



RECEIVED

MAR 15 2011

BUREAU OF AIR REGULATION

TRANSMITTAL

Date: March 14, 2011

Project No.: 103-89656

To: Mr. Al Linero
Program Administrator

Company: Florida Department of
Environmental Protection

From: Scott Osbourn

Address: 2600 Blair Stone Road
Tallahassee, FL 32399-2400

cc:

Email: sosbourn@golder.com

RE: RESPONSE TO RAI AIR CONSTRUCTION PERMIT APPLICATION FOR NORTHWEST
FLORIDA RENEWABLE ENERGY CENTER, PORT ST. JOE, FL

- Federal Express (priority, standard, 2-day, 3-day)
- UPS
- DHL
- Email _____
- U.S. Mail
- Courier
- Hand Delivery
- Other _____

Quantity	Item	Description
3	RAI Response	Response to Request for Additional Information Air Construction Permit Application for Northwest Florida Renewable Energy Center, Port St. Joe FL FDEP File No.: 0450012-002-AC
1	Original signed and sealed RAI Response (Attachment 1)	Response to Request for Additional Information Air Construction Permit Application for Northwest Florida Renewable Energy Center, Port St. Joe FL FDEP File No.: 0450012-002-AC

Notes:

Please advise us if enclosures are not as described.

ACKNOWLEDGEMENT REQUIRED:

- Yes
- No

h:\projects\2010pro\10389656 beh\rai\transmittals\to al linero 3-14-2011.docx

Golder Associates Inc.
5100 W. Lemon Street, Suite 208
Tampa, FL 33609 USA
Tel: (813) 287-1717 Fax: (813) 287-1716 www.golder.com

Golder Associates: Operations in Africa, Asia, Australasia, Europe, North America and South America

Golder, Golder Associates and the GA globe design are trademarks of Golder Associates Corporation



RECEIVED

MAR 15 2011

March 14, 2011

Project No. 103-89656

Mr. Al Linero, Program Administrator
Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

BUREAU OF
AIR REGULATION

RE: **RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
AIR CONSTRUCTION PERMIT APPLICATION
NORTHWEST FLORIDA RENEWABLE ENERGY CENTER, LLC (NWFREC)
PORT ST. JOE, FL
FDEP FILE NO.: 0450012-002-AC**

Dear Mr. Linero:

This correspondence provides the additional information requested by the Florida Department of Environmental Protection concerning the above-referenced Air Construction Permit application. The Northwest Florida Renewable Energy Center, LLC (NWFREC) received the request for additional information on February 21, 2011. Golder is submitting this information on behalf of the applicant, NWFREC. The additional information is presented in the same sequence as in the Department's letter, with a restatement of each comment followed by Golder's response in boldface italics.

1. Rule Applicability, "Subpart JJJJJJ": The U.S. District Court for the District of Columbia recently denied a request by the U.S. EPA to extend a deadline of January 21, 2011 to promulgate final National Emissions Standards for Hazardous Air Pollutants (NESHAP) applicable to certain boilers including those located at area sources of hazardous air pollutants (HAP). EPA is required to issue the final rule at 40 Code of Federal Regulations (CFR), Part 63, Subpart JJJJJJ by February 21, 2011. If the rule is actually promulgated, please include an applicability evaluation and (if applicable) provide reasonable assurance of compliance with the requirements contained therein. For reference the draft version of the rule is available at:

www.epa.gov/ttn/atw/boiler/fr04in10ap.pdf

The relevant court decision is available at:

https://ecf.dcd.uscourts.gov/cgi-bin/show_public_doc?2001cv1537-150

[Rule 62-4.070 (Standards of Issuing or Denying Permits), Florida Administrative Code (F.A.C.)]

Response: As proposed, the project is not a major source of HAPs, which is why it was not proposed to be subject to a case-by-case MACT determination in the initial application. No major source MACT standards would apply, however, the recently promulgated area source boiler MACT/GACT rule will apply to the char combustor associated with the project. Specifically, the char combustor will need to comply with the area source boiler MACT/GACT rule upon startup. The combustor would be regulated as a biomass boiler under the area source boiler MACT/GACT rule. Although the area source boiler MACT/GACT rule will apply, the char combustor will have sufficient control equipment to meet the applicable emission limits. These include:

h:\projects\2010pro\10389656 beh\rai\nwfrec rai response final031411 .docx

Golder Associates Inc.
5100 W. Lemon Street, Suite 208
Tampa, FL 33609 USA
Tel: (813) 287-1717 Fax: (813) 287-1716 www.golder.com



Golder Associates: Operations in Africa, Asia, Australasia, Europe, North America and South America

Golder, Golder Associates and the GA globe design are trademarks of Golder Associates Corporation

Particulate Matter 0.03 lb/mmBtu of heat input (the project is permitted at 0.01 lb/mmBtu)

Carbon Monoxide 100 ppm by volume on a dry basis corrected to 7% O₂, daily average (the project is permitted at about 26 ppmvd).

2. Rule Applicability, "Subpart Db": The char combustor is rated at 155 million British thermal units per hour (mmBtu/hr) and produces some of the heat for the gasification step by heating the sand (olivine) used in both the gasification and combustor fluidized beds. Heat from the char combustor exhaust gas is ultimately recovered in heat exchangers and provides some of the heat used to generate steam and electricity. For the char combustor, please include an applicability evaluation of 40 CFR 60, Subpart Db, Standards of Performance (NSPS) for Industrial-Commercial-Institutional Steam Generating Units. Subpart Db is available at: [Link to Subpart Db](#)

[40 CFR 60, Subpart Db; Rule 62-4.070, F.A.C. and 62-210.800(b)3., F.A.C.]

Response: Subpart Db applies to fossil fuel-fired steam generating units with a rating greater than or equal to 100 mmBtu/hr. While the char combustor is rated in excess of the Subpart Db threshold, it is utilizing a carbonaceous material. Although natural gas is utilized as a startup fuel, the associated burner size is limited to less than 25 mmBtu/hr. The primary feedstock, carbonaceous feedstock, is defined in the Department's rules as solid materials composed primarily of vegetative matter such as tree bark, wood waste, or bagasse. However, the vegetative matter (biomass) to be used as the feedstock in the primary chamber of the gasifier is not "burned" or combusted. The biomass will be heated with sand in the absence of oxygen without combustion. The resulting "char" will then be combusted in the second chamber of the gasifier, although the material is not a fuel or "vegetative" matter at that point. The primary "fuel burning" is to occur in the combustion turbines and duct burners; the fuel, however, is syngas—which is a gas, not a solid. This rule therefore does not appear applicable to the project. If the project were subject to this standard, a NO_x limit of 0.1 to 0.2 lb/mmBtu heat input would apply and an opacity limit of 10 percent opacity would apply, along with a particulate matter limit of 0.03 lb/mmBtu heat input. While NWFREC argues that this requirement does not apply, the char combustor would meet the applicable standards regardless.

3. Rule Applicability, "Subpart Eb": Per the application (Page 25) and with relation to gasifier feedstock, a small percentage of the fuel consists of municipal solid waste (MSW) such as yard trimmings. Please provide (as suggested in the application) documentation that the project is a "Qualifying Facility" (QF) pursuant to the Federal Energy Act and thus not subject to 40 CFR 60, Subpart Eb – NSPS for Large Municipal Waste Combustors for Which Construction is Commenced After September 20, 1994. Section 60.50b(e) of Subpart Eb states:

"A qualifying small power production facility, as defined in section 3(17)(C) of the Federal Power Act (16 U.S.C. 796(17)(C)), that burns homogeneous waste (such as automotive tires or used oil, but not including refuse-derived fuel) for the production of electric energy is not subject to this subpart if the owner or operator of the facility notifies EPA of this exemption and provides data documenting that the facility qualifies for this exemption." Please provide such referenced documentation. Subpart Eb is available at:

[Link to Subpart Eb](#)-- [40 CFR 60, Subpart Eb; Rule 62-4.070, F.A.C. and 62-210.800(b)7., F.A.C.]

Response: The project is not subject to Subpart Eb, as it is in compliance with the requirements established by the FERC Form No. 556, which is required to obtain and maintain status as a qualifying facility [See 18 C.F.R. § 131.80 and Part 292]. Attachment 1 to this response package includes the email confirmation that acknowledges the project's

docket number (i.e., only an approved qualifying facility can get a docket number). FERC provides for a self-certifying process for any renewable QF less than 80 MW.

4. Details Regarding Char Combustor: Please provide additional detail regarding the temperature profile of the char combustor exhaust gas through the cyclone(s), heat recovery equipment and air pollution control equipment. Comment on the measures incorporated that will control dioxin and furan (D/F).

[Rule 62-4.070, F.A.C.]

Response: The presence of chlorine is required for the formation of dioxins. The chemical reaction that takes place in the gasifier will ensure that most chlorine bonds with hydrogen to form HCl. The HCl will follow the product gas stream and be scrubbed from the gas in the water scrubber. The amount of chlorine that reaches the char combustor, with some potential to form dioxins, is addressed through control of temperature and residence time in the unit. Dioxins are volatile compounds that are destroyed at temperatures above 1,600 F and two seconds of residence time. The char combustor is designed to operate at temperatures to reheat the sand/olivine from 1,550 F up to 1,800 F with a residence time of 2.5 seconds. Therefore dioxin formation is expected to be very low. Attachment 2 to this response package provides more detail on dioxins in gasification.

5. Syngas Flare System: It appears from the air permit application report that during emergency shutdown events and possibly other shutdown events, synthetic gas (syngas) generated in the gasifier will not go the syngas cleanup system prior to being combusted in the flare system. Based on the hydrogen sulfide (H₂S) content of the syngas, emission estimates given in Table 3-8 of the application report appear to be based on "cleaned" syngas. Please review and update the sulfur dioxide (SO₂) emission estimates if some untreated syngas will also be flared.

[Rule 62-4.070, F.A.C.]

Response: Table 3-8 has been updated to reflect the flaring of "untreated" product gas during startup operations. In addition, NWFREC is providing additional detail on the startup sequencing and flare operation. The updated table and associated startup description are included in Attachment 3.

6. Municipal Solid Waste (Yard Trimmings) Description: Yard waste is defined per § 60.51b (NSPS Subpart Eb - Standards of Performance for Large Municipal Waste Combustors) as follow:

"Yard waste means grass, grass clippings, bushes, shrubs, and clippings from bushes and shrubs that are generated by residential, commercial/retail, institutional, and/or industrial sources as part of maintenance activities associated with yards or other private or public lands. Yard waste does not include construction, renovation, and demolition wastes, which are exempt from the definition of municipal solid waste in this section. Yard waste does not include clean wood, which is exempt from the definition of municipal solid waste in this section."

Does this definition of yard waste accurately reflect the yard waste that will be gasified at the proposed NWFREC? If not, please provide a detailed description (in tabular form if possible) of the types of "yard waste" that will be gasified at the NWFREC.

[Rule 62-4.070, F.A.C.]

Response: The definition as supplied in the RAI is correct. However, at the present time, it is not anticipated that the NWFREC will receive any significant amounts of such material. If so, it will be in amounts less than one percent of the volume for the project.

7. Biomass Feedstock Description: On Page 18 of the application report, hogged fuel, processed but cuts and fuel crops are indicated as some of the biomass feedstocks that will be gasified at the

NWFREC. Please provide a more extensive list (in tabular form if possible) of the types of biomass feedstocks that may be gasified at the NWFREC so that the feedstock fuel slate can be accurately described. Also clarify what types of fuels crops are being considered for use at the NWFREC.

