--
Acrolein	--	--	6.38E-06	2.24E-04	--	2.24E-04	Section 585	1.70E-02	YES	--
1,3-Butadiene	--	--	2.34E-07	8.21E-06	2.34E-07	--	Section 586	2.40E-05	YES	--

<sup>5</sup> Per email correspondence from Cheryl Robinson of Idaho DEQ to Jacob Post of GBMc & Associates on 10/23/13, naphthalene has been determined as a possible/probable carcinogen by the DEQ. Compliance for naphthalene emissions is based on the EL or AACC in Section 586 for PAH.

Substance	Annualized Hourly Emission Rate All Boilers (lb/hr)	Limited Emission Rate All Boilers (lb/hr)	Annualized Hourly Emission Rate All Engines (lb/hr)	Limited Emission Rate All Engines (lb/hr)	Total Annualized Hourly Emission Rate (lb/hr)	Total Limited Hourly Emission Rate (lb/hr)	Source	EL (lb/hr)	Below Regulatory Concern? (10% of EL)	Below EL?
2-Methylnaphthalene	4.85E-07	5.91E-07	--	--	4.85E-07	--	Section 586	9.10E-05	YES	--
7,12-Dimethylbenz(a)anthracene	4.85E-07	5.91E-07	--	--	4.85E-07	--	Section 586	9.10E-05	YES	--
Acenaphthylene	3.66E-08	4.47E-08	7.13E-06	2.50E-04	7.16E-06	--	Section 586	9.10E-05	YES	--
Acenaphthene	5.32E-08	3.07E-06	3.47E-06	1.22E-04	3.52E-06	--	Section 586	9.10E-05	YES	--
Fluorene	6.01E-08	6.50E-07	--	--	6.01E-08	--	Section 586	9.10E-05	YES	--
Phenanthrene	3.52E-07	1.53E-06	3.03E-05	1.06E-03	3.07E-05	--	Section 586	9.10E-05	NO	YES
Anthracene	4.95E-08	1.77E-07	9.20E-07	3.22E-05	9.70E-07	--	Section 586	9.10E-05	YES	--
Fluoranthene	6.45E-08	7.04E-07	--	--	6.45E-08	--	Section 586	9.10E-05	YES	--
Pyrene	1.04E-07	6.18E-07	2.77E-06	9.71E-05	2.88E-06	--	Section 586	9.10E-05	YES	--
Benzo(g,h,i)pyrene	2.60E-08	3.29E-07	4.14E-07	1.45E-05	4.40E-07	--	Section 586	9.10E-05	YES	--

The current regulatory version of the US EPA AERMOD (v12345) modeling program was utilized in order to conduct the screening modeling demonstration. There are a number of options related to setting up an AERMOD model. The selection of these options for the model runs conducted for St. Joseph is outlined in this document.

#### **Meteorological Data:**

Idaho DEQ processed and provided<sup>6</sup> AERMOD-ready met data set (Lewiston\_KLWS\_2008-2012t) for the Lewiston area representative of the conditions at St. Joseph; this was utilized in all modeling efforts. The MET data covers the years 2008 to 2012. All five years of MET data were used in all modeling efforts.

#### **Receptor Grid and Ambient Air Boundaries:**

The receptor grid utilized in this modeling demonstration was developed in order to ensure that the extent and spacing of the receptor network would reasonably resolve the maximum modeled concentration. This grid utilized a receptor spacing of 50 meters and extends approximately 1,000 meters in each direction from the facility center. The grid was then converted to discrete cartesian receptors and all receptors located within the ambient air boundaries were deleted. With no fences or areas excluding public access, the ambient air boundaries were defined as everywhere outside of a building. The buildings were defined as ambient boundaries within AERMOD and receptors were placed at each intersection point and at 50 meter intervals.

#### **Terrain Data:**

Base elevation heights were imported for all model objects via the AERMAP software. National Elevation Dataset (NED) was obtained from the US Geological Survey (USGS) through the Multi-Resolution Land Characteristics Consortium (MRLC)<sup>7</sup> for the area surrounding the St. Joseph facility. This data utilizes a spatial resolution of 1/3 arc second and was obtained in the GeoTIFF format, the AERMAP required format for NED data.

#### **Building Downwash:**

Per the State of Idaho Guideline for Performing Air Quality Impact Analyses Section 6.4.4, the air quality impacts associated with cavity and wake effects due to the nearby building structures was determined for any stacks with stack heights less than good engineering practice (GEP). The recommended building profile software, EPA's Building Profile Input Program (BPIP), was used to take into account all surrounding buildings. Since, many of the building are non-uniform in shape, detailed building parameters can be found in the provided CD building input files (.bpi).

#### **Emission Rates:**

All modeled pollutant emission rates are based off of the limited annual and hourly emission calculations, as appropriate. Table 4 contains a summary of all modeled emission rates and scenarios.

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<sup>6</sup> Attached within the email correspondence from Cheryl Robinson of Idaho DEQ to Jacob Post of GBMc & Associates on 10/23/13.

<sup>7</sup> MLRC provides a viewer (<http://www.mrlc.gov/viewerjs/>) which allows the user to specify an area for which to obtain desired terrain data.

NO<sub>2</sub> annual emission rates

Modeling for annual NO<sub>2</sub> utilizes the limited emissions from the existing boilers (OB04A – OB04D), as a “bubbled source”. The existing boilers are planned to be cycled on standby as the current facilities requirement is a maximum of 200 MBH at any one time.

Additionally the limited emissions for the new and existing boiler (OB01 – OB04) reflect operating a maximum of 48 hours per year using diesel fuel in the boilers for testing and maintenance purposes.

Modeled emission rates are based on the limited annual emission rate divided by 8,760 hr/year to get an annualized hourly emission rates.

NO<sub>2</sub> 1-hr emission rates

Modeling for 1-hr NO<sub>2</sub> takes into account the above existing boiler (OB04A – OB04D) emission “bubble”, and that only one of the three new boilers (OB01 – OB03) will utilize diesel at any given time. As allowed<sup>8</sup>, the facility has opted to omit the emergency engines (E01 – E01) from the 1-hr NO<sub>2</sub> models.

Additionally, one of the three new boilers (OB01 – OB03) will be a redundant unit. The expected steam load can be handled by two of the new boilers and all three new boilers will not operate at any given time.

In order to account for all the operating limitations, six operating scenarios were required to determine the worst case 1-hr NO<sub>2</sub> modeling results. Table 3 shows these operating scenarios.

**Table 3. Operating Scenarios – 1-hr NO<sub>2</sub>**

Operating Scenario	New Boiler 1 B01	New Boiler 2 B02	New Boiler 3 B03	Existing Boilers B04
OS1D2	Not operating	Combusting diesel	Combusting natural gas	Combusting worst case of diesel or natural gas
OS1D3	Not operating	Combusting natural gas	Combusting diesel	
OS2D1	Combusting diesel	Not operating	Combusting natural gas	
OS2D3	Combusting natural gas	Not operating	Combusting diesel	
OS3D1	Combusting diesel	Combusting natural gas	Not operating	
OS3D2	Combusting natural gas	Combusting diesel	Not operating	

<sup>8</sup> Per email correspondence between Cheryl Robinson Idaho DEQ and Jacob Post GBMc & Associates, October 23, 2013

**Table 4. Modeled Emission Rates – Criteria Pollutants**

Modeled Emission Rate (lb/hr)									
Pollutant	Averaging Period	Operating Scenario	New Boiler 1 B01	New Boiler 2 B02	New Boiler 3 B03	Existing Boilers B04	Existing Engine 1 E01	Existing Engine 2 E02	Existing Fire Pump Engine E03
NO <sub>2</sub> <sup>9</sup>	1-hr	OS1D2	--	0.9676	0.2903	1.1955	--	--	--
		OS1D3	--	0.2903	0.9676	1.1955	--	--	--
		OS2D1	0.9676	--	0.2903	1.1955	--	--	--
		OS2D3	0.2903	--	0.9676	1.1955	--	--	--
		OS3D1	0.9676	0.2903	--	1.1955	--	--	--
		OS3D2	0.2903	0.9676	--	1.1955	--	--	--
NO <sub>2</sub>	Annual	N/A	0.2956	0.2956	0.2956	0.8270	1.267	1.267	0.0265

TAP emission rates

All TAPs requiring modeling are carcinogens. Annualized hourly emission rates are used for modeling since the acceptable ambient concentration for carcinogens (AACC) is based on an annual averaging period. Table 5 contains a summary of modeled emission rates.

**Table 5. Modeled Emission Rates – TAP**

Modeled Emission Rate (lb/hr)							
Substance	New Boiler 1 B01	New Boiler 2 B02	New Boiler 3 B03	Existing Boilers B04	Existing Engine 1 E01	Existing Engine 2 E02	Existing Fire Pump Engine E03
Formaldehyde	4.58E-04	4.58E-04	4.58E-04	6.26E-04	2.92E-05	2.92E-05	7.07E-06
Arsenic	1.51E-06	1.51E-06	1.51E-06	2.07E-06	--	--	--
Cadmium	6.69E-06	6.69E-06	6.69E-06	9.16E-06	--	--	--
Nickel	3.24E-05	3.24E-05	3.24E-05	4.49E-05	--	--	--
POM (7-PAH group)	7.15E-08	7.15E-08	7.15E-08	9.78E-08	1.66E-06	1.66E-06	2.06E-08

**Source Characterization:**

Each air emission source emitting a pollutant of interest was included within the model. These emission sources are routed to the atmosphere through a traditional exhaust stack and defined within AERMOD as point sources. The three engines (E01 – E03) have weather caps and EPA's non-regulatory default option for capped releases was used (see Form MI2 for detailed stack parameters).

<sup>9</sup> NO<sub>2</sub> 1-hr boiler emission rates assume diesel fuel use during testing and new boilers will be tested one at a time. Existing boilers are assumed to use diesel as worst case. Additionally, one of three new boilers is redundant. This results in six possible operating scenarios. Engines are not included in this model.

**Criteria Pollutant Background:**

St. Joseph Medical Center is located in Lewiston, Idaho. The region is currently in attainment for all criteria pollutants. Idaho DEQ recommended<sup>10</sup> background concentrations are utilized for NO<sub>2</sub> (1-hr and annual) modeling (table 6). These background values were drawn from the NW Airquest background values tool (<http://lar.wsu.edu/nw-airquest/lookup.html>) for coordinates 46.41119 N, 117.026 W (the approximate location of St Joseph).

**Table 6. Background Concentrations – Criteria Pollutants**

Pollutant	Averaging Period	Background Concentration	
		(ppb)	( $\mu\text{g}/\text{m}^3$ )
Nitrogen oxides (as NO <sub>2</sub> )	1-hr	29	54.6
	Annual	4	7.6

**Modeling Results:**

Screening modeling demonstrations were conducted for each of the compounds listed in the following table. For each criteria pollutant, the maximum predicted concentration is less than the regulatory limit minus the background concentration and no further evaluation is required (Table 7). For each TAP, the maximum predicted concentration is below the AACC and no further evaluation is required (Table 8).

