David Read
Module AB 169

0610096-004-AC

Permit Application

AIR CONSTRUCTION PERMIT APPLICATION

INEOS New Planet BioEnergy

Prepared For: INEOS New Planet BioEnergy
925 74th Avenue SW
Vero Beach, FL 32968

Submitted By: Golder Associates Inc.
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Department of Environmental Protection

Division of Air Resource Management

APPLICATION FOR AIR PERMIT - LONG FORM

RECEIVED
APR 12 2013
DIVISION OF AIR RESOURCE MANAGEMENT

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 County BioEnergy Facility**	
3. Facility Identification Number: **0610096**	
4. Facility Location... Street Address or Other Locator: **925 74th Avenue SW** City: **Vero Beach** County: **Indian River** Zip Code: **32968**	
5. Relocatable Facility? ☐ Yes ☒ No	6. Existing Title V Permitted Facility? ☐ Yes ☒ No

Application Contact

1. Facility Contact Name: **Gary F. Phillips, HSSE Manager**
2. Facility Contact Mailing Address... Organization/Firm: **INEOS New Planet BioEnergy LLC** Street Address: **925 74th Avenue SW** City: **Vero Beach** State: **FL** Zip Code: **32968**
3. Facility Contact Telephone Numbers: Telephone: **(772) 794-7909** ext. Fax: **(772) 794-7999**
4. Facility Contact E-mail Address: **gary.phillips@ineos.com**

Application Processing Information (DEP Use)

1. Date of Receipt of Application: 4-12-13	3. PSD Number (if applicable):
2. Project Number(s): 0610096-004-AC	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

Air construction permit application for the purpose of requesting minor amendments to air construction permit No. 0610096-003-AC. Please see Part II for requested amendments.

APPLICATION INFORMATION

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Processing Fee
001	Materials Handling Area	ACIM1	N/A
002	Feedstock Dryers No. 1 and No. 2	ACIM1	N/A
003	Gasification, Fermentation and Distillation Systems	ACIM1	N/A
004	Distillation Unit Fugitive Emissions	ACIM1	N/A
006	Vent Gas Boiler	ACIM1	N/A
007	Tank Farm	ACIM1	N/A
008	Loadout Flare	ACIM1	N/A
010	Syngas Flare	ACIM1	N/A
011	Emergency Equipment	ACIM1	N/A

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 LLC**
   Street Address: **925 74th Avenue SW**
   City: **Vero Beach** State: **FL** Zip Code: **32968**
3. Owner/Authorized Representative Telephone Numbers...
   Telephone: **(772) 794-7905** ext. Fax: **(772) 794-7999**
4. Owner/Authorized Representative E-mail Address: **david.king@ineos.com**
5. Owner/Authorized Representative Statement:

   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.

David W. Tilson
Signature

4/5/13
Date

APPLICATION INFORMATION

Application Responsible Official Certification

Complete if applying for an initial, revised, or renewal Title V air operation permit or concurrent processing of an air construction permit and revised or renewal Title V air operation permit. If there are multiple responsible officials, the "application responsible official" need not be the "primary responsible official."

1. Application Responsible Official Name:

2. Application Responsible Official Qualification (Check one or more of the following options, as applicable):

- ☐ For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C.
- ☐ For a partnership or sole proprietorship, a general partner or the proprietor, respectively.
- ☐ For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.
- ☐ The designated representative at an Acid Rain source or CAIR source.

3. Application Responsible Official Mailing Address...
Organization/Firm:
Street Address:
City: State: Zip Code:

4. Application Responsible Official Telephone Numbers...
Telephone: ( ) - ext. Fax: ( ) -

5. Application Responsible Official E-mail Address:

6. Application Responsible Official Certification:

I, the undersigned, am a responsible official of the Title V source addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject, except as identified in compliance plan(s) submitted with this application.

_____ _____
Signature Date

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: **Kennard F. Kosky**
   Registration Number: **14996**
2. Professional Engineer Mailing Address...
   Organization/Firm: **Golder Associates Inc.****
   Street Address: **6026 NW 1st Place**
   City: **Gainesville** State: **FL** Zip Code: **32607**
3. Professional Engineer Telephone Numbers...
   Telephone: **(352) 336-5600** ext. **21156** Fax: **(352) 336-6603**
4. Professional Engineer E-mail Address: **Ken_Kosky@golder.com**
5. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(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

(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.

(3) If the purpose of this application is to obtain a Title V air operation permit (check here ☐, 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.

(4) If the purpose of this application is to obtain an air construction permit (check here ☒, 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 ☐, 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.

(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 ☐, 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.

Signature 4/6/13
Date

(seal) No. 14996

* Attach any exception to certification statement.
**Board of Professional Engineers Certificate of Authorization #00001670.