[Rule 62-4.070, F.A.C.]

Response: The proposed slate of fuels is included in a tabular format in Attachment 4 to this letter response.

8. Construction Plan to Minimize Fugitive Dust Emissions: Describe measures to minimize emissions during the construction of the facility. In particular, please describe reasonable precautions to minimize evolution of dust related to scraping of the former coal storage area and during earth moving activities.

[Rules 62-4.070, F.A.C. and 62-296.320(4)(c), F.A.C.]

Response: The construction plan will include requirements for "Best Management Practices" for fugitive dust control on general construction projects. More specifically, the coal storage area will not be scraped in total. The current plan calls for storage of wood chips right on top of the existing coal storage yard. Less than 1% of the coal storage area will be disturbed with construction activities. Most all of the new construction area has an existing grass cover growth. The site has an existing deep water well which will be utilized as a water source for spraying water during the construction process, including construction traffic and excavation activities.

Finally, although not addressed in the initial air application, this response package also serves to provide information with respect to some additional proposed equipment. Specifically, the project will include a nominal 500 kW emergency generator and a nominal 250 KW emergency fire water pump. It was initially believed that these units would be electrically-powered and, therefore, not necessary to include in the air application. These units are now proposed to be fired by either biodiesel or ultra low sulfur distillate oil (ULSDO). Operation of these units would be limited to no more than 500 hours /yr for the emergency generator and 250 hours/yr for the fire water pump. Emission estimates and associated application forms are included in Attachment 5 to this response package. It was always intended for a small biodiesel or distillate oil tank to be at the site, as the gas turbines require liquid fuel for start-up, due to their water injection design, and liquid fuel would be used for onsite mobile equipment.

In accordance with the Department's requirements, as these responses include information of an engineering nature, a professional engineering certification accompanies this response package. Should you have any questions, please contact our office at (813) 287-1717.

Sincerely,

GOLDER ASSOCIATES INC.



Scott Osbourn, P.E.
Associate and Tampa Operations Manager

cc: Kenn Davis, NWFREC
Glenn Farris, NWFREC
Andrew Grant, NWFREC

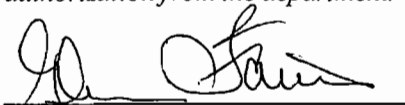
Enclosures: Attachment 1— Qualifying Facility Application

- Attachment 2— Dioxins in Gasification
- Attachment 3— Flare System Description
- Attachment 4— Biomass Feedstock Description
- Attachment 5--- Emergency Generator and Fire Water Pump

APPLICATION INFORMATION

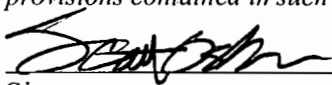
Owner/Authorized Representative Statement

Complete if applying for an air construction permit or an initial FESOP.

1. Owner/Authorized Representative Name : Glenn Farris, VP Business Development
2. Owner/Authorized Representative Mailing Address... Organization/Firm: Biomass Energy Holdings, LLC Street Address: P.O. Box 366 City: Clinton State: IN Zip Code: 47842
3. Owner/Authorized Representative Telephone Numbers... Telephone: 770-662-0256 ext.2526 Fax: (765) 832-1860
4. Owner/Authorized Representative Email Address: gfarris@bioeh.com
5. Owner/Authorized Representative Statement: <i>I, the undersigned, am the owner or authorized representative of the corporation, partnership, or other legal entity submitting this air permit application. To the best of my knowledge, the statements made in this application are true, accurate and complete, and any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department.</i>  Signature <u>3-11-2011</u> Date

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: Scott H. Osbourn Registration Number: 57557
2. Professional Engineer Mailing Address... Organization/Firm: Golder Associates Inc.** Street Address: 5100 West Lemon Street, Suite 208 City: Tampa State: FL Zip Code: 33609
3. Professional Engineer Telephone Numbers... Telephone: (813) 287-1717 ext. 53304 Fax: (813) 287-1716
4. Professional Engineer Email Address: sosbourn@golder.com
5. Professional Engineer Statement: <i>I, the undersigned, hereby certify, except as particularly noted herein*, that:</i> <i>(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and</i> <i>(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.</i> <i>(3) If the purpose of this application is to obtain a Title V air operation permit (check here <input type="checkbox"/> , if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.</i> <i>(4) If the purpose of this application is to obtain an air construction permit (check here <input checked="" type="checkbox"/> , if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here <input type="checkbox"/> , if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.</i> <i>(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here <input type="checkbox"/> , if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.</i> Signature  Date <u>3/14/11</u> (seal)

* Attach any exception to certification statement.

** Board of Professional Engineers Certificate of Authorization #00001670



**ATTACHMENT 1
QUALIFYING FACILITY APPLICATION**

FERC Online - eLibrary (formerly FERRIS)

http://www.ferc.gov

[E-mail this page](#)

[Search](#)

Document Information

[Advanced Search](#)

Accession Number: 20100106-5046

Available: Public

[New Dockets](#)

Document Date: 1/6/2010

Filed Date: 1/6/2010

[Docket Search](#)

Posted Date: 1/6/2010 3:07:23 PM

First Received Date: 1/6/2010 12:51:51 PM

[Daily Search](#)

Official: Yes

E-filing: Yes

Non-decisional: No

[Request List](#)

Description:

Self Certification Notice of Biomass Energy Holdings, LLC under QF10-238.

[Logon](#)

Category:
Submittal

Library:
Electric

[Help](#)

Document Type:

[Help - Accessible](#)

Class:	Type:
Application/Petition/Request	Qualifying Facility Application or PURPA Energy Utility Filing

Login: Guest

Docket Numbers: [Click here to eSubscribe to a Docket](#)

Docket	SubDocket	Type
QF10-238	000	On Document

Correspondent:

Type	Last Name	FI	MI	Affiliation
AUTHOR	Farris	G	x	Biomass Energy Holdings, LLC
AGENT	Farris	G	x	No Organization Found
RECIPIENT	Bose	K	D	Office of the Secretary, FERC

For any issues regarding FERC Online, please contact ferconlinesupport@ferc.gov or call 866-208-3676. Please include a current mail address, telephone number, and email address.

**ATTACHMENT 2
DIOXINS IN GASIFICATION**



Dioxins in gasification

**The Northwest Florida Renewable Energy Center
plant evaluation**

**Presented at Tallahassee Scientific Society meeting,
Tallahassee, USA**

Mariusz Cieplik and Willem van de Kamp

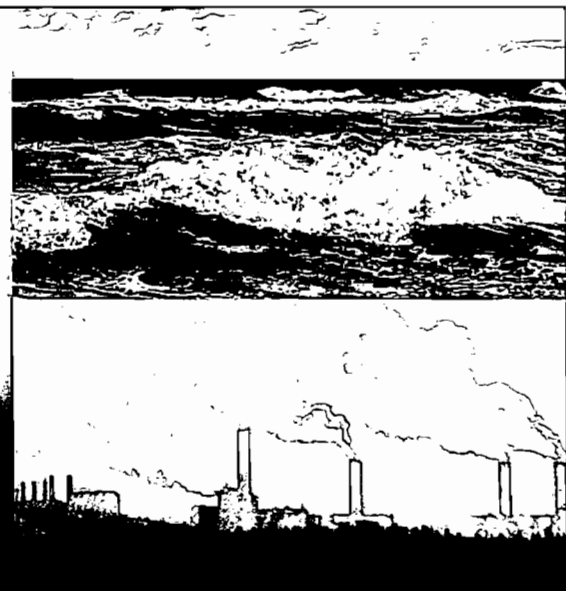
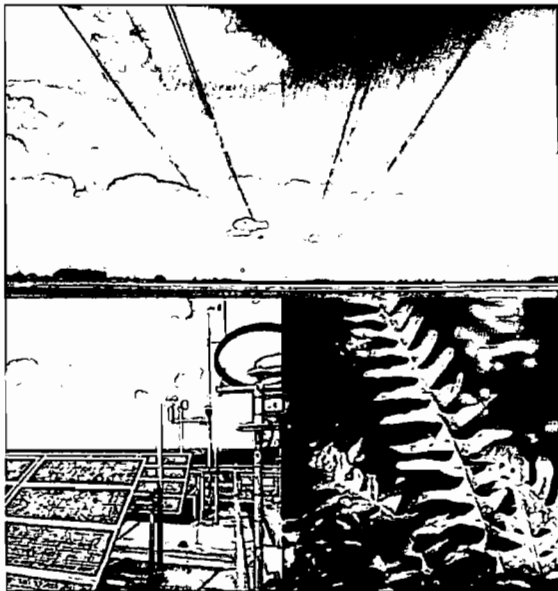


Energy research Centre of the Netherlands

Dioxins in gasification

the Northwest Florida Renewable Energy Center plant evaluation

Mariusz Cieplik and Willem van de Kamp



Disclaimer

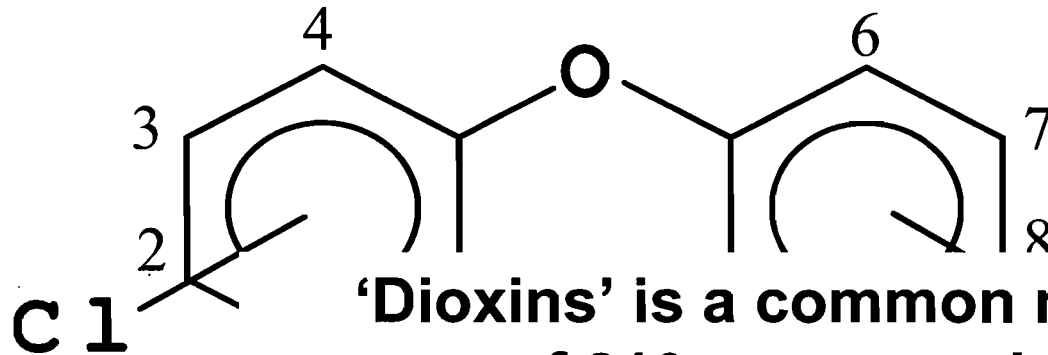
Every effort is made to ensure that the information provided in this report is accurate and up to date, but no legal responsibility is accepted for any errors, omissions or misleading statements. ECN accepts no responsibility for liability that may arise with respect to or as a result of the contents of this report causing any damage, costs, injury or financial loss of any kind.

Copyright

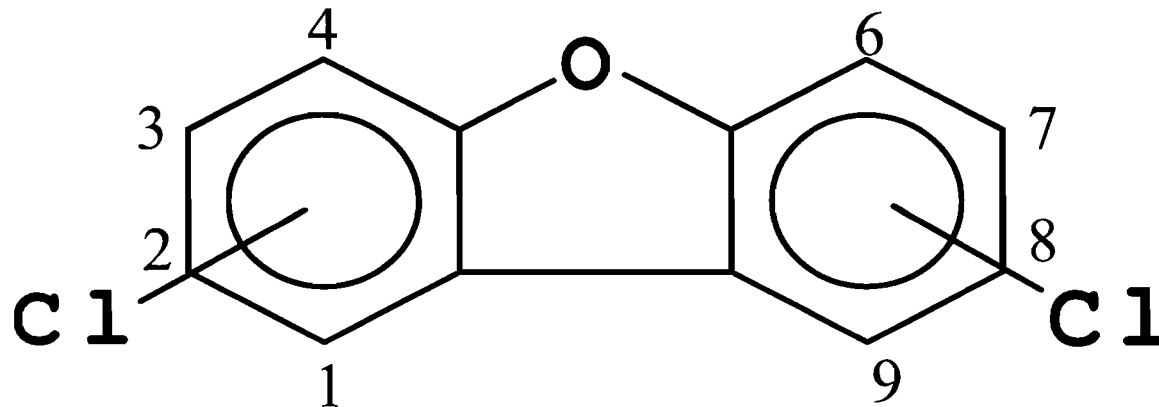
Copyright © 2009, Energy research Centre of the Netherlands (ECN)

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior written permission of the copyright holder.

