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DIVISION OF AIR
RESOURCE MANAGEMENT

June 25, 2012

Mr. David Lyle Read
Permitting Engineer
Office of Permitting and Compliance
Chemicals and Combustion Group
Division of Air Resource Management
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Subject: Response to Request for Additional Information
INEOS New Planet BioEnergy, Indian River County Facility
File No. 0610096-003-AC

Dear Mr. Read:

With this letter we are providing on behalf of INEWOS New Planet BioEnergy the information you identified in your letter Request for Additional Information, dated June 7, 2012. As you note in your letter, we have submitted an application to modify Air Construction Permit Nos. 0610096-001-AC and 0610096-002-AC. The primary purpose of the modification application is to request approval for an increase to the capacity of 84.5- Million British Thermal Units per hour (MMBtu/hr) burner in the Vent Gas Boiler (EU-006) to a larger capacity of 97.2-MMBtu/hr burner. However, as we have progressed further in the design and construction of the Indian River County Facility, we have learned that we will need greater use of the Syngas Flare (EU-010) during Facility commissioning, as well as during routine Gasifier and Fermenter start-ups. Specific Condition 3.H.3. of the current construction air permit restricts use of the Syngas Flare to 310.2 million standard cubic feet per year (mmscf/yr), equivalent to 300 hours of operation per year at its design heat input rate of 168.4 MMBtu/hr. We are **seeking to increase the permitted annual usage of the Syngas Flare to 496.2 mmscf/yr**, equivalent to 640 hours of operation per year at the design heat input rate.

With the initial air construction permit application we had conservatively estimated the hydrogen sulfide (H₂S) concentration in the syngas and in the fermenter off-gas to be about 700 and 1,000 parts per million by volume (ppmv), respectively. These two streams would go untreated to the Syngas Flare during start-up, until the gas flow is of sufficient pressure to be used in the Vent Gas Boiler. The very high H₂S inlet concentrations to the Syngas Flare would cause the Facility sulfur dioxide (SO₂) potential emission rate to exceed the Prevention of Significant Deterioration (PSD) program threshold of 100 tons/year if the annual flow rate to the Syngas Flare were substantially



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increased. We have re-evaluated H₂S concentration data from the pilot testing facility, and have concluded that we can lower the H₂S concentration basis for both streams to 500 ppmv, and still conservatively represent upper-bound conditions. With this reduced estimate of H₂S inlet concentrations, we expect lower pounds per hour (lb/hr) SO₂ emission rates from both the Syngas Flare and the Vent Gas Boiler. We have adjusted the SO₂ maximum potential emission rates accordingly, and based on the request for increasing the permitted annual usage of the Syngas Flare to 496.2 mmscf/yr, the revised Facility SO₂ emission rate total is maintained under the PSD threshold. In your June 7th letter, you requested additional information to provide the Department reasonable assurance that the revised SO₂ air emission rates will not trigger the PSD program. We are providing responses, below, in the order requested in your letter.

Comment No. 1 Calculations and Revised Permit Application Pages. "Should your response to any of the items below require new calculations, please submit the new calculations, assumptions, reference materials and appropriate revised pages of the application form."

Response No. 1 Revised calculations for maximum potential emission rates for the Syngas Flare and for the Vent Gas Boiler are included in **Attachment 1** to this letter. These calculations also show the revised Facility totals. Changes in the calculations are highlighted in color; only the Syngas Flare and Vent Gas Boiler emission rates have changed.

The reduction in the H₂S mass entering the Vent Gas Boiler burner also reduced the Boiler's exhaust volumetric and mass gas flow rates. This, in turn, reduced all of the mass-based (lb/hr and ton/yr) air pollutant emission rates from the Vent Gas Boiler, not just the SO₂ emission rate. None of the concentration-based limits in the modification application have changed. The reduction in exhaust flow and mass emission rates means that INEOS no longer needs to request an annual capacity restriction for Vent Gas Boiler steam production. Therefore, we are revising our application, as shown in the application forms attached, to request unrestricted use of the Vent Gas Boiler.

Attachment 2 contains the revised application form pages for the Syngas Flare and Vent Gas Boiler.

Comment No. 2 Acid Gas Control System Vendor Guarantee. "The SO₂ concentration in the flue gas stream from the vent gas boiler must be reduced

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significantly to allow the operational hours of the syngas flare to be increased to the level desired by INEOS. A reduction in the SO₂ concentration could affect the control efficiency guarantee from the vendor of the sorbent injection system that will be used to control SO₂ emission from the vent gas boiler. Please submitted proof that the original vendor guarantee of 85% removal efficiency is still valid."

Response No. 2 **Attachment 3** contains the email confirmation from Filter Designs Ltd., the vendor of the sorbent injection system for the Vent Gas Boiler, that the guarantee of 85 percent SO₂ removal is valid with the reduced design inlet specification for H₂S.

Comment No. 3 **Syngas Hydrogen Sulfide (H₂S) Sampling Protocol: "Please submit a sampling protocol to the Department to measure the syngas H₂S concentration prior to inlet to the fermenter or any another appropriate location. The sampling protocol may be based on quarterly or semiannual samples. The purpose of the protocol is to provide reasonable assurance that the H₂S concentration in the syngas is 500 parts per million (ppm) instead of the 1,000 ppm assumed in previously submitted permit applications. In lieu of a sampling protocol, an H₂S continuous monitor may be installed to provide the reasonable assurance."**

Response No. 3 H₂S in the Fermenter off-gas (vent gas) will be analyzed several times an hour for H₂S content with a continuous on-line gas chromatograph (GC). H₂S in the Fermenter vent gas is mainly the result of nutrients fed to the Fermenter. This is a controlled parameter that will be monitored continuously, and controlled at a value considerably below 500 ppmv.

There is no continuous H₂S analyzer for the syngas stream produced by the Gasifiers. INEOS proposes to collect bag samples from a port at the inlet to the Fermenter, and inject these samples into the on-site GC for H₂S analysis quarterly, and whenever the feedstock is modified.

Comment No. 4 **Pilot Facility H₂S Feedstock Test Data. "Please submit the test data from the pilot facility showing that the H₂S concentration in the syngas when gasifying the feedstocks (vegetative and municipal wastes) that**



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will be used in the INEOS facility is 500 ppm instead of the 1000 ppm that was used in previous permit applications."

Response No. 4 A summary of the pilot facility sampling results is included in **Attachment 4.**

Forms containing the required Professional Engineer Certification and the Responsible Official Certification for this additional information are included in Attachment 2.

We greatly appreciate your guidance and review of this application. Please feel free to contact either me or Ms. Cynthia Hibbard of CDM Smith (617-452-6244) if you have additional questions.

Sincerely,

A handwritten signature in cursive script that reads "Jill Grimaldi".

Jill Grimaldi
Principal
CDM Smith, Inc.