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates... Zone **17** East (km) **550.7** North (km) **27/35/10**		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) **27/35/10** Longitude (DD/MM/SS) **80/28/55**	
3. Governmental Facility Code: **0**	4. Facility Status Code: **C**	5. Facility Major Group SIC Code: **28**	6. Facility SIC(s): **2869**
7. Facility Comment : **The facility is currently under commissioning with some emission units operating as part of this process. The gasification process (portion of EU 003) has been in startup using clean biomass and the vent gas boiler (EU 006) has been operational using natural gas and land fill gas to support commissioning activities. No fermentation or production of commercial ethanol has yet occurred.**			

Facility Contact

1. Facility Contact Name: **Gary F. Phillips, HSSE Manager**
2. Facility Contact Mailing Address... Organization/Firm: **INEOS New Planet BioEnergy LLC** Street Address: **925 74th Avenue SW** City: **Vero Beach** State: **FL** Zip Code: **32968**
3. Facility Contact Telephone Numbers: Telephone: **(772) 794-7909** ext. Fax: **(772) 794-7999**
4. Facility Contact E-mail Address: **gary.phillips@ineos.com**

Facility Primary Responsible Official

Complete if an "application responsible official" is identified in Section I that is not the facility "primary responsible official."

1. Facility Primary Responsible Official Name:
2. Facility Primary Responsible Official Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:
3. Facility Primary Responsible Official Telephone Numbers... Telephone: ( ) ext. Fax: ( )
4. Facility Primary Responsible Official E-mail Address:

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. ☐ Small Business Stationary Source	☐ Unknown
2. ☐ Synthetic Non-Title V Source	
3. ☒ Title V Source	
4. ☐ Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5. ☐ Synthetic Minor Source of Air Pollutants, Other than HAPs	
6. ☐ Major Source of Hazardous Air Pollutants (HAPs)	
7. ☐ Synthetic Minor Source of HAPs	
8. ☒ One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9. ☐ One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10. ☒ One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11. ☐ Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	
12. Facility Regulatory Classifications Comment:	

PART II

PART II

APPLICATION FOR MINOR CHANGES TO AIR CONSTRUCTION PERMIT NO. 0610096-003-AC

EXECUTIVE SUMMARY

INEOS New Planet BioEnergy (INPB) was authorized by the Florida Department of Environmental Protection (FDEP) to construct a waste-to-ethanol production facility in Vero Beach, Indian River County, Florida. Air Construction (AC) Permit No. 0610096-001-AC, authorizing the construction, was issued on August 25, 2010. AC Permit Nos. 0610096-002-AC and 0610096-003-AC authorized minor changes to the proposed facility. Permit No. 0610096-003-AC will expire on September 30, 2014. The facility is currently in commissioning with some emission units operating as part of this process. The gasification process [portion of Emission Unit (EU) 003] has been in commissioning using clean biomass and the vent gas boiler (EU 006) has been operational using natural gas and landfill gas to support commissioning activities. No fermentation or production of ethanol from the production fermentor has occurred. As a result of the commissioning of this innovative process, INPB is requesting minor changes to the AC permit as described below and discussed with the Department on January 8, 2013.

This air construction permit application package consists of the appropriate application form [DEP Form 62-210.900(1)], a description of the proposed changes, and rule applicability for the project. The project does not include any physical changes to any of the existing emissions units, there will be no change to the existing control equipment as a result of the proposed project, and no new emission control technology will be added.

PROPOSED CHANGES

1. Administrative Requirements: Section 2, Condition 12 and Appendix BMP

The permit includes in Condition 12 and Appendix BMP Section 4 the requirements for an odor control plan that specifies the use of an enclosed area for Municipal Solid Waste (MSW). However, some material defined as MSW such as "yard waste" and "refuse derived fuel" have limited potential to generate odors. These materials are similar to biomass and can be handled without the generation of odors that would be considered objectionable. As a result, INPB is requesting that the requirement for an enclosed area for the purpose of odor control be revised in the permit. This will allow sufficient time to design and construct the appropriate facilities if MSW that could potentially cause objectionable odors is ever used. The requested revision would however require an enclosed area if MSW that has the potential to create objectionable odors is used. INPB would meet any Department requirements regarding its solid waste rules for the storage of feedstocks considered MSW. INPB offers the following permit language changes for the Department's consideration. The changes are provided as strikethrough and underlined text.