What are dioxins ?



'Dioxins' is a common name for a group of 210 compounds isomers/ of polychlorinated-dibenzo-*para*-dioxins and -dibenzofurans (PCDD/Fs)



Conditions essential for PCDD/Fs formation:

- **carbon source**
 - residual carbon on ash
 - gas-phase **Products of Incomplete Combustion** (PICs, TAR)
 - (fly) ash/char-adsorbed PICs
- **elevated temperature**
 - 700-900°C gas-phase reactions
 - 250-400°C catalytic reactions (surface = wall/ash catalysed)
- **chlorine source**
 - organic/inorganic chlorides
 - free Cl₂ (e.g. Deacon's reaction from HCl)

Only a (proper) combination of all three factors yields dioxins...

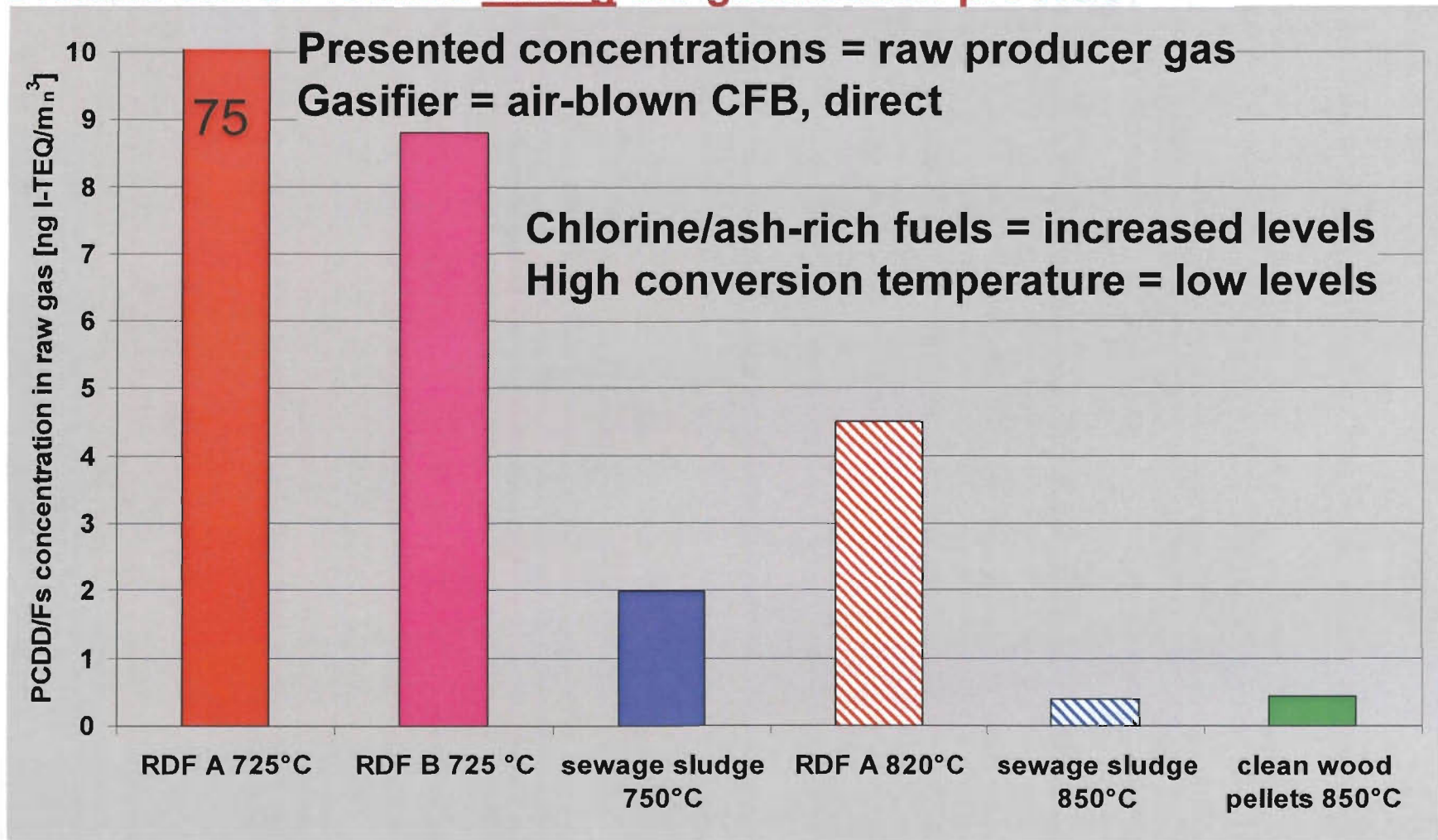
Toxicity measure: I-TEQ

- dioxins are toxic at low concentrations (already at $0.000000001 \text{ g/m}^3$)
- not all isomers are equally toxic
 - (2,3,7,8)-tetrachlorodioxin is 10 000 x as toxic as octachlorodioxin
- I-TEQ = International Toxicity Equivalent
- I-TEQ = (normalised) measure for dioxins toxicity
- concentration term in (producer of flue) gas (ng I-TEQ/m_n^3)
- European emission limit (flue) = $0.1 \text{ ng I-TEQ/m}_n^3$ (at 6% O_2 in flue gas)

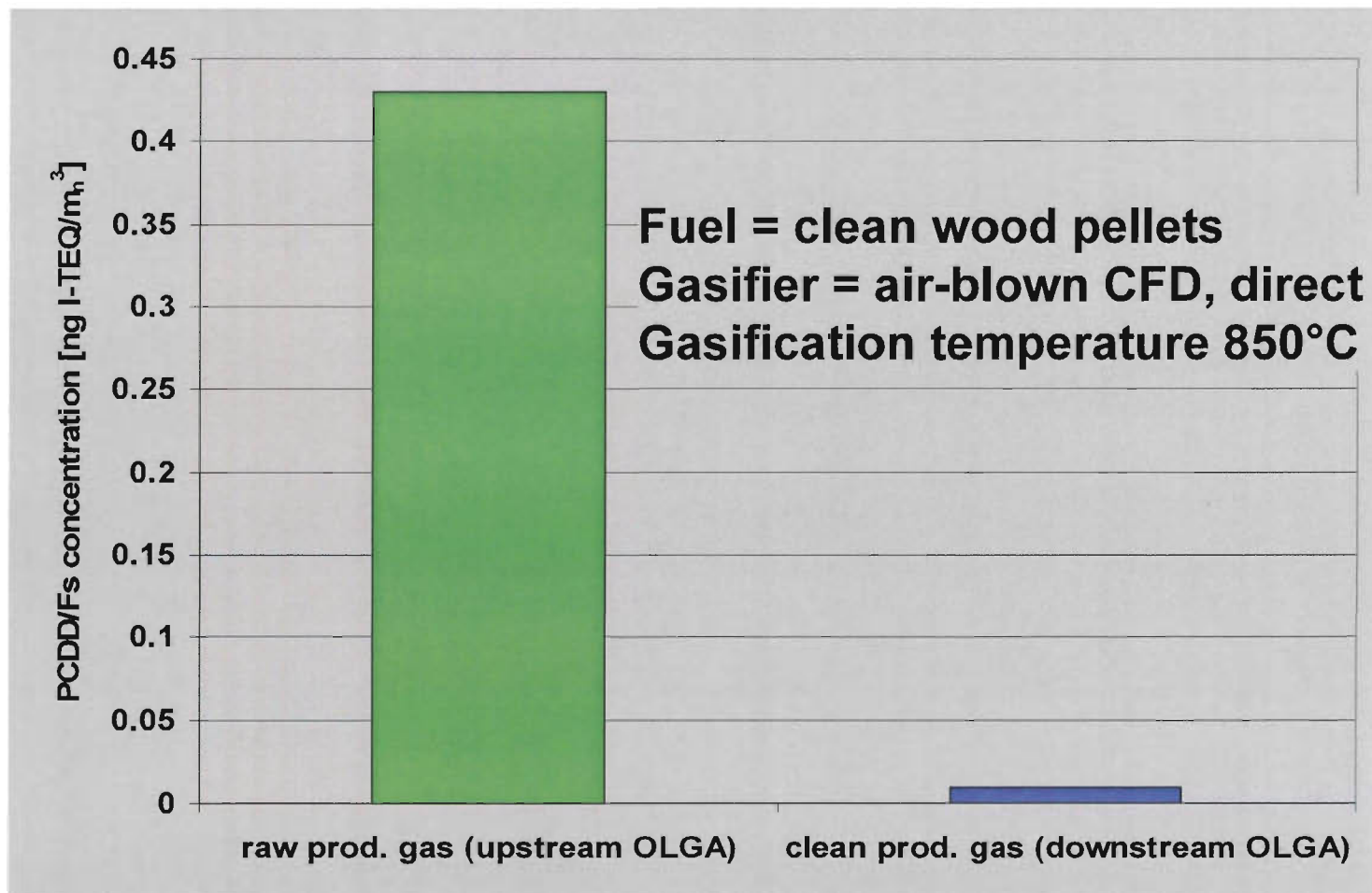
Reference (raw gas) emission levels: waste vs coal vs biomass

- **Municipal Solid Waste Incineration (500 MW_{th}):**
 - EU 0.5-20 ng (I-TEQ)/m³, in the US 20-200 (raw flue gas)
- **Pulverised coal-fired power plant (1500 MW_{th}):**
 - 0.005-0.05 ng (I-TEQ)/m³
- **Fluidised-bed boiler (65 MW_{th}, waste/thinning-wood-fired)**
 - continuous operation: < 0.1 ng (I-TEQ)/m³
- **Small-scale (100 kW_{th}) (clean) wood-stoves:**
 - continuous operation: 0.05-1.0 ng (I-TEQ)/m³
 - stop-and-go: 0.25-5.0 ng (I-TEQ)/m³
- **Fireplace (10 kW_{th})**
 - wood logs: 0.25-1.5, waste wood up to 2.4 ng (I-TEQ)/m³