File: 90438-85178

cc: David King, INPB
William Smith, INEOS
Nigel Falcon, INEOS
Joseph Curro, CDM Smith
Gretchen Janssen, CDM Smith
Cynthia Hibbard, CDM Smith



Attachment No. 1

Revised Calculations

Attachment 1

INPB IRC BioEnergy Facility

Summary of Estimated Maximum Potential Emission Rates

Facility Wide Emission Rates, pounds per hour

	Short Term Emissions (lb/hr)											
	NOx	CO	SOx	VOC	PM10	PM2.5	Pb	Total HAP	Hg	HCl	PCDD/PCDF	Cd
Feedstock Handling area	---	---	---	---	---	---	---	---	---	---	---	---
<i>Paved Road</i>	---	---	---	---	1.32	0.20	---	---	---	---	---	---
<i>Materials Handling Operations</i>	---	---	---	---	5.49E-03	8.31E-04	---	---	---	---	---	---
<i>Shredding and Screening</i>	---	---	---	---	2.52	2.52	---	---	---	---	---	---
<i>Shredder and Screen Engines</i>	6.98	6.61	0.43	---	0.38	0.38	---	---	---	---	---	---
<i>Feedstock Windrows</i>	---	---	---	7.62	---	---	---	---	---	---	---	---
Emergency Fire Pump Engine	6.20	1.34	0.08	---	0.44	0.44	---	---	---	---	---	---
Emergency Standby Generator	2.67	5.34	2.53E-03	1.33	0.04	0.04	---	---	---	---	---	---
Feedstock Dryers	---	---	---	7.62	0.86	0.86	---	1.24	---	---	---	---
Vent Gas Boiler	20.52	4.16	10.24	2.12	1.72	1.72	1.43E-02	1.10	5.01E-03	1.08	9.30E-07	1.43E-03
Distillation	---	---	---	0.11	---	---	---	4.03E-02	---	---	---	---
Syngas Flare	6.66	124.96	70.03	8.23	2.83	2.83	6.37E-02	15.49	2.60E-03	15.00	---	1.11E-03
Tank Farm	---	---	---	0.42	---	---	---	1.31E-02	---	---	---	---
Dry Chemical Silos	---	---	---	---	0.15	0.15	---	---	---	---	---	---
Cooling Tower	---	---	---	---	0.48	0.48	---	---	---	---	---	---
Loading Area Flare	0.14	2.65	---	0.41	5.71E-02	5.71E-02	---	1.55E-03	---	---	---	---
Miscellaneous Tanks	---	---	---	5.68E-02	---	---	---	9.84E-04	---	---	---	---
Total	43.17	145.05	80.78	27.93	10.81	9.68	7.80E-02	17.90	7.61E-03	16.08	9.30E-07	2.54E-03

Facility Wide Emission Rates, tons per year

	Annual Emissions (tpy)											
	NOx	CO	SOx	VOC	PM10	PM2.5	Pb	Total HAP	Hg	HCl	PCDD/PCDF	Cd
Feedstock Handling area	---	---	---	---	---	---	---	---	---	---	---	---
<i>Paved Road</i>	---	---	---	---	2.87	0.43	---	---	---	---	---	---
<i>Materials Handling Operations</i>	---	---	---	---	1.20E-02	1.82E-03	---	---	---	---	---	---
<i>Shredding and Screening</i>	---	---	---	---	4.72	4.72	---	---	---	---	---	---
<i>Shredder and Screen Engines</i>	13.07	12.37	0.80	---	0.72	0.72	---	---	---	---	---	---
<i>Feedstock Windrows</i>	---	---	---	33.38	---	---	---	---	---	---	---	---
Emergency Fire Pump Engine	0.31	0.07	4.05E-03	---	2.20E-02	2.20E-02	---	---	---	---	---	---
Emergency Standby Generator	0.13	0.27	1.26E-04	0.07	2.04E-03	2.04E-03	---	---	---	---	---	---
Feedstock Dryers	---	---	---	33.38	3.79	3.79	---	5.45	---	---	---	---
Vent Gas Boiler	72.09	18.29	44.98	9.33	7.54	7.54	6.28E-02	4.85	2.20E-02	4.76	4.08E-06	6.28E-03
Distillation	---	---	---	0.46	---	---	---	0.18	---	---	---	---
Syngas Flare	2.17	40.62	22.41	2.65	0.92	0.92	9.56E-03	4.87	3.90E-04	4.80	---	1.67E-04
Tank Farm	---	---	---	1.69	---	---	---	5.25E-02	---	---	---	---
Dry Chemical Silos	---	---	---	---	0.66	0.66	---	---	---	---	---	---
Cooling Tower	---	---	---	---	2.11	2.11	---	---	---	---	---	---
Loading Area Flare	7.41E-02	1.39	---	1.66	2.00E-02	2.00E-02	---	5.42E-04	---	---	---	---
Miscellaneous Tanks	---	---	---	0.25	---	---	---	4.31E-03	---	---	---	---
Total	87.85	73.00	68.20	82.88	23.37	20.92	7.24E-02	15.41	2.24E-02	9.56	4.08E-06	6.45E-03

Attachment 1

INPB IRC BioEnergy Facility

Estimated Emission Rates for the Vent Gas Boiler, Based on Vendor Information and 40 CFR 60 Subparts AAAAA and VVa

From Vent Gas Boiler Vendor:

Maximum Heat Input Rate	97.2 MMBTU/hr, Vendor Information
Flue Gas Flow Rate	86,556 lb/hr, Vendor Information
Flue Gas Oxygen Content	2.3% O ₂ , Vendor Information

Updated per new Heat and Material Balance Information using 500ppm H₂S in Fermenter Off-Gas

From INPB Material Balance:

Flue Gas Density	0.087 lb/ft ³ , INPB Material Balance	
Aspen Water in Flue Gas	523.9 lbmol/hr, INPB Material Balance	
Aspen Flue Gas Flow	2,821.8 lbmol/hr, INPB Material Balance	
Flue Gas Temperature	312.8 °F, INPB Material Balance,	429 degrees Kelvin
Flue Gas Pressure	23.4 psi, INPB Material Balance	
SO ₂ exiting boiler	68.28 lb/hr, INPB Material Balance	
Steam Production Rate	62,700 lb/hr, INPB Material Balance	

From Code of Federal Regulations, Title 40 Part 60:

NSPS Standard Temperature	68 °F, 40 CFR 60.2,	293 degrees Kelvin
NSPS Standard Pressure	14.7 psi, 40 CFR 60.2	
Needed for NSPS comparison	7% O ₂ , 40 CFR 60 Subpart AAAAA	
Needed for NSPS comparison	3% O ₂ , 40 CFR 60 Subpart VVa	

Calculated Values:

Flue Gas Volumetric Flow Rate	16,582 ACFM
Dry Standard Cubic Feet per Minute	19,090 DSCFM @ 7% O ₂
Dry Standard Cubic Meters per Minute	541 dscmm @ 7% O ₂
Dry Standard Cubic Meters per Minute	420 dscmm @ 3% O ₂
Dry Standard Cubic Meters per MMBtu	334 dscm/MMBtu @ 7% O ₂
Dry Standard Cubic Meters per MMBtu	259 dscm/MMBtu @ 3% O ₂
Steam Production Rate:	645 lb steam per MMBtu of heat input

Annual Steam Production (unrestricted):

Heat Input	853,805 MMBtu/year, measured as	Removed the steam restriction
Steam Production	550,756,800 lb of steam/year	

From Vent Gas Boiler Vendor guarantees:

NO _x Concentration	150 ppmdv, corrected to	7% O ₂ conc., based on a 24-hour daily block arithmetic average
NO _x Concentration	120 ppmdv, corrected to	7% O ₂ conc., based on a rolling average 12-month average of the 24-hour daily block averages.

