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Mr. Rick Bradburn, Air Program Administrator  
Florida Department of Environmental Protection  
Northwest District  
160 W. Government Street, Suite 308  
Pensacola, Florida 32502

**RE: FILE NO. 0330040-036-AC  
ASCEND PERFORMANCE MATERIALS, PENSACOLA SITE**

Dear Mr. Bradburn:

Ascend Performance Materials LLC (Ascend) received a request for additional information (RAI) from the Florida Department of Environmental Protection (FDEP) Northwest District Office for the 1080 MAR Air Permit Application (FDEP File No. 0330049-036-AC) in a letter dated February 28, 2011. Ascend is pleased to provide this response to the RAI. In addition, Ascend is providing the attached updated PSD applicability analysis to support the RAI responses and is based on additional discussions with FDEP.

**Item 1. Application Section I, Page 3 (Scope of Application) does not list Emissions Units 014, 015 and 016 (boilers 4, 5 and 6), yet the project takes credit for reducing SO2 emissions by placing a lower limit on the allowable fuel oil fed to these boilers. Please submit an Emissions Unit Information section (Section III) for the affected boilers and a corrected Scope of Application.**

**Response:** A new Section III of the FDEP application form for the Emission Units 014, 015, and 016 is included as Attachment 1. Based on the updated PSD applicability analysis, Ascend is requesting PSD avoidance emissions limits for boilers 7, 8, 9, and the cogen boiler in addition to boilers 4, 5, and 6. As a result, new Section III of the FDEP application form for boilers 7, 8, and 9, and the cogen boiler are also included in Attachment 1. The revised Application Information page (page 3) is attached in Attachment 2.

**Item 2. Application Section II.A., Page 7 requires, for the Facility Location and Type, that the UTM coordinates be given to "at least the nearest tenth of a kilometer for the approximate center of the points of air pollutant emissions at the facility." Please confirm that these coordinates should be listed as 476.0 and 3385.0 in the permit.**

**Response:** The coordinates referenced above are an approximate center of the Pensacola Plant manufacturing units. The coordinates are 476.0 and 3385.2 respectively. The revised diagram entitled Permitted Stack Inventory Site Plan is included in Attachment 3 and illustrates the general location of the existing as well as proposed emission units. The longitude/latitude of the flagpole located at the facility entrance is shown on the diagram.

**Item 3. Application Section II.C., Page 11 requires "a plot plan of the facility showing the location of existing and proposed manufacturing processes, control equipment, stacks, vents, identifiable sources of fugitive emissions and principal buildings." Further, "if this application is being submitted to obtain an air construction permit for a proposed new emissions unit at the facility, the plot plan should be drawn to scale, show the precise location of the new emissions unit and its emission point(s), include at least one UTM or latitude/longitude reference coordinate point and compass direction, and provide dimensions, including height, of any buildings**

**or structures that may affect dispersion of pollutants from the new emissions unit.” Please provide a legible larger copy of the plot plan meeting these requirements, as the one submitted is not readable.**

**Response:** The revised diagram entitled Permitted Stack Inventory Site Plan included in Attachment 3 and illustrates the general location of the existing as well as proposed emission units. Since we are not conducting dispersion modeling at this time, and the height of new structures associated with the new hydrogen plant and new Therminol vaporizer are not finalized, Ascend proposes to provide such detail in the event that dispersion modeling is required in the future.

**Item 4. Application Section III, Emissions Unit Information, Section 1, Area II Adipic Acid. Please supply the following supplemental information to help us determine regulatory applicability:**

- a. **The applicant has requested that a new emissions unit be designated for new fugitive emissions from the adipic acid process in order to facilitate post project emissions monitoring. Please confirm that fugitive emissions from the existing equipment will continue to be reported under EU 002.**

**Response:** Ascend confirms that existing fugitive emissions from the adipic acid unit will continue to be reported under EU 090, which are the fugitive emissions associated with EU 002. Ascend has requested a new emissions unit for new fugitive emission components associated with this construction permit in order to clearly delineate emission increases associated with this permit.

- b. **The project proposes to install two new storage tanks, one for Refined Crystallizer Feed and one for Water Mother Liquor. Based on the information in Table 2, these tanks will be a source of VOC emissions. 40 CFR 60 subpart Kb applies to certain tanks that store volatile organic liquids (defined in the regulation as “any organic liquid which can emit volatile organic compounds (as defined in 40 CFR 51.100) into the atmosphere”). Please provide the information needed to determine subpart Kb applicability to these tanks (size and vapor pressure). Additionally, Section 2.1.4 of Attachment A mentions another tank, Adipic Solution tank. Please provide pertinent information for that tank as well.**

**Response** The proposed new Refined Crystallizer Feed (RCF) tank will have an approximate capacity of 267,300 gallons (1,012 cubic meters) and the proposed new Water Mother Liquor (WML) tank will have an approximate capacity of 96,200 gallons (364 cubic meters). Both tanks will be exempt from 40 CFR 60, subpart Kb per 60.110b(b) due to storing a volatile organic liquid with a true vapor pressure of less than 0.51 psia (3.5 kPa). The calculated vapor pressures of the mixtures for the RCF tank and WML tank are, respectively, 0.002 kPa and 0.0003 kPa. The new proposed Adipic Solution Tank has a capacity of 500 gallons and is thereby exempt from all provision of 40 CFR 60, subpart Kb.

- c. **The current Title V permit for the facility (0330040-029-AV) states that EU 002 is subject to 40 CFR 63 subpart FFFF. Please indicate where HAPs are handled or may be emitted in this emissions unit to determine the applicability of subpart FFFF.**

**Response** An initial Notification of Compliance Status (NOCS) for subpart FFFF was submitted by the Pensacola Plant in October of 2008. This NOCS had detailed information on each affected process, including the Adipic Acid Unit. The principal HAP associated with adipic acid manufacture is hydrogen cyanide in low concentration; however, all of the process vents, storage/surge vessels, wastewater streams are categorized as Group 2. Per subpart FFFF, this “miscellaneous chemical process unit” or MCPU is not subject to fugitive emission monitoring due to the low concentration of HAP. For reference, please see the NOCS submitted by Ascend to EPA and DEP. The proposed projects in this application will not impact the regulatory status of the Adipic Acid Unit with regard to subpart FFFF. Low

concentrations of HAPs are inadvertent byproduct impurities in the adipic acid process and emitted at the TRU and Backup SCR.