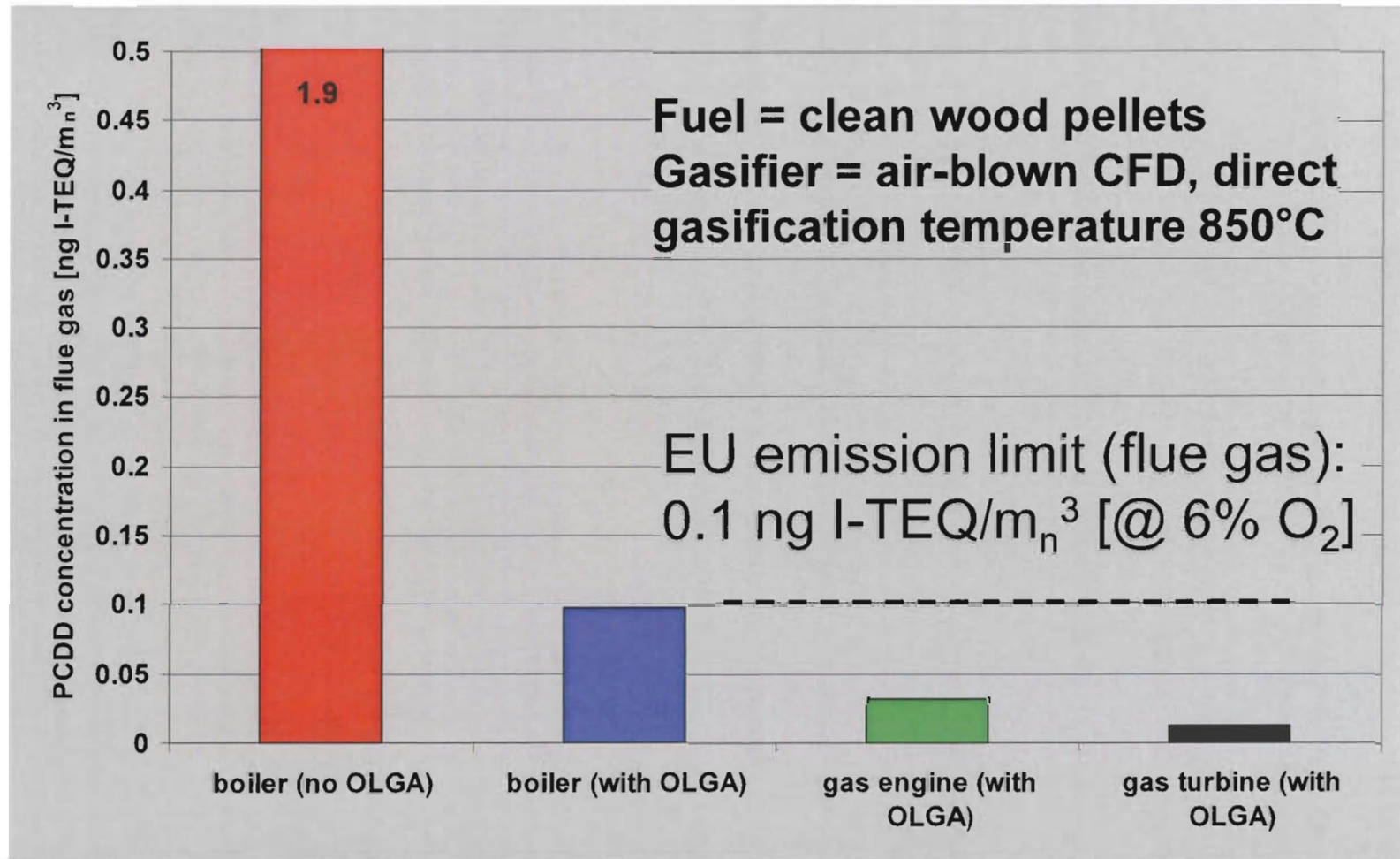
Dioxins can be formed during the gasification process



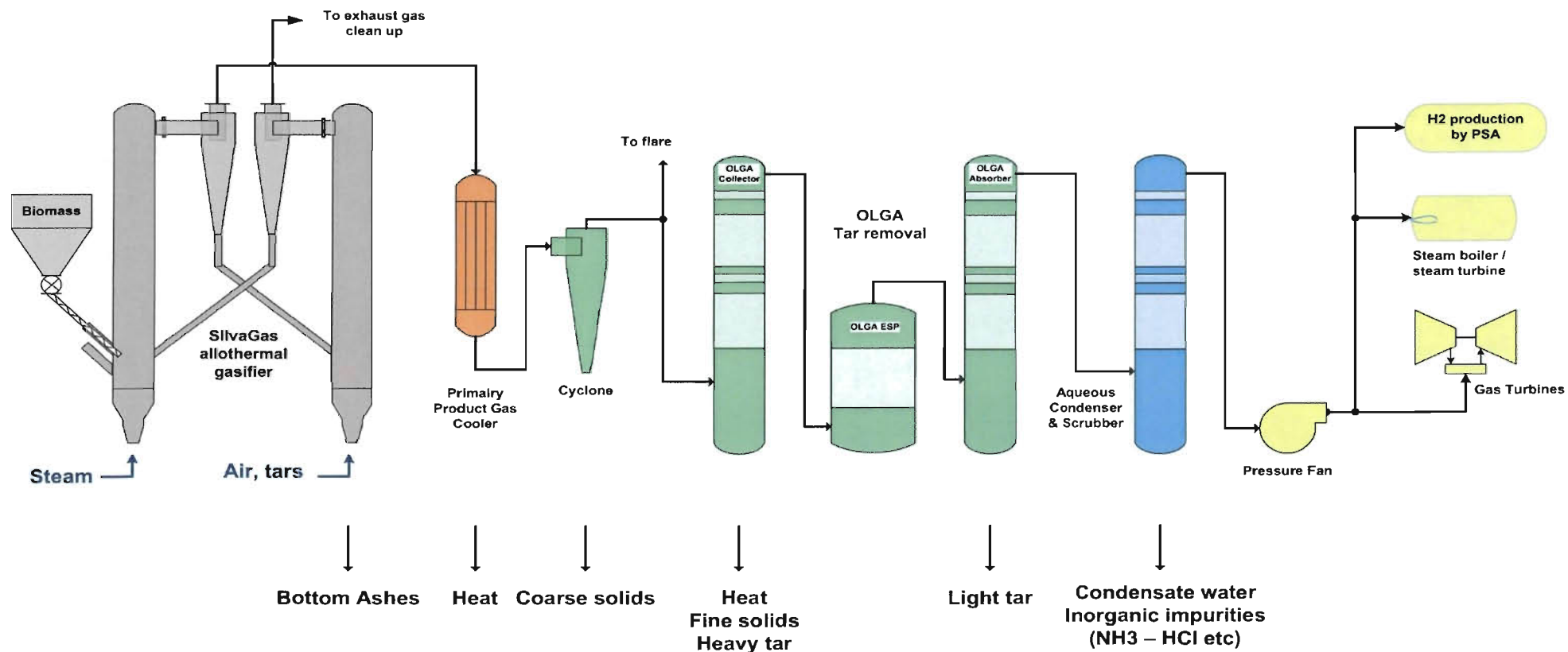
OLGA removes tars and dioxins from producer gas



Emissions from 'prime movers' (with & without OLGA)