SECTION 2. ADMINISTRATIVE REQUIREMENTS

12. Objectionable Odors Prohibited: No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor. Prior to the use of MSW that creates objectionable odors (i.e. putrescible household waste and institutional waste) ~~trial period outlined in Condition 3.C.11 of this permit~~, the permittee shall submit an odor control plan to the Compliance Authority that addresses how the facility will control MSW odors, such as through implementing a "first in/first out" material handling practice; storing MSW in an enclosed area; limiting on-site storage of MSW to 48 hours or less; or other procedures. After the conclusion of a 120 day period continuously using such MSW~~the MSW trial period~~, the permittee shall revise and resubmit the odor control plan to the Compliance Authority ~~along with the results of any repeat testing as per Condition 3.C.11.c~~. [Rule 62-296.320(2), F.A.C. and Rule 62-4.070, F.A.C. Reasonable Assurance]

SECTION 4. APPENDIX BMP BEST MANAGEMENT PRACTICES

Alternate Disposal: The permit authorizes a tipping floor, designed to accommodate a 48-hour period of operation (730 dry tons, 15% moisture), with an additional enclosed, paved storage area for MSW that create objectionable odors, designed to accommodate two days of operation (730 tons dry tons 15% moisture). MSW that creates objectionable odors shall be stored in the enclosed paved area, and MSW that is creating objectionable odors and which has been at the INPB IRC facility for more than 48 hours shall be directed to the county landfill.

2. Authorized Feedstock: Section 3, Subsection A, Conditions 3 and 4

As discussed at the January 8th meeting, INPB requests a distinction between feedstocks for the facility to allow the commissioning, testing, and development of the waste-to-ethanol process. Condition No. A.4 lists vegetative matter, yard waste, land clearing debris, and untreated wood as authorized feedstock for the gasifiers. Yard waste is considered as MSW based on its definition in Title 40, Part 60 of the Code of Federal Regulations (40 CFR 60), Subpart AAAA – New Source Performance Standards for Small Municipal Waste Combustion Units (§60.1465). In contrast, "biomass" is defined as vegetative matter based on its definition in Rule 62-210.200, F.A.C. INPB currently does not have MSW handling and processing capability and therefore, initial operation has not occurred using MSW. Currently, only clean biomass from tree trimmings and similar plant materials has been used for the initial testing and operation of the gasifiers. Clean biomass will be used as the only feedstock until MSW processing capability is installed, which may take additional months beyond the 180 days from initial operation for Subpart AAAA testing to be completed. As a result, INPB is requesting that a distinction be made between biomass and MSW for the purpose of demonstrating compliance with all Subpart AAAA requirements and that stack testing under Subpart AAAA will be completed during the 120-day MSW trial period once the operation starts using MSW.

This distinction is supported by the definition of "clean cellulosic biomass" in 40 CFR 241 — Solid Wastes Used as Fuels or Ingredients in Combustion Units, with corresponding definitions being supported in 40 CFR 60. Biomass that is referred to as "clean cellulosic biomass" is not defined as a solid waste and would not be considered MSW. This is also consistent with the Department's determination for the use of "clean woody biomass" for the Gainesville Renewable Energy Center, LLC [Air Permit No. 0010131-001-

AC (PSD-FL-411)]. Clean woody biomass as defined in the permit consists of in-forest residue and slash; mill residue; pre-commercial tree trimmings and understory clearing; storm, fire and disease debris; urban wood waste; recycled industrial wood; and supplementary fuel material. INPB is requesting that FDEP add "clean cellulosic biomass" as an authorized feedstock to the process.

In addition to the distinction between biomass and MSW feedstocks requested above, INPB would like to clarify those conditions of the feedstock system storing, handling and processing these materials. The Department has applicable non-air related regulations that are potentially applicable to storage of biomass. As a result, any storage of material on the site must meet these non-air related regulations. For biomass, the requirement for hard-packed gravel may not be necessary for certain types of biomass while other substrates may be effective in meeting the Department's non-air related requirements. INPB requests that for the biomass storage area only a reference to meeting applicable regulations be included in this condition. If this request is accepted by the Department, the Emission Unit Description regarding hard-packed gravel should be also be revised. For MSW, as described above in the request for changes to Condition 12 of Section 2, INPB requests that the odor control plan be referenced. The odor control plan will contain the appropriate systems to mitigate objectionable odors from MSW that creates odors. Finally, INPB requests that the term "biomass processing" be added to this condition since for some biomass material will be processed in windrows as describe in the Emission Unit Description.