- d. **Table 3 provides an estimate of fugitive emissions from new equipment proposed to be installed by this project. The emission estimate indicates that percent of components at "default zero" is 98%. Please provide screening data or other supporting information for the assumption that 98% of the new equipment will test at "default zero." Also, the regulatory analysis indicates that 40 CFR 60 subpart VV (which carries a leak definition of 10,000 ppm for pumps and valves in light liquid service) is the applicable regulation. Please explain why 40 CFR subpart VVa is not the applicable regulation (which carries a leak definition of 2000 ppm for pumps and 500 ppm for valves in light liquid service) for the facility, since it is being modified after November 7, 2006.**

**Response** With regard to the percentage of components assigned to the "default zero" category for the purpose of calculating emission increases due to new components, Ascend believes this is a conservative (high) estimate of future fugitive emission rates from new components in the Adipic Acid Unit. Actual monitoring data for existing process units (Adipic Acid and Area 480) has shown that greater than 99% of components screen at zero. Regulatory applicability for the Adipic Acid Unit does indicate that NSPS Subpart VVa would be triggered as a result of the projects. Ascend is clarifying with this submittal that NSPS subpart VVa will apply to both EU 090 and the new fugitive emissions associated with the Adipic Acid Unit following installation of new equipment associated with this application.

- e. **The project proposes to install a new Low Temperature Converter. Based on the converter producing adipic acid, which is one of the compounds listed in 40 CFR 60.707, it appears that the new converter will be subject to 40 CFR 60 subpart RRR, Standards of Performance for Volatile Organic Compound Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes. Please indicate which compliance option Ascend intends to use and provide relevant information regarding the disposition of the vent (if any).**

**Response** Ascend elects to comply with 40 CFR 60.700(d) which provides for compliance with 40 CFR 65, subpart D. The subject vent stream will be a combination of two or more reactor processes and the common recovery system into which their vent streams discharge (40 CFR 60.700(b)(3)). TRE calculations for this equipment show Group 2b status for the affected streams. Data used for the TRE calculation was obtained by process modeling as allowed under 40 CFR 65, subpart D. The vent stream will route to the TRU during normal operation and to the Backup SCR during periods when the TRU is not operating.

- f. **Section 2.1.8 of Attachment A involves upgrades to the 403B still. Please advise if this is the same still discussed in the letter from Timothy Montgomery to the Department dated January 11, 2011. If the 403B still is not the still described in the recent letter, please provide information related to the applicability of 40 CFR 60 subpart NNN, Standards of Performance for Volatile Organic Compound (VOC) Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations.**

**Response** The 403B still is the same as discussed in the letter of January 11, 2011. Per the Department's letter of January 31, 2011, and in compliance with 40 CFR 60 Subpart NNN, Ascend will reassess the Still's Group determination status and notify the Department as required. If the additional water removal is required, Ascend proposes upgrading, adding or replacing the reboiler, condenser, and pumps. Per the Department's letter of January 31, 2011 and in compliance with 40 CFR 60 Subpart NNN, Ascend would reassess the Group determination and notify the Department as required.

- g. **Section 2.1.9 of the Project Description involves replacement of the existing selective catalytic reduction system (SCR) with a selective non-catalytic reduction system (SNCR) that uses ammonia to break down NO<sub>x</sub> into water and nitrogen. Please verify that the site-wide emissions of ammonia (fugitives plus emissions from this SNCR and from the one in the nitric acid plant) do not exceed 250 tons per year. Also, please describe the impact this change will have on CO emissions and on the operation of the NO<sub>x</sub> CEMS.**

**Response** Site wide emissions of ammonia will not exceed 250 tons per year. The estimated ammonia slip from the SNCR unit is 40 ppmv or less which correlates to approximately 1.35 tons or less per year increase from the site. CO emissions as a result of proposed increase production rates are reflected in the TRU emission estimates are not impacted by the selected NO<sub>x</sub> control technology. The installation of SNCR will not impact operation of the NO<sub>x</sub> CEMS. Even with the additional ammonia emissions from the SNCR, we expect actual site-wide ammonia emissions to remain less than 5 tons per year. Ascend has attached the ammonia slip and NO<sub>x</sub> emission guarantee letter from John Zinc for the TRU/SNCR in Attachment 4. Should the department require testing of ammonia slip, Ascend proposes CTM-027 or after consultation with the testing company another appropriate method to be approved by the Department.

- h. **Attachment APM-EU1-I1 shows two vents to the atmosphere from Adipic Drying and the Transfer System. Please indicate whether these vents are controlled or not and the type of control applied. Please also include the Emissions Unit Control Equipment/Method information required on Pages 16 and 20 of the application.**

**Response** The six adipic acid dryers and loading operations are not associated with EU 002, but are part of other emissions units at the site. APM-EU-I1 has been revised to reflect only EU 002 by deleting reference to downstream emissions units such as the dryers and loading for which there are no physical modifications associated with this project. The revised APM-EU1-I1 is attached in Attachment 5.

- i. **Application Section III, Emissions Unit Information, Subsection C., Emission Point (Stack/Vent) Information, Page 18 requires the applicant to "enter the emissions unit addressed in this Emissions Unit Information Section, as shown on the facility plot plan or flow diagram. If the emissions unit has multiple emission points...enter the identification numbers or symbols for all of the emission points serving the emissions unit." Page 18 lists only one emission point; however, Attachment APM-EU1-I1 shows four vents to the atmosphere. Please provide a unique number or symbol for each emission point for which permitting is required and show them on the Process Flow Diagram. If vents are for emergency purposes only, please indicate this by some designation such as "EV." This will help in communication regarding specific vents in the future. Larger diagrams such as 11" X 17" (which can easily be folded to fit the application) may be submitted as necessary.**

**Response:** APM-EU1-I1 has been revised (see Attachment 5) to identify the TRU stack and backup SCR stack. Equipment not specifically associated with EU 002 has been removed from this diagram. Revised Page 18 of the application form is included in Attachment 2.

- j. **Attachment SPM-FUEL does not list the sulfur content of the natural gas used in the TRU. Please submit the latest sulfur analysis for the natural gas being used and an estimate of the SO<sub>2</sub> emissions based on the amount of natural gas used.**

**Response:** In the enclosed sulfur analysis in Attachment 6, the sulfur content from a March 9, 2011 sample was <0.03 grains/scf. Ascend has added the corresponding amount of SO<sub>2</sub> to emission calculations.

**Item 5. Application Section III, Emissions Unit Information, Section 2, EU 020 starting on Page 34 describes proposed modifications in the cyclohexane oxidation area of the facility. Please provide the following additional information and clarifications.**

- a. The Emission Point Comment in subsection C., Page 37 states that "venting to high pressure scrubbers occurs during change from TRU to OBUD." Please explain what this comment means.**

**Response:** The Emission Point Comment in subsection C., Page 37 has been revised to say "venting from the high pressure scrubber occurs during change from TRU to OBUD during emergency events". Revised Page 37 of the application form is presented in Attachment 2. This comment refers to a malfunction of the TRU, an event that requires redirecting the off gas stream. The TRU is the primary control device and the OBUD is the backup control device. Startup of the OBUD is not instantaneous and thus there may exist a period of venting from the high pressure scrubbers during a malfunction of the TRU until the proper operating temperature of OBUD is achieved.