The Northwest Florida Renewable Energy Center plant design

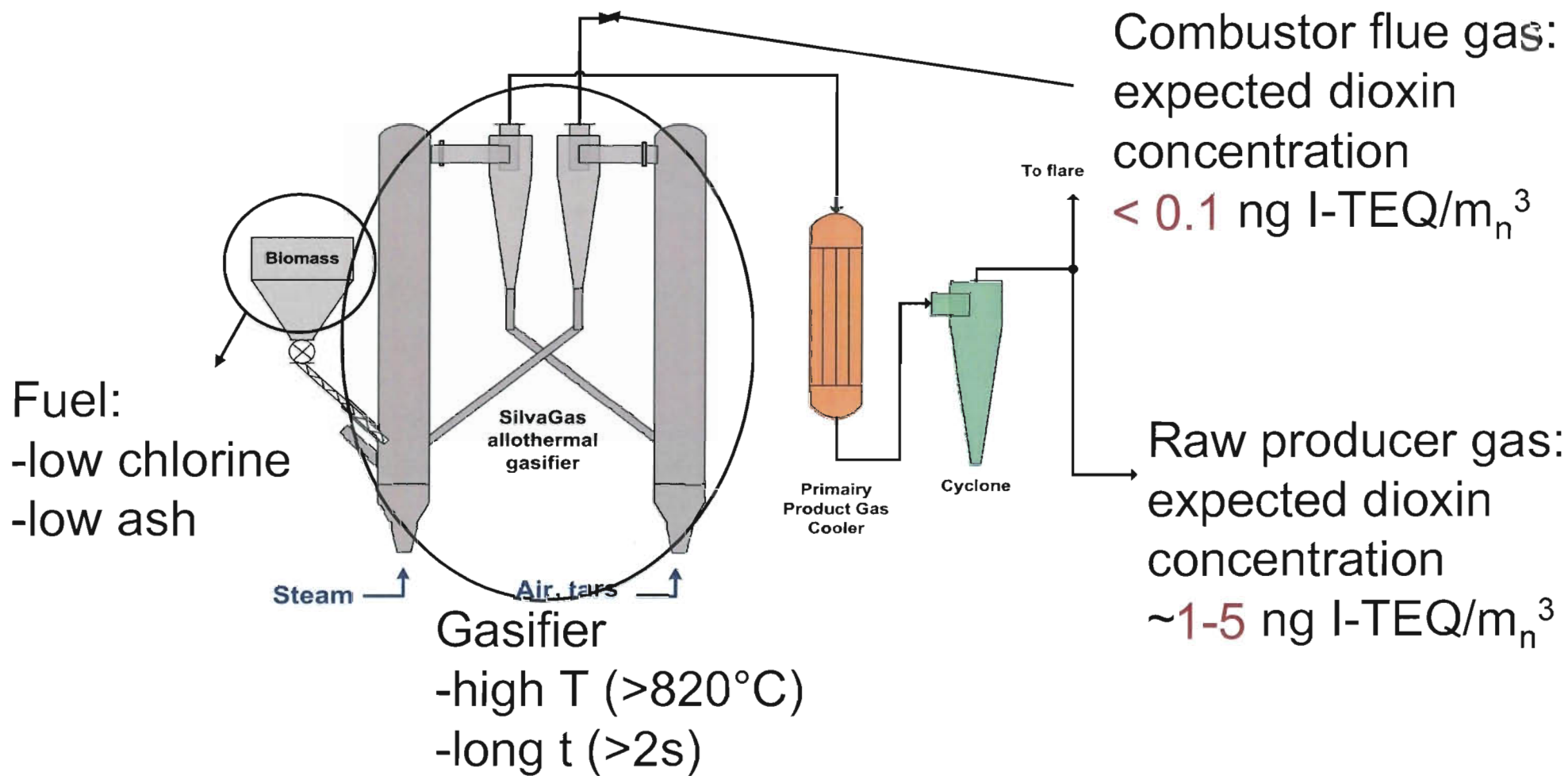


Gasifier

OLGA

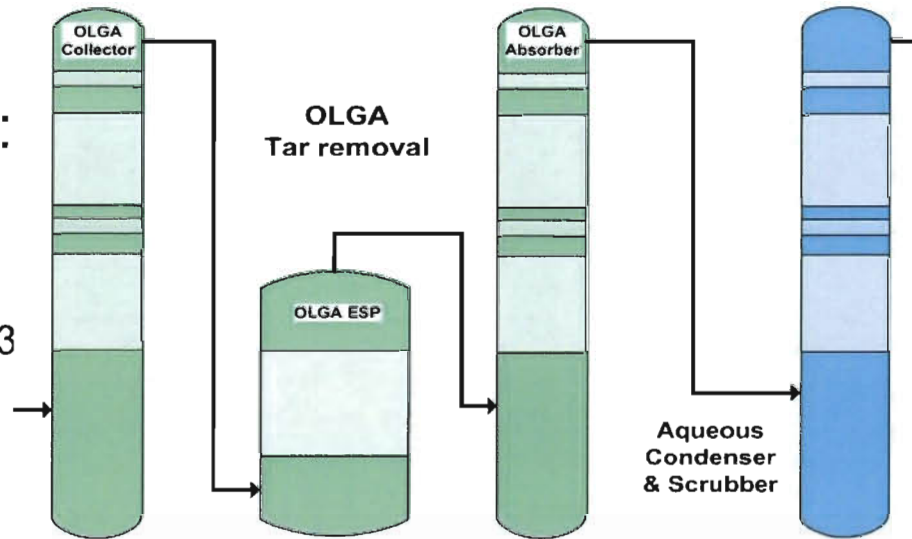
Prime movers

NWFREC plant: fuel, gas production – expected emissions



NWFREC plant: OLGA tar & dioxin reduction

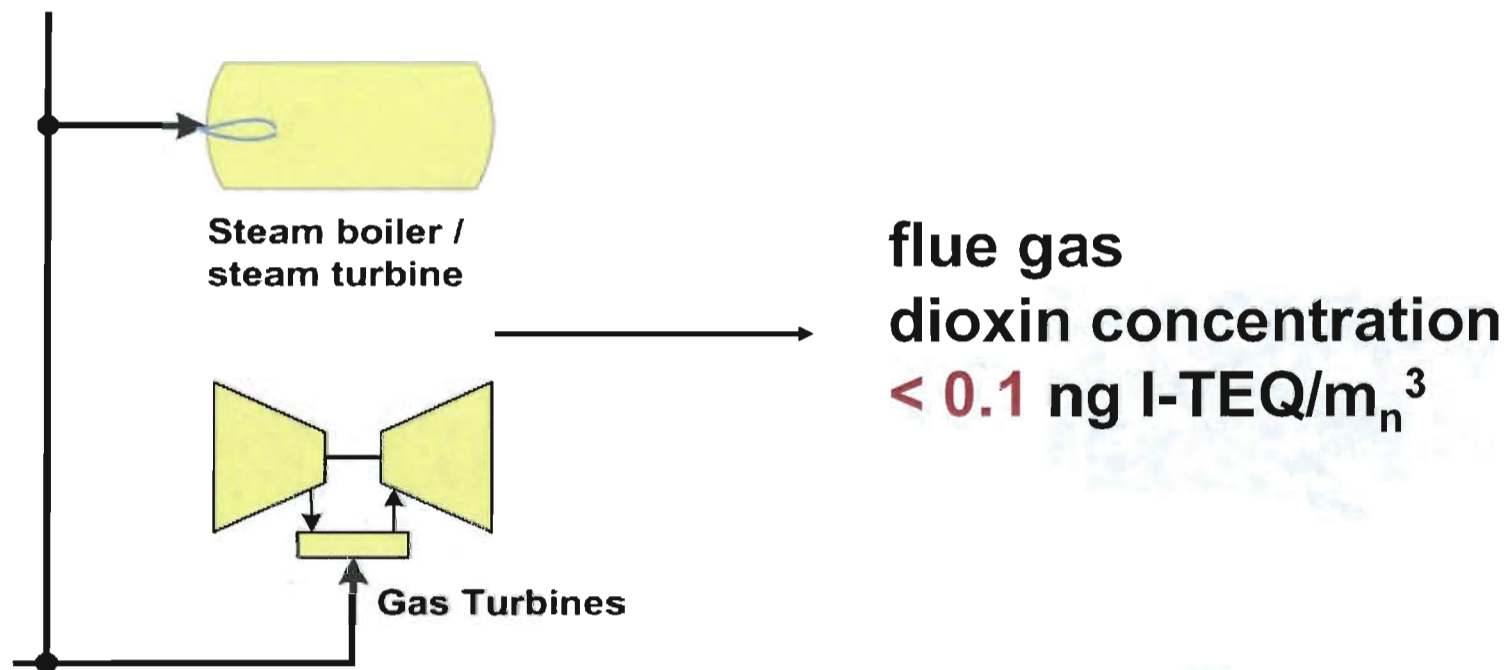
Raw producer gas:
 expected dioxin
 concentration
 ~ **1-5** ng I-TEQ/m_n³



clean producer gas:
 expected dioxin
 concentration
 ~ **0.2-1** ng I-TEQ/m_n³

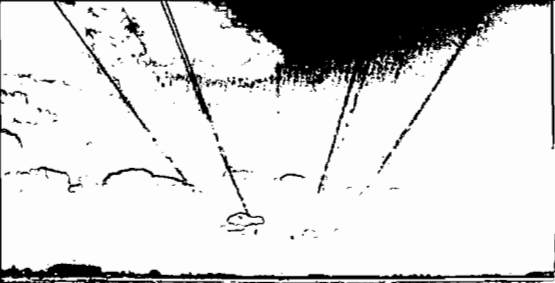
@ 80% removal efficiency (conservative estimate)

NWFREC plant: expected emissions from prime movers

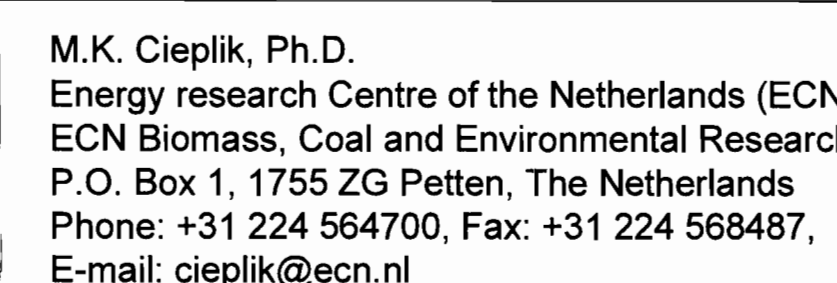




Energy research Centre of the Netherlands



M.K. Cieplik, Ph.D.
Energy research Centre of the Netherlands (ECN)
ECN Biomass, Coal and Environmental Research
P.O. Box 1, 1755 ZG Petten, The Netherlands
Phone: +31 224 564700, Fax: +31 224 568487,
E-mail: cieplik@ecn.nl



www.ecn.nl

**ATTACHMENT 3
FLARE SYSTEM DESCRIPTION**

Revised Table 3-8. Flare System Emissions

Parameter	Value	Units	Source/Description
Energy Input to Flare	469	MMBtu/hr	
Annual Operation	100	hr/yr	
TOC			
Emission Factor	0.14	lb/MMBtu	AP-42 Table 13.5-1
Emission Rate	66	lb/hr	Emission Rate = Emission Factor * Energy Input
Emission Rate	3	tpy	Emission Rate (tpy) = Emission Rate (lb/hr) * 100 / 2000
CO			
Emission Factor	0.37	lb/MMBtu	AP-42 Table 13.5-1
Emission Rate	173	lb/hr	Emission Rate = Emission Factor * Energy Input
Emission Rate	9	tpy	Emission Rate (tpy) = Emission Rate (lb/hr) * 100 / 2000
NOx			
Emission Factor	0.07	lb/MMBtu	AP-42 Table 13.5-1
Emission Rate	32	lb/hr	Emission Rate = Emission Factor * Energy Input
Emission Rate	2	tpy	Emission Rate (tpy) = Emission Rate (lb/hr) * 100 / 2000
SO2 (Based on Mass Balance)			
Heating Value	435	Btu/scf	Heating Value of Syngas @ 14.7 psia & 60°F
Syngas Flow	1,076,045	scf/hr	468.5 MMBtu * 1,000,000 / 435 btu/scf
H2S in syngas	0.02	% by vol	
H2S Flow	215.2	scf/hr	1,076,045 scf/hr * 0.0005 vol %
gas constant	0.0029	cf-atm/mol-K	Constant
H2S Molar Flow	257.24	g-mol/hr	$n = (1 \text{ atm}) * (5.4 \text{ scf/hr}) / (0.0029 \text{ cf-atm/mol-K}) / (288.7\text{K})$
MW SO2	64	g/g-mol	1 mol of H2S forms 1 mol of SO2
SO2 Mass Flow	16,489	g/hr	6.43 gmol/hr * 64.1 g/gmol
SO2 Mass Flow	36.4	lb/hr	412 g/hr / 453.59 g/lb
SO2 Mass Flow	1.82	tpy	0.9 lb/hr * 100 / 2000

Soot (PM)

AP-42, Table 13.5-1--- fuels with a C:H ratio of less than 0.33 tend not to soot. The average C:H ratio in the syngas is less than 0.33.

**REVISED TABLE 3-1
BEH PROJECT SUMMARY OF POTENTIAL AIR EMISSIONS**

Pollutant (TPY)	New CTs (1, 2, & 3) ^a	Gasifier Combustor	Cooling Tower	Material Handling	Auxiliary Boiler	Flare	Dryer	Project Total Emissions
SO ₂	11.9	13.1	NA	NA	0.09	1.82	NA	27
PM	61.6	2.5	1.03	12.4	0.03	-- ^b	0.10	78
PM ₁₀	61.6	2.5	0.73	7.00	0.03	-- ^b	0.01	72
NO _x	118.1	42.0	NA	NA	1.47	1.59	NA	163
CO	72.3	14.0	NA	NA	1.24	8.67	NA	96
VOC (as methane)	13.7	7.0	NA	NA	0.08	3.28	NA	24
Fluoride	-- ^b	-- ^b	NA	NA	NA	-- ^b	NA	0
Lead	-- ^b	-- ^b	NA	NA	NA	-- ^b	NA	0
Total HAPs	5.8	5.2	NA	NA	0.03	-- ^b	NA	11

^a Based on emissions at 55°F.

^b Emissions are negligible

Source: Golder, 2011

Revised Table 2-2. Shutdown Emissions Summary

Emission Component	Source	Turnaround Shutdowns, TPY	Emergency Shutdowns, TPY	Total Annual Emissions (TPY)
NO _x	Gasifier Island/Flare	0.025	0.06	0.085
PM ₁₀		0.0025	0.0005	0.003
PM		0.0025	0.0005	0.003
CO	Gasifier Island/Flare	0.0011	0.0008	0.0019
VOC	Gasifier Island/Flare	0.0003	0.0002	0.0005
SO ₂	Gasifier Island/Flare	0.009	0.006	0.015

* Based upon information from SilvaGas and AP-42 Section 1.1 for Cyclone Furnace, Bituminous