A. Materials Handling Area (EU-001)
PERFORMANCE RESTRICTIONS

3. Feedstock System: The permittee is authorized to install/operate the following major pieces of equipment for feedstock delivery, handling and processing:
a. Tipping floor;
b. Front-end loaders;
c. ~~Hard-packed gravel~~ Biomass storage area shall meet applicable FDEP regulations for such materials~~for biomass~~ (authorized feedstock other than MSW, see Condition 3.A.4 of this permit);
d. MSW~~Paved~~ storage area shall conform to the odor control plan in Condition 12 of Section 2~~for MSW inside a building~~;
e. Conveyer systems; and
f. Relocateable shredding~~, and~~ screening equipment and biomass processing equipment.
[Application No. 0610096-002-AC and Rule 62-4.070(3), F.A.C. Reasonable Assurance]

4. Authorized Feedstock: Biomass, ~~V~~vegetative matter, yard waste, land clearing debris, untreated wood and MSW is authorized to be stored in the materials handling area. For purposes of this permit, "biomass" refers to authorized feedstock other than MSW. [Application No. 0610096-001-AC; Rule 62-210.200, F.A.C. Definitions of "Biomass", "Yard Waste," "Land Clearing Debris," "Untreated Wood" and "Solid Waste"; and Rule 62-4.070(3), F.A.C. Reasonable Assurance]

C. Gasification, Fermentation and Distillation Systems (EU-003)
PERFORMANCE RESTRICTIONS
10. Primary Authorized Feedstock: Biomass, ~~V~~vegetative matter, yard waste, land clearing debris and untreated wood is authorized to be used as feedstock to the gasification system. Feedstock processing for both gasifiers combined is limited to an annual average throughput of no more than 365 dried tons (15% moisture) per day on a rolling 12-month basis. [Application No.

0610096-001-AC; Rule 62-210.200, F.A.C. Definitions of "Biomass," "Yard Waste," "Untreated Wood" and "Solid Waste"; and Rule 62-4.070(3), F.A.C. Reasonable Assurance]

3. H_2S Concentration Monitoring: Section 3, Subsection C, Condition 19

Specific Condition No. C.19 of Permit No. 0610096-003-AC presents the continuous monitoring requirements for hydrogen sulfide (H_2S) concentrations in the fermenter off gas and requires the monitoring frequency to be 4 times per hour. The H_2S concentration in the fermenter off gas is limited to 500 parts per million by volume (ppmv) or less on a 1-hour average basis. INPB believes that the 15-minute monitoring frequency is unnecessary and reasonable assurance of the actual concentrations and emissions can be provided with an hourly monitoring frequency, which will provide 8,760 data points per year. This can be demonstrated statistically by comparing the differences in means produced using hourly data and data taken 4 times per hour. Table 1 presents examples of the differences in annual means at the 95% confidence interval using assumed high standard deviations. As shown in Table 1a, if the means were 500 ppm H_2S with a standard deviation of 100 ppm, the difference in the means at the 95% confidence level would only be 1.75 ppm based on the number of samples alone. This is only 0.35% of the mean value and smaller than the measurement accuracy of the equipment. Table 1b shows a similar outcome with an even larger standard deviation in the data of 200 ppm. In this example, the difference in annual means at the 95% confidence interval is 3.5 ppm or 0.7%. Table 1c shows an example at lower H_2S levels and within the expected upper range of H_2S levels. Again, the difference in annual means at the 95% confidence interval due to the number of samples is only 1.75 ppm or 0.58% of the mean value. These examples demonstrate that hourly data is sufficient to obtain the necessary information to confirm that H_2S levels would not cause the project to exceed the Prevention of Significant Deterioration (PSD) thresholds for sulfur dioxide (SO_2).

Please note that EU 003 is not subject to any numerical emission limit except for a performance restriction on H_2S concentration. The H_2S concentration in the fermenter off gas contributes to the SO_2 emissions from the syngas flare (EU ID 010), which also has no numerical SO_2 emission limit. It is in INPB's best interest to limit the H_2S content of the fermenter gas to 500 ppmv because the potential annual SO_2 emissions calculation for the syngas flare assumed a maximum H_2S content of 500 ppm. The proposed hourly concentration values should be more than adequate to account for small fluctuations in the actual H_2S concentration; as the system is biological, large fluctuations in H_2S concentration are not expected. The reduced sampling frequency will still provide a good estimate of the annual SO_2 emissions from the syngas flare.

INPB is requesting to revise the monitoring frequency in Specific Condition No. 19 to once per hour and change the averaging period for the H_2S concentration limit from hourly to annual. Please note that Specific Condition No. C.19 also requires a monthly monitoring of H_2S concentration in the gas stream by taking bag or canister samples. Therefore, additional monitoring requirements are in place and a 15-minute

continuous testing requirement is unnecessary and overly burdensome for INPB. Please also note that similar to a continuous emission monitoring system for SO_2 and NO_x, no data is recorded by the monitor during calibration. The H_2S monitoring system requires calibration for about 2 hours each week.