From Air Pollution Control Vendor Guarantee:

SO ₂ Removal Efficiency	85%				
HCl Concentration	10 ppmv, corrected to	7% O ₂ conc. @	293 K	and 1 atm, or	95% removal, whichever is less stringent

From 40 CFR 60 Subpart AAAAA:

PM Concentration	24 mg/dscm, corrected to	7% O ₂ conc. @	293 K	and 1 atm
CO Concentration	50 ppmdv, corrected to	7% O ₂ conc. @	293 K	and 1 atm
PCDD/PCDF Concentration	13 ng/dscm, corrected to	7% O ₂ conc. @	293 K	and 1 atm
Cd Concentration	0.02 mg/dscm, corrected to	7% O ₂ conc. @	293 K	and 1 atm
Pb Concentration	0.2 mg/dscm, corrected to	7% O ₂ conc. @	293 K	and 1 atm

From 40 CFR 60 Subpart VVa:

VOC Concentration	20 ppmv, corrected to	3% O ₂ conc.	293 K	and 1 atm	(If can demonstrate 95% removal, should use mass balance and inlet conc.)
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From 62-296.416, F.A.C.:

Hg Concentration	0.07 mg/dscm, corrected to	7% O ₂ conc.	293 K	and 1 atm	(If can demonstrate 85% removal, should use mass balance and inlet conc.)
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Attachment 1

INPB IRC BioEnergy Facility

Estimated Emission Rates for the Vent Gas Boiler, Based on Vendor Information and 40 CFR 60 Subparts AAAAA and VVa

Hydrogen Chloride Emissions

From Vendor Guarantee

Calculated HCl emission rate:

$$\frac{541 \text{ dscm}}{\text{min}} \cdot \frac{10}{1.E+06} \frac{\text{mol HCl}}{\text{moles}} \cdot \frac{41.57 \text{ moles}}{1 \text{ dscm}} \cdot \frac{36.46 \text{ g}}{1 \text{ mole}} \cdot \frac{1 \text{ lb}}{453.59 \text{ g}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} = \boxed{1.08 \frac{\text{lb}}{\text{hr}}}$$

Calculated HCl annual emission rate:

$$\frac{334 \text{ dscm}}{\text{MMBtu}} \cdot \frac{10}{1.E+06} \frac{\text{mol HCl}}{\text{moles}} \cdot \frac{41.57 \text{ moles}}{1 \text{ dscm}} \cdot \frac{36.46 \text{ g}}{1 \text{ mole}} \cdot \frac{1 \text{ ton}}{907,180 \text{ g}} \cdot \frac{853,805 \text{ MMBtu}}{1 \text{ year}} = \boxed{4.76 \frac{\text{ton}}{\text{year}}}$$

Dioxins/Furans (PCDD/PCDF) Emissions

From AAAAA:

Calculated PCDD/PCDF emission rate:

$$\frac{13 \text{ ng}}{1 \text{ dscm}} \cdot \frac{541 \text{ dscm}}{\text{min}} \cdot \frac{1 \text{ lb}}{4.54E+11 \text{ ng}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} = \boxed{9.30E-07 \frac{\text{lb}}{\text{hr}}}$$

Calculated PCDD/PCDF annual emission rate:

$$\frac{13 \text{ ng}}{1 \text{ dscm}} \cdot \frac{334 \text{ dscm}}{1 \text{ MMBtu}} \cdot \frac{1 \text{ ton}}{9.07E+14 \text{ ng}} \cdot \frac{853,805 \text{ MMBtu}}{1 \text{ year}} = \boxed{4.08E-06 \frac{\text{ton}}{\text{year}}}$$

Cadmium Emissions

From AAAAA:

Calculated Cd emission rate:

$$\frac{0.02 \text{ mg}}{1 \text{ dscm}} \cdot \frac{541 \text{ dscm}}{\text{min}} \cdot \frac{1 \text{ lb}}{4.54E+05 \text{ mg}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} = \boxed{1.43E-03 \frac{\text{lb}}{\text{hr}}}$$

Calculated Cd annual emission rate:

$$\frac{0.02 \text{ mg}}{1 \text{ dscm}} \cdot \frac{334 \text{ dscm}}{1 \text{ MMBtu}} \cdot \frac{1 \text{ ton}}{9.07E+08 \text{ mg}} \cdot \frac{853,805 \text{ MMBtu}}{1 \text{ year}} = \boxed{6.28E-03 \frac{\text{ton}}{\text{year}}}$$

Lead Emissions

From AAAAA:

Calculated Pb emission rate:

$$\frac{0.2 \text{ mg}}{1 \text{ dscm}} \cdot \frac{541 \text{ dscm}}{\text{min}} \cdot \frac{1 \text{ lb}}{4.54E+05 \text{ mg}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} = \boxed{1.43E-02 \frac{\text{lb}}{\text{hr}}}$$

Calculated Pb annual emission rate:

$$\frac{0.2 \text{ mg}}{1 \text{ dscm}} \cdot \frac{334 \text{ dscm}}{1 \text{ min}} \cdot \frac{1 \text{ ton}}{9.07E+08 \text{ mg}} \cdot \frac{853,805 \text{ MMBtu}}{1 \text{ year}} = \boxed{6.28E-02 \frac{\text{ton}}{\text{year}}}$$

Attachment 1

INPB IRC BioEnergy Facility

Estimated Emission Rates for Syngas Flare, Based on AP-42 Section 2.4 Municipal Solid Waste Landfills (Enclosed Flare)

Volumetric Flow	12,924 dscfm	
Flare Heat Rate	168.4 MMBtu/hr	
Maximum Flare Operation	640 hr/year*	<i>increased from 300 hr/year</i>
Pilot Flow Rate	325 scf/hr	
Pilot Heat Rate	0.21 MMBtu/hr	
Pilot Operation	8,760 hr/year	

*Note: The 640 hours per year used in the calculations are assumed at maximum operating potential. These hours are equivalent to 496,281,600 dry standard cubic feet per year. CDM requests on behalf of INPB that a permit limit be set on the volumetric flow to the flare in place of an hours limitation.