** Based on an estimated 6 planned shutdowns/yr and an estimated 4 emergency shutdowns/yr

Revision: 3/14/11

Revised Table 2.2a. Startup Emission Summary

Parameter		Value	Units	Source/Description
Natural Gas Combustion Phase	Natural Gas Heating Value	1,020	Btu/scf	
	Natural Gas Event Operation	21	hr/Start-up Event	
	Combuster Burner	17	MMBtu/hr	
	Gasifier Burner	25	MMBtu/hr	
Biomass Combustion, Heat-up Phase	Feedstock Rate	23.2	dry TPH	
	Wood Heating Value (Hog Fuel,)	4,560	Btu/lb	
	Wood Chip Operational Hours	1	hr/Start-up Event	
Biogas Gasification, Vent Clean Gas	Energy Input to Flare	469	MMBtu/hr	
	Operational Hours (Clean Gas)	1	hr/Start-up Event	
CO				
Natural Gas Combustion Phase	Emission Factor	84	lb/MMscf	AP-42 Table 1.4-1
	Emission Rate	3.46	lb/hr	
	Emission Rate	0.0363	tons per event	
Biomass Combustion, Heat-up Phase	Emission Factor	0.60	lb/MMBtu	AP-42 Table 1.6-1 (Bark)
	Emission Rate	126.95	lb/hr	
	Emission Rate	0.0635	tons per event	
Biogas Gasification, Vent Clean Gas	Emission Factor	0.37	lb/MMBtu	AP-42 Table 13.5-1
	Emission Rate	173.35	lb/hr	Emission Rate = Emission Factor * Energy Input
	Emission Rate	0.09	tpy	Emission Rate (tpy) = Emission Rate (lb/hr) * 100 /2000
		303.76	lb/hr	
		0.1865	tons per event	
	TOTAL	1.86	tons per year (Assume 10 start-ups a year)	
NOX				
Natural Gas Combustion Phase	Emission Factor	100	lb/MMscf	AP-42 Table 1.4-1
	Emission Rate	4.12	lb/hr	
	Emission Rate	0.0432	tons per event	
Biomass Combustion, Heat-up Phase	Emission Factor	0.22	lb/MMBtu	AP-42 Table 1.6-1 (Bark)
	Emission Rate	46.55	lb/hr	
	Emission Rate	0.0233	tons per event	
Biogas Gasification, Vent Clean Gas	Emission Factor	0.068	lb/MMBtu	AP-42 Table 13.5-1
	Emission Rate	31.86	lb/hr	Emission Rate = Emission Factor * Energy Input
	Emission Rate	0.02	tpy	Emission Rate (tpy) = Emission Rate (lb/hr) * 100 /2000
		82.52	lb/hr	
		0.0824	tons per event	
	TOTAL	0.82	tons per year (Assume 10 start-ups a year)	
SO2				
Natural Gas Combustion Phase	Emission Factor	0.6	lb/MMscf	AP-42 Table 1.4-2
	Emission Rate	0.02	lb/hr	
	Emission Rate	0.0003	tons per event	
Biomass Combustion, Heat-up Phase	sulfur content	0.03	% sulfur biomass	
	Emission Rate	14	lb of S per hour	
	Emission Rate	27.84	lb of SO2 per hour	
	Emission Rate	0.01	tons of SO2 per event	
Biogas Gasification, Vent Clean Gas	SO2 (Based on Mass Balance)			
	Heating Value	435	Btu/scf	Heating Value of Syngas @ 14.7 psia & 60°F
	Syngas Flow	1,076,045	scf/hr	468.5 MMBtu * 1,000,000 / 435 btu/scf
	H2S in syngas	0.0005	% by vol	clean gas
	H2S Flow	5.4	scf/hr	1,076,0045 scf/hr * 0.0005 vol %
	gas constant	0.0029	cf-atm/mol-K	Constant
	H2S Molar Flow	6.43	g-mol/hr	n= (1 atm) * (5.4 scf/hr) / (0.0029 cf-atm/mol-K) / (288.7K)
	MW SO2	64	g/g-mol	1 mol of H2S forms 1 mol of SO2
	SO2 Mass Flow	412	g/hr	6.43 gmol/hr * 64.1 g/gmol
	SO2 Mass Flow	0.9088	lb/hr	412 g/hr / 453.59 g/lb
	SO2 Mass Flow	0.0005	tons per event	0.9 lb/hr * 100 / 2000
			28.8	lb/hr
		0.015	tons per event	
	TOTAL	0.15	tons per year (Assume 10 start-ups a year)	

TOC

Natural Gas Combustion Phase	Emission Factor	11	lb/MMscf	AP-42 Table 1.4-2
	Emission Rate	0.45	lb/hr	
	Emission Rate	0.0048	tons per event	
Biomass Combustion, Heat-up Phase	Emission Factor	0.039	lb/MMBtu	AP-42 Table 1.6-3
	Emission Rate	8.25	lb/hr	
	Emission Rate	0.0041	tons per event	
Biogas Gasification, Vent Clean Gas	Emission Factor	0.14	lb/MMBtu	AP-42 Table 13.5-1
				Emission Rate = Emission Factor * Energy Input
	Emission Rate	65.59	lb/hr	Emission Rate (tpy) = Emission Rate (lb/hr) * 100 /2000
	Emission Rate	0.03	tpy	
		74.3	lb/hr	
		0.042	tons per event	
TOTAL		0.42	tons per year (Assume 10 start-ups a year)	

VOC

Natural Gas Combustion Phase	Emission Factor	5.5	lb/MMscf	AP-42 Table 1.4-2
	Emission Rate	0.23	lb/hr	
	Emission Rate	0.0024	tons per event	
Biomass Combustion, Heat-up Phase	Emission Factor	0.017	lb/MMBtu	AP-42 Table 1.6-3
	Emission Rate	3.60	lb/hr	
	Emission Rate	0.0018	tons per event	
		3.82	lb/hr	
		0.0042	tons per event	
TOTAL		0.042	tons per year (Assume 10 start-ups a year)	

PM Total

Natural Gas Combustion Phase	Emission Factor	7.6	lb/MMscf	AP-42 Table 1.4-2
	Emission Rate	0.31	lb/hr	
	Emission Rate	0.0033	tons per event	
Biomass Combustion, Heat-up Phase	Emission Factor	0.54	lb/MMBtu	AP-42 Table 1.6-1 (Bark)
	Emission Rate	114.26	lb/hr	
	Emission Rate	0.0571	tons per event	
		114.57	lb/hr	
		0.0604	tons per event	
TOTAL		0.604	tons per year (Assume 10 start-ups a year)	

NWFREC Port St Joe - Flare Stack SO2 Emissions

During start-up, and during planned and emergency trips, gasifier product gases will be vented to atmosphere via the flare stack located on a separate tower approximately 100 ft above grade.

There are two connections to the flare stack, one before the gas clean-up system, and one between the gas clean-up system and the fuel gas compressors/gas turbines. In normal operation, a gas turbine or gas compressor trip will cause clean fuel gas - 5 ppm H2S maximum - to be flared

The table below shows expected biomass feed rates, and the associated SO2 release rates at the flare tip, during start-up.

Note that initial gasifier start-up, to a gasifier temperature of about 1300 - 1400 F, is performed with natural gas with minimum SO2 release.

Biomass feed to the gasifier is started with the gasifier in combustion mode, and the products of combustion, containing biomass sulfur as SO2, are released through the flare.

Once the gasifier temperature reaches approximately 1350 - 1400 F, and hot sand flow is established, the biomass feed rate is increased, steam is added, and air is cut off to initiate gasification.

The raw gas so produced continues to flow to the flare until consistent gas composition is established, and the gas clean-up system is purged.

Then raw gas is introduced to the gas clean-up system, and clean gas is flared until the gas compressors and gas turbines are brought on line. As soon as raw gas flaring ceases, flare tip SO2 release will cease.

Gasifier trips and planned shut-downs involve tripping the biomass feed to the gasifier and directing the remaining raw gas to the flare.

Following the fuel trip, the gasifier is first purged with inert gas to the flare, followed by addition of air to burn out the bed material to a safe carbon content and temperature. As the carbon contained in the recirculating gasifier-combustor system is equivalent to only a few minutes of biomass feed, flare SO2 emissions will decline after a trip from close to the full load at the start of the trip, to an insignificant level, in less than 30 minutes.

Flare events lasting less than 30 minutes will not require analysis of ambient SO2 levels, and are not shown here

Phase:	Duration, Hours	Biomass Tons/hr average	Biomass Sulfur lb/hr average	SO2 emitted lb/hr
Natural Gas combustion	14 to 21	0	0	0
Initial Biomass Feed	1	23.2	13.9	27.8
Biomass gasification, vent clean gas	1	37.5	22.5	0.9

Biomass sulfur content = 0.03 % dry basis.

At 900 dry tons/day biomass feed rate, 37.5 tons/hr, the fuel contains 22.5 lb/hr Sulfur, if 100 % released as SO2, this would be 45 lb/hr SO2.

The sulfur contents of both natural gas, and of desulfurized fuel gas, have been ignored.

**ATTACHMENT 4
BIOMASS FEEDSTOCK DESCRIPTION**

Fuel Slate and Sources

The feedstock will consist of clean woody biomass that will be processed at a remote fuel preparation area (or areas) where it will be sorted, screened and chipped to size. NWFREC has identified the following possible, available feedstock types for their facility, including:

Summary of Woody Biomass Fuel Descriptions

Fuel Group	Description
Pine (slash, sand, loblolly)	
Hogged Fuel	Land clearing debris that has either been processed, run to a tub grinder, or a horizontal mill at a specific private forest clearing site.
Processed Butt Cuts	Round wood residues that are either of oversized or undersized non processible materials from post or pole manufacturers.
Fuel (vegetative) Crop	Examples include: Arundo donax and eucalyptus

Woody biomass consists of cellulose, hemicellulose, lignin and minerals. NWFREC submitted fuel analyses for biomass of the kind intended for use at the energy center facility. The key values are given below.

Analyses of candidate biomass feedstock

Parameter	Pine	Saw Dust	GP Fuel	Hogged Fuel	Knots Shives	Butt Cuts	Crop Fuels
Moisture (%)		59.68	36.14	34.54	61.59	31.52	23.35
Ash (%)	0.78	3.12	1.80	1.67	8.48	0.48	3.80
Calorific Value (Btu/lb)	8,985	8,458	9,061	8,254	7,655	8,336	8,070
Volatile Matter (%)		78.15	75.15	79.37	73.71	83.25	75.75
Fixed Carbon (%)		18.73	23.05	18.96	17.81	16.27	20.34
Sulfur (%)	0.018	0.02	0.06	0.03	0.36	0.01	0.11
Carbon (%)	50.0	50.11	55.38	47.20	46.25	51.65	47.37
Hydrogen (%)	6.9	6.01	6.51	5.56	5.74	6.10	5.73
Nitrogen (%)	0.25	0.26	0.27	0.34	0.11	0.19	0.44
Oxygen (%)	46.6	40.48	35.98	45.20	39.06	41.57	42.50
Fluorine (ppmw)		<10	<10	<10	<10	<10	---
Chlorine (%)		0.02	0.02	0.02	0.09	0.03	0.00
Mercury (ppmw)		<0.02	<0.02	0.03	<0.02	<0.02	---

**ATTACHMENT 5
EMERGENCY GENERATOR AND FIRE WATER PUMP**

EMISSIONS UNIT INFORMATION

Section [8] of [9]
Emergency Generator

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for an initial, revised or renewal Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for an air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application - Where this application is used to apply for both an air construction permit and a revised or renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes, and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit addressed in this application that is subject to air construction permitting and for each such emissions unit that is a regulated or unregulated unit for purposes of Title V permitting. (An emissions unit may be exempt from air construction permitting but still be classified as an unregulated unit for Title V purposes.) Emissions units classified as insignificant for Title V purposes are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

EMISSIONS UNIT INFORMATION

Section [8] of [9]
Emergency Generator

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
Emergency Generator

3. Emissions Unit Identification Number:

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code: 49
--------------------------------	--------------------------------	--------------------------	--

8. Federal Program Applicability: (Check all that apply)

Acid Rain Unit

CAIR Unit

9. Package Unit:
Manufacturer: _____ Model Number: _____

10. Generator Nameplate Rating: **500 kW**

11. Emissions Unit Comment:

EMISSIONS UNIT INFORMATION

Section [8] of [9]
Emergency Generator

Emissions Unit Control Equipment/Method: Control ___ of ___

1. Control Equipment/Method Description:
2. Control Device or Method Code:

Emissions Unit Control Equipment/Method: Control ___ of ___

1. Control Equipment/Method Description:
2. Control Device or Method Code:

Emissions Unit Control Equipment/Method: Control ___ of ___

1. Control Equipment/Method Description:
2. Control Device or Method Code:

Emissions Unit Control Equipment/Method: Control ___ of ___

1. Control Equipment/Method Description:
2. Control Device or Method Code:

EMISSIONS UNIT INFORMATION

Section [8] of [9]
Emergency Generator

C. EMISSION POINT (STACK/VENT) INFORMATION

(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: TBD		2. Emission Point Type Code: 1			
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:					
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:					
5. Discharge Type Code:		6. Stack Height: 25 feet		7. Exit Diameter: 0.5 feet	
8. Exit Temperature: 942°F		9. Actual Volumetric Flow Rate: acfm		10. Water Vapor: %	
11. Maximum Dry Standard Flow Rate: dscfm			12. Nonstack Emission Point Height: feet		
13. Emission Point UTM Coordinates... Zone: East (km): North (km):			14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)		
15. Emission Point Comment: Table 3-10 presents emission point information. Specification sheet of emergency generator is provided in Appendix A to the attachment forms.					