**Table 7. Modeling Results by Pollutant – Criteria Pollutants**

Pollutant	Averaging Period	Modeled Value	Significant Contribution Levels ( $\mu\text{g}/\text{m}^3$ )	Regulatory Limit ( $\mu\text{g}/\text{m}^3$ )	Background Concentration ( $\mu\text{g}/\text{m}^3$ )	Maximum Modeled Impact ( $\mu\text{g}/\text{m}^3$ )	Further Evaluation Required?
NO <sub>2</sub> <sup>11</sup>	1-hr	8 <sup>th</sup> high	7.5	188	54.6	125.92	No
NO <sub>2</sub>	Annual	1 <sup>st</sup> high	1.0	100	7.6	89.59	No

**Table 8. Modeling Results by Pollutant – TAP**

Pollutant	Averaging Period	Modeled Value	AACC ( $\mu\text{g}/\text{m}^3$ )	Maximum Modeled Impact ( $\mu\text{g}/\text{m}^3$ )	Further Evaluation Required?
Formaldehyde	Annual	1 <sup>st</sup> high	7.7E-02	2.06E-02	No
Arsenic	Annual	1 <sup>st</sup> high	2.3E-04	7.00E-05	No
Cadmium	Annual	1 <sup>st</sup> high	5.6E-04	3.00E-04	No
Nickel	Annual	1 <sup>st</sup> high	4.2E-03	1.45E-03	No
POM (7-PAH group)	Annual	1 <sup>st</sup> high	3.0E-04	1.10E-04	No

<sup>10</sup> Per email correspondence between Cheryl Robinson Idaho DEQ and Jacob Post GBMc & Associates, October 23, 2013

<sup>11</sup> NO<sub>2</sub> 1-hr maximum modeled impact 157.40  $\mu\text{g}/\text{m}^3$  occurs with scenario OS3D1 (New Boilers 1 and 2 operating, with New Boiler 1 testing on diesel). The reported value of 124.98  $\mu\text{g}/\text{m}^3$  includes the default ambient NO<sub>2</sub>/NO<sub>x</sub> ratio of 0.8 per EPA's Tier 2 option for NO<sub>x</sub>.

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**Equipment Specifications – New Boiler Specifications and  
Existing Engine Specifications**



# Fulton<sup>®</sup>

## Engineering Data

### Supplemental Technical Data

Vantage Hydronic Condensing Boilers  
Model: VTG-6000DF, Riello Burner

Category	Units	Detail
Fuel		Natural Gas, Propane, #2 Oil, B-100 Biodiesel*
Input	BTU/HR KCAL/HR	6,000,000 1,512,986
Output	BTU/HR 120°F in – 140°F out KCAL/HR 49°C in - 60°C out	5,640,000 1,422,207
Fuel Consumption at rated capacity – Natural Gas	FT3/HR M3/HR	6,000 170
Fuel Consumption at rated capacity - Propane	FT3/HR M3/HR	2,334 66.1
Fuel Consumption at rated capacity - #2 Oil	GPH LPH	42.8 162.0
Electrical Requirements** <ul style="list-style-type: none"> <li>• 208/60/3</li> <li>• 230/60/3</li> <li>• 460/60/3</li> </ul>	Maximum In-rush Amps with Standard 7.5 HP Blower Motor	32.5 28.2 14.6
Maximum Allowable Working Pressure	PSI BAR	160 11.0
Maximum Allowable Working Temperature	Degrees F Degrees C	210 99
Water Content	Gallons Liters	480 1,817

Connection	Units	Diameter
Safety Valve Inlet (160 PSIG)	IN	1
	MM	25.4
Safety Valve Outlet (160 PSIG)	IN	1 ¼
	MM	31.75
Water Inlet and Outlet	IN	6
	MM	152.4
Air Inlet	IN	12
	MM	304.8
Natural Gas Inlet	IN	2.5
	MM	63.5
Propane Inlet	IN	2.5
	MM	63.5
#2 Oil Connections	IN	.5
	MM	12.7
Exhaust Outlet***	IN	14
	MM	355.6

\*Consult factory

\*\*Contact factory for other voltages

\*\*\*Flue piping must be Category IV (Positive Pressure, Condensing)

Category	Units	Weight
Dry Weight	LB	10,800
	KG	4,899
Shipping Weight	LB	11,500
	KG	5,216
Operating Weight	LB	14,803
	KG	6,714
Floor Loading	LB/FT2	270
	KG/M2	1,324

**Gas Pressure Requirements:**

- Natural Gas Firing – 18" W.C. – 5 PSIG required at the fuel train inlet.
- Propane Gas Firing – 1 PSIG – 5 PSIG required at the fuel train inlet.
- Oil Pump suction not to exceed 13" Hg.
- Do not exceed 3 PSI (NFPA) oil inlet line pressure.

**Other Technical Data:**

- Boiler rated HP: 179 BHP, 1758 KW
- Turndown Ratios: 5:1 Natural Gas
  - Refer to factory test fire sheet for site specific settings.
- Safety Relief Valve Trim Pressures Available: 30 PSIG, 60 PSIG, 75 PSIG, 100 PSIG, 125 PSIG, 160 PSIG
  - Additional trim pressures are available. Consult factory for additional information.
- Jacket Losses: 0.2% of output at High Fire, IAW ASHRAE Standard 103-2007
- Exhaust Flow Rate: Will vary based on stack temperature, firing rate and site conditions
  - SCFM 1373
  - ACFM 1725

**Emissions Data (typical):**

	NOx	CO2	VOC	CO
VTG-6000 Nat Gas	<30 ppm	8.0-10.0 %	0.0330 lbs/hr	<50 ppm
VTG-6000 #2 Oil	<100 ppm	11.0-12.5%	0.0338 lbs/hr	<50 ppm

- VOC = Volatile Organic Compounds
- Calculations based on EPA PM10 AP42 Standard
- NOx is based on a 3% O2 correction

**Standard Control Platform:** Siemens LMV36 (Flame Programmer), Yokogawa UT32A (Temperature Controller).

Note: Information provided in this document is based on standard configurations. Options required by the Customer or factory imposed changes may result in deviations.



Fulton Heating Solutions, Inc.  
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Phone: (315) 298-5121 • Fax: (315) 298-6390

www.fulton.com

vtg6000df-engdata-techdata

## Diesel Generator Set Model DFLC 60 Hz

**1250 kW, 1563 kVA Standby**  
**1100 kW, 1375 kVA Prime**



### Description

The Cummins Power Generation DF-series commercial generator set is a fully integrated power generation system providing optimum performance, reliability, and versatility for stationary standby or prime power applications.

A primary feature of the DF GenSet is strong motor-starting capability and fast recovery from transient load changes. The torque-matched system includes a heavy-duty Cummins 4-cycle diesel engine, an AC alternator with high motor-starting kVA capacity, and an electronic voltage regulator with three-phase sensing for precise regulation under steady-state or transient loads. The DF GenSet accepts 100% of the nameplate standby rating in one step, in compliance with NFPA110 requirements.

The standard PowerCommand® digital electronic control is an integrated system that combines engine and alternator controls for high reliability and optimum GenSet performance.

Optional coolant heaters improve starting in extreme operating conditions. A wide range of options, accessories, and services are available, allowing configuration to your specific power generation needs.

Every production unit is factory tested at rated load and power factor. This testing includes demonstration of rated power and single-step rated load pickup. Cummins Power Generation manufacturing facilities are registered to ISO9001 quality standards emphasizing our commitment to high quality in the design, manufacture, and support of our products. The generator set is CSA certified, and the PowerCommand control is UL508 listed.

All Cummins Power Generation systems are backed by a comprehensive warranty program and supported by a worldwide network of 170 distributors and service branches to assist you with warranty, service, parts, and planned maintenance support.

### Features

- **UL Listed Generator Set** - The complete generator set assembly is available Listed to UL2200.
- **Cummins Heavy-Duty Engine** - Rugged 4-cycle industrial diesel delivers reliable power, low emissions, and fast response to load changes.
- **Permanent Magnet Generator (PMG)** - Offers enhanced motor starting and fault clearing short circuit capability.
- **Alternator** - Several alternator sizes offer selectable motor starting capability with low reactance 2/3 pitch windings; low waveform distortion with non-linear loads, fault clearing short-circuit capability, and class H insulation.
- **Control System** - The PowerCommand electronic control is standard equipment and provides total genset system integration, including automatic remote starting/stopping, precise frequency and voltage regulation, alarm and status message display, AmpSentry™ protection, output metering, auto-shutdown at fault detection, and NFPA 110 compliance.
- **Cooling System** - Standard integral set-mounted radiator system, designed and tested for rated ambient temperatures, simplifies facility design requirements for rejected heat.
- **Structural Steel Skid Base** - Robust skid base supports the engine, alternator, and radiator.
- **E-Coat Finish** - Dual electro-deposition paint system provides high resistance to scratches, corrosion, or fading.
- **Certifications** - Generator sets are designed, manufactured, tested, and certified to relevant UL, NFPA, ISO, IEC, and CSA standards.
- **Warranty and Service** - Backed by a comprehensive warranty and world wide distributor network.

## Generator Set

The general specifications provide representative configuration details. Consult the outline drawing for installation design.

### Specifications – General

See outline drawing 500-3317 for installation design specifications.

<b>Unit Width, in (mm)</b>	89.6 (2277)
<b>Unit Height, in (mm)</b>	96.1 (2441)
<b>Unit Length, in (mm)</b>	222.5 (5652)
<b>Unit Dry Weight, lb (kg)</b>	23950 (10864)
<b>Unit Wet Weight, lb (kg)</b>	25160 (11413)
<b>Rated Speed, rpm</b>	1800
<b>Voltage Regulation, No Load to Full Load</b>	±0.5%
<b>Random Voltage Variation</b>	±0.5%
<b>Frequency Regulation</b>	Isochronous
<b>Random Frequency Variation</b>	±0.25%
<b>Radio Frequency Interference</b>	IEC 801.2, Level 4 Electrostatic Discharge IEC 801.3, Level 3 Radiated Susceptibility IEC 801.4, Level 4 Electrical Fast Transients IEC 801.5, Level 5 Voltage Surge Immunity MIL STD 461C, Part 9 Radiated Emissions (EMI)

Cooling	Standby	Prime
Fan Load, HP (kW)	75.0 (56.0)	75.0 (56.0)
Coolant Capacity with radiator, US Gal (L)	102.0 (386.1)	102.0 (386.1)
Coolant Flow Rate, Gal/min (L/min)	535.0 (2025.0)	535.0 (2025.0)
Heat Rejection To Coolant, Btu/min (MJ/min)	51000.0 (54.1)	44000.0 (46.6)
Heat Radiated To Room, Btu/min (MJ/min)	14040.0 (14.9)	12430.0 (13.2)
Maximum Coolant Friction Head, psi (kPa)	15.0 (103.4)	15.0 (103.4)
Maximum Coolant Static Head, ft (m)	60.0 (18.3)	60.0 (18.3)

Air		
Combustion Air, scfm (m <sup>3</sup> /min)	3900.0 (110.4)	3700.0 (104.7)
Alternator Cooling Air, scfm (m <sup>3</sup> /min)	6720.0 (190.2)	6720.0 (190.2)
Radiator Cooling Air, scfm (m <sup>3</sup> /min)	68000.0 (1924.4)	68000.0 (1924.4)
Max. Static Restriction, in H <sub>2</sub> O (Pa)	0.5 (124.5)	0.5 (124.5)

### Rating Definitions

**Standby Rating based on:** Applicable for supplying emergency power for the duration of normal power interruption. No sustained overload capability is available for this rating. (Equivalent to Fuel Stop Power in accordance with ISO3046, AS2789, DIN6271 and BS5514). Nominally rated.