PM Emission Factor	17 lb/10 ⁶ dscf methane	0.017 lb/MMBtu
NO ₂ Emission Factor	40 lb/10 ⁶ dscf methane	0.040 lb/MMBtu
CO Emission Factor	750 lb/10 ⁶ dscf methane	0.741 lb/MMBtu
Methane Heat of Combustion	1012 Btu/scf methane	
NMOC Emission Factor	2420 ppmv as hexane	
HCl rate	15 lb/hr	
H ₂ S Rate	35.22 lb/hr	
COS Rate	3.5 lb/hr	
Assume	98% control of VOC	

AP-42 Section 2.4, Table 2.4-5
 AP-42 Section 2.4, Table 2.4-5
 AP-42 Section 2.4, Table 2.4-5

AP-42 Section 2.4, Table 2.4-2 and 2.4-3

Updated per new Heat and Material Balance information using 500ppm H₂S in Fermenter Off-Gas

PM Emissions

Calculated PM emission rate during flare operation:

$$\frac{0.017 \text{ lb}}{1 \text{ MMBtu}} \cdot \frac{168 \text{ MMBtu}}{1 \text{ hr}} = \boxed{2.83 \frac{\text{lb}}{\text{hr}}}$$

Maximum Combined Hourly PM Emission Rate:

$$\boxed{2.83 \frac{\text{lb}}{\text{hr}}}$$

Calculated PM emission rate during pilot operation:

$$\frac{0.017 \text{ lb}}{1 \text{ MMBtu}} \cdot \frac{0.21 \text{ MMBtu}}{1 \text{ hr}} = \boxed{0.004 \frac{\text{lb}}{\text{hr}}}$$

Calculated PM annual emission rate:

$$\left(2.8 \frac{\text{lb}}{\text{hr}} \cdot \frac{640 \text{ hour}}{1 \text{ year}} + 0.004 \frac{\text{lb}}{\text{hr}} \cdot \frac{8,760 \text{ hour}}{1 \text{ year}} \right) \cdot \frac{1 \text{ ton}}{2000 \text{ lb}} = \boxed{0.92 \frac{\text{ton}}{\text{year}}}$$



Attachment 1

INPB IRC BioEnergy Facility

Estimated Emission Rates for Syngas Flare, Based on AP-42 Section 2.4 Municipal Solid Waste Landfills (Enclosed Flare)

Nitrogen Oxide Emissions

Calculated NO₂ emission rate during flare operation:

$$\frac{0.040 \text{ lb}}{1 \text{ MMBtu}} \times \frac{168 \text{ MMBtu}}{1 \text{ hr}} = \boxed{6.66 \frac{\text{lb}}{\text{hr}}}$$

Maximum Combined Hourly NO₂ Emission Rate:

$$\boxed{6.66 \frac{\text{lb}}{\text{hr}}}$$

Calculated NO₂ emission rate during pilot operation:

$$\frac{0.040 \text{ lb}}{1 \text{ MMBtu}} \times \frac{0.21 \text{ MMBtu}}{1 \text{ hr}} = \boxed{0.008 \frac{\text{lb}}{\text{hr}}}$$

Calculated NO₂ annual emission rate:

$$\left(6.7 \frac{\text{lb}}{\text{hr}} \times \frac{640 \text{ hour}}{1 \text{ year}} + 0.008 \frac{\text{lb}}{\text{hr}} \times \frac{8,760 \text{ hour}}{1 \text{ year}} \right) \times \frac{1 \text{ ton}}{2000 \text{ lb}} = \boxed{2.17 \frac{\text{ton}}{\text{year}}}$$

Carbon Monoxide Emissions

Calculated CO emission rate during flare operation:

$$\frac{0.741 \text{ lb}}{1 \text{ MMBtu}} \times \frac{168 \text{ MMBtu}}{1 \text{ hr}} = \boxed{124.80 \frac{\text{lb}}{\text{hr}}}$$

Maximum Combined Hourly CO Emission Rate:

$$\boxed{124.96 \frac{\text{lb}}{\text{hr}}}$$

Calculated CO emission rate during pilot operation:

$$\frac{0.741 \text{ lb}}{1 \text{ MMBtu}} \times \frac{0.21 \text{ MMBtu}}{1 \text{ hr}} = \boxed{0.16 \frac{\text{lb}}{\text{hr}}}$$

Calculated CO annual emission rate:

$$\left(124.80 \frac{\text{lb}}{\text{hr}} \times \frac{640 \text{ hour}}{1 \text{ year}} + 0.16 \frac{\text{lb}}{\text{hr}} \times \frac{8,760 \text{ hour}}{1 \text{ year}} \right) \times \frac{1 \text{ ton}}{2000 \text{ lb}} = \boxed{40.62 \frac{\text{ton}}{\text{year}}}$$

Volatile Organic Compounds Emissions

Calculated NMOC emission rate as hexane during flare operation:

$$\frac{2420 \text{ cf}}{1000000 \text{ cf}} \times \frac{12,924 \text{ dscf}}{\text{min}} \times \frac{1 \text{ lbmol}}{392 \text{ dscf}} \times \frac{86 \text{ lb}}{1 \text{ lbmol}} \times \frac{60 \text{ min}}{\text{hr}} \times (1 - 0.98) = \boxed{8.23 \frac{\text{lb}}{\text{hr}}}$$

Calculated NMOC emission rate as hexane during pilot operation:

$$\frac{2420 \text{ cf}}{1000000 \text{ cf}} \times \frac{325 \text{ dscf}}{\text{hr}} \times \frac{1 \text{ lbmol}}{392 \text{ dscf}} \times \frac{86 \text{ lb}}{1 \text{ lbmol}} \times (1 - 0.98) = \boxed{3.45E-03 \frac{\text{lb}}{\text{hr}}}$$

Maximum Combined Hourly Emission Rate:

$$\boxed{8.23 \frac{\text{lb}}{\text{hr}}} \text{ NMOC as Hexane}$$

Calculated NMOC annual emission rate as hexane:

$$\left(8.2 \frac{\text{lb}}{\text{hr}} \times \frac{640 \text{ hour}}{1 \text{ year}} + 0.003 \frac{\text{lb}}{\text{hr}} \times \frac{8,760 \text{ hour}}{1 \text{ year}} \right) \times \frac{1 \text{ ton}}{2000 \text{ lb}} = \boxed{2.65 \frac{\text{ton}}{\text{year}}}$$

Attachment 1

INPB IRC BioEnergy Facility

Estimated Emission Rates for Syngas Flare, Based on AP-42 Section 2.4 Municipal Solid Waste Landfills (Enclosed Flare)

Sulfur Dioxide Emissions

Calculated maximum SO₂ emission rate assuming all sulfur is emitted as SO₂:

$$\begin{aligned}
 & \frac{35.22 \text{ lb H}_2\text{S}}{\text{hr}} * \frac{1 \text{ lbmol H}_2\text{S}}{34 \text{ lb H}_2\text{S}} * \frac{1 \text{ lbmol S}}{1 \text{ lbmol H}_2\text{S}} * \frac{1 \text{ lbmol SO}_2}{1 \text{ lbmol S}} * \frac{64 \text{ lb SO}_2}{1 \text{ lbmol SO}_2} = \frac{66.30 \text{ lb SO}_2}{\text{hr}} \\
 & \frac{3.50 \text{ lb COS}}{\text{hr}} * \frac{1 \text{ lbmol COS}}{60 \text{ lb COS}} * \frac{1 \text{ lbmol S}}{1 \text{ lbmol COS}} * \frac{1 \text{ lbmol SO}_2}{1 \text{ lbmol S}} * \frac{64 \text{ lb SO}_2}{1 \text{ lbmol SO}_2} = \frac{3.73 \text{ lb SO}_2}{\text{hr}} \\
 & \frac{66.30 \text{ lb SO}_2}{\text{hr}} + \frac{3.73 \text{ lb SO}_2}{\text{hr}} = \boxed{70.03 \frac{\text{lb}}{\text{hr}}}
 \end{aligned}$$

Calculated SO₂ annual emission rate:

$$\frac{70.03 \text{ lb}}{\text{hr}} * \frac{1 \text{ ton}}{2000 \text{ lb}} * \frac{640 \text{ hour}}{1 \text{ year}} = \boxed{22.41 \frac{\text{ton}}{\text{year}}}$$