EMISSIONS UNIT INFORMATION

**Section [8] of [9]
Emergency Generator**

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): Diesel/ Biodiesel		
2. Source Classification Code (SCC):		3. SCC Units: Gallons of fuel
4. Maximum Hourly Rate: 36.6	5. Maximum Annual Rate: 18,300	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment:		

Segment Description and Rate: Segment __ of __

1. Segment Description (Process/Fuel Type):		
2. Source Classification Code (SCC):		3. SCC Units:
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment:		

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
 POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS**
 (Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: CO		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 3.8 lb/hour 0.96 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 2.6 g/hp-hr Reference: 40 CFR Part 60, Subpart III, 40 CFR 89.112		7. Emissions Method Code: 5	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: 2.6 g/hp-hr x 671 hp x lb/453.6 g = 3.8 lb/hr 3.8 lb/hr x 500 hr/yr x ton/ 2,000 lb = 0.96 TPY			
11. Potential, Fugitive, and Actual Emissions Comment: See Table 3-10.			

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
 ALLOWABLE EMISSIONS**

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
 POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS**
 (Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: NOx		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 4.0 lb/hour 0.99 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 2.68 g/hp-hr Reference: 40 CFR Part 60, Subpart IIII, 40 CFR 89.112, AP-42		7. Emissions Method Code: 5	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: 2.68 g/hp-hr x 671 hp x lb/453.6 g = 4.0 lb/hr 4.0 lb/hr x 500 hr/yr x ton/ 2,000 lb = 0.99 TPY			
11. Potential, Fugitive, and Actual Emissions Comment: See Table 3-10.			

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
 ALLOWABLE EMISSIONS**

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
 POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS**
 (Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: PM/PM10		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 0.2 lb/hour 0.06 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 0.15 g/hp-hr Reference: 40 CFR Part 60, Subpart IIII, 40 CFR 89.112, AP-42		7. Emissions Method Code: 5	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: 0.15 g/hp-hr x 671 hp x lb/453.6 g = 0.2 lb/hr 0.2 lb/hr x 500 hr/yr x ton/ 2,000 lb = 0.06 TPY			
11. Potential, Fugitive, and Actual Emissions Comment: See Table 3-10.			

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
 ALLOWABLE EMISSIONS**

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
 POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS**
 (Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: SO2		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 0.01 lb/hour 0.0019 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 0.0015% S Reference:		7. Emissions Method Code: 2	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: 7.1 lb/gal x 36.6 gal/hr x 0.0015 % x (64/32) = 0.01 lb/hr 0.01 lb/hr x 500 hr/yr x ton/ 2,000 lb = 0.0019 TPY			
11. Potential, Fugitive, and Actual Emissions Comment: See Table 3-10.			

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
 ALLOWABLE EMISSIONS**

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
 POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS**
 (Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: VOC		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 0.5 lb/hour 0.12 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 7.05E-04 lb/hp-hr Reference: AP-42		7. Emissions Method Code: 3	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: 7.05E-04 lb/hp-hr x 671 hp = 0.5 lb/hr 0.5 lb/hr x 500 hr/yr x ton/ 2,000 lb = 0.12 TPY			
11. Potential, Fugitive, and Actual Emissions Comment: See Table 3-10.			

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
 ALLOWABLE EMISSIONS**

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

EMISSIONS UNIT INFORMATION

**Section [8] of [9]
Emergency Generator**

G. VISIBLE EMISSIONS INFORMATION

Complete Subsection G if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation __ of __

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: <input type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

Visible Emissions Limitation: Visible Emissions Limitation __ of __

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: <input type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

EMISSIONS UNIT INFORMATION

Section [8] of [9]
Emergency Generator

H. CONTINUOUS MONITOR INFORMATION

Complete Subsection H if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

EMISSIONS UNIT INFORMATION

**Section [8] of [9]
Emergency Generator**

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: <u>TBD</u> <input type="checkbox"/> Previously Submitted, Date _____
2. Fuel Analysis or Specification: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input checked="" type="checkbox"/> Attached, Document ID: <u>See Report</u> <input type="checkbox"/> Previously Submitted, Date _____
3. Detailed Description of Control Equipment: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: <u>N/A</u> <input type="checkbox"/> Previously Submitted, Date _____
4. Procedures for Startup and Shutdown: (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date _____ <input checked="" type="checkbox"/> Not Applicable (construction application)
5. Operation and Maintenance Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date _____ <input checked="" type="checkbox"/> Not Applicable
6. Compliance Demonstration Reports/Records: <input type="checkbox"/> Attached, Document ID: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> Previously Submitted, Date: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> To be Submitted, Date (if known): _____ Test Date(s)/Pollutant(s) Tested: _____ <input checked="" type="checkbox"/> Not Applicable Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.
7. Other Information Required by Rule or Statute: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

EMISSIONS UNIT INFORMATION

Section [8] of [9]
Emergency Generator

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications – N/A

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rules 62-212.400(4)(d) and 62-212.500(4)(f), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
3. Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements: <input checked="" type="checkbox"/> Attached, Document ID: <u>see below</u>
2. Compliance Assurance Monitoring: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
3. Alternative Methods of Operation: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
4. Alternative Modes of Operation (Emissions Trading): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

Additional Requirements Comment

The emergency generator is a Stationary Compression Ignition Internal Combustion Engine (Stationary ICE) and will be subject to the requirements of 40 CFR 60 Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, published July 11, 2006 and effective on September 11, 2006. The format of the final standard is an output-based emission standard for PM, NO_x, CO, and non-methane VOC (NMHC) and tiered based on model year. The Project will comply with the NSPS. Applicable emission standards and emission calculations are presented in Table 3-10. The emergency generator will be fired on ULSDO or bio-diesel.

The emergency generator is a Liquid Fueled Reciprocating Internal Combustion Engine (RICE) and shall comply with applicable provisions of 40 CFR 63 Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Stationary RICE. Pursuant to 40 CFR 63.6590(c) the generator must meet the requirements of Subpart ZZZZ by meeting the requirements of 40 CFR 60, Subpart IIII.

EMISSIONS UNIT INFORMATION

Section [9] of [9]
Fire Pump

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for an initial, revised or renewal Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for an air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application - Where this application is used to apply for both an air construction permit and a revised or renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes, and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit addressed in this application that is subject to air construction permitting and for each such emissions unit that is a regulated or unregulated unit for purposes of Title V permitting. (An emissions unit may be exempt from air construction permitting but still be classified as an unregulated unit for Title V purposes.) Emissions units classified as insignificant for Title V purposes are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

EMISSIONS UNIT INFORMATION

Section [9] of [9]
Fire Pump

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

- The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.
- The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

- This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).
- This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.
- This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:

Fire Water Pump engine

3. Emissions Unit Identification Number:

4. Emissions Unit Status Code:

C

5. Commence Construction Date:

6. Initial Startup Date:

7. Emissions Unit Major Group SIC Code:

49

8. Federal Program Applicability: (Check all that apply)

- Acid Rain Unit
- CAIR Unit

9. Package Unit:

Manufacturer:

Model Number:

10. Generator Nameplate Rating: **250 kW**

11. Emissions Unit Comment:

EMISSIONS UNIT INFORMATION

Section [9] of [9]
Fire Pump

Emissions Unit Control Equipment/Method: Control ___ of ___

1. Control Equipment/Method Description:

2. Control Device or Method Code:

Emissions Unit Control Equipment/Method: Control ___ of ___

1. Control Equipment/Method Description:

2. Control Device or Method Code:

Emissions Unit Control Equipment/Method: Control ___ of ___

1. Control Equipment/Method Description:

2. Control Device or Method Code:

Emissions Unit Control Equipment/Method: Control ___ of ___

1. Control Equipment/Method Description:

2. Control Device or Method Code:

EMISSIONS UNIT INFORMATION

Section [9] of [9]
Fire Pump

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate:
2. Maximum Production Rate:
3. Maximum Heat Input Rate: 2.7 million Btu/hr
4. Maximum Incineration Rate: pounds/hr tons/day
5. Requested Maximum Operating Schedule: 24 hours/day 7 days/week 52 weeks/year 250 hours/year
6. Operating Capacity/Schedule Comment:

EMISSIONS UNIT INFORMATION

Section [9] of [9]

Fire Pump

C. EMISSION POINT (STACK/VENT) INFORMATION

(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: TBD		2. Emission Point Type Code: 1	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:			
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:			
5. Discharge Type Code:		6. Stack Height: Feet	
		7. Exit Diameter: 0.6 feet	
8. Exit Temperature: 853.9°F		9. Actual Volumetric Flow Rate: Acfm	
		10. Water Vapor: %	
11. Maximum Dry Standard Flow Rate: dscfm		12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: East (km): North (km):		14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment: <p>Table 3-11 presents performance and emission data information.</p> <p>Specification sheet of fire pump is provided in Appendix B to the attachment forms.</p>			

EMISSIONS UNIT INFORMATION

Section [9] of [9]

Fire Pump

D. SEGMENT (PROCESS/FUEL) INFORMATION**Segment Description and Rate: Segment 1 of 1**

1. Segment Description (Process/Fuel Type): Diesel/ Biodiesel		
2. Source Classification Code (SCC):		3. SCC Units: Gallons of fuel
4. Maximum Hourly Rate: 19.4	5. Maximum Annual Rate: 4,850	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment:		

Segment Description and Rate: Segment __ of __

1. Segment Description (Process/Fuel Type):		
2. Source Classification Code (SCC):		3. SCC Units:
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment:		

EMISSIONS UNIT INFORMATION

Section [9] of [9]
Fire Pump

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
CO			EL
NOX			EL
PM/PM10			EL
SO2			EL
VOC			NS

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
 POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS**
 (Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: CO		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 1.9 lb/hour 0.24 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 2.6 g/hp-hr Reference: 40 CFR Part 60, Subpart IIII		7. Emissions Method Code: 5	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: 2.6 g/hp-hr x 335 hp x lb/453.6 g = 1.9 lb/hr 1.9 lb/hr x 250 hr/yr x ton/ 2,000 lb = 0.24 TPY			
11. Potential, Fugitive, and Actual Emissions Comment: See Table 3-11.			

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
 ALLOWABLE EMISSIONS**

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS**

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: NOx		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 2.0 lb/hour 0.24 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 2.68 g/hp-hr Reference: 40 CFR Part 60, Subpart III		7. Emissions Method Code: 5	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: 2.68 g/hp-hr x 335 hp x lb/453.6 g = 2.0 lb/hr 2.0 lb/hr x 250 hr/yr x ton/ 2,000 lb = 0.24 TPY			
11. Potential, Fugitive, and Actual Emissions Comment: See Table 3-11.			

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
 ALLOWABLE EMISSIONS**

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
 POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS**

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: PM/PM10		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 0.1 lb/hour 0.01 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 0.15 g/hp-hr Reference: 40 CFR Part 60, Subpart IIII		7. Emissions Method Code: 5	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: 0.15 g/hp-hr x 335 hp x lb/453.6 g = 0.1 lb/hr 0.1 lb/hr x 250 hr/yr x ton/ 2,000 lb = 0.01 TPY			
11. Potential, Fugitive, and Actual Emissions Comment: See Table 3-11.			