INPB would also like to clarify the location where the H_2S monitoring is conducted. The "production fermenter" as discussed with the Department at the January 8th meeting is the large vertical cylinder that is the primary processing unit for converting the syngas to ethanol. Approximately 96 percent of the total volume of fermentation occurs in this unit. Therefore the addition of "production" is requested in this condition as the location of monitoring. Suggested changes to the permit condition for the Department's consideration are presented below.

> **MONITORING REQUIREMENTS**
> 19. H_2S Concentration: The concentration of H_2S in the production fermenter off gas (vent gas) shall be monitored in ppmv ~~at least 4 times~~ once per hour with a continuous on-line gas chromatograph to show that it is 500 ppmv or less ~~(1-hour average)~~. The concentration in ppmv of H_2S in the syngas steam from the gasifiers shall be monitored monthly by collecting bag or canister samples from the inlet port to the fermenter and injecting the samples into a chromatograph for analysis. As an alternative the samples may be sent off-site to a certified laboratory for analysis. If the average H_2S concentration of the first 12 monthly samples of the syngas is 400 ppmv or less, with no sample exceeding 500 ppmv, sampling may hence forth be done on a quarterly basis. Any exceedance of the H_2S concentration limit of 500 ppmv shall be reported to the Compliance Authority within 48 hours. [Application No. 0610096-001-AC; Rule 62-4.070(3), F.A.C. Reasonable Assurance; and Rule 62-210.200, F.A.C. Definition of "Potential to Emit"]

4. Emission Standards for Vent Gas Boiler: Section 3, Subsection E, Condition 9

Specific Condition No. E.9 states that the vent gas boiler is required to comply with New Source Performance Standards (NSPS) Subpart AAAA emission limits when it is combusting any authorized fuel, including syngas, generated from the gasification process. INPB is requesting that a permitting note be added to indicate that these emission standards apply when MSW is first combusted in the gasifiers and demonstrating compliance with Subpart AAAA requirements is required 60 days after achieving the maximum production rate, but no later than 180 days from initial operation, with MSW. INPB will provide test data when using clean biomass within the same time limits for nitrogen oxides (NO_x), SO_2, particulate matter (PM), volatile organic compounds (VOCs), and carbon monoxide (CO). When the facility is capable of using MSW, testing for the Subpart AAAA pollutants (lead, cadmium, hydrogen chloride, and mercury) will be completed within the requisite timeframes. Please note that the boiler is equipped with continuous emission monitoring systems (CEMS) and continuous opacity monitoring systems (COMS) to continuously monitor emissions of SO_2, NO_x, CO, and opacity. Data from this monitoring can demonstrate compliance regardless of the source of feedstock.

E. Vent Gas Boiler (EU-006)
APPLICABLE STANDARDS AND REGULATIONS

1. NSPS for Small Municipal Waste Combustion Units (Appendix AAAA): Each equipment train (from gasifier to vent gas boiler) is an "affected facility" ~~separate~~ (i.e., new municipal waste combustion unit) for purposes of 40 C.F.R. part 60, subpart AAAA—Standards of Performance for Small Municipal Waste Combustion Units for Which Construction is Commenced After August 31, 1999 or for Which Modification or Reconstruction is Commenced After June 6, 2001) when MSW is first combusted in the gasifiers. The permittee shall comply with the requirements of the NSPS, included as Appendix AAAA when MSW is first combusted in the gasifiers. The following requirements and specifications are relevant to NSPS applicability.

a. The word "combust" in reference to the NSPS refers to the pyrolysis reaction in the gasifiers using MSW.

b. Each municipal waste combustion unit (gasifier-to-vent gas boiler equipment train) has a capacity of greater than 35 but less than 250 tons per day of MSW.

c. The municipal waste combustion units are "Class I Units" because the aggregate plant combustion capacity is 365 tons per day of MSW, which is greater than 250 tons per day.

d. The municipal waste combustion units use activated carbon (in the dry gas cleanup packages) to control emissions of dioxin/furan and mercury.

e. The NSPS emissions limits will apply at the vent gas boiler exhaust stack when MSW is first combusted.

f. Continuous monitors required by the NSPS will be located at the vent gas boiler exhaust stack.

g. The municipal waste combustion units generate steam.

h. With respect to NSPS-required monitoring of flue gas temperature, the inlets to the dry gas cleaning fabric filters are deemed to be the inlets to the PM air pollution control device.

i. The municipal waste combustion units are deemed to be modular starved-air and excess air units.

[Application No. 0610096-001-AC; Rule 62-296.100(3), F.A.C.; and Rule 62-4.070(3), F.A.C. Reasonable Assurance]

3. Initial Standards and Requirements for Biomass-Firing: Each emission train (gasifiers to vent gas boiler) shall demonstrate compliance with the emission limits, initial compliance, continuous compliance, monitoring, recordkeeping and reporting requirements in 40 CFR Part 60 Subpart AAAA for the following pollutants: particulate matter, opacity, nitrogen oxides (Class I units), sulfur dioxide, fugitive ash and carbon monoxide (modular starved units) during the initial operation of the emission train using biomass. When MSW is first combusted in the emission train, all the requirements of 40 CFR Part 60 Subpart AAAA shall apply.