**Prime (Unlimited Running Time) Rating based on:** Applicable for supplying power in lieu of commercially purchased power. Prime power is the maximum power available at a variable load for an unlimited number of hours. A 10% overload capability is available for limited time. (Equivalent to Prime Power in accordance with ISO8528 and Overload Power in accordance with ISO3046, AS2789, DIN6271, and BS5514). This rating is not applicable to all generator set models.

**Base Load (Continuous) Rating based on:** Applicable for supplying power continuously to a constant load up to the full output rating for unlimited hours. No sustained overload capability is available for this rating. Consult authorized distributor for rating. (Equivalent to Continuous Power in accordance with ISO8528, ISO3046, AS2789, DIN6271, and BS5514). This rating is not applicable to all generator set models.

### Site Derating Factors

Rated power available up to 5800 ft (1760 m) at ambient temperatures up to 104°F (40°C). Above 5800 ft (1760 m), derate at 4% per 1000 ft (305 m) and 1% per 10°F (2% per 11°C) above 104°F (40°C).

## Engine

Cummins heavy duty diesel engines use advanced combustion technology for reliable and stable power, low emissions, and fast response to sudden load changes.

Electronic governing provides precise speed regulation, especially useful for applications requiring constant (isochronous) frequency regulation such as Uninterruptible Power Supply (UPS) systems, non-linear loads, or sensitive electronic loads. Optional coolant heaters are recommended for all emergency standby installations or for any application requiring fast load acceptance after start-up.

## Specifications – Engine

<b>Base Engine</b>	Cummins Model KTA50-G3, Turbocharged and Aftercooled, diesel-fueled
<b>Displacement in<sup>3</sup> (L)</b>	3067.0 (50.3)
<b>Overspeed Limit, rpm</b>	2100 ±50
<b>Regenerative Power, kW</b>	168.00
<b>Cylinder Block Configuration</b>	Cast iron, 60° V 16 cylinder
<b>Cranking Current</b>	1280 amps at ambient temperature of 32°F (0°C)
<b>Battery Charging Alternator</b>	45 amps
<b>Starting Voltage</b>	24-volt, negative ground
<b>Lube Oil Filter Types</b>	Five spin-on, full flow
<b>Standard Cooling System</b>	104°F (40°C) ambient radiator, standard

<b>Power Output</b>	<b>Standby</b>	<b>Prime</b>							
Gross Engine Power Output, bhp (kWm)	1850.0 (1380.1)	1635.0 (1219.7)							
BMEP at Rated Load, psi (kPa)	262.0 (1806.4)	232.0 (1599.6)							
Bore, in. (mm)	6.25 (158.8)	6.25 (158.8)							
Stroke, in. (mm)	6.25 (158.8)	6.25 (158.8)							
Piston Speed, ft/min (m/s)	1875.0 (9.5)	1875.0 (9.5)							
Compression Ratio	13.9:1	13.9:1							
Lube Oil Capacity, qt. (L)	177.0 (167.5)	177.0 (167.5)							
<b>Fuel Flow</b>									
Maximum Fuel Flow w/c180, US Gal/hr (L/hr)	165.0 (624.5)	165.0 (624.5)							
Maximum Fuel Flow w/c174, US Gal/hr (L/hr)	260.0 (984.1)	260.0 (984.1)							
Maximum Inlet Restriction, in. Hg (mm Hg)	4.0 (101.6)	4.0 (101.6)							
Maximum Return Restriction, in. Hg (mm Hg)	6.5 (165.1)	6.5 (165.1)							
<b>Air Cleaner</b>									
Maximum Air Cleaner Restriction, in. H <sub>2</sub> O (kPa)	25.0 (6.2)	25.0 (6.2)							
<b>Exhaust</b>									
Exhaust Flow at Rated Load, cfm (m <sup>3</sup> /min)	9100.0 (257.5)	8400.0 (237.7)							
Exhaust Temperature, °F (°C)	887.0 (475.0)	860.0 (460.0)							
Max Back Pressure, in. H <sub>2</sub> O (kPa)	27.0 (6.7)	27.0 (6.7)							
<b>Fuel System</b>	Direct injection, number 2 diesel fuel, fuel filter; automatic electric fuel shutoff								
<b>Fuel Consumption</b>									
<b>60 Hz Ratings, kW (kVA)</b>	<b>Standby</b>				<b>Prime</b>				
		<b>1250 (1563)</b>				<b>1100 (1375)</b>			
	Load	1/4	1/2	3/4	Full	1/4	1/2	3/4	Full
	US Gal/hr	25.9	46.0	65.9	87.3	23.6	41.6	58.7	76.9
	L/hr	98	174	249	330	89	157	222	291

## Alternator

Several alternators are available for application flexibility based on the required motor-starting kVA and other requirements. Larger alternator sizes have lower temperature rise for longer life of the alternator insulation system. In addition, larger alternator sizes can provide a cost-effective use of engine power in across-the-line motor-starting applications and can be used to minimize voltage waveform distortion caused by non-linear loads.

Single-bearing alternators couple directly to the engine flywheel with flexible discs for drivetrain reliability and durability. No gear reducers or speed changers are used. Two-thirds pitch windings eliminate third-order harmonic content of the AC voltage waveform and provide the standardization desired for paralleling of generator sets. The standard excitation system is a PMG excited system.

## Alternator Application Notes

**Separately Excited Permanent Magnet Generator (PMG) System** - This standard system uses an integral PMG to supply power to the voltage regulator. A PMG system generally has better motor-starting performance, lower voltage dip upon load application, and better immunity from problems with harmonics in the main alternator output induced by non-linear loads. This system provides improved performance over self-excited regulators in applications that have large transient loads, sensitive electronic loads (especially UPS applications), harmonic content, or that require sustained short-circuit current (sustained 3-phase short circuit current at approximately 3 times rated for 10 seconds).

**Alternator Sizes** - On any given model, various alternator sizes are available to meet individual application needs. Alternator sizes are differentiated by maximum winding temperature rise, at the generator set standby or prime rating, when operated in a 40°C ambient environment. Available temperature rises range from 80°C to 150°C. Not all temperature rise selections are available on all models. Lower temperature rise is accomplished using larger alternators at lower current density. Lower temperature rise alternators have higher motor-starting kVA, lower voltage dip upon load application, and they are generally recommended to limit voltage distortion and heating due to harmonics induced by non-linear loads.

**Alternator Space Heater** - is recommended to inhibit condensation.

## Available Output Voltages

### Three Phase Reconnectable

- 220/380
- 240/416
- 254/440
- 277/480

### Three Phase Non-Reconnectable

- 220/380
- 277/480
- 347/600
- 2400/4160

# Specifications – Alternator

<b>Design</b>	Brushless, 4 pole, drip proof revolving field
<b>Stator</b>	2/3 pitch
<b>Rotor</b>	Direct coupled by flexible disc
<b>Insulation System</b>	Class H, standard, (low voltage) or Class F, optional, (medium voltage) per NEMA MG 1-1.65 and BS2757.
<b>Standard Temperature Rise</b>	125°C @ Standby, 105°C @ Prime
<b>Exciter Type</b>	Permanent Magnet Generator (PMG)
<b>Phase Rotation</b>	A (U), B (V), C (W)
<b>Alternator Cooling</b>	Direct drive centrifugal blower
<b>AC Waveform Total Harmonic Distortion</b>	<5% total no load to full linear load <3% for any single harmonic
<b>Telephone Influence Factor (TIF)</b>	<50 per NEMA MG1-22.43
<b>Telephone Harmonic Factor (THF)</b>	<3

Three Phase Table <sup>1</sup>		80° C	80° C	80° C	105° C	105° C	105° C	105° C	125° C	125° C	125° C	125° C
Feature Code		B284	B302	B314	B283	B301	B312	B313	B282	B288	B276	B300
Alternator Data Sheet Number		315	315	323	315	314	322	322	314	314	313	313
Voltage Ranges		220/380 Thru 277/480	347/600	4160	220/380 Thru 277/480	347/600	4160	4160	220/380 Thru 277/480	240/416 Thru 277/480	277/480	347/600
Surge kW		1266	1275	1276	1266	1273	1273	1273	1262	1267	1264	1264
Motor Starting kVA (at 90% sustained voltage)	PMG	6716	6716	7005	6716	5521	6204	6204	5521	5521	4602	4802
Full Load Current - Amps at Standby Rating		<u>220/380</u> 2373	<u>240/415</u> 2168	<u>254/440</u> 2050	<u>277/480</u> 1879	<u>347/600</u> 1503	<u>2400/4160</u> 217					

**Notes:**

**1. Single Phase Capability:** Single phase power can be taken from a three phase generator set at up to 40% of the generator set nameplate kW rating at unity power factor.

# Control System



Optional Features Shown

PowerCommand® Control with AmpSentry™ Protection		
<ul style="list-style-type: none"> <li>• AmpSentry Protection guards the electrical integrity of the alternator and power system from the effects of overcurrent, over/under voltage, under frequency and overload conditions.</li> <li>• Control components are designed to withstand the vibration levels typical in generator sets.</li> <li>• Integrated automatic voltage regulator and engine speed governor</li> </ul>		
Standard Control Description		
<ul style="list-style-type: none"> <li>• Analog % of current meter (amps)</li> <li>• Analog % of load meter (kW)</li> <li>• Analog AC frequency meter</li> <li>• Analog AC voltage meter</li> <li>• Cycle cranking control</li> <li>• Digital display panel</li> <li>• Emergency stop switch</li> <li>• Idle mode control</li> <li>• Menu switch</li> <li>• Panel backlighting</li> <li>• Remote starting, 24 V, 2 wire</li> <li>• Reset switch</li> <li>• Run-Off-Auto switch</li> <li>• Sealed front panel, gasketed door</li> <li>• Self diagnostics</li> <li>• Separate customer interconnection box</li> <li>• Voltmeter/Ammeter phase selector switch</li> </ul>		
Standard Protection Functions		Standard Performance Data
<b>Warnings</b> <ul style="list-style-type: none"> <li>• High coolant temperature</li> <li>• High DC voltage</li> <li>• Low coolant temperature</li> <li>• Low DC voltage</li> <li>• Low fuel-day tank</li> <li>• Low oil pressure</li> <li>• Oil pressure sender fault</li> <li>• Overcurrent</li> <li>• Overload load shed contacts</li> <li>• Temperature sender fault</li> <li>• Up to four customer fault inputs</li> <li>• Weak battery</li> </ul>	<b>Shutdowns</b> <ul style="list-style-type: none"> <li>• Emergency stop</li> <li>• Fail to crank</li> <li>• High AC voltage</li> <li>• High coolant temperature</li> <li>• Low AC voltage</li> <li>• Low coolant level (option for alarm only)</li> <li>• Low oil pressure</li> <li>• Magnetic pickup failure</li> <li>• Overcrank</li> <li>• Overcurrent</li> <li>• Overspeed</li> <li>• Short circuit</li> <li>• Underfrequency</li> </ul>	<b>AC Alternator</b> <ul style="list-style-type: none"> <li>• Current by phase</li> <li>• Kilowatts</li> <li>• Kilowatt hours</li> <li>• Power factor</li> <li>• Voltage line to line</li> <li>• Voltage line to neutral</li> </ul> <b>Engine Data</b> <ul style="list-style-type: none"> <li>• Battery voltage</li> <li>• Coolant temperature</li> <li>• Engine running hours</li> <li>• Engine starts counter</li> <li>• Oil pressure</li> <li>• Oil temperature</li> <li>• RPM</li> </ul>