- b. The Process Flow Diagram, Attachment APM-EU2-11, indicates that there are two High Pressure Off-gas Vents. Please verify that these vents are either locked closed, monitored or are classified as emergency vents as required by 40 CFR 63.983(a)(3) (referenced by 40 CFR 63.2450(e) via 63.982(c)).**

**Response:** Yes, the vents are classified as emergency vents per required by 40 CFR 63.983(a)(3). The vents are over-pressure or high-pressure safety vents. Whenever there is malfunction or over-pressure, venting may occur through these safety vents in order to protect the process and control equipment. Ascend will continue to meet all requirements of NESHAP Subpart FFFF.

- c. Please indicate on the Process Flow Diagram the proposed tie-ins from the four tanks and two centrifuges, referenced in Section 2.5.1 of Attachment A, to the Low Pressure Recovery Scrubbers.**

**Response** These tanks have been added to the Process Flow Diagram (PFD) (Attachment APM-EU2-11) and the revised PFD is presented in Attachment 5.

- d. Please provide the supporting calculations for the four tanks and two centrifuges referenced in Item c. above to demonstrate that they are included in the baseline emissions that were reported for EU020 during the baseline years for VOC (2004-2005).**

**Response:** Calculations are attached in Attachment 7. Actual VOC emissions from these 4 tanks and 2 centrifuges were 11.45 tons/yr average for 2004/2005. Upon review, Ascend notes that these tanks were not included as part of the AOR for the subject baseline years. Ascend has recalculated the baseline emissions for 2004/2005 using a modification of the approach requested by the Department to restate Halcon emissions post OBUD installation. The reported tank and LP Scrubber emissions from 2007/2008 were removed from the AOR reported emissions and the remaining emissions were used to determine an emission rate which was then converted into equivalent emissions for the 2004/2005 base years. The actual tank and LP Scrubber emissions from 2004/2005 were then added to this value to arrive at the actual emissions. Post emission reduction project emissions (following routing of these tanks and centrifuges to the low pressure scrubber) are included with this submittal.

- e. The Continuous Monitor Comment on Page 45 for the KA Recovery Column suggests that there is a vent to the atmosphere from the KA Recovery Column. Please clarify whether this is the case, and if so, identify the location of that emission point on the Process Flow Diagram.**

**Response:** The KA Recovery Column is routed to the low pressure scrubbers. Monitoring of the KA Recovery Column is done in accordance with NSPS Subpart NNN and the existing Title V permit condition.

- f. **Subsection C., Emission Point (Stack/Vent) Information, Page 37, discusses the TRU and the OBUD, but identifies only one emission point as EU 020 (which is not shown on the process flow diagram). Please assign a unique number or symbol for each emission point and show them on the Process Flow Diagram.**

**Response:** The revised PFD, "Attachment APM-EU2-I1" in Attachment 5 illustrates major equipment associated with EU 020.

- Item 6.** Attachment A, Section 2.3.1 indicates that the nitric acid plant is currently limited to 1,500 tons per day, which will not be exceeded. However, the last compliance test conducted on December 6, 2010 was only conducted at 1,247 tons per day. Therefore, by Rule 62-297.310(2), the current limit is 1,372 tons per day until the plant can be retested at a higher rate. Please clarify whether the plant has been retested to allow the 1,500 tons per day limit and, if not, verify that the current production limit has not been exceeded since December 6, 2010.

**Response:** The current production rate has not exceeded 1,372 tons per day. Maximum production since December 6, 2010 occurred on December 16, 2010, when the production was 1,268.8 tons per day. Ascend continues to comply with Rule 62-297.310(2).

- Item 7.** Application Section III., Emissions Unit Information, Section 3 (nitric acid), Page 53 identifies the emission point as EU 042. Please "enter the identification number or symbol for the emission point associated with the emissions unit addressed in this Emissions Unit Information Section, as shown on the facility plot plan or flow diagram."

**Response:** EU 042 is identified on the revised facility plot plan entitled Permitted Stack Inventory Site Plan included in Attachment 3.

- Item 8.** Application Section III., Emissions Unit Information, Section 3 (nitric acid), subsection G lists an allowable opacity under exceptional conditions of 100% for 60 min/hour. Please cite the authority or regulatory citation for that allowable opacity.

**Response:** In accordance with Rule 62-210.700(1), F.A.C., opacity provisions are not applicable during periods of startup, shutdown, or malfunction. Also, per 40 CFR 60.11(c), opacity provisions do not apply during periods of startup, shutdown, or malfunction.

- Item 9.** Application Attachment A, Section 3.3.1 proposes to reduce NOx emissions from the nitric acid plant by increasing ammonia injection to the SCR. Please show the SCR and ammonia injection point on the Process Flow Diagram, Attachment APM-EU3-I1, and provide documentation or supporting calculations to verify that this emission reduction can be achieved.

**Response:** Attachment APM-EU3-I1 has been revised to illustrate the locations of the SCR and ammonia injection. The revised APM-EU3-I1 is presented in Attachment 5. Ascend conducted rate tests in 2010 to demonstrate that the SCR could be optimized to achieve the lower projected emission rate for NOx, primarily by increasing the ammonia injection rate.

- Item 10.** Application Section III., Emissions Unit Information, Section 4 (P2K), Page 64 lists "flare and backup flare" as the control equipment for this emissions unit. Additionally, Attachment APM-EU4-I3 provides vendor data for two different flare designs. Please explain which flare is the primary flare and which one is the backup flare and describe the parameters that are monitored to ensure compliance with NSPS (40 CFR 60 subparts A, NNN, and RRR) and NESHAP (40 CFR 63 subparts A, F and G). Please also provide documentation to support that the flares will meet the requirements of 40 CFR 63.11 at the production rates proposed in this project.

**Response:** There are 2 identical flares (Model 648 enclosed-type). The vendor data from the original 2001 HON Notice of Compliance Status are presented in Attachment 8. The presence of a flame is monitored by 3 flame scanners per flare (one for each stream) and alarm in the control room should no flame be detected. Flare outrages are logged and submitted in the semi-annual HON report. The flares were designed to support maximum operating rates and the projects proposed do not increase rates above that limit. These units are designed, operated and monitored consistent with flare provisions as outlined in 40 CFR 63.11. Per 40 CFR 63.110 (regulatory overlap) the NSPS provisions of 40 CFR 60 are superseded by the requirements of 40 CFR 63 Subparts A, F and G.