{Permitting Note: The initial operation of the INPB syngas to ethanol production process is planned be demonstrated using biomass. During this demonstration period, MSW is not planned to be used. The vent gas boiler will not be "an affected facility" under Subpart AAAA when biomass is used during this initial demonstration period. However, this condition requires a demonstration of initial compliance of the vent gas boiler using biomass as feedstock for the air pollutants referenced in the condition. Upon the use of MSW for the syngas to ethanol production process, the vent gas boiler will be considered to be "an affected facility" for the purposes of Subpart AAAA. The Subpart AAAA requirements including the initial compliance determination for emissions of mercury, cadmium, dioxins/furans, lead and HCL from the vent gas boiler will take effect at that time. INPB may perform initial compliance determination on different MSW types and feed rates during or after the MSW trial period.}

EMISSIONS STANDARDS

9. Emissions Standards: The emission limits in 40 CFR Part 60 Subpart AAAA for particulate matter, opacity, nitrogen oxides (Class I units), sulfur dioxide, fugitive ash and carbon monoxide (modular starved units) are applicable during the initial operation of vent gas boiler combusting syngas generated using biomass. The NSPS for small municipal waste combustion units (Appendix AAAA) specifies emissions standards for the following pollutants when syngas

generated from MSW is combusted in the vent gas boiler: dioxins/furans, cadmium, lead, mercury, PM, HCl, NO_X, SO_2 and CO. This NSPS also limits visible emissions. The permittee shall comply with the NSPS limits when the vent gas boiler is first combusting syngas generated from MSW.~~any authorized fuel, including syngas generated from the gasification of C&D debris. As a result of this permit modification,~~ NO_X emission from the vent gas boiler shall also be limited to 120 ppmdv, corrected to 7 percent O_2, based on a rolling 12-month average of 24-hour daily block averages.
[Application No. 0610096-002-AC; Rule 62-4.070(3), F.A.C. Reasonable Assurance; and Rule 62-210.200, F.A.C. Definition of "Potential to Emit"]

5. Circumvention of Air Pollution Control Equipment for Vent Gas Boiler: Section 3, Subsection E, Condition 7

Specific Condition No. E.7 states that syngas cannot be routed to the vent gas boiler without dry gas cleaning using sodium bicarbonate and activated carbon injection followed by fabric filtration. The activated carbon injection is used to control mercury emissions from the gas stream. The syngas generated from clean biomass (wood chips) will have very little mercury and as a result, activated carbon injection is unnecessary. INPB is requesting that Specific Condition No. E.7 state that dry gas cleaning using activated carbon injection is only required when syngas generated from MSW is combusted in the boiler.

PERFORMANCE RESTRICTIONS
7. Circumvention of Air Pollution Control Equipment: The permittee shall not circumvent any air pollution control equipment or allow the emission of air pollutants without the applicable air pollution equipment operating properly. Syngas shall not be routed to the vent gas boiler for combustion except through the gasifier-to-vent gas boiler equipment train, including dry gas cleaning (sodium bicarbonate for SO_2 control and activated carbon injection for Hg control when firing MSW followed by fabric filtration) and vent gas scrubbing. If all or part of the gasifier-to-vent gas boiler equipment train is inoperative, then syngas shall be routed to the syngas flare (EU-010) instead of the vent gas boiler. [Rule 62-210.650, F.A.C.]

6. Initial and Annual Stack Tests for Vent Gas Boiler: Section 3, Subsection E, Condition 11

Specific Condition No. E.11 requires initial and annual stack testing for the vent gas boiler as required by NSPS Subpart AAAA. The initial testing is required to be completed within 60 days after initial operation of the boiler, but not later than 180 days after the initial startup.

The vent gas boiler is authorized to fire the following fuels:

- Natural gas
- Landfill gas
- Syngas

The boiler is being commissioned and is currently operating on mostly natural gas. Although the gasifiers have been tested to produce syngas from clean biomass (wood chips), the equipment train from gasifier to vent gas boiler has not yet been operated. When syngas generated from biomass (wood chips) is

routed to the vent gas boiler, the equipment train will be functionally complete and this should mark the initial operation of the gasifier-to-boiler equipment train. However, the equipment train will still not be operating as a MSW combustion unit until syngas generated from MSW is routed to the boiler, which may not be complete for many months.