## Generator Set Options

### Engine

- 75 A battery charging alternator
- 208/240/480 V, coolant heaters  
10,000 total W max.
- 208/240/480 V, coolant heaters  
12,840 total W max.
- Bypass oil filter
- Dual 120 V, 300 W lube oil heaters
- Dual 208/240 V, 300 W lube oil  
heaters
- Dual 480 V, 300 W lube oil heaters
- Fuel/water separator
- Heavy duty air cleaner w/service  
indicator

### Cooling System

- Heat exchanger cooling
- Remote radiator cooling
- Radiator, 50°C ambient

### Alternator

- 80°C rise alternator
- 105°C rise alternator
- 120/240 V, 300 W anti-condensation  
heater

### Control Panel

- 120/240 V, 100 W control anti-  
condensation space heater
- Exhaust pyrometer
- Fuel-pressure gauge
- Ground fault indication
- Paralleling configuration
- Paralleling upgrade configuration
- Remote fault signal package
- Run relay package

### Exhaust System

- Critical grade exhaust silencer
- Exhaust packages
- Industrial grade exhaust silencer
- Residential grade exhaust silencer

### Generator Set

- AC entrance box
- Batteries
- Battery charger
- Export box packaging
- Main line circuit breaker
- Paralleling accessories
- PowerCommand network
- Remote annunciator panel
- Spring isolators
- 2 year prime power warranty
- 2 year standby warranty
- 5 year basic power warranty
- 5 year comprehensive power  
warranty
- 10 year major components warranty

## Available Products and Services

A wide range of products and services is available to match your power generation system requirements. Cummins Power Generation products and services include:

- Diesel and Spark-Ignited Generator Sets
- Transfer Switches
- Bypass Switches
- Parallel Load Transfer Equipment
- Digital Paralleling Switchgear
- PowerCommand Network and Software
- Distributor Application Support
- Planned Maintenance Agreements

## Warranty

All components and subsystems are covered by an express limited one-year warranty. Other optional and extended factory warranties and local distributor maintenance agreements are available. Contact your distributor/dealer for more information.

## Certifications



**ISO9001** - This generator set was designed and manufactured in facilities certified to ISO9001.



**CSA** - This generator set is CSA certified to product class 4215-01.



**PTS** - The Prototype Test Support (PTS) program verifies the performance integrity of the generator set design. Products bearing the PTS symbol have been subjected to demanding tests in accordance to NFPA 110 to verify the design integrity and performance under both normal and abnormal operating conditions including short circuit, endurance, temperature rise, torsional vibration, and transient response, including full load pickup.



**UL** - The generator set is available Listed to UL2200, Stationary Engine Generator Assemblies. The PowerCommand control is Listed to UL508 - Category NITW7 for U.S. and Canadian usage.

**See your distributor for more information**



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Cummins and PowerCommand are registered trademarks of Cummins Inc.  
Detector and AmpSentry are trademarks of Cummins Inc.

**Important:** Backfeed to a utility system can cause electrocution and/or property damage. Do not connect generator sets to any building electrical system except through an approved device or after building main switch is open.

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**Federal Regulation Applicability – NSPS Subpart Dc**

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## Subpart Dc—Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

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SOURCE: 72 FR 32759, June 13, 2007, unless otherwise noted.

### §60.40c Applicability and delegation of authority.

(a) Except as provided in paragraphs (d), (e), (f), and (g) of this section, the affected facility to which this subpart applies is each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/h)) or less, but greater than or equal to 2.9 MW (10 MMBtu/h).

*Neither the existing boiler (OB04A-OB04D) nor the new boilers (OB01-OB03) at St. Joseph commenced construction after June 9, 1989 and has a design capacity of less than 100 MMBtu/hr but greater than 10 MMBtu (see below table).*

<i>Boiler</i>	<i>Year Commenced Construction</i>	<i>Size (MMBtu/hr)</i>
<i>OB01</i>	<i>2013 (expected)</i>	<i>6</i>
<i>OB02</i>	<i>2013 (expected)</i>	<i>6</i>
<i>OB03</i>	<i>2013 (expected)</i>	<i>6</i>
<i>OB04A</i>	<i>1961</i>	<i>10.46</i>
<i>OB04B</i>	<i>1961</i>	<i>8.37</i>
<i>OB04C</i>	<i>1990</i>	<i>5.23</i>
<i>OB04D</i>	<i>1990</i>	<i>5.23</i>

(b) In delegating implementation and enforcement authority to a State under section 111(c) of the Clean Air Act, §60.48c(a)(4) shall be retained by the Administrator and not transferred to a State.

(c) Steam generating units that meet the applicability requirements in paragraph (a) of this section are not subject to the sulfur dioxide (SO<sub>2</sub>) or particulate matter (PM) emission limits, performance testing requirements, or monitoring requirements under this subpart (§§60.42c, 60.43c, 60.44c, 60.45c, 60.46c, or 60.47c) during periods of combustion research, as defined in §60.41c.

(d) Any temporary change to an existing steam generating unit for the purpose of conducting combustion research is not considered a modification under §60.14.

(e) Affected facilities (*i.e.* heat recovery steam generators and fuel heaters) that are associated with stationary combustion turbines and meet the applicability requirements of subpart KKKK of this part are not subject to this subpart. This subpart will continue to apply to all other heat recovery steam generators, fuel heaters, and other affected facilities that are capable of combusting more than or equal to 2.9 MW (10 MMBtu/h) heat input of fossil fuel but less than or equal to 29 MW (100 MMBtu/h) heat input of fossil fuel. If the heat recovery steam generator, fuel heater, or other affected facility is subject to this subpart, only emissions resulting from combustion of fuels in the steam generating unit are subject to this subpart. (The stationary combustion turbine emissions are subject to subpart GG or KKKK, as applicable, of this part.)

(f) Any affected facility that meets the applicability requirements of and is subject to subpart AAAA or subpart CCCC of this part is not subject to this subpart.

(g) Any facility that meets the applicability requirements and is subject to an EPA approved State or Federal section 111(d)/129 plan implementing subpart BBBB of this part is not subject to this subpart.

(h) Affected facilities that also meet the applicability requirements under subpart J or subpart Ja of this part are subject to the PM and NO<sub>x</sub> standards under this subpart and the SO<sub>2</sub> standards under subpart J or subpart Ja of this part, as applicable.

(i) Temporary boilers are not subject to this subpart.

[72 FR 32759, June 13, 2007, as amended at 74 FR 5090, Jan. 28, 2009; 77 FR 9461, Feb. 16, 2012]

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**Federal Regulation Applicability – NESHAP Subpart JJJJJ**

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## Subpart JJJJJ—National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources

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SOURCE: 76 FR 15591, Mar. 21, 2011, unless otherwise noted.

§63.11193 Am I subject to this subpart?

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.

*St. Joseph has four existing boilers (OB04A – OB04D) and proposes to install three more boilers (OB01-OB03). All seven boilers meet the definition of an institutional boiler. However, they all seven engines are proposed to be operated as gas-fired boilers and are exempt from this subpart as specified in §63.11195(e).*

.....

§63.11195 Are any boilers not subject to this subpart?

The types of boilers listed in paragraphs (a) through (k) of this section are not subject to this subpart and to any requirements in this subpart.

(a) Any boiler specifically listed as, or included in the definition of, an affected source in another standard(s) under this part.

(b) Any boiler specifically listed as an affected source in another standard(s) established under section 129 of the Clean Air Act.

(c) A boiler required to have a permit under section 3005 of the Solid Waste Disposal Act or covered by subpart EEE of this part (e.g., hazardous waste boilers), unless such units do not combust hazardous waste and combust comparable fuels.

(d) A boiler that is used specifically for research and development. This exemption does not include boilers that solely or primarily provide steam (or heat) to a process or for heating at a research and development facility. This exemption does not prohibit the use of the steam (or heat) generated from the boiler during research and development, however, the boiler must be concurrently and primarily engaged in research and development for the exemption to apply.

(e) A gas-fired boiler as defined in this subpart.

*All seven boilers can burn both natural gas and fuel oil. However, as allowed they will only burn fuel oil for at most 48 hours in a year for periodic testing or during periods of gas curtailment and gas supply interruption.*

(f) A hot water heater as defined in this subpart.

(g) Any boiler that is used as a control device to comply with another subpart of this part, or part 60, part 61, or part 65 of this chapter provided that at least 50 percent of the average annual heat input during any 3

consecutive calendar years to the boiler is provided by regulated gas streams that are subject to another standard.

(h) Temporary boilers as defined in this subpart.

(i) Residential boilers as defined in this subpart.

(j) Electric boilers as defined in this subpart.

(k) An electric utility steam generating unit (EGU) covered by subpart UUUUU of this part.

[76 FR 15591, Mar. 21, 2011, as amended at 78 FR 7506, Feb. 1, 2013]

.....  
§63.11237 What definitions apply to this subpart?

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

*10-day rolling average* means the arithmetic mean of all valid hours of data from 10 successive operating days, except for periods of startup and shutdown and periods when the unit is not operating.

*30-day rolling average* means the arithmetic mean of all valid hours of data from 30 successive operating days, except for periods of startup and shutdown and periods when the unit is not operating.

*Affirmative defense* means, in the context of an enforcement proceeding, a response or defense put forward by a defendant, regarding which the defendant has the burden of proof, and the merits of which are independently and objectively evaluated in a judicial or administrative proceeding.

*Annual heat input* means the heat input for the 12 months preceding the compliance demonstration.

*Bag leak detection system* means a group of instruments that are capable of monitoring particulate matter loadings in the exhaust of a fabric filter (*i.e.*, baghouse) in order to detect bag failures. A bag leak detection system includes, but is not limited to, an instrument that operates on electrodynamic, triboelectric, light scattering, light transmittance, or other principle to monitor relative particulate matter loadings.

*Biodiesel* means a mono-alkyl ester derived from biomass and conforming to ASTM D6751-11b, Standard Specification for Biodiesel Fuel Blend Stock (B100) for Middle Distillate Fuels (incorporated by reference, see §63.14).