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
 ALLOWABLE EMISSIONS**

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
 POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS**
 (Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: SO2		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 0.0041 lb/hour 0.0005 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 0.0015% S Reference:		7. Emissions Method Code: 2	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: $7.1 \text{ lb/gal} \times 19.4 \text{ gal/hr} \times 0.0015 \% \times (64/32) = 0.0041 \text{ lb/hr}$ $0.0041 \text{ lb/hr} \times 250 \text{ hr/yr} \times \text{ton/} 2,000 \text{ lb} = 0.0005 \text{ TPY}$			
11. Potential, Fugitive, and Actual Emissions Comment: See Table 3-11.			

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
 ALLOWABLE EMISSIONS**

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
 POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS**
 (Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: VOC		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 0.2 lb/hour 0.03 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 7.05E-04 lb/hp-hr Reference: AP-42		7. Emissions Method Code: 3	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: 7.05E-04 lb/hp-hr x 335 hp = 0.2 lb/hr 0.2 lb/hr x 250 hr/yr x ton/ 2,000 lb = 0.03 TPY			
11. Potential, Fugitive, and Actual Emissions Comment: See Table 3-11.			

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
 ALLOWABLE EMISSIONS**

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

EMISSIONS UNIT INFORMATION

Section [9] of [9]
Fire Pump

G. VISIBLE EMISSIONS INFORMATION

Complete Subsection G if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation __ of __

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: <input type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

Visible Emissions Limitation: Visible Emissions Limitation __ of __

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: <input type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

EMISSIONS UNIT INFORMATION

Section [9] of [9]
Fire Pump

H. CONTINUOUS MONITOR INFORMATION

Complete Subsection H if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	<input type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

EMISSIONS UNIT INFORMATION

Section [9] of [9]
Fire Pump

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date _____
2. Fuel Analysis or Specification: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input checked="" type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date _____
3. Detailed Description of Control Equipment: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: <u>N/A</u> _____ <input type="checkbox"/> Previously Submitted, Date _____
4. Procedures for Startup and Shutdown: (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date _____ <input checked="" type="checkbox"/> Not Applicable (construction application)
5. Operation and Maintenance Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date _____ <input checked="" type="checkbox"/> Not Applicable
6. Compliance Demonstration Reports/Records: <input type="checkbox"/> Attached, Document ID: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> Previously Submitted, Date: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> To be Submitted, Date (if known): _____ Test Date(s)/Pollutant(s) Tested: _____ <input checked="" type="checkbox"/> Not Applicable Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.
7. Other Information Required by Rule or Statute: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

EMISSIONS UNIT INFORMATION

Section [9] of [9]
Fire Pump

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications – N/A

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rules 62-212.400(4)(d) and 62-212.500(4)(f), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
3. Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements: <input checked="" type="checkbox"/> Attached, Document ID: <u>See below</u>
2. Compliance Assurance Monitoring: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
3. Alternative Methods of Operation: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
4. Alternative Modes of Operation (Emissions Trading): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

Additional Requirements Comment

The fire water pump will be subject to the requirements of 40 CFR 60 Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, published July 11, 2006 and effective on September 11, 2006. The format of the final standard is an output-based emission standard for PM, NO_x, CO, and non-methane VOC (NMHC) and tiered based on model year. The Project will comply with the NSPS. Applicable emission standards and emission calculations are presented in Table 3-11. The fire water pump will be fired on ULSDO or bio-diesel.

The emergency fire water pump engine is a Liquid Fueled Reciprocating Internal Combustion Engine (RICE) and shall comply with applicable provisions of 40 CFR 63 Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Stationary RICE. Pursuant to 40 CFR 63.6590(c) fire pump engine must meet the requirements of Subpart ZZZZ by meeting the requirements of 40 CFR 60, Subpart IIII.

TABLES

**TABLE 3-10
PERFORMANCE AND EMISSION DATA
FOR EMERGENCY GENERATOR**

Parameter	Value
<u>Performance</u>	
Number of Units	1
Rating (kW)	500
Rating (hp)	671
Fuel	Diesel/Bio-Diesel
Fuel Heat content (Btu/lb) (HHV)	19,300
Fuel density (lb/gal)	7.1
Heat input (MMBtu/hr) (HHV)	5.02
Fuel usage (gallons/hr)	36.6
Maximum operation (hours)	500
Maximum fuel usage (gallons/yr)	18,300
<u>Emissions</u>	
SO ₂ - Basis (%S)	0.0015%
Conversion of S to SO ₂	100
Molecular weight SO ₂ / S (64/32)	2
Emission rate (lb/hr)	0.01
(TPY)	0.0019
NO _x - Basis (g/hp-hr)	2.68
Emission rate (lb/hr)	4.0
(TPY)	0.99
CO - Basis (g/hp-hr)	2.6
Emission rate (lb/hr)	3.8
(TPY)	0.96
VOC - Basis (g/hp-hr)	0.32
Emission rate (lb/hr)	0.5
(TPY)	0.12
PM/PM ₁₀ /PM _{2.5} - Basis (g/hp-hr)	0.15
Emission rate (lb/hr)	0.2
(TPY)	0.06

Source: Golder, 2009; 40 CFR Part 60, Subpart IIII, 40 CFR 89.112, AP-42

**TABLE 3-11
PERFORMANCE AND EMISSION DATA
FOR FIRE WATER PUMP**

Parameter	Value
<u>Performance</u>	
Number of Units	1
Rating (kW)	250
Rating (hp)	335
Fuel	Diesel/Bio-Diesel
Fuel Heat content (Btu/lb) (HHV)	19,300
Fuel density (lb/gal)	7.1
Heat input (MMBtu/hr) (HHV)	2.6584
Fuel usage (gallons/hr)	19.4
Maximum operation (hours/yr)	250
Maximum fuel usage (gallons/yr)	4,850
<u>Emissions</u>	
SO ₂ - Basis (%S)	0.0015%
Conversion of S to SO ₂	100
Molecular weight SO ₂ / S (64/32)	2
Emission rate (lb/hr)	0.0041
(TPY)	0.0005
NO _x - Basis (g/hp-hr)	2.68
Emission rate (lb/hr)	2.0
(TPY)	0.2474
CO - Basis (g/hp-hr)	2.6
Emission rate (lb/hr)	1.9
(TPY)	0.24
VOC - Basis (g/hp-hr)	0.32
Emission rate (lb/hr)	0.2
(TPY)	0.03
PM/PM ₁₀ /PM _{2.5} - Basis (g/hp-hr)	0.15
Emission rate (lb/hr)	0.1
(TPY)	0.01

Source: Golder, 2009; 40 CFR Part 60, Subpart III, AP-42

Appendix A
Emergency Generator Specifications

SPECIFICATIONS OF EMERGENCY GENERATOR

DIESEL GENERATOR SET

CATERPILLAR®

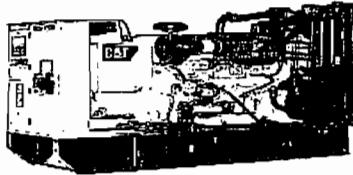


Image shown may not reflect actual package.

STANDBY

**500 ekW 625 kVA
60 Hz 1800 rpm 480 Volts**

Caterpillar is leading the power generation marketplace with Power Solutions engineered to deliver unmatched flexibility, expandability, reliability, and cost-effectiveness.

FEATURES

FUEL/EMISSIONS STRATEGY

- EPA Tier 2 and Low Emissions

DESIGN CRITERIA

- The generator set accepts 100% rated load in one step per NFPA 110 and meets ISO 8528-5 transient response.

UL 2200

- UL 2200 listed packages available. Certain restrictions may apply. Consult with your Caterpillar Dealer.

FULL RANGE OF ATTACHMENTS

- Wide range of bolt-on system expansion attachments, factory designed and tested
- Flexible packaging options for easy and cost effective installation

SINGLE-SOURCE SUPPLIER

- Fully prototype tested with certified torsional vibration analysis available

WORLDWIDE PRODUCT SUPPORT

- Caterpillar® dealers provide extensive post sale support including maintenance and repair agreements
- Caterpillar dealers have over 1,800 dealer branch stores operating in 200 countries
- The Cat® S-O-S™ program cost effectively detects internal engine component condition, even the presence of unwanted fluids and combustion by-products

CAT® C15 ATAAC DIESEL ENGINE

- Utilizes ACERT™ Technology
- Reliable, rugged, durable design
- Field-proven in thousands of applications worldwide
- Four-stroke diesel engine combines consistent performance and excellent fuel economy with minimum weight
- Electronic engine control

CAT GENERATOR

- Matched to the performance and output characteristics of Caterpillar engines
- Load adjustment module provides engine relief upon load impact and improves load acceptance and recovery time
- UL 1448 Recognized Class H insulation

CAT EMCP 3 SERIES CONTROL PANELS

- Simple user friendly interface and navigation
- Scalable system to meet a wide range of customer needs
- Integrated Control System and Communications Gateway

Stack Parameters

3842 cfm
942 deg F
0.5 diameter (ft)

fuel consumption

36.6 gal/hr

Appendix B
Fire Water Pump Engine Specifications

SPECIFICATIONS OF FIRE PUMP

DIESEL GENERATOR SET

CATERPILLAR®

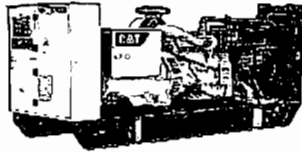


Image shown may not reflect actual package.

STANDBY
250 ekW 313 kVA
60 Hz 1800 rpm 480 Volts

Caterpillar is leading the power generation marketplace with Power Solutions engineered to deliver unmatched flexibility, expandability, reliability, and cost-effectiveness.

FEATURES

FUEL/EMISSIONS STRATEGY

- EPA Tier 3

DESIGN CRITERIA

- The generator set accepts 100% rated load in one step per NFPA 110 and meets ISO 8528-5 transient response.

UL 2200

- UL 2200 listed packages available. Certain restrictions may apply. Consult with your Caterpillar Dealer.

FULL RANGE OF ATTACHMENTS

- Wide range of bolt-on system expansion attachments, factory designed and tested
- Flexible packaging options for easy and cost effective installation

SINGLE-SOURCE SUPPLIER

- Fully prototype tested with certified torsional vibration analysis available

WORLDWIDE PRODUCT SUPPORT

- Caterpillar® dealers provide extensive post sale support including maintenance and repair agreements
- Caterpillar dealers have over 1,600 dealer branch stores operating in 200 countries
- The Cat® S-O-S™ program cost effectively detects internal engine component condition, even the presence of unwanted fluids and combustion by-products

CAT® CS ATAAC DIESEL ENGINE

- Utilizes ACERT™ Technology
- Reliable, rugged, durable design
- Field-proven in thousands of applications worldwide
- Four-stroke diesel engine combines consistent performance and excellent fuel economy with minimum weight
- ADEM™A4 electronic engine control

CAT GENERATOR

- Matched to the performance and output characteristics of Caterpillar engines
- Load adjustment module provides engine relief upon load impact and improves load acceptance and recovery time
- UL 1446 Recognized Class H insulation

CAT EMCP 3 SERIES CONTROL PANELS

- Simple user friendly interface and navigation
- Scalable system to meet a wide range of customer needs
- Integrated Control System and Communications Gateway

Stack Parameters

2243 cfm
854 deg F
0.6 diamter (ft)

fuel consumption

19.4 gal/hr