As described above, INPB is requesting that Specific Condition No. E.11 be amended to state that the initial and annual stack testing requirements for lead, mercury, cadmium, and hydrogen chloride be required 60 days of achieving the maximum production rate, but no later than 180 days from initial operation, with MSW. Please note that the boiler is equipped with CEMS and COMS and emissions of SO_2, NO_x, CO, and opacity are continuously monitored. INPB will also perform the stack testing for VOC emissions within 180 days of initial startup as required by Specific Condition No. 12.

> ***TESTING REQUIREMENTS***
> 11. Initial and Annual Stack Tests: The permittee shall conduct initial and annual stack testing for particulate matter and opacity when syngas generated from biomass is combusted in the vent gas boiler. The initial stack testing combusting syngas generated from biomass shall be conducted within 60 days after the vent gas boiler reaches maximum load level on syngas generated from biomass but no later than 180 days of initial continuous operation on syngas generated from biomass. The permittee shall conduct initial and annual stack testing as specified by the NSPS for small municipal waste combustion units (Appendix AAAA) when syngas generated from MSW is combusted in the vent gas boiler. As specified in §60.8, the permittee shall conduct required compliance tests within 60 days after vent gas boiler becomes an "affected facility" and reaches the maximum load level at which it will operate, but no later than 180 days after its initial startup. [NSPS Subpart AAAA and Rule 62-4.070(3), F.A.C.]

7. Tank Farm: Section 3, Subsection F

Section 3 of AC Permit No. 0610096-003-AC lists two storage tanks in the Tank Farm – a 94,755-gallon product storage tank and a 19,800-gallon denaturant tank. However, the VOC and hazardous air pollutant (HAP) emissions calculation for the tank farm presented in Attachment 3 of the permit application included five storage tanks. The five tanks were listed as follows:

- 94,755-gallon product storage tank
- 19,800-gallon denaturant (gasoline) storage tank
- 21,477-gallon re-run tank
- 21,447-gallon day tank No. 1
- 21,447-gallon day tank No. 2

The permit application forms for the tank farm, however, only listed the product storage tank (94,755-gallon ethanol storage tank) and the denaturant tank (19,800-gallon denaturant storage tank).

INPB is requesting administrative approval from FDEP to update the description of the Tank Farm to include the following tanks:

- 100,000-gallon product storage tank
- 23,800-gallon denaturant storage tank
- 23,800-gallon re-run tank
- 23,800-gallon day tank No. 1
- 23,800-gallon day tank No. 2

Please note that the permit application presented only the working volume of the product storage and the denaturant tanks. The emissions calculation presented in Attachment 3 of the permit application was also based on the working volume of all five tanks. INPB has attached a revised VOC and HAP emissions calculation for the Tank Farm using the design volume of these tanks, which are presented in Attachment A. As shown, there are no changes to the potential emissions estimated for the Tank Farm in the permit application for Permit No. 0610096-003-AC.

8. Syngas Flare: Section 3, Subsection H

During the commissioning of the gasifiers and syngas flare, it was observed that syngas routed to the syngas flare did not have sufficient heat content to sustain combustion with only the use of a pilot flame fired with natural gas. INPB requests that Condition 1 for Emission Unit 10 be modified to allow the continuous use of natural gas in sufficient quantities to support good combustion when syngas is being routed to the flare. This will ensure proper combustion and minimize emissions from the flare. In addition, INPB requests that "vent gas" rather than "air flow" be identified as the appropriate constituent being routed to the syngas flare. Vent gas will include syngas and gases from the fermentation process. This is consistent with the Emission Unit Description of this section.

H. Syngas Flare (EU-010)
EQUIPMENT
1. Syngas Flare: The permittee is authorized to construct an enclosed ground flare system with thea continuous use of natural gas as either a pilot flame or in sufficient quantity to support good combustion of syngas. The syngas flare shall comply with the requirements of 40 CFR 60.18, included in Appendix GP. [Application No. 0610096-002-AC and Rule 62-4.070(3), F.A.C. Reasonable Assurance]
PERFORMANCE RESTRICTIONS
2. Hours of Operation: Vent gas~~Air flow~~ routed to the syngas flare shall not exceed 496.2 million standard cubic feet per year on a rolling 12-month basis. The flare will be used during facility shake-down, startup of the gasifier, when the syngas quality is not adequate for use in either the fermenter (EU 003) or vent gas boiler (EU 006) or until the fermenter pressure reaches the boiler head pressure or for emergencies. [Application No. 0610096-003-AC and Rule 62-210.200, F.A.C. Definition of "Potential to Emit"]

{Permitting Note: 496.2.2 million standard cubic feet per year flow corresponds to approximately 640 hours per year of operation at the design maximum flow rate.}

RULE APPLICABILITY

The INPB facility is not a major stationary source according to PSD rules in 62-212.400, F.A.C. Based on Rule 62-210.200(205), F.A.C., modification is defined as any physical change in, change in the method of operation of, or addition to a facility which would result in an increase in the actual emissions of any pollutant subject to new source review regulation under the Clean Air Act. Because there is no change in the method of operation and no change in emissions will occur as a result of these proposed minor changes in the air construction permit, it is not a modification and therefore, a minor source air construction permit application is applicable to the project.