To document compliance with 40 CFR 63.11(b)(6), the individual flare stream BTU values and tip velocities are as follows:

Stream	BTU/scf	MJ/scm	Allowed Exit Velocity ft/sec	scfm	Individual	
					Surface Area ft <sup>2</sup>	Exit Velocity ft/sec
Reactor & Atm. Column Vents	223	8.32	122	353.5	0.0639	92.2
Tank Vent	650	24.21	154	68.34	0.0150	75.9
Vacuum System Vent	432	16.07	85	44.01	0.0123	59.8

Flare Tip velocity and heat content requirements are specified in 40 CFR 63.11, summarized below:

MAX Exit Velocity for non-assisted Hydrogen Flares ( $v_{\text{wet H}_2} > 8.0$ ) = 122 ft/s  
 (Reactor & Atm. Column Vents contains 73.7% by volume Hydrogen)

MIN Heating Value for non-assisted flares = 200 btu/scf

MAX Exit Velocity for non-H<sub>2</sub> Flares: 60 ft/s or  $\text{Log}_{10}(V_{\text{max}}) = (H_t + 28.8) / 31.7$   
 (with 400 ft/s MAX)

where:

$V_{\text{max}}$  is in m/s  
 $H_t$  heating value in MJ/scm

**Item 11. Attachment A, Section 2.6.2 describes improvements to barge loading proposed by this project. Please explain how vapor emissions from barge loading are estimated and controlled (if applicable) and where they are accounted for in the emissions analysis for this project.**

**Response:** The proposed barge loading is vapor balanced, which means any emissions from the loading operation will go back to the tanks. The proposed barge loading system will be vapor balanced.

**Item 12. Attachment A, Section 2.7 and Application Section 5 describe modifications to the nylon polymerization Emissions Units 081 and 082 proposed by this project. Please provide the following additional information to help us determine regulatory applicability.**

- a. Section 2.7.6 addresses transitioning CP lines 21 and 18 to pelletizing lines. Table 9 of the 0330040-036-AC application presents the estimated PM10 emission increases from this modification due to elutriation and conveying. The emission factor listed for elutriation is 0.01 grains per standard cubic foot (based on bag filter vendor specs) and for conveying is 0.004 grains per standard cubic foot (based on test results conducted by TRC, Test Report 39596-001, conducted on 4/16/2003).

**Table 1 from 0330040-033-AC application issued March 2010 documents similar projects undertaken within the last five years as follows:**

Permit No.	Date issued	PM10 increase	comment
0330040-020-AC	March 2006	0.5 TPY	CP 27 conversion
0330040-021-AC	June 2006	1.0 TPY	CP 26 conversion
0330040-023-AC	December 2006	1.5 TPY	CP 24 & 25 conv.
0330040-025-AC	August 2007	1.45 TPY	CP 28 & 29 conv.
0330040-030-AC	December 2008	1.8 TPY	CP 22 & 23 conv.
0330040-033-AC	March 2010	1.7 TPY	CP 16 & 17 conv.
Total:		7.95 TPY	

**Please explain why the particulate emissions from these projects are not considered contemporaneous for the purposes of the current project.**

**Response:** The CP Lines are affected units of the project. The potential emissions as presented in Table 1, above, have been added to Table 1a of the PSD applicability analysis. The application form for EU081/EU082 has been revised to add pollutant sections for PM/PM10 and PM2.5. The revised pollutant sections are presented in Attachment 2.

- b. Application Section III, Emissions Unit Information, subsection E, Page 81 lists VOC as the only pollutant emitted. The application instructions require that each pollutant be identified that the emissions unit would "emit or have the potential to emit in an amount greater than a threshold amount," which is 5.0 tons per year for PM10. Based on the information presented in a., above, please explain why PM10 is not listed as an emissions unit pollutant for this emissions unit.**

**Response:** Please see the response for Item 12a above.

- c. Application Section III, Emissions Unit Information, subsection A, Emissions Unit Control Equipment/Method, Page 77 lists the adsorption column as the only control device employed by this emissions unit. Please list all the control devices used to reduce particulate matter emissions from this emissions unit (baghouses, scrubbers, etc.).**

**Response:** In addition to the column referenced above, individual CP lines have Monomer Scrubbers that control VOCs from the emission unit. The projects referenced in Table 1 above did not add any PM control devices to the emission unit. The emissions from the TRC test report (0.0030 grains/dscf) vent uncontrolled from miscellaneous dryer and convey vents as identified on the applications. (In fact other than the silos and loading facility constructed under permit 0330040-025-AC, all loading and gravity blender (silo) emissions were at sources designated as insignificant emission units in the Title V permit.) Following discussions with the Department, PM emissions from the monomer scrubbers and malfunction events using appropriate emission factors have also been added to the application. See the revised Table 1a and new Table 14 in Attachment 7.

The CP 16/17 conversion project ties into an existing elutriator and baghouse to make use of unused capacity. The elutriator and baghouse are identified as an insignificant activity in the existing Title V permit as Polymer Fines Removal System with baghouse." This source was designated an insignificant activity in permit 0330040-016-AC. Source testing has previously determined emissions as less than 0.003 grains per dscf which was conservatively used in calculations for permit 0330040-033-AC. This project did not change the status of the system.



- d. **Please indicate PM10 emission points on Attachment APM-EU5-I1, the Process Flow Diagram. Please identify the emission points with a number or symbol that can be cross-referenced to Application Section III., subsection C, page 79.**

**Response:** A revised APM-EU5-I1 is presented in Attachment 5.

- Item 13.** Table 5 provides an estimate of fugitive emissions from the new therminol vaporizer proposed to be installed by this project. The emission estimate indicates that percent of components at "default zero" is 98%. Please provide screening data or other justification for the assumption that 98% of the new equipment will test at "default zero."

**Response:** With regard to the percentage of components assigned to the "default zero" category for the purpose of calculating emission increases due to new components, Ascend believes this is a conservative (high) estimate of future fugitive emission rates from new components in Therminol service. Actual monitoring data for existing process units (Adipic Acid and Area 480) has shown that greater than 99% of components screen at zero.

- Item 14.** Table 6 uses very low emission factors to estimate NOx and CO emissions from the steam methane reformer exhaust stack. Please verify whether a catalyst is used to achieve the low CO value. Also, please explain how these low emissions will be verified and maintained.

**Response:** The emission factors are based on data from the hydrogen plant vendor, Air Products. The current design reflects a low NOx burner from Hamworthy Peabody which provides burner specific data (0.05 lb NOx /MMBTU and 0.015 lb CO / MMBTU). These factors are reflected in the emission calculations for the new hydrogen plant. An oxygen analyzer in the reformer flue gas will be utilized to ensure good combustion. There are no catalysts utilized for emission control.

- Item 15.** Table 6 estimates the emissions of SOx from the proposed new hydrogen generating plant at 0.35 lb/hr. Please explain the calculations to get 0.35 lb/hr of SOx from the information provided in Footnote c, namely 3 grains sulfur per 100 scf of gas.