*Biomass* means any biomass-based solid fuel that is not a solid waste. This includes, but is not limited to, wood residue and wood products (e.g., trees, tree stumps, tree limbs, bark, lumber, sawdust, sander dust, chips, scraps, slabs, millings, and shavings); animal manure, including litter and other bedding materials; vegetative agricultural and silvicultural materials, such as logging residues (slash), nut and grain hulls and chaff (e.g., almond, walnut, peanut, rice, and wheat), bagasse, orchard prunings, corn stalks, coffee bean hulls and grounds. This definition of biomass is not intended to suggest that these materials are or are not solid waste.

*Biomass subcategory* includes any boiler that burns any biomass and is not in the coal subcategory.

*Boiler* means an enclosed device using controlled flame combustion in which water is heated to recover thermal energy in the form of steam and/or hot water. Controlled flame combustion refers to a steady-state, or near steady-state, process wherein fuel and/or oxidizer feed rates are controlled. A device combusting solid waste, as defined in §241.3 of this chapter, is not a boiler unless the device is exempt from the definition of a solid waste incineration unit as provided in section 129(g)(1) of the Clean Air Act. Waste heat boilers, process heaters, and autoclaves are excluded from the definition of *Boiler*.

*Boiler system* means the boiler and associated components, such as, feedwater systems, combustion air systems, fuel systems (including burners), blowdown systems, combustion control systems, steam systems, and condensate return systems, directly connected to and serving the energy use systems.

*Calendar year* means the period between January 1 and December 31, inclusive, for a given year.

*Coal* means all solid fuels classifiable as anthracite, bituminous, sub-bituminous, or lignite by the American Society for Testing and Materials in ASTM D388 (incorporated by reference, see §63.14), coal refuse, and petroleum coke. For the purposes of this subpart, this definition of "coal" includes synthetic fuels derived from coal including, but not limited to, solvent-refined coal, coal-oil mixtures, and coal-water mixtures. Coal derived gases are excluded from this definition.

*Coal subcategory* includes any boiler that burns any solid fossil fuel and no more than 15 percent biomass on an annual heat input basis.

*Commercial boiler* means a boiler used in commercial establishments such as hotels, restaurants, and laundries to provide electricity, steam, and/or hot water.

*Common stack* means the exhaust of emissions from two or more affected units through a single flue. Affected units with a common stack may each have separate air pollution control systems located before the common stack, or may have a single air pollution control system located after the exhausts come together in a single flue.

*Daily block average* means the arithmetic mean of all valid emission concentrations or parameter levels recorded when a unit is operating measured over the 24-hour period from 12 a.m. (midnight) to 12 a.m. (midnight), except for periods of startup and shutdown and periods when the unit is not operating.

#### *Deviation*

(1) Means any instance in which an affected source subject to this subpart, or an owner or operator of such a source:

(i) Fails to meet any applicable requirement or obligation established by this subpart including, but not limited to, any emission limit, operating limit, or work practice standard; or

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

(2) A deviation is not always a violation.

*Distillate oil* means fuel oils that contain 0.05 weight percent nitrogen or less and comply with the specifications for fuel oil numbers 1 and 2, as defined by the American Society of Testing and Materials in ASTM D396 (incorporated by reference, see §63.14) or diesel fuel oil numbers 1 and 2, as defined by the American Society for Testing and Materials in ASTM D975 (incorporated by reference, see §63.14), kerosene,

and biodiesel as defined by the American Society of Testing and Materials in ASTM D6751-11b (incorporated by reference, see §63.14).

*Dry scrubber* means an add-on air pollution control system that injects dry alkaline sorbent (dry injection) or sprays an alkaline sorbent (spray dryer) to react with and neutralize acid gas in the exhaust stream forming a dry powder material. Sorbent injection systems used as control devices in fluidized bed boilers and process heaters are included in this definition. A dry scrubber is a dry control system.

*Electric boiler* means a boiler in which electric heating serves as the source of heat. Electric boilers that burn gaseous or liquid fuel during periods of electrical power curtailment or failure are included in this definition.

*Electric utility steam generating unit (EGU)* means a fossil fuel-fired combustion unit of more than 25 megawatts that serves a generator that produces electricity for sale. A fossil fuel-fired unit that cogenerates steam and electricity and supplies more than one-third of its potential electric output capacity and more than 25 megawatts electrical output to any utility power distribution system for sale is considered an electric utility steam generating unit. To be “capable of combusting” fossil fuels, an EGU would need to have these fuels allowed in their operating permits and have the appropriate fuel handling facilities on-site or otherwise available (e.g., coal handling equipment, including coal storage area, belts and conveyers, pulverizers, etc.; oil storage facilities). In addition, fossil fuel-fired EGU means any EGU that fired fossil fuel for more than 10.0 percent of the average annual heat input in any 3 consecutive calendar years or for more than 15.0 percent of the annual heat input during any one calendar year after April 16, 2015.

*Electrostatic precipitator (ESP)* means an add-on air pollution control device used to capture particulate matter by charging the particles using an electrostatic field, collecting the particles using a grounded collecting surface, and transporting the particles into a hopper. An electrostatic precipitator is usually a dry control system.

*Energy assessment* means the following for the emission units covered by this subpart:

(1) The energy assessment for facilities with affected boilers with less than 0.3 trillion Btu per year (TBtu/year) heat input capacity will be 8 on-site technical labor hours in length maximum, but may be longer at the discretion of the owner or operator of the affected source. The boiler system(s) and any on-site energy use system(s) accounting for at least 50 percent of the affected boiler(s) energy (e.g., steam, hot water, or electricity) production, as applicable, will be evaluated to identify energy savings opportunities, within the limit of performing an 8-hour energy assessment.

(2) The energy assessment for facilities with affected boilers with 0.3 to 1.0 TBtu/year heat input capacity will be 24 on-site technical labor hours in length maximum, but may be longer at the discretion of the owner or operator of the affected source. The boiler system(s) and any on-site energy use system(s) accounting for at least 33 percent of the affected boiler(s) energy (e.g., steam, hot water, or electricity) production, as applicable, will be evaluated to identify energy savings opportunities, within the limit of performing a 24-hour energy assessment.

(3) The energy assessment for facilities with affected boilers with greater than 1.0 TBtu/year heat input capacity will be up to 24 on-site technical labor hours in length for the first TBtu/year plus 8 on-site technical labor hours for every additional 1.0 TBtu/year not to exceed 160 on-site technical hours, but may be longer at the discretion of the owner or operator of the affected source. The boiler system(s) and any on-site energy use system(s) accounting for at least 20 percent of the affected boiler(s) energy (e.g., steam, hot water, or electricity) production, as applicable, will be evaluated to identify energy savings opportunities.

(4) The on-site energy use system(s) serving as the basis for the percent of affected boiler(s) energy production, as applicable, in paragraphs (1), (2), and (3) of this definition may be segmented by production area or energy use area as most logical and applicable to the specific facility being assessed (e.g., product X manufacturing area; product Y drying area; Building Z).

*Energy management program* means a program that includes a set of practices and procedures designed to manage energy use that are demonstrated by the facility's energy policies, a facility energy manager and other staffing responsibilities, energy performance measurement and tracking methods, an energy saving goal, action plans, operating procedures, internal reporting requirements, and periodic review intervals used at the facility. Facilities may establish their program through energy management systems compatible with ISO 50001.

*Energy use system*

(1) Includes the following systems located on the site of the affected boiler that use energy provided by the boiler:

(i) Process heating; compressed air systems; machine drive (motors, pumps, fans); process cooling; facility heating, ventilation, and air conditioning systems; hot water systems; building envelop; and lighting; or

(ii) Other systems that use steam, hot water, process heat, or electricity, provided by the affected boiler.

(2) Energy use systems are only those systems using energy clearly produced by affected boilers.

*Equivalent* means the following only as this term is used in Table 5 to this subpart:

(1) An equivalent sample collection procedure means a published voluntary consensus standard or practice (VCS) or

EPA method that includes collection of a minimum of three composite fuel samples, with each composite consisting of a minimum of three increments collected at approximately equal intervals over the test period.

(2) An equivalent sample compositing procedure means a published VCS or EPA method to systematically mix and obtain a representative subsample (part) of the composite sample.

(3) An equivalent sample preparation procedure means a published VCS or EPA method that: Clearly states that the standard, practice or method is appropriate for the pollutant and the fuel matrix; or is cited as an appropriate sample preparation standard, practice or method for the pollutant in the chosen VCS or EPA determinative or analytical method.

(4) An equivalent procedure for determining heat content means a published VCS or EPA method to obtain gross calorific (or higher heating) value.

(5) An equivalent procedure for determining fuel moisture content means a published VCS or EPA method to obtain moisture content. If the sample analysis plan calls for determining mercury using an aliquot of the dried sample, then the drying temperature must be modified to prevent vaporizing this metal. On the other hand, if metals analysis is done on an "as received" basis, a separate aliquot can be dried to determine moisture content and the mercury concentration mathematically adjusted to a dry basis.

(6) An equivalent mercury determinative or analytical procedure means a published VCS or EPA method that clearly states that the standard, practice, or method is appropriate for mercury and the fuel matrix and has a published detection limit equal or lower than the methods listed in Table 5 to this subpart for the same purpose.

*Fabric filter* means an add-on air pollution control device used to capture particulate matter by filtering gas streams through filter media, also known as a baghouse. A fabric filter is a dry control system.

*Federally enforceable* means all limitations and conditions that are enforceable by the EPA Administrator, including, but not limited to, the requirements of 40 CFR parts 60, 61, 63, and 65, requirements within any applicable state implementation plan, and any permit requirements established under 40 CFR 52.21 or under 40 CFR 51.18 and 40 CFR 51.24.

*Fluidized bed boiler* means a boiler utilizing a fluidized bed combustion process that is not a pulverized coal boiler.

*Fluidized bed combustion* means a process where a fuel is burned in a bed of granulated particles, which are maintained in a mobile suspension by the forward flow of air and combustion products.

*Fuel type* means each category of fuels that share a common name or classification. Examples include, but are not limited to, bituminous coal, sub-bituminous coal, lignite, anthracite, biomass, distillate oil, residual oil. Individual fuel types received from different suppliers are not considered new fuel types.

*Gaseous fuels* includes, but is not limited to, natural gas, process gas, landfill gas, coal derived gas, refinery gas, hydrogen, and biogas.

*Gas-fired boiler* includes any boiler that burns gaseous fuels not combined with any solid fuels and burns liquid fuel only during periods of gas curtailment, gas supply interruption, startups, or periodic testing on liquid fuel. Periodic testing of liquid fuel shall not exceed a combined total of 48 hours during any calendar year.

***All seven boilers can burn both natural gas and fuel oil. However, as allowed they will only burn fuel oil for at most 48 hours in a year for periodic testing or during periods of gas curtailment and gas supply interruption.***

*Heat input* means heat derived from combustion of fuel in a boiler and does not include the heat input from preheated combustion air, recirculated flue gases, returned condensate, or exhaust gases from other sources such as gas turbines, internal combustion engines, kilns.