TABLES

Table 1. Example Annual Mean Differences to 95% Confidence Interval

Table 1a.

Parameter	Hourly	4 per hour
Hourly samples per year (n)	8,760	35,040
Mean	500	500
Standard Deviation (s)	100	100
z statistic	1.64	1.64
Upper C. I.	501.75	500.88
Lower C. I.	498.25	499.12
Difference upper lower C. I.	3.50	1.75
Difference in hourly and 15 minutes	1.75	
	0.35%	

Table 1b.

	Hourly	4 per hour
Hourly samples per year (n)	8,760	35,040
Mean	500	500
Standard Deviation (s)	200	200
z statistic	1.64	1.64
Upper C. I.	503.50	501.75
Lower C. I.	496.50	498.25
Difference upper lower C. I.	7.01	3.50
Difference in hourly and 15 minutes	3.50	
	0.70%	

Table 1c.

	Hourly	4 per hour
Hourly samples per year (n)	8,760	35,040
Mean	300	300
Standard Deviation (s)	100	100
z statistic	1.64	1.64
Upper C. I.	301.75	300.88
Lower C. I.	298.25	299.12
Difference upper lower C. I.	3.50	1.75
Difference in hourly and 15 minutes	1.75	
	0.58%	

Calculations of mean differences in 15-min and hourly sampling based on statistical theory using normal distribution.

Note normal distribution appropriate for sample size > 30 samples.

Confidence Level = mean $\pm$ z $\cdot$ $(s/n)^{0.5}$

where: z = normal distribution statistic at 95% confidence
s = assumed standard deviation of the data
n = number of samples

ATTACHMENT A

REVISED TANK FARM VOC AND HAP EMISSIONS CALCULATION

INPB IRC BioEnergy facility
Estimated VOC Emission Rates from the Tank Farm based on EPA TANKs 4.09d Model

Annual VOC Emissions

Tank	Material	Diameter [a] (ft)	Height [a] (ft)	Volume [a] (gal)	Throughput [b] (gal/yr)	Turnovers	Losses [c]					Annual VOC (TPY)
							Rim Seal (lb)	Withdrawal (lb)	Deck Fitting (lb)	Deck Seam (lb)	Total (lb)	
Day Tank No. 1	Ethanol	24	32	23,800	4,000,000	168.1	12.4	38.7	211.7	0.0	262.7	0.13
Day Tank No. 2	Ethanol	24	32	23,800	4,000,000	168.1	12.4	38.7	211.7	0.0	262.7	0.13
Re-Run	Ethanol	24	32	23,800	800,000	33.6	12.4	7.7	211.7	0.0	231.8	0.12
Product	Denaturant Ethanol	24	32	100,000	8,000,000	80.0	12.2	77.3	222.4	0.0	311.9	0.16
Denaturant	Gasoline (RVP 9)	24	32	23,800	400,000	16.8	127.1	3.3	2,175.1	0.0	2,305.4	1.15
												1.69

Hourly VOC Emissions

Tank	Material	Diameter [a] (ft)	Height [a] (ft)	Volume [a] (gal)	Throughput [b] (gal/yr)	Turnovers	Losses [d]					Hourly VOC (lb/hr)
							Rim Seal (lb)	Withdrawal (lb)	Deck Fitting (lb)	Deck Seam (lb)	Total (lb)	
Day Tank No. 1	Ethanol	24	32	23,800	4,000,000	168.1	1.2	3.2	20.3	0.0	24.7	0.03
Day Tank No. 2	Ethanol	24	32	23,800	4,000,000	168.1	1.2	3.2	20.3	0.0	24.7	0.03
Re-Run	Ethanol	24	32	23,800	800,000	33.6	1.2	0.6	20.3	0.0	22.1	0.03
Product	Denaturant Ethanol	24	32	100,000	8,000,000	80.0	1.2	6.4	21.4	0.0	29.0	0.04
Denaturant	Gasoline (RVP 9)	24	32	23,800	400,000	16.8	11.7	0.3	201.0	0.0	213.0	0.29
												0.42

[a] As-built, based on INEOS Bio information.

[b] Throughput based on Attachment 3 of the permit application for Permit No. 0610096-003-AC.

[c] Based on EPA TANKS 4.09d Model.

[d] Based on EPA TANKS 4.09d Model results for August.

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