Hydrogen Chloride Emissions

Assume Hydrogen Chloride, HCl emission rate:

$$\frac{15.00 \text{ lb HCl}}{\text{hr}}$$

Calculated HCl annual emission rate:

$$\frac{15.00 \text{ lb}}{\text{hr}} * \frac{1 \text{ ton}}{2000 \text{ lb}} * \frac{640 \text{ hour}}{1 \text{ year}} = \frac{4.80 \text{ ton HCl}}{\text{year}}$$

Attachment No. 2

Revised Application Form Pages



Department of Environmental Protection

Division of Air Resource Management

APPLICATION FOR AIR PERMIT - LONG FORM

I. APPLICATION INFORMATION

Air Construction Permit – Use this form to apply for an air construction permit:

- For any required purpose at a facility operating under a federally enforceable state air operation permit (FESOP) or Title V air operation permit;
- For a proposed project subject to prevention of significant deterioration (PSD) review, nonattainment new source review, or maximum achievable control technology (MACT);
- To assume a restriction on the potential emissions of one or more pollutants to escape a requirement such as PSD review, nonattainment new source review, MACT, or Title V; or
- To establish, revise, or renew a plantwide applicability limit (PAL).

Air Operation Permit – Use this form to apply for:

- An initial federally enforceable state air operation permit (FESOP); or
- An initial, revised, or renewal Title V air operation permit.

To ensure accuracy, please see form instructions.

Identification of Facility

1. Facility Owner/Company Name: INEOS NEW PLANET BIOENERGY	
2. Site Name: INDIAN RIVER BIOENERGY CENTER	
3. Facility Identification Number: 0610096	
4. Facility Location... Street Address or Other Locator: 925 74th Avenue City: VERO BEACH County: INDIAN RIVER Zip Code: 32968-9702	
5. Relocatable Facility? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6. Existing Title V Permitted Facility? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Application Contact

1. Application Contact Name: GRETCHEN JANSSEN	
2. Application Contact Mailing Address... Organization/Firm: CDM SMITH Street Address: 1701 HIGHWAY A-1-A, SUITE 301 City: VERO BEACH State: FL Zip Code: 32963	
3. Application Contact Telephone Numbers... Telephone: (772)231-4301 ext. Fax: (772)231-4332	
4. Application Contact E-mail Address: janssenge@cdmsmith.com	

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	3. PSD Number (if applicable):
2. Project Number(s):	4. Siting Number (if applicable):

APPLICATION INFORMATION

Purpose of Application

This application for air permit is being submitted to obtain: (Check one)

Air Construction Permit

- Air construction permit.
- Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL).
- Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL), and separate air construction permit to authorize construction or modification of one or more emissions units covered by the PAL.

Air Operation Permit

- Initial Title V air operation permit.
- Title V air operation permit revision.
- Title V air operation permit renewal.
- Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is required.
- Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is not required.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit (Concurrent Processing)

- Air construction permit and Title V permit revision, incorporating the proposed project.
- Air construction permit and Title V permit renewal, incorporating the proposed project.

Note: By checking one of the above two boxes, you, the applicant, are requesting concurrent processing pursuant to Rule 62-213.405, F.A.C. In such case, you must also check the following box:

- I hereby request that the department waive the processing time requirements of the air construction permit to accommodate the processing time frames of the Title V air operation permit.

Application Comment

The following form includes only the pages with information that has changed since the original permit modification application (Application No. 3211-1) was submitted on April 9, 2012.

APPLICATION INFORMATION

Scope of Application (RAI Response)

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Processing Fee
6	VENT GAS BOILER	ACM2	N/A - RAI Response
10	SYNGAS FLARE	ACM2	N/A - RAI Response

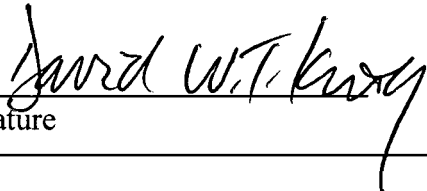
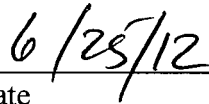
Application Processing Fee

Check one: Attached - Amount: \$ _____ Not Applicable

APPLICATION INFORMATION

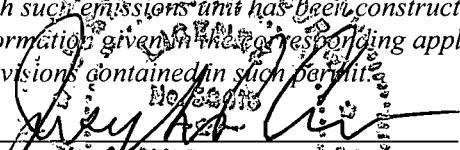
Owner/Authorized Representative Statement

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

1. Owner/Authorized Representative Name : DAVID KING, PRESIDENT
2. Owner/Authorized Representative Mailing Address... Organization/Firm: INEOS NEW PLANET BIOENERGY Street Address: 925 74TH AVENUE City: VERO BEACH State: FL Zip Code: 32968-9702
3. Owner/Authorized Representative Telephone Numbers... Telephone: (772) 794-7905 ext. Fax: () -
4. Owner/Authorized Representative E-mail Address: david.king@ineos.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  Date

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: JOSEPH CURRO Registration Number: 58416
2. Professional Engineer Mailing Address... Organization/Firm: CDM Smith Inc. Street Address: 1701 HIGHWAY A-1-A, SUITE 301 City: VERO BEACH State: FL Zip Code: 32963
3. Professional Engineer Telephone Numbers... Telephone: (772)231-4301 ext. Fax: (772) 231-4332
4. Professional Engineer E-mail Address: CURROJP@CDMSMITH.COM
5. Professional Engineer Statement: <i>I, the undersigned, hereby certify, except as particularly noted herein*, that:</i> (1) <i>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> (2) <i>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> (3) <i>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> (4) <i>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> (5) <i>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> <div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  Signature _____ (seal) </div> <div style="text-align: center;"> 6/25/12 _____ Date </div> </div>

* Attach any exception to certification statement.

Facility Regulatory Classifications

Check all that would apply *following* completion of all projects and implementation of all other changes proposed in this application for air permit. Refer to instructions to distinguish between a “major source” and a “synthetic minor source.”

1. <input type="checkbox"/> Small Business Stationary Source	<input type="checkbox"/> Unknown
2. <input type="checkbox"/> Synthetic Non-Title V Source	
3. <input checked="" type="checkbox"/> Title V Source	
4. <input type="checkbox"/> Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5. <input checked="" type="checkbox"/> Synthetic Minor Source of Air Pollutants, Other than HAPs	
6. <input type="checkbox"/> Major Source of Hazardous Air Pollutants (HAPs)	
7. <input checked="" type="checkbox"/> Synthetic Minor Source of HAPs	
8. <input checked="" type="checkbox"/> One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9. <input type="checkbox"/> One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10. <input type="checkbox"/> One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11. <input type="checkbox"/> Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	
12. Facility Regulatory Classifications Comment: Synthetic minor for PSD pollutants; Stationary engines are subject to the area source RICE MACT Requirements, 40 CFR 63 Subpart ZZZZ	