**Response:** During normal operation, the primary fuel to the reformer furnace will be pressure swing adsorption (PSA) purge gas and the trim fuel will be pipeline quality natural gas. The emission factor is derived as follows:

- A. The Process heater has 2 Fuel sources.
  1. Major Fuel is Purge Gas which was natural gas that has been desulfurized by passing over zinc oxide and reformed.
  2. Natural Gas Trim (supplemental) Fuel
- B. Conservatively assume that natural gas has 3 grains sulfur per 100 scf. This is equivalent to 50.7 ppmv ( $50.7 \times 10^{-6}$  lb-moles S/lb-mole natural gas). This is a conservative assumption as the most recent natural gas analysis was less than 0.03 grains per 100 scf.
- C. Per the vendor, the Natural Gas Trim fuel flow is 106 lb-moles/hr at maximum rates.
- D. Hourly SO2 Emission Rate (ER) is as follows:

$$ER = \text{Trim Fuel Flow} \times \text{Total Sulfur} \times 64 \text{ lbs SO}_2/\text{lb-mole S}$$

$$ER = (106 \text{ lb-moles/hr Natural Gas}) \times 50.7 \text{ ppmv} \times 64 \text{ lbs SO}_2/\text{lb-mole S}$$

$$ER = 0.35 \text{ lb/hr SO}_2$$

**Item 16.** Section 7 of the application proposes to install a new Hydrogen Generating Plant that uses steam methane reforming technology. Table 1 indicates that the steam rate required to support this project does not increase over that required to support the last adipic rate increase from 850 to 990 MAR proposed in 0330040-035-AC. Please explain how the steam rate to support the 0330040-036-AC project can be the same as the steam rate to support the 0330040-035-AC project with the addition of a new steam methane reformer.

**Response:** The proposed new Hydrogen plant will utilize heat recovery and generate substantially more steam than is required for the reformer. As such, the new hydrogen plant will be a net exporter of steam. In addition, the increased utilization of the Nitric Acid Plant will result in addition steam generation. This steam is the amount above the steam utilized within the nitric acid plant / new hydrogen plant and is available for use elsewhere at the Pensacola Plant. The following summarizes the additional steam requirement for the project:

From 930 Permit (Incremental Steam Basis from 850 MAR)

	10 <sup>6</sup> Btu
Wet Adipic Production	Confidential Process Data
Dry Adipic Production	
Nylon Production	
DME Production	
AGS Steam	
<b>Total:</b>	<b>313,914</b>

Adjusted for 1080 Permit (Incremental Steam Basis from 850 MAR)

	10 <sup>6</sup> Btu
Wet Adipic Production	Confidential Process Data
Dry Adipic Production	
Nylon Production	
DME Production	
AGS Steam	
<b>Total:</b>	<b>651,602</b>

**Additional Units**

HMD Steam	Confidential Process Data
P2K Steam	
Steam from Nitric	
Steam from new H2 plant	
<b>Total:</b>	<b>-358268</b>

**Net increase: 293,334**

**Item 17.** Application Section III., Emissions Unit Information, subsection C., in Section 7, page 113 requires the identification of emission points on the plot plant or process flow diagram. Please provide an identification number or symbol for each emission point and show them on the Process Flow Diagram, Attachment APM-EU7-I1.

**Response:** Page 113 has been revised to indicate two separate emission points associated with the emissions unit: (1) combustion flue gas from the reformer; and (2) emissions from a flare utilized for SSM events. Revised Page 113 is presented in Attachment 2. Attachment APM-EU7-I1 has been revised accordingly and presented in Attachment 5.

**Item 18.** Attachment APM-EU7-I1, the Process Flow Diagram for the new hydrogen generating plant indicates that the natural gas feed will be desulfurized. A process vent from the desulfurizer to the flare is shown. Please clarify whether this vent is for regenerating the desulfurizers or for other purposes and whether the emissions from the flare from this vent are included in Table 6.

**Response:** Attachment APM-EU7-I1 has been revised to clarify that the vent stream associated with the desulfurizer is for overpressure conditions only and not for the purposes of routing sulfur to the flare. The zinc oxide bed utilized for desulfurization will capture the sulfur for ultimate disposal as a solid waste. All emissions from the flare are accounted for in Table 6 (see Attachment 7). Other than pilot flame emissions, all flare emissions are due to SSM events.

**Item 19.** Table 13 presents an estimate of the increase in particulate emissions as a result of increasing the circulation rate in five cooling towers and construction of a new cooling tower. The drift rates which are utilized are significantly less than the rate presented in AP-42 for induced draft towers, which is 0.02% of circulation rate. Please explain how the drift rates used in Table 13 were obtained.

**Response:** The AP-42 emission factors for cooling towers were established in the early 1990s based on then available technology. The technology to reduce drift has advanced over the years. State of the art drift eliminators now have drift rates of 0.0005% for counter flow towers and 0.001% for cross flow towers. The most recent drift eliminators Ascend installed on Cooling Towers 3 (a cross flow tower) are rated at 0.001% drift rate. Drift eliminator efficiencies on all Cooling Towers are based on Vendor ratings. Vendor specifications for the most recent installation are presented in Attachment 9.

**Item 20.** Each of sections 3.1.3 through 3.1.8 in Attachment A end with the sentence, "Any production rate related changes in emissions are reflected in Tables 1 and 2." Please clarify whether there are other changes in emissions as a result of the proposed project that are not "production rate related."

**Response:** All emissions changes, whether production rate related or otherwise, are reflected in revised Tables 1 and 2 provided in Attachment 7.

**Item 21.** On the last page of Table 1, the "total emissions all emission units" table does not match the "PSD Review Applicability" table below it. Please reconcile the discrepancy and submit a corrected Table 1.

**Response:** Revised Tables (1a, 1b and 1c) are provided in Attachment 7.

**Item 22.** Please provide PM2.5 emission estimates for the emissions units affected by this project.

**Response:** Calculations for PM2.5 emissions are provided in revised Table 1a through 17.

Mr. Rick Bradburn  
May 3, 2011  
Page 12 of 12

Ascend has also revised several "Emission Point Information" forms to provide the revised emission point IDs and "Emission Unit Pollutant Detail Information" forms to provide the new requested emissions limits. These revised pages are presented in Attachment 2.

Thank you for considering the information. Should you have any questions concerning this submittal, please contact Roy Noble. at (850) 968-8721.