*Hot water heater* means a closed vessel with a capacity of no more than 120 U.S. gallons in which water is heated by combustion of gaseous, liquid, or biomass fuel and hot water is withdrawn for use external to the vessel. Hot water boilers (*i.e.*, not generating steam) combusting gaseous, liquid, or biomass fuel with a heat input capacity of less than 1.6 million Btu per hour are included in this definition. The 120 U.S. gallon capacity threshold to be considered a hot water heater is independent of the 1.6 million Btu per hour heat input capacity threshold for hot water boilers. Hot water heater also means a tankless unit that provides on-demand hot water.

*Hourly average* means the arithmetic average of at least four CMS data values representing the four 15-minute periods in an hour, or at least two 15-minute data values during an hour when CMS calibration, quality assurance, or maintenance activities are being performed.

*Industrial boiler* means a boiler used in manufacturing, processing, mining, and refining or any other industry to provide steam, hot water, and/or electricity.

*Institutional boiler* means a boiler used in institutional establishments such as, but not limited to, medical centers, nursing homes, research centers, institutions of higher education, elementary and secondary schools, libraries, religious establishments, and governmental buildings to provide electricity, steam, and/or hot water.

*Limited-use boiler* means any boiler that burns any amount of solid or liquid fuels and has a federally enforceable average annual capacity factor of no more than 10 percent.

*Liquid fuel* includes, but is not limited to, distillate oil, residual oil, any form of liquid fuel derived from petroleum, used oil meeting the specification in 40 CFR 279.11, liquid biofuels, biodiesel, and vegetable oil, and comparable fuels as defined under 40 CFR 261.38.

*Load fraction* means the actual heat input of a boiler divided by heat input during the performance test that established the minimum sorbent injection rate or minimum activated carbon injection rate, expressed as a fraction (*e.g.*, for 50 percent load the load fraction is 0.5).

*Minimum activated carbon injection rate* means load fraction multiplied by the lowest hourly average activated carbon injection rate measured according to Table 6 to this subpart during the most recent performance stack test demonstrating compliance with the applicable emission limit.

*Minimum oxygen level* means the lowest hourly average oxygen level measured according to Table 6 to this subpart during the most recent performance stack test demonstrating compliance with the applicable carbon monoxide emission limit.

*Minimum scrubber liquid flow rate* means the lowest hourly average scrubber liquid flow rate (*e.g.*, to the particulate matter scrubber) measured according to Table 6 to this subpart during the most recent performance stack test demonstrating compliance with the applicable emission limit.

*Minimum scrubber pressure drop* means the lowest hourly average scrubber pressure drop measured according to Table 6 to this subpart during the most recent performance stack test demonstrating compliance with the applicable emission limit.

*Minimum total secondary electric power* means the lowest hourly average total secondary electric power determined from the values of secondary voltage and secondary current to the electrostatic precipitator measured according to Table 6 to this subpart during the most recent performance stack test demonstrating compliance with the applicable emission limits.

*Natural gas* means:

(1) A naturally occurring mixture of hydrocarbon and nonhydrocarbon gases found in geologic formations beneath the earth's surface, of which the principal constituent is methane; or

(2) Liquefied petroleum gas, as defined by the American Society for Testing and Materials in ASTM D1835 (incorporated by reference, see §63.14); or

(3) A mixture of hydrocarbons that maintains a gaseous state at ISO conditions (*i.e.*, a temperature of 288 Kelvin, a relative humidity of 60 percent, and a pressure of 101.3 kilopascals). Additionally, natural gas must either be composed of at least 70 percent methane by volume or have a gross calorific value between 35 and 41 megajoules (MJ) per dry standard cubic meter (950 and 1,100 Btu per dry standard cubic foot); or

(4) Propane or propane-derived synthetic natural gas. Propane means a colorless gas derived from petroleum and natural gas, with the molecular structure C<sub>3</sub>H<sub>8</sub>.

*Oil subcategory* includes any boiler that burns any liquid fuel and is not in either the biomass or coal subcategories. Gas-fired boilers that burn liquid fuel only during periods of gas curtailment, gas supply interruptions, startups, or for periodic testing are not included in this definition. Periodic testing on liquid fuel shall not exceed a combined total of 48 hours during any calendar year.

*Opacity* means the degree to which emissions reduce the transmission of light and obscure the view of an object in the background.

*Operating day* means a 24-hour period between 12 midnight and the following midnight during which any fuel is combusted at any time in the boiler unit. It is not necessary for fuel to be combusted for the entire 24-hour period.

*Oxygen analyzer system* means all equipment required to determine the oxygen content of a gas stream and used to monitor oxygen in the boiler flue gas, boiler firebox, or other appropriate intermediate location. This definition includes oxygen trim systems.

*Oxygen trim system* means a system of monitors that is used to maintain excess air at the desired level in a combustion device. A typical system consists of a flue gas oxygen and/or carbon monoxide monitor that automatically provides a feedback signal to the combustion air controller.

*Particulate matter (PM)* means any finely divided solid or liquid material, other than uncombined water, as measured by the test methods specified under this subpart, or an approved alternative method.

*Performance testing* means the collection of data resulting from the execution of a test method used (either by stack testing or fuel analysis) to demonstrate compliance with a relevant emission standard.

*Period of gas curtailment or supply interruption* means a period of time during which the supply of gaseous fuel to an affected boiler is restricted or halted for reasons beyond the control of the facility. The act of entering into a contractual agreement with a supplier of natural gas established for curtailment purposes does not constitute a reason that is under the control of a facility for the purposes of this definition. An increase in the cost or unit price of natural gas due to normal market fluctuations not during periods of supplier delivery restriction does not constitute a period of natural gas curtailment or supply interruption. On-site gaseous fuel system emergencies or equipment failures qualify as periods of supply interruption when the emergency or failure is beyond the control of the facility.

*Process heater* means an enclosed device using controlled flame, and the unit's primary purpose is to transfer heat indirectly to a process material (liquid, gas, or solid) or to a heat transfer material (e.g., glycol or a mixture of glycol and water) for use in a process unit, instead of generating steam. Process heaters are devices in which the combustion gases do not come into direct contact with process materials. Process heaters include units that heat water/water mixtures for pool heating, sidewalk heating, cooling tower water heating, power washing, or oil heating.

*Qualified energy assessor* means:

(1) Someone who has demonstrated capabilities to evaluate energy savings opportunities for steam generation and major energy using systems, including, but not limited to:

- (i) Boiler combustion management.
- (ii) Boiler thermal energy recovery, including
  - (A) Conventional feed water economizer,
  - (B) Conventional combustion air preheater, and
  - (C) Condensing economizer.
- (iii) Boiler blowdown thermal energy recovery.
- (iv) Primary energy resource selection, including

(A) Fuel (primary energy source) switching, and

(B) Applied steam energy versus direct-fired energy versus electricity.

(v) Insulation issues.

(vi) Steam trap and steam leak management.

(vii) Condensate recovery.

(viii) Steam end-use management.

(2) Capabilities and knowledge includes, but is not limited to:

(i) Background, experience, and recognized abilities to perform the assessment activities, data analysis, and report preparation.

(ii) Familiarity with operating and maintenance practices for steam or process heating systems.

(iii) Additional potential steam system improvement opportunities including improving steam turbine operations and reducing steam demand.

(iv) Additional process heating system opportunities including effective utilization of waste heat and use of proper process heating methods.

(v) Boiler-steam turbine cogeneration systems.

(vi) Industry specific steam end-use systems.

*Regulated gas stream* means an offgas stream that is routed to a boiler for the purpose of achieving compliance with a standard under another subpart of this part or part 60, part 61, or part 65 of this chapter.

*Residential boiler* means a boiler used to provide heat and/or hot water and/or as part of a residential combined heat and power system. This definition includes boilers located at an institutional facility (e.g., university campus, military base, church grounds) or commercial/industrial facility (e.g., farm) used primarily to provide heat and/or hot water for:

(1) A dwelling containing four or fewer families, or

(2) A single unit residence dwelling that has since been converted or subdivided into condominiums or apartments.

*Residual oil* means crude oil, fuel oil that does not comply with the specifications under the definition of distillate oil, and all fuel oil numbers 4, 5, and 6, as defined by the American Society of Testing and Materials in ASTM D396-10 (incorporated by reference, see §63.14(b)).

*Responsible official* means responsible official as defined in §70.2.

*Seasonal boiler* means a boiler that undergoes a shutdown for a period of at least 7 consecutive months (or 210 consecutive days) each 12-month period due to seasonal conditions, except for periodic testing. Periodic testing shall not exceed a combined total of 15 days during the 7-month shutdown. This definition only applies to boilers that would otherwise be included in the biomass subcategory or the oil subcategory.

*Shutdown* means the cessation of operation of a boiler for any purpose. Shutdown begins either when none of the steam or heat from the boiler is supplied for heating and/or producing electricity, or for any other purpose, or at the point of no fuel being fired in the boiler, whichever is earlier. Shutdown ends when there is no steam and no heat being supplied and no fuel being fired in the boiler.

*Solid fossil fuel* includes, but is not limited to, coal, coke, petroleum coke, and tire-derived fuel.

*Solid fuel* means any solid fossil fuel or biomass or bio-based solid fuel.

*Startup* means either the first-ever firing of fuel in a boiler for the purpose of supplying steam or heat for heating and/or producing electricity, or for any other purpose, or the firing of fuel in a boiler after a shutdown event for any purpose. Startup ends when any of the steam or heat from the boiler is supplied for heating and/or producing electricity, or for any other purpose.

*Temporary boiler* means any gaseous or liquid fuel boiler that is designed to, and is capable of, being carried or moved from one location to another by means of, for example, wheels, skids, carrying handles, dollies, trailers, or platforms. A boiler is not a temporary boiler if any one of the following conditions exists:

- (1) The equipment is attached to a foundation.
- (2) The boiler or a replacement remains at a location within the facility and performs the same or similar function for more than 12 consecutive months, unless the regulatory agency approves an extension. An extension may be granted by the regulating agency upon petition by the owner or operator of a unit specifying the basis for such a request. Any temporary boiler that replaces a temporary boiler at a location within the facility and performs the same or similar function will be included in calculating the consecutive time period unless there is a gap in operation of 12 months or more.
- (3) The equipment is located at a seasonal facility and operates during the full annual operating period of the seasonal facility, remains at the facility for at least 2 years, and operates at that facility for at least 3 months each year.
- (4) The equipment is moved from one location to another within the facility but continues to perform the same or similar function and serve the same electricity, steam, and/or hot water system in an attempt to circumvent the residence time requirements of this definition.

*Tune-up* means adjustments made to a boiler in accordance with the procedures outlined in §63.11223(b).

*Vegetable oil* means oils extracted from vegetation.