FACILITY INFORMATION

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
H106	(SM) POTENTIAL EMISSION BELOW MAJOR SOURCE THRESHOLD IF AND ONLY IF SOURCE COMPLIES WITH FEDERALLY ENFORCEABLE REG/LIMIT.	N
CO	(SM) POTENTIAL EMISSION BELOW MAJOR SOURCE THRESHOLD IF AND ONLY IF SOURCE COMPLIES WITH FEDERALLY ENFORCEABLE REG/LIMIT.	N
SO2	(SM) POTENTIAL EMISSION BELOW MAJOR SOURCE THRESHOLD IF AND ONLY IF SOURCE COMPLIES WITH FEDERALLY ENFORCEABLE REG/LIMIT.	N
NOX	(SM) POTENTIAL EMISSION BELOW MAJOR SOURCE THRESHOLD IF AND ONLY IF SOURCE COMPLIES WITH FEDERALLY ENFORCEABLE REG/LIMIT.	N
VOC	(SM) POTENTIAL EMISSION BELOW MAJOR SOURCE THRESHOLD IF AND ONLY IF SOURCE COMPLIES WITH FEDERALLY ENFORCEABLE REG/LIMIT.	N
PB	(B) ACTUAL AND POTENTIAL EMISSIONS BELOW ALL APPLICABLE MAJOR SOURCE THRESHOLDS	N
H114	(B) ACTUAL AND POTENTIAL EMISSIONS BELOW ALL APPLICABLE MAJOR SOURCE THRESHOLDS	N
H027	(B) ACTUAL AND POTENTIAL EMISSIONS BELOW ALL APPLICABLE MAJOR SOURCE THRESHOLDS	N
D/F	(B) ACTUAL AND POTENTIAL EMISSIONS BELOW ALL APPLICABLE MAJOR SOURCE THRESHOLDS	N
H110	(B) ACTUAL AND POTENTIAL EMISSIONS BELOW ALL APPLICABLE MAJOR SOURCE THRESHOLDS	N
PM10	(B) ACTUAL AND POTENTIAL EMISSIONS BELOW ALL APPLICABLE MAJOR SOURCE THRESHOLDS	N
PM2.5	(B) ACTUAL AND POTENTIAL EMISSIONS BELOW ALL APPLICABLE MAJOR SOURCE THRESHOLDS	N
PM	(B) ACTUAL AND POTENTIAL EMISSIONS BELOW ALL APPLICABLE MAJOR SOURCE THRESHOLDS	N

EMISSIONS UNIT INFORMATION

Section [1] of [2]

**III. EMISSIONS UNIT INFORMATION
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:

VENT GAS BOILER

3. Emissions Unit Identification Number: 6

4. Emissions Unit Status Code: C	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code: 28
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8. Federal Program Applicability: (Check all that apply)

- Acid Rain Unit
- CAIR Unit

9. Package Unit:

Manufacturer: RENTECH BOILER SYSTEMS, INC. Model Number:

10. Generator Nameplate Rating: MW

11. Emissions Unit Comment: The vent gas boiler stack is the primary emissions point for both gasifier trains.

EMISSIONS UNIT INFORMATION

Section [1] of [2]

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:	97.2 million Btu/hr	
4. Maximum Incineration Rate:	pounds/hr tons/day	
5. Requested Maximum Operating Schedule:	24 hours/day 52 weeks/year	7 days/week 8760 hours/year
6. Operating Capacity/Schedule Comment:		

EMISSIONS UNIT INFORMATION

Section [1] of [2]

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: VENT GAS BOILER STACK		2. Emission Point Type Code: 1 - A single emission point serving a single emissions unit	
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: (V) A STACK WITH AN UNOBSTRUCTED OPENING DISCHARGING IN A VERTICAL/ NEARLY VERTICAL DIRECTION		6. Stack Height: 80 feet	7. Exit Diameter: 2.5 feet
8. Exit Temperature: 313 °F	9. Actual Volumetric Flow Rate: 16,582 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: The vent gas boiler stack is the common emission point for both gasifier trains.			

EMISSIONS UNIT INFORMATION

Section [1] of [2]

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
D/F			EL
H027	FABRIC FILTER		EL
H106	DRY SORBENT INJECTION	FABRIC FILTER	EL
H114	DRY SORBENT INJECTION	FABRIC FILTER	EL
NOX	LOW NOX BURNERS		EL
PB	FABRIC FILTER		EL
PM	FABRIC FILTER		EL
PM10	FABRIC FILTER		
PM2.5	FABRIC FILTER		
SO2	DRY SORBENT INJECTION	FABRIC FILTER	EL
VOC			EL

**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 - Carbon Monoxide		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 4.16 lb/hour 18.29 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 50 PPMVD @ 7% O2 Reference: 40 CFR 60 AAAA		7. Emissions Method Code: (0) EQUAL TO EQUIVALENT ALLOWABLE EMISSION/WORSTCASE ALLOWABLE EMISSION.	
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: See Attachment 2			
11. Potential, Fugitive, and Actual Emissions Comment:			

**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 1 of 1

1. Basis for Allowable Emissions Code: (RULE) required by rule specified in regulation		2. Future Effective Date of Allowable Emissions:	
3. Allowable Emissions and Units: 50 PARTS PER MILLION DRY GAS VOLUME @ 7% O2		4. Equivalent Allowable Emissions: 4.16 lb/hour 18.29 tons/year	
5. Method of Compliance: CEMS			
6. Allowable Emissions Comment (Description of Operating Method): 4-hr block arithmetic mean for modular starved-air unit, 40 CFR 60 Subpart AAAA			

**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: D/F - Dioxin/Furan		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 9.30E-07 lb/hour 4.08E-06 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 13 NANOGRAMS/DSCM @ 7% O2 Reference: 40 CFR 60 AAAA		7. Emissions Method Code: (0) EQUAL TO EQUIVALENT ALLOWABLE EMISSION/WORSTCASE ALLOWABLE EMISSION.	
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: See Attachment 2			
11. Potential, Fugitive, and Actual Emissions Comment:			

**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 1 of 1

1. Basis for Allowable Emissions Code: (RULE) required by rule specified in regulation		2. Future Effective Date of Allowable Emissions:	
3. Allowable Emissions and Units: 13 NANOGRAMS PER DRY STANDARD CUBIC METER @ 7% O2		4. Equivalent Allowable Emissions: 9.30 x 10 ⁻⁰⁷ lb/hour 4.08 x 10 ⁻⁰⁶ tons/year	
5. Method of Compliance: Stack Test			
6. Allowable Emissions Comment (Description of Operating Method): 40 CFR 60 Subpart AAAA			

**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: H027 – Cadmium Compounds		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 0.00143 lb/hour 0.00628 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: .02 MILLIGRAMS/DSCM Reference: 40 CFR 60 AAAA		7. Emissions Method Code: (0) EQUAL TO EQUIVALENT ALLOWABLE EMISSION/WORSTCASE ALLOWABLE EMISSION.	
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: See Attachment 2			
11. Potential, Fugitive, and Actual Emissions Comment:			

**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 1 of 1

1. Basis for Allowable Emissions Code: (RULE) required by rule specified in regulation		2. Future Effective Date of Allowable Emissions:	
3. Allowable Emissions and Units: .02 MILLIGRAMS PER DRY STANDARD CUBIC METER @ 7% O2		4. Equivalent Allowable Emissions: 0.00143 lb/hour 0.00628 tons/year	
5. Method of Compliance: Stack Test			
6. Allowable Emissions Comment (Description of Operating Method): 40 CFR 60 Subpart AAAA			