Sincerely,



Timothy N. Montgomery

cc: Bobby Bull, FDEP, Tallahassee

**APPLICATION INFORMATION**

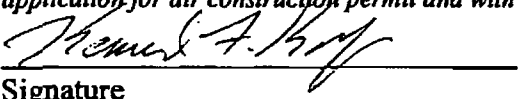
**Owner/Authorized Representative Statement**

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

1. Owner/Authorized Representative Name : <b>Timothy N. Montgomery, Chemical &amp; Utilities Plant Manager</b>
2. Owner/Authorized Representative Mailing Address... Organization/Firm: <b>Ascend Performance Materials LLC</b> Street Address: <b>P.O. Box 97</b> City: <b>Gonzalez</b> State: <b>FL</b> Zip Code: <b>32560-0097</b>
3. Owner/Authorized Representative Telephone Numbers... Telephone: <b>(850) 968 - 7114</b> ext. Fax: <b>(850) 968 - 7220</b>
4. Owner/Authorized Representative E-mail Address: <b>tnmont@ascendmaterials.com</b>
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 <u>5/4/11</u>

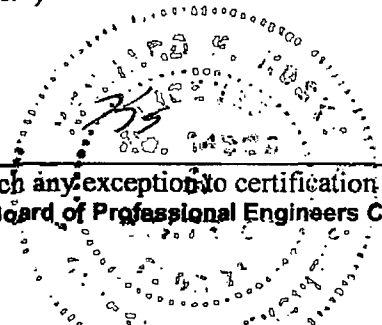
**APPLICATION INFORMATION**

**Professional Engineer Certification**

1. Professional Engineer Name: <b>Kennard F. Kosky</b> Registration Number: <b>14996</b>
2. Professional Engineer Mailing Address... Organization/Firm: <b>Golder Associates Inc.**</b> Street Address: <b>6026 NW 1<sup>st</sup> Place</b> City: <b>Gainesville</b> State: <b>FL</b> Zip Code: <b>32607</b>
3. Professional Engineer Telephone Numbers... Telephone: <b>(352) 336-5600</b> ext. <b>21156</b> Fax: <b>(352) 336-6603</b>
4. Professional Engineer Email Address: <b>kkosky@golder.com</b>
5. Professional Engineer Statement: <i>I, the undersigned, hereby certify, except as particularly noted herein*, that:</i> <i>(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and</i> <i>(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.</i> <i>(3) If the purpose of this application is to obtain a Title V air operation permit (check here <input type="checkbox"/>, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.</i> <i>(4) If the purpose of this application is to obtain an air construction permit (check here <input checked="" type="checkbox"/>, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here <input type="checkbox"/>, if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.</i> <i>(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here <input type="checkbox"/>, if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.</i>   Signature _____ Date <u>5/4/11</u>  (seal)

\* Attach any exception to certification statement.

\*\* Board of Professional Engineers Certificate of Authorization #00001670



Project No. 1038657  
**RAI 2-28-11**

## **SUPPLEMENTAL PSD ANALYSIS**

## SUPPLEMENTAL PSD ANALYSIS INFORMATION

The following information is provided as a result of the Department's request for additional information (RAI) dated February 28, 2011, and based on additional discussions with the Department. The information contained herein represents a re-evaluated the PSD applicability analysis for the proposed Adipic Acid increase of 1080 MAR production, FDEP File No. 0330040-036-AC.

In order for Ascend to achieve an adipic acid production rate of 1,080 MAR, modifications must be made to upstream and downstream supporting operations including the addition of new emission units. The new emission units include the following:

- Adipic Acid and P2K fugitive sources;
- New Hydrogen Plant;
- New Nylon sources (Extruder, Elutriators, and Conveying);
- New Vaporizer; and
- New Cooling Tower

A process flow diagram of the "Project" affected emission units is shown in Figure 1 that encompasses the project proposed by Ascend for 1080 MAR. The new hydrogen plant and vaporizer are shown in Figure 1, while the other new sources will be integrated into the plant.

The PSD applicability analysis performed is consistent the hybrid PSD analysis defined in Rule 62.212.400(2)(a)3. The existing units affected by the project were evaluated based on a comparison of baseline actual emission to projected actual emissions and accounting for demand growth. All new units were evaluated based on potential emission increases. The results of this analysis of project emission increases from both existing and new emission units affected by the project are presented in Table 1a, Revised PSD Applicability Analysis - Adipic Acid 1080 MAR Project Project Emission Increases. Table 1a replaces the previously submitted Table 1. The resulting emission increases as a result of the project are as follows:

Project Emission Increases Prior to PSD Avoidance Limits (TPY)					
CO	NOx	PM/PM10	PM2.5	SO2	VOC
47.41	69.02	70.46	58.75	1.8	46.85

The project increases include increases in steam requirement (power house) for the project equal to 300,000 MMBtu/yr heat input. This increase is projected from that required for the demand growth level of 850 MAR adipic acid. The steam generating units will fire natural gas to achieve the projected additional 300,000 MMBtu/yr. The total steam required for the project from the power house is reduced by



significant offsetting steam generated by the new hydrogen plant and increased utilization of the nitric acid plant. Both these emission units generate steam which is feed to the steam header and used within the project units.

In response to RAI Question No. 12, regarding the CP Line Conversion projects, Ascend has conservatively included the potential emissions from these projects into Table 1a of the analysis

In order to avoid PSD review for NO<sub>x</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, and VOC, Ascend is proposing PSD Avoidance Limits for the following units:

- Nitric Acid Plant
- HALCON; and
- Powerhouse (Boilers Nos. 4, 5, 6, 7, 8, 9 and Cogeneration)

## PSD Avoidance Limits

### 1.1.1 NO<sub>x</sub>

As shown above and in Table 1a of this supplemental information, NO<sub>x</sub> emission increases from the project are projected to be 69.02 TPY. Ascend proposes to reduce emissions from Nitric Acid by 31.67 TPY (Table 1b) to offset NO<sub>x</sub> emissions generated by the project. **Ascend proposes a PSD avoidance limit for the Nitric Acid Plant of 285 TPY NO<sub>x</sub>.**

### 1.1.2 PM<sub>10</sub> and PM<sub>2.5</sub>

As shown above and in Table 1a of this supplemental information, PM<sub>10</sub> and PM<sub>2.5</sub> emission increases from the project are projected to be 70.46 TPY and 58.75, respectively. Ascend proposes to reduce PM<sub>10</sub> and PM<sub>2.5</sub> emissions by 56.16 and 49.58 TPY (Table 1b), respectively. **Ascend proposes PSD avoidance limits for the powerhouse steam units equal to 235 and 138 TPY PM<sub>10</sub> and PM<sub>2.5</sub>, respectively.** Ascend will achieve emissions at or below these levels by managing the sulfur content of the fuel oil combusted in Boilers Nos. 4, 5, and 6. Ascend proposes a formula based method of compliance to determine the PM<sub>10</sub> and PM<sub>2.5</sub> emissions as follows.

For Boilers 7 and 8 (EU-004, EU-003) PM<sub>10</sub> and PM<sub>2.5</sub> emissions will be calculated using the 5 year average from the Method 5 emission testing and the condensable PM will be calculated using the AP-42 emission factor for condensable PM (5.7 lbs/mscf or 0.00559 lbs/MMBtu).

For Cogeneration (EU-032) and Boiler 9 (EU-099) PM<sub>10</sub> and PM<sub>2.5</sub> emissions will be calculated using the AP-42 factor for PM including condensables of 7.6 lbs/mscf of natural gas.