*Voluntary Consensus Standards (VCS)* mean technical standards (e.g., materials specifications, test methods, sampling procedures, business practices) developed or adopted by one or more voluntary consensus bodies. EPA/Office of Air Quality Planning and Standards, by precedent, has only used VCS that are written in English. Examples of VCS bodies are: American Society of Testing and Materials (ASTM 100 Barr Harbor Drive, P.O. Box CB700, West Conshohocken, Pennsylvania 19428-B2959, (800) 262-1373, <http://www.astm.org>), American Society of Mechanical Engineers (ASME ASME, Three Park Avenue, New York, NY 10016-5990, (800) 843-2763, <http://www.asme.org>), International Standards Organization (ISO 1, ch. de la Voie-Creuse, Case postale 56, CH-1211 Geneva 20, Switzerland, +41 22 749 01 11, <http://www.iso.org/iso/home.htm>), Standards Australia (AS Level 10, The Exchange Centre, 20 Bridge Street, Sydney, GPO Box 476, Sydney NSW 2001, + 61 2 9237 6171 <http://www.stadards.org.au>), British Standards Institution (BSI, 389 Chiswick High Road, London, W4 4AL, United Kingdom, +44 (0)20 8996 9001, <http://www.bsigroup.com>), Canadian Standards Association (CSA 5060 Spectrum Way, Suite 100, Mississauga, Ontario L4W 5N6, Canada, 800-463-6727, <http://www.csa.ca>), European Committee for Standardization (CEN CENELEC Management Centre Avenue Marnix 17 B-1000 Brussels, Belgium +32 2

550 08 11, <http://www.cen.eu/cen>), and German Engineering Standards (VDI VDI Guidelines Department, P.O. Box 10 11 39 40002, Duesseldorf, Germany, +49 211 6214-230, <http://www.vdi.eu>). The types of standards that are not considered VCS are standards developed by: the United States, *e.g.*, California (CARB) and Texas (TCEQ); industry groups, such as American Petroleum Institute (API), Gas Processors Association (GPA), and Gas Research Institute (GRI); and other branches of the U.S. government, *e.g.*, Department of Defense (DOD) and Department of Transportation (DOT). This does not preclude EPA from using standards developed by groups that are not VCS bodies within their rule. When this occurs, EPA has done searches and reviews for VCS equivalent to these non-EPA methods.

*Waste heat boiler* means a device that recovers normally unused energy (*i.e.*, hot exhaust gas) and converts it to usable heat. Waste heat boilers are also referred to as heat recovery steam generators. Waste heat boilers are heat exchangers generating steam from incoming hot exhaust gas from an industrial (*e.g.*, thermal oxidizer, kiln, furnace) or power (*e.g.*, combustion turbine, engine) equipment. Duct burners are sometimes used to increase the temperature of the incoming hot exhaust gas.

*Wet scrubber* means any add-on air pollution control device that mixes an aqueous stream or slurry with the exhaust gases from a boiler to control emissions of particulate matter or to absorb and neutralize acid gases, such as hydrogen chloride. A wet scrubber creates an aqueous stream or slurry as a byproduct of the emissions control process.

*Work practice standard* means any design, equipment, work practice, or operational standard, or combination thereof, which is promulgated pursuant to section 112(h) of the Clean Air Act.

[76 FR 15591, Mar. 21, 2011, as amended at 78 FR 7513, Feb. 1, 2013]

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**Federal Regulation Applicability – NESHAP Subpart ZZZZ**

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## Subpart ZZZZ—National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

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§63.6580 What is the purpose of subpart ZZZZ?

Subpart ZZZZ establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations.

[73 FR 3603, Jan. 18, 2008]

§63.6585 Am I subject to this subpart?

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.

(a) A stationary RICE is any internal combustion engine which uses reciprocating motion to convert heat energy into mechanical work and which is not mobile. Stationary RICE differ from mobile RICE in that a stationary RICE is not a non-road engine as defined at 40 CFR 1068.30, and is not used to propel a motor vehicle or a vehicle used solely for competition.

(b) A major source of HAP emissions is a plant site that emits or has the potential to emit any single HAP at a rate of 10 tons (9.07 megagrams) or more per year or any combination of HAP at a rate of 25 tons (22.68 megagrams) or more per year, except that for oil and gas production facilities, a major source of HAP emissions is determined for each surface site.

(c) An area source of HAP emissions is a source that is not a major source.

(d) If you are an owner or operator of an area source subject to this subpart, your status as an entity subject to a standard or other requirements under this subpart does not subject you to the obligation to obtain a permit under 40 CFR part 70 or 71, provided you are not required to obtain a permit under 40 CFR 70.3(a) or 40 CFR 71.3(a) for a reason other than your status as an area source under this subpart. Notwithstanding the previous sentence, you must continue to comply with the provisions of this subpart as applicable.

(e) If you are an owner or operator of a stationary RICE used for national security purposes, you may be eligible to request an exemption from the requirements of this subpart as described in 40 CFR part 1068, subpart C.

(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).

*St. Joseph operates its 3 emergency engines (E01 – E03) according to the provisions specified in §63.6640(f) and they all meet the definition of emergency RICE in §63.6675. Therefore, the engines are not subject to this subpart.*

(1) Existing residential 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).

(2) Existing commercial 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).

(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).

*St. Joseph operates 3 engines (E01 – E03) as institutional emergency engines. All three engines were installed before 2006 and are considered existing engines under this rule.*

[69 FR 33506, June 15, 2004, as amended at 73 FR 3603, Jan. 18, 2008; 78 FR 6700, Jan. 30, 2013]

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§63.6640 How do I demonstrate continuous compliance with the emission limitations, operating limitations, and other requirements?

(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. 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 RICE beyond 100 hours per calendar year.

(ii) Emergency stationary RICE may be operated for emergency demand response for periods in which the Reliability Coordinator under the North American Electric Reliability Corporation (NERC) Reliability Standard EOP-002-3, Capacity and Energy Emergencies (incorporated by reference, see §63.14), or other authorized entity as determined by the Reliability Coordinator, has declared an Energy Emergency Alert Level 2 as defined in the NERC Reliability Standard EOP-002-3.

(iii) Emergency stationary RICE may be operated for periods where there is a deviation of voltage or frequency of 5 percent or greater below standard voltage or frequency.

(3) Emergency stationary RICE located at major 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. 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 supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity.

(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.

***St. Joseph is not currently in any emergency demand response or other financial arrangement to supply power with another entity.***

(i) Prior to May 3, 2014, the 50 hours per year for non-emergency situations can be used for peak shaving or non-emergency demand response to generate income for a facility, or to otherwise supply power as part of a financial arrangement with another entity if the engine is operated as part of a peak shaving (load management program) with the local distribution system operator and the power is provided only to the facility itself or to support the local distribution system.

(ii) The 50 hours per year for non-emergency situations can be used to supply power as part of a financial arrangement with another entity if all of the following conditions are met:

(A) The engine is dispatched by the local balancing authority or local transmission and distribution system operator.

(B) The dispatch is intended to mitigate local transmission and/or distribution limitations so as to avert potential voltage collapse or line overloads that could lead to the interruption of power supply in a local area or region.

(C) The dispatch follows reliability, emergency operation or similar protocols that follow specific NERC, regional, state, public utility commission or local standards or guidelines.

(D) The power is provided only to the facility itself or to support the local transmission and distribution system.

(E) The owner or operator identifies and records the entity that dispatches the engine and the specific NERC, regional, state, public utility commission or local standards or guidelines that are being followed for dispatching the engine. The local balancing authority or local transmission and distribution system operator may keep these records on behalf of the engine owner or operator.

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§63.6675 What definitions apply to this subpart?

Terms used in this subpart are defined in the Clean Air Act (CAA); in 40 CFR 63.2, the General Provisions of this part; and in this section as follows:

*Alaska Railbelt Grid* means the service areas of the six regulated public utilities that extend from Fairbanks to Anchorage and the Kenai Peninsula. These utilities are Golden Valley Electric Association; Chugach Electric Association; Matanuska Electric Association; Homer Electric Association; Anchorage Municipal Light & Power; and the City of Seward Electric System.

*Area source* means any stationary source of HAP that is not a major source as defined in part 63.

*Associated equipment* as used in this subpart and as referred to in section 112(n)(4) of the CAA, means equipment associated with an oil or natural gas exploration or production well, and includes all equipment from the well bore to the point of custody transfer, except glycol dehydration units, storage vessels with potential for flash emissions, combustion turbines, and stationary RICE.

*Backup power for renewable energy* means an engine that provides backup power to a facility that generates electricity from renewable energy resources, as that term is defined in Alaska Statute 42.45.045(1)(5) (incorporated by reference, see §63.14).

*Black start engine* means an engine whose only purpose is to start up a combustion turbine.

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

*Commercial emergency stationary RICE* means an emergency stationary RICE used in commercial establishments such as office buildings, hotels, stores, telecommunications facilities, restaurants, financial institutions such as banks, doctor's offices, and sports and performing arts facilities.

*Compression ignition* means relating to a type of stationary internal combustion engine that is not a spark ignition engine.

*Custody transfer* means the transfer of hydrocarbon liquids or natural gas: After processing and/or treatment in the producing operations, or from storage vessels or automatic transfer facilities or other such equipment, including product loading racks, to pipelines or any other forms of transportation. For the purposes of this subpart, the point at which such liquids or natural gas enters a natural gas processing plant is a point of custody transfer.

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

- (1) Fails to meet any requirement or obligation established by this subpart, including but not limited to any emission limitation or operating limitation;
- (2) Fails to meet any term or condition that is adopted to implement an applicable requirement in this subpart and that is included in the operating permit for any affected source required to obtain such a permit; or
- (3) Fails to meet any emission limitation or operating limitation in this subpart during malfunction, regardless of whether or not such failure is permitted by this subpart.

(4) Fails to satisfy the general duty to minimize emissions established by §63.6(e)(1)(i).

*Diesel engine* means any stationary RICE in which a high boiling point liquid fuel injected into the combustion chamber ignites when the air charge has been compressed to a temperature sufficiently high for auto-ignition. This process is also known as compression ignition.

*Diesel fuel* means any liquid obtained from the distillation of petroleum with a boiling point of approximately 150 to 360 degrees Celsius. One commonly used form is fuel oil number 2. Diesel fuel also includes any non-distillate fuel with comparable physical and chemical properties (e.g. biodiesel) that is suitable for use in compression ignition engines.

*Digester gas* means any gaseous by-product of wastewater treatment typically formed through the anaerobic decomposition of organic waste materials and composed principally of methane and CO<sub>2</sub>.

*Dual-fuel engine* means any stationary RICE in which a liquid fuel (typically diesel fuel) is used for compression ignition and gaseous fuel (typically natural gas) is used as the primary fuel.

Emergency stationary RICE means any stationary reciprocating internal combustion engine that meets all of the criteria in paragraphs (1) through (3) of this definition. All emergency stationary RICE must comply with the requirements specified in §63.6640(f) in order to be considered emergency stationary RICE. If the engine does not comply with the requirements specified in §63.6640(f), then it is not considered to be an emergency stationary RICE under this subpart.

*All three engines comply with the requirements in §63.6640(f) (see above).*

(1) The stationary RICE is operated to provide electrical power or mechanical work during an emergency situation. Examples include stationary RICE used to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility (or the normal power source, if the facility runs on its own power production) is interrupted, or stationary RICE used to pump water in the case of fire or flood, etc.

*Two of the engines (E01 and E02) are used to produce power for critical networks and equipment to the medical center when the power supplied to the facility from the local utility is interrupted. The other engine (E03) is used to as a fire pump in case of fire.*

(2) The stationary RICE is operated under limited circumstances for situations not included in paragraph (1) of this definition, as specified in §63.6640(f).