**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: H106 - Hydrogen chloride (Hydrochloric acid)		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 1.08 lb/hour 4.76 tons/year		4. Synthetically Limited? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 10 PPMVD @ 7% O2 Reference: VENDOR		7. Emissions Method Code: (2) CALCULATED BY USE OF MATERIAL BALANCE AND KNOWLEDGE OF THE PROCESS.	
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: See Attachment 2			
11. Potential, Fugitive, and Actual Emissions Comment:			

**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 1 of 1

1. Basis for Allowable Emissions Code: (OTHER) assumed by applicant for other reasons (Explain in comment field)		2. Future Effective Date of Allowable Emissions:	
3. Allowable Emissions and Units: 10 PARTS PER MILLION DRY GAS VOLUME @ 7% O2		4. Equivalent Allowable Emissions: 1.08 lb/hour 4.76 tons/year	
5. Method of Compliance: Stack Test			
6. Allowable Emissions Comment (Description of Operating Method): or 95 percent Control whichever is less restrictive - from vendor guarantee. Reduces HCl levels to below HAP major source threshold.			

**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: H114 – Mercury Compounds	2. Total Percent Efficiency of Control:
3. Potential Emissions: 0.00501 lb/hour 0.0220 tons/year	4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 0.07 MICROGRAMS/DSCM @ 7% O2 Reference: 62-296.416, F.A.C.	7. Emissions Method Code: (0) EQUAL TO EQUIVALENT ALLOWABLE EMISSION/WORSTCASE ALLOWABLE EMISSION.
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: See Attachment 2	
11. Potential, Fugitive, and Actual Emissions Comment:	

**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 1 of 1

1. Basis for Allowable Emissions Code: (RULE) required by rule specified in regulation	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: .07 MICROGRAMS PER DRY STANDARD CUBIC METER @ 7% O2	4. Equivalent Allowable Emissions: 0.00501 lb/hour 0.0220 tons/year
5. Method of Compliance: Stack Test	
6. Allowable Emissions Comment (Description of Operating Method): 62-296.416, F.A.C.	

**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 - Nitrogen Oxides		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 20.52 lb/hour 72.09 tons/year		4. Synthetically Limited? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 150 PPMVD @ 7% O2 Reference: VENDOR INFORMATION		7. Emissions Method Code: (2) CALCULATED BY USE OF MATERIAL BALANCE AND KNOWLEDGE OF THE PROCESS.	
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: See Attachment 2			
11. Potential, Fugitive, and Actual Emissions Comment: 150 ppmv (7% O2) based on a 24-hour daily block arithmetic average, and 120 ppmv (7% O2) based on a rolling 12-month average of the 24-hour daily block averages.			

**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 1 of 1

1. Basis for Allowable Emissions Code: (ESCPD) allow facility/modification to escape PSD preconstruction review		2. Future Effective Date of Allowable Emissions:	
3. Allowable Emissions and Units: 150 PARTS PER MILLION DRY GAS VOLUME @ 7% O2		4. Equivalent Allowable Emissions: 20.52 lb/hour 72.09 tons/year	
5. Method of Compliance: CEMS			
6. Allowable Emissions Comment (Description of Operating Method): Vendor guarantee of 150 ppmv (7% O2) based on a 24-hour daily block arithmetic average, and 120 ppmv (7% O2) based on a rolling 12-month average of the 24-hour daily block averages.			

**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 - Particulate Matter - Total		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 1.72 lb/hour 7.54 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 24 MILLIGRAMS/DSCM Reference: 40 CFR 60 AAAA		7. Emissions Method Code: (0) EQUAL TO EQUIVALENT ALLOWABLE EMISSION/WORSTCASE ALLOWABLE EMISSION.	
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: See Attachment 2			
11. Potential, Fugitive, and Actual Emissions Comment:			

**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 1 of 1

1. Basis for Allowable Emissions Code: (RULE) required by rule specified in regulation		2. Future Effective Date of Allowable Emissions:	
3. Allowable Emissions and Units: 24 MILLIGRAMS PER DRY STANDARD CUBIC METER @ 7% O2		4. Equivalent Allowable Emissions: 1.72 lb/hour 7.54 tons/year	
5. Method of Compliance: Stack Test			
6. Allowable Emissions Comment (Description of Operating Method): 40 CFR 60 Subpart AAAA			

**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: PM10 - Particulate Matter - PM10		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 1.72 lb/hour 7.54 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: Reference:		7. Emissions Method Code: (0) EQUAL TO EQUIVALENT ALLOWABLE EMISSION/WORSTCASE ALLOWABLE EMISSION.	
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: See Attachment 2			
11. Potential, Fugitive, and Actual Emissions Comment: Total PM assumed to all be PM 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.

No Pollutant Allowable Emissions information submitted.

**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: PM2.5 - Particulate Matter - PM2.5		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 1.72 lb/hour 7.54 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: Reference:		7. Emissions Method Code: (0) EQUAL TO EQUIVALENT ALLOWABLE EMISSION/WORSTCASE ALLOWABLE EMISSION.	
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: See Attachment 2			
11. Potential, Fugitive, and Actual Emissions Comment: Total PM assumed to be PM2.5			

**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.

No Pollutant Allowable Emissions information submitted.

**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 - Sulfur Dioxide		2. Total Percent Efficiency of Control: 85	
3. Potential Emissions: 10.24 lb/hour 44.98 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: Reference: 40 CFR 60 AAAA		7. Emissions Method Code: (0) EQUAL TO EQUIVALENT ALLOWABLE EMISSION/WORSTCASE ALLOWABLE EMISSION.	
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: Calculation based on 85% removal and upper bound inlet concentration; See Attachment 2			
11. Potential, Fugitive, and Actual Emissions Comment:			

**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 1 of 1

1. Basis for Allowable Emissions Code: (RULE) required by rule specified in regulation		2. Future Effective Date of Allowable Emissions:	
3. Allowable Emissions and Units: 85 PERCENT REDUCTION IN EMISSIONS		4. Equivalent Allowable Emissions: 10.24 lb/hour 44.98 tons/year	
5. Method of Compliance: CEMS			
6. Allowable Emissions Comment (Description of Operating Method): Based on vendor guarantee and 40 CFR 60 Subpart AAAA			

**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 - Volatile Organic Compounds		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 2.12 lb/hour 9.33 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 20 PPMVD Reference: 40 CFR 60 VVA		7. Emissions Method Code: (0) EQUAL TO EQUIVALENT ALLOWABLE EMISSION/WORSTCASE ALLOWABLE EMISSION.	
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: See Attachment 2			
11. Potential, Fugitive, and Actual Emissions Comment: Vent Boiler serves as a control device for VOCs from Fermentation process and is required by 40CFR60 Subpart VVa to achieve 95% removal or exit concentration of 20ppmv@3%O2			

**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 1 of 1

1. Basis for Allowable Emissions Code: (RULE) required by rule specified in regulation		2. Future Effective Date of Allowable Emissions:	
3. Allowable Emissions and Units: 20 PARTS PER MILLION DRY GAS VOLUME @ 3% O2		4. Equivalent Allowable Emissions: 2.12 lb/hour 9.33 tons/year	
5. Method of Compliance: Stack Test			
6. Allowable Emissions Comment (Description of Operating Method): Annually, facility must stack test to show control efficiency or exit concentration, or else show min residence time and temp			