For Boilers 4, 5 and 6 (EU-014, EU-015, EU-016) PM10 and PM2.5 emission calculations will be as follows:

For natural gas combustion PM10 and PM2.5 emissions will be calculated using the AP-42 factor for PM (including condensable PM) of 7.6 lbs/mscf of natural gas.

For Fuel Oil and KATT Composite Fuel:

$$\begin{aligned} \text{PM10} &= (9.19(S) + 3.22) * \text{kgal} / 2000 + 1.5 * \text{kgal} / 2000 \\ \text{PM2.5} &= (4.67(1.12(S) + 0.37)) * \text{kgal} / 2000 + 1.5 * \text{kgal} / 2000 \end{aligned}$$

Where S = sulfur in percent as supplied by the Certificate of Analysis for Fuel Oil and sulfur in percent based on the latest analysis of KATT Composite Fuel. (Currently 0.02% S)

(Note the Boiler 6 is not authorized to combust KATT Composite Fuel)

$$\text{PM10 TPY (Total)} = \text{Boiler No. 7 PM10} + \text{Boiler No. 8 PM10} + \text{Cogeneration PM10} + \text{Boilers No. 9 PM10} + \text{Boiler No. 4 PM10} + \text{Boiler No. 5 PM10} + \text{Boiler No. 6 PM10}$$

$$\text{PM2.5 TPY (Total)} = \text{Boiler No. 7 PM2.5} + \text{Boiler No. 8 PM2.5} + \text{Cogeneration PM2.5} + \text{Boilers No. 9 PM2.5} + \text{Boiler No. 4 PM2.5} + \text{Boiler No. 5 PM2.5} + \text{Boiler No. 6 PM2.5}$$

$$\text{PM10 TPY (Total)} \leq 235 \text{ TPY}$$

$$\text{PM2.5 TPY (Total)} \leq 138 \text{ TPY}$$

A secondary benefit to the limitations of PM10 and PM2.5 emissions is the reduction of annual SO2 emissions associated with managing the sulfur content of the fuel oil to meet the proposed PM10 and PM2.5 emission limits. Dependent on the sulfur content of fuel oil and the quantity combusted, the annual SO2 emissions may be reduced by as much as 500 TPY.

### 1.1.3 VOC

As shown above and in Table 1a of this supplemental information, VOC emission increases from the project are projected to be 46.85 TPY. Ascend proposes to reduce emissions from HALCON, project controlled tanks and LP Scrubbers by 17.55 TPY (Table 1b) to offset VOC emissions generated by the project. **Ascend proposes a PSD avoidance limit for the HALCON equal to 94.21 TPY VOC as follows: HALCON Project Actual 71.21 TPY (Table 1a) + Halcon Tank Vent Recovery 8 TPY (Table 1b) + Halcon LP Scrubber 15 TPY (Table 1b) = 94.21 TPY Total Halcon VOC emissions.**

### PSD Applicability Results

Ascend has performed a PSD applicability analysis of the 1080 MAR Adipic Acid Production Project including existing and new emission units. Ascend has proposed PSD avoidance limits for NOx, PM10,

PM2.5, and VOC. All the emission units affected by the Project that include increases from existing and new units, and decreases from existing units are within the project boundary shown in Figure 1. The resulting emissions compared to PSD thresholds is provided in Table 1c, and summarized as follows:

Ascend 1080 MAR Adipic Acid PSD Applicability Analysis						
	CO	NOx	PM/PM10	PM2.5	SO2	VOC
Post Project Emissions	47.41	37.35	12.24	8.54	1.8	29.3
PSD Review Thresholds	100	40	15	10	40	40
PSD Review Required (Y/N)	N	N	N	N	N	N

#### Identification of Changes from Original PSD Applicability Analysis

The following summarizes the changes as a result of the updated PSD applicability analysis:

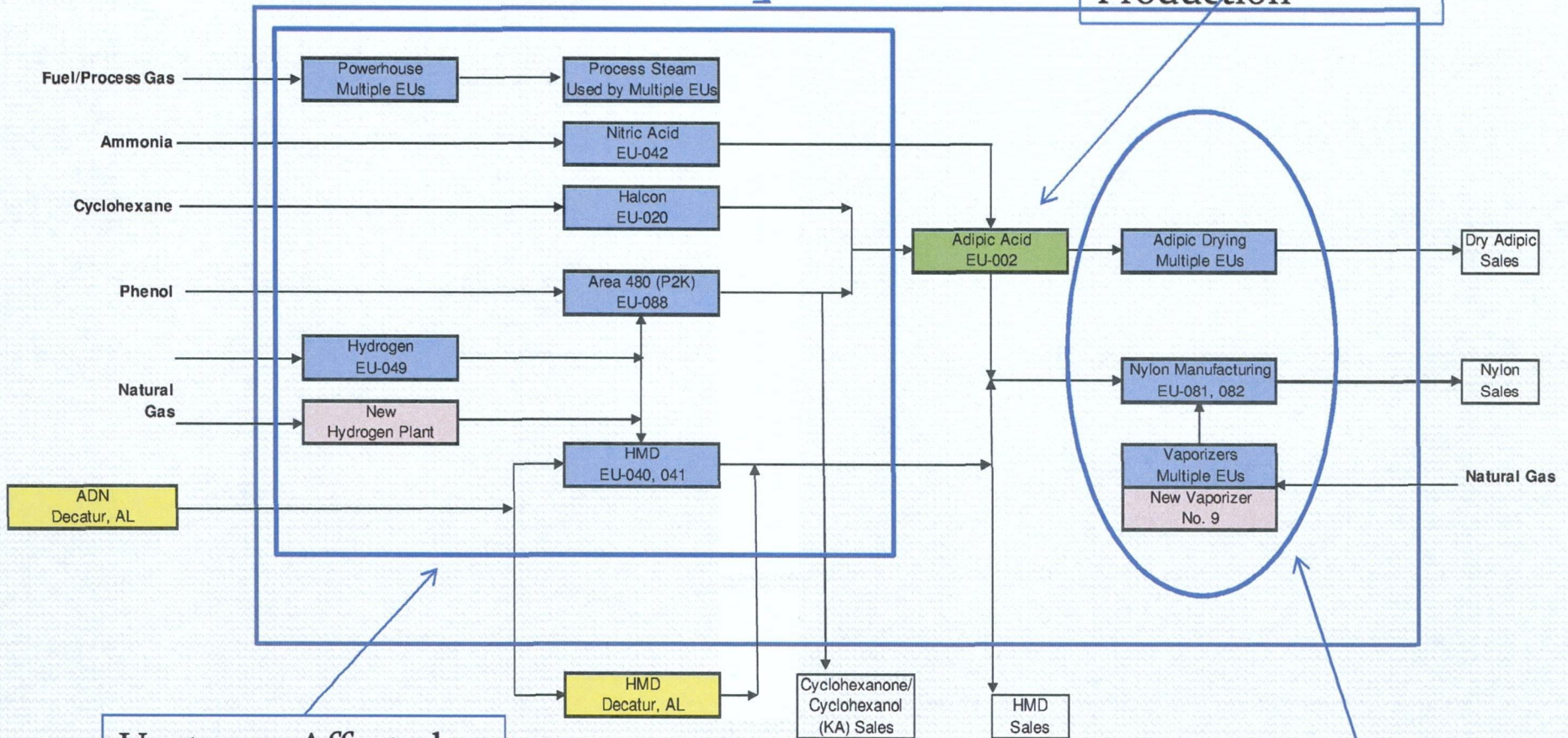
1. Updated project emission calculations to incorporate PM2.5 where applicable.
2. Table 1 has been revised and replaced with Table 1a, Table 1b and Table 1c. See text for explanation.
3. Table 11 is no longer used as a result of Ascend's proposal of PSD avoidance limits for PM10 and PM2.5.
4. Table 12 has been revised to show PSD avoidance limits.
5. Table 14 added to show PM emissions from nylon polymerization.
6. Table 15 added to show PM emission calculations due to ammonia slip at the SCR and proposed new SNCR.
7. Table 16 added to show recalculation of Halcon baseline emissions post OBUD and including tank emissions.
8. Table 17 added to show powerhouse emissions from additional natural gas combustion.
9. Boiler 7/8 reported emissions were Method 5 (filterable), updated reported emissions to include condensable PM emissions based on AP-42.