*Other than emergency situations specified in paragraph (1) above, the engines are only operated for testing and maintenance allowed within §63.6640(f).*

(3) The stationary RICE operates as part of a financial arrangement with another entity in situations not included in paragraph (1) of this definition only as allowed in §63.6640(f)(2)(ii) or (iii) and §63.6640(f)(4)(i) or (ii).

*St. Joseph is not currently in any emergency demand response or other financial arrangement to supply power with another entity.*

*Engine startup* means the time from initial start until applied load and engine and associated equipment reaches steady state or normal operation. For stationary engine with catalytic controls, engine startup means

the time from initial start until applied load and engine and associated equipment, including the catalyst, reaches steady state or normal operation.

*Four-stroke engine* means any type of engine which completes the power cycle in two crankshaft revolutions, with intake and compression strokes in the first revolution and power and exhaust strokes in the second revolution.

*Gaseous fuel* means a material used for combustion which is in the gaseous state at standard atmospheric temperature and pressure conditions.

*Gasoline* means any fuel sold in any State for use in motor vehicles and motor vehicle engines, or nonroad or stationary engines, and commonly or commercially known or sold as gasoline.

*Glycol dehydration unit* means a device in which a liquid glycol (including, but not limited to, ethylene glycol, diethylene glycol, or triethylene glycol) absorbent directly contacts a natural gas stream and absorbs water in a contact tower or absorption column (absorber). The glycol contacts and absorbs water vapor and other gas stream constituents from the natural gas and becomes "rich" glycol. This glycol is then regenerated in the glycol dehydration unit reboiler. The "lean" glycol is then recycled.

*Hazardous air pollutants (HAP)* means any air pollutants listed in or pursuant to section 112(b) of the CAA.

*Institutional emergency stationary RICE* means an emergency stationary RICE used in institutional establishments such as medical centers, nursing homes, research centers, institutions of higher education, correctional facilities, elementary and secondary schools, libraries, religious establishments, police stations, and fire stations.

***St. Joseph a medical center and all three engines are used as emergency stationary RICE.***

*ISO standard day conditions* means 288 degrees Kelvin (15 degrees Celsius), 60 percent relative humidity and 101.3 kilopascals pressure.

*Landfill gas* means a gaseous by-product of the land application of municipal refuse typically formed through the anaerobic decomposition of waste materials and composed principally of methane and CO<sub>2</sub>.

*Lean burn engine* means any two-stroke or four-stroke spark ignited engine that does not meet the definition of a rich burn engine.

*Limited use stationary RICE* means any stationary RICE that operates less than 100 hours per year.

*Liquefied petroleum gas* means any liquefied hydrocarbon gas obtained as a by-product in petroleum refining of natural gas production.

*Liquid fuel* means any fuel in liquid form at standard temperature and pressure, including but not limited to diesel, residual/crude oil, kerosene/naphtha (jet fuel), and gasoline.

*Major Source*, as used in this subpart, shall have the same meaning as in §63.2, except that:

(1) Emissions from any oil or gas exploration or production well (with its associated equipment (as defined in this section)) and emissions from any pipeline compressor station or pump station shall not be aggregated with emissions from other similar units, to determine whether such emission points or stations are major sources, even when emission points are in a contiguous area or under common control;

(2) For oil and gas production facilities, emissions from processes, operations, or equipment that are not part of the same oil and gas production facility, as defined in §63.1271 of subpart HHH of this part, shall not be aggregated;

(3) For production field facilities, only HAP emissions from glycol dehydration units, storage vessel with the potential for flash emissions, combustion turbines and reciprocating internal combustion engines shall be aggregated for a major source determination; and

(4) Emissions from processes, operations, and equipment that are not part of the same natural gas transmission and storage facility, as defined in §63.1271 of subpart HHH of this part, shall not be aggregated.

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

*Natural gas* means a naturally occurring mixture of hydrocarbon and non-hydrocarbon gases found in geologic formations beneath the Earth's surface, of which the principal constituent is methane. Natural gas may be field or pipeline quality.

*Non-selective catalytic reduction (NSCR)* means an add-on catalytic nitrogen oxides (NO<sub>x</sub>) control device for rich burn engines that, in a two-step reaction, promotes the conversion of excess oxygen, NO<sub>x</sub>, CO, and volatile organic compounds (VOC) into CO<sub>2</sub>, nitrogen, and water.

*Oil and gas production facility* as used in this subpart means any grouping of equipment where hydrocarbon liquids are processed, upgraded (*i.e.*, remove impurities or other constituents to meet contract specifications), or stored prior to the point of custody transfer; or where natural gas is processed, upgraded, or stored prior to entering the natural gas transmission and storage source category. For purposes of a major source determination, facility (including a building, structure, or installation) means oil and natural gas production and processing equipment that is located within the boundaries of an individual surface site as defined in this section. Equipment that is part of a facility will typically be located within close proximity to other equipment located at the same facility. Pieces of production equipment or groupings of equipment located on different oil and gas leases, mineral fee tracts, lease tracts, subsurface or surface unit areas, surface fee tracts, surface lease tracts, or separate surface sites, whether or not connected by a road, waterway, power line or pipeline, shall not be considered part of the same facility. Examples of facilities in the oil and natural gas production source category include, but are not limited to, well sites, satellite tank batteries, central tank batteries, a compressor station that transports natural gas to a natural gas processing plant, and natural gas processing plants.

*Oxidation catalyst* means an add-on catalytic control device that controls CO and VOC by oxidation.

*Peaking unit or engine* means any standby engine intended for use during periods of high demand that are not emergencies.

*Percent load* means the fractional power of an engine compared to its maximum manufacturer's design capacity at engine site conditions. Percent load may range between 0 percent to above 100 percent.

*Potential to emit* means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the stationary source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable. For oil and natural gas production facilities subject to subpart HH of this part, the potential to emit provisions in §63.760(a) may be used. For natural gas transmission and storage facilities subject to subpart HHH of this part, the maximum annual facility gas

throughput for storage facilities may be determined according to §63.1270(a)(1) and the maximum annual throughput for transmission facilities may be determined according to §63.1270(a)(2).

*Production field facility* means those oil and gas production facilities located prior to the point of custody transfer.

*Production well* means any hole drilled in the earth from which crude oil, condensate, or field natural gas is extracted.

*Propane* means a colorless gas derived from petroleum and natural gas, with the molecular structure  $C_3H_8$ .

*Remote stationary RICE* means stationary RICE meeting any of the following criteria:

(1) Stationary RICE located in an offshore area that is beyond the line of ordinary low water along that portion of the coast of the United States that is in direct contact with the open seas and beyond the line marking the seaward limit of inland waters.

(2) Stationary RICE located on a pipeline segment that meets both of the criteria in paragraphs (2)(i) and (ii) of this definition.

(i) A pipeline segment with 10 or fewer buildings intended for human occupancy and no buildings with four or more stories within 220 yards (200 meters) on either side of the centerline of any continuous 1-mile (1.6 kilometers) length of pipeline. Each separate dwelling unit in a multiple dwelling unit building is counted as a separate building intended for human occupancy.

(ii) The pipeline segment does not lie within 100 yards (91 meters) of either a building or a small, well-defined outside area (such as a playground, recreation area, outdoor theater, or other place of public assembly) that is occupied by 20 or more persons on at least 5 days a week for 10 weeks in any 12-month period. The days and weeks need not be consecutive. The building or area is considered occupied for a full day if it is occupied for any portion of the day.

(iii) For purposes of this paragraph (2), the term pipeline segment means all parts of those physical facilities through which gas moves in transportation, including but not limited to pipe, valves, and other appurtenance attached to pipe, compressor units, metering stations, regulator stations, delivery stations, holders, and fabricated assemblies. Stationary RICE located within 50 yards (46 meters) of the pipeline segment providing power for equipment on a pipeline segment are part of the pipeline segment. Transportation of gas means the gathering, transmission, or distribution of gas by pipeline, or the storage of gas. A building is intended for human occupancy if its primary use is for a purpose involving the presence of humans.

(3) Stationary RICE that are not located on gas pipelines and that have 5 or fewer buildings intended for human occupancy and no buildings with four or more stories within a 0.25 mile radius around the engine. A building is intended for human occupancy if its primary use is for a purpose involving the presence of humans.

*Residential emergency stationary RICE* means an emergency stationary RICE used in residential establishments such as homes or apartment buildings.

*Responsible official* means responsible official as defined in 40 CFR 70.2.

*Rich burn engine* means any four-stroke spark ignited engine where the manufacturer's recommended operating air/fuel ratio divided by the stoichiometric air/fuel ratio at full load conditions is less than or equal to 1.1. Engines originally manufactured as rich burn engines, but modified prior to December 19, 2002 with

passive emission control technology for NO<sub>x</sub> (such as pre-combustion chambers) will be considered lean burn engines. Also, existing engines where there are no manufacturer's recommendations regarding air/fuel ratio will be considered a rich burn engine if the excess oxygen content of the exhaust at full load conditions is less than or equal to 2 percent.

*Site-rated HP* means the maximum manufacturer's design capacity at engine site conditions.

*Spark ignition* means relating to either: A gasoline-fueled engine; or any other type of engine with a spark plug (or other sparking device) and with operating characteristics significantly similar to the theoretical Otto combustion cycle. Spark ignition engines usually use a throttle to regulate intake air flow to control power during normal operation. Dual-fuel engines in which a liquid fuel (typically diesel fuel) is used for CI and gaseous fuel (typically natural gas) is used as the primary fuel at an annual average ratio of less than 2 parts diesel fuel to 100 parts total fuel on an energy equivalent basis are spark ignition engines.

*Stationary reciprocating internal combustion engine (RICE)* means any reciprocating internal combustion engine which uses reciprocating motion to convert heat energy into mechanical work and which is not mobile. Stationary RICE differ from mobile RICE in that a stationary RICE is not a non-road engine as defined at 40 CFR 1068.30, and is not used to propel a motor vehicle or a vehicle used solely for competition.

*Stationary RICE test cell/stand* means an engine test cell/stand, as defined in subpart P of this part, that tests stationary RICE.

*Stoichiometric* means the theoretical air-to-fuel ratio required for complete combustion.

*Storage vessel with the potential for flash emissions* means any storage vessel that contains a hydrocarbon liquid with a stock tank gas-to-oil ratio equal to or greater than 0.31 cubic meters per liter and an American Petroleum Institute gravity equal to or greater than 40 degrees and an actual annual average hydrocarbon liquid throughput equal to or greater than 79,500 liters per day. Flash emissions occur when dissolved hydrocarbons in the fluid evolve from solution when the fluid pressure is reduced.

*Subpart* means 40 CFR part 63, subpart ZZZZ.

*Surface site* means any combination of one or more graded pad sites, gravel pad sites, foundations, platforms, or the immediate physical location upon which equipment is physically affixed.

*Two-stroke engine* means a type of engine which completes the power cycle in single crankshaft revolution by combining the intake and compression operations into one stroke and the power and exhaust operations into a second stroke. This system requires auxiliary scavenging and inherently runs lean of stoichiometric.

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