EMISSIONS UNIT INFORMATION

Section [2] of [2]

III. EMISSIONS UNIT INFORMATION
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:

SYNGAS FLARE

3. Emissions Unit Identification Number: 10

4. Emissions Unit Status Code:
C

5. Commence Construction Date:

6. Initial Startup Date:

7. Emissions Unit Major Group SIC Code:
28

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

- Acid Rain Unit
- CAIR Unit

9. Package Unit:
Manufacturer:

Model Number:

10. Generator Nameplate Rating: MW

11. Emissions Unit Comment:

EMISSIONS UNIT INFORMATION

Section [2] of [2]

B. EMISSIONS UNIT CAPACITY INFORMATION
(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: 496.2 MILLION DSCF/YR
2. Maximum Production Rate:
3. Maximum Heat Input Rate: 168.4 million Btu/hr
4. Maximum Incineration Rate: pounds/hr tons/day
5. Requested Maximum Operating Schedule: hours/day days/week weeks/year hours/year
6. Operating Capacity/Schedule Comment: INPB is requesting a syngas flow restriction for the syngas flare; the max heat input is for pilot and syngas; Pilot operates continuously

**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 - Carbon Monoxide		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 124.96 lb/hour 40.62 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 0.741 LB/MMBTU Reference: AP-42 SECTION 2.4		7. Emissions Method Code: (4) CALCULATED BASED ON SIMILAR, BUT DIFFERENT, PROCESS IN AP-42/FIRE SYSTEM OR OTHER PUBLISHED EMISSIONS CALCULATION SOURCE.	
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: See Attachment 2			
11. Potential, Fugitive, and Actual Emissions Comment:			

**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.

No Pollutant Allowable Emissions information submitted.

**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 - Nitrogen Oxides		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 6.66 lb/hour 2.17 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 0.04 LB/MMBTU Reference: AP-42 SECTION 2.4		7. Emissions Method Code: (4) CALCULATED BASED ON SIMILAR, BUT DIFFERENT, PROCESS IN AP-42/FIRE SYSTEM OR OTHER PUBLISHED EMISSIONS CALCULATION SOURCE.	
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: See Attachment 2			
11. Potential, Fugitive, and Actual Emissions Comment:			

**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.

No Pollutant Allowable Emissions information submitted.

**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 - Sulfur Dioxide		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 70.03 lb/hour 22.41 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: Reference:		7. Emissions Method Code: (2) CALCULATED BY USE OF MATERIAL BALANCE AND KNOWLEDGE OF THE PROCESS.	
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: See Attachment 2			
11. Potential, Fugitive, and Actual Emissions Comment:			

**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.

No Pollutant Allowable Emissions information submitted.

**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 - Volatile Organic Compounds		2. Total Percent Efficiency of Control: 98	
3. Potential Emissions: 8.23 lb/hour 2.65 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: Reference:		7. Emissions Method Code: (0) EQUAL TO EQUIVALENT ALLOWABLE EMISSION/WORST-CASE ALLOWABLE EMISSION.	
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: See Attachment 2			
11. Potential, Fugitive, and Actual Emissions Comment:			

**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.

No Pollutant Allowable Emissions information submitted.

Attachment No. 3

Email Confirmation from Filter Designs Ltd.

Janssen, Gretchen E.

From: graeme.parker@ineos.com
Sent: Friday, June 15, 2012 5:54 AM
To: Janssen, Gretchen E.; william.j.smith@ineos.com; peter.bell@ineos.com; Hibbard, Cynthia
Subject: Performance of Sulphur removal unit at lower inlet levels

Confirmation from Filter Designs

Regards,

Graeme Parker

Snr Process Engineer
Ineos Bio
Tel: + 44 (0) 1324 493026
Mobile: +44 (0) 7990 974343

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----- Forwarded by Graeme Parker/GB/OP-EU/INEOS on 15/06/2012 10:51 -----

From: Roger Callis <RogerC@filterdesigns.com>
To: Graeme Parker/GB/OP-EU/INEOS@INEOS
Date: 15/06/2012 09:38
Subject: FW: Sorbent Usage

Hi Graeme,

Hope you are moving forward well in the States. Here is your answer - No problem.

Regards

Roger

From: David Petitjean [<mailto:dpetitjean@tatachemicals.com>]
Sent: 14 June 2012 14:29
To: Roger Callis
Subject: RE: Sorbent Usage

Hi Roger,

No need to go through the official channel for that one.

There will not be any problem if you decrease the SO₂ in and still want to remove 85%. The SR will still remain at 1.3 (the concentration of the pollutants has a negligible influence on the performances).

Rgds,

David

From: Roger Callis [<mailto:RogerC@filterdesigns.com>]

Sent: 14 June 2012 12:47

To: David Petitjean

Subject: RE: Sorbent Usage

Hi David

I hope the new job is interesting and going well - but as you said you can't leave the flue gas behind!

Can you answer this for me? Or do I need to go through the right channels?

Regards

Roger

Hi Roger,

Recent work on our pilot plant has shown that the actual levels of SO₂ in the vent gas boiler flue gas will be less than those you quoted for (by ~40-50%)

Could you please confirm you are happy that the bag filter system will remove 85% of the SO₂ in the flue at the lower level of 380 ppm SO₂ in the flue gas? (68 lb/hr) flowrate remains unchanged.

(I know we have discussed this but I need an email to confirm, sorry)

Regards,

Graeme Parker

Snr Process Engineer

Ineos Bio

Tel: + 44 (0) 1324 493026

Mobile: +44 (0) 7990 974343

Attachment No. 4

Summary of the Pilot Facility Sampling Results

Janssen, Gretchen E.

From: graeme.parker@ineos.com
Sent: Wednesday, June 20, 2012 3:28 AM
To: Hibbard, Cynthia; Janssen, Gretchen E.
Cc: william.j.smith@ineos.com; peter.bell@ineos.com
Subject: H2S levels in syngas from gasifier

H2S levels in syngas from gasifier

Between October 2010 and February 2011, INEOS conducted a number of gasification runs with representative vegetative mulch sourced from Indian River County and Palm Beach County landfills. Various tests were made on the syngas generated and representative results are shown below. Draeger tubes were used for this analysis

- H2S was typically in the region of 100 ppm (mole)

Based on these results, we are applying for permitting of syngas to flare on the basis of 500 ppm H2S in the gasifier syngas

Draeger Tube Testing

Date	Time	Project	Feed	Trial #	H ₂ S Concentration (ppm) Dry Gas Cleaning Inlet
2/17/2011	9:30		VBM	1	100
2/17/2011	9:40		VBM	2	100

H2S in vent gas from the fermenter

H2S in the fermenter vent gas is mainly the result of nutrients fed to the fermenter. This is a controlled parameter which is measured continuously via on-line gas chromatograph and is reliably controlled at a value considerably below 500 ppm

Yours sincerely
Regards,

Graeme Parker

Snr Process Engineer
Ineos Bio
Tel: + 44 (0) 1324 493026
Mobile: +44 (0) 7990 974343

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