10. Updated Cooling Tower PM10/PM2.5 based on Cooling Tower Particulate Emissions Size Distribution (based on paper by Reisman and Frisbie, "Calculating Realistic PM10 Emissions from Cooling Tower")

**FIGURE 1**  
**Project Definition**  
**Process Flow Diagram of the Project Affected Emission Units**

# The Project Affected Emission Units

Increase Production



Upstream Affected Units

Downstream Affected Units













2004	13.892	13.47	9.93	9.93	0.264	4.207
2005	8.7	13.302			0.256	4.145
2006	9.82	13.11			0.243	3.493
2007	12.8	9.633			0.237	3.853
2008	6.13	10.676			0.239	4.271
2009	2.51	7.677			0.208	3.071

2001						
2002						
2003						
2004						
2005						
2006						
2007	8.07	14.04	1.72	1.72	1.968	1.376
2008	12.67	23.48	2.094	2.09	2.427	1.675
2009	9.16	13.26	1.58	1.58	1.849	1.264
2001	93.344	191.356	12.501	12.50	10.226	11.001
2002	101.847	208.787	13.64	13.64	11.157	12.003
2003	78.029	159.958	10.501	10.50	8.589	9.196
2004	105.444	219.283	11.39	11.39	9.316	28.544
2005	92.555	192.478	9.998	10.00	8.178	25.055
2006	65.019	197.425	9.892	9.89	8.091	18.766
2007	58.811	178.583	8.888	8.89	7.27	16.974
2008	24.964	75.805	3.822	3.82	3.126	7.205
2009	54.057	164.148	8.358	8.36	6.836	15.602

Powerhouse Total

2001						
2002	192.1	1186.7	13.6	13.6	327.6	33.5
2003	160.7	# 855.6	291.5	187.8	3609.4	34.6
2004	189.7	# 637.6	277.7	177.0	3518.3	49.5
2005	165.0	# 595.3	10.0	10.0	3004.6	46.0
2006	120.6	# 488.5	9.9	9.9	491.2	33.3
2007	128.0	# 473.8	10.6	10.6	621.8	33.5
2008	84.0	# 374.3	5.9	5.9	236.3	25.8
2009	94.1	# 390.7	9.9	9.9	22.4	29.4

Emission Reduction (TPY)							
NOX	PM/PM10	PM2.5	VOC	NOX	PM/PM10	PM2.5	VOC
285.00	242.47	144.95		-33.04	-55.98	-48.34	
285.00	242.47	144.95	23.00	-30.30	-46.33	-40.82	-16.96
			23.00				-18.14
285.00	242.47	144.95	23.00	-31.67	-51.16	-44.58	-17.55

**Table 1c. Revised PSD Applicability Analysis - Adipic Acid 1080 MAR Project.**

	CO	NOX	PM/PM10	PM2.5	SO2	VOC
Project Emission Increases From Existing Units	15.10	19.54	52.70	44.23	0.14	40.45
Project Emission Increases From New Units	32.31	49.49	10.69	8.89	1.66	6.40
Project Emission Decreases		-31.67	-51.16	-44.58		-17.55
Project Net Emissions	47.41	37.36	12.24	8.54	1.81	29.30
PSD Review Threshold	100	40	15	10	40	40
PSD Review Required (Y/N)	<b>N</b>	<b>N</b>	<b>N</b>	<b>N</b>	<b>N</b>	<b>N</b>

**Table 2. Projected Adipic Acid VOC Emissions Based on Emissions Testing (1080 MAR) - EU002**

**Post Project Estimated VOC Emissions are as follows:**

**Projected Annual Emissions from Adipic TRU/SCR I**

Annual TRU Flow <sup>b</sup> (lb/yr)	VOC Emissions per Off Gas (lb/lb Off Gas)	HCN Emissions per Off Gas (lb/lb Off Gas)	VOC Control Efficiency <sup>a</sup> (% Reduction)	HCN Control Efficiency <sup>a</sup> (% Reduction)	VOC Emissions (TPY)	HCN Emissions (TPY)
479528400	9.06E-04	4.29E-05	99.5	99	<b>1.09</b>	<b>0.10</b>

<sup>a</sup>ENTEC Services Inc. October 22, 2010

<sup>b</sup> Based 7080 hours per year and 67,730 pph average projected rate at 1080 MAR.

<sup>b</sup> VOC Emissions (tpy) = Annual TRU Flow (lb/yr) x Emission per Off Gas (lb/lb Off Gas) x (1 - VOC Control Efficiency/100) x ton/2000 lb

<sup>b</sup> HCN Emissions (tpy) = Annual TRU Flow (lb/yr) x Emission per Off Gas (lb/lb Off Gas) x (1 - HCN Control Efficiency/100) x ton/2000 lb

**Projected Annual Emissions from Adipic Backup SCR (SCR II) based on Control Device Operations**

Annual SCR Feed <sup>a</sup> (lb/yr)	VOC + HCN Emissions per Off Gas (lb/lb Off Gas)	VOC Emissions <sup>b</sup> (TPY)
113786400	9.49E-04	<b>53.99</b>

<sup>a</sup> Based on 67,730 lb/hr x (8760 hr - 7080 hr) = 101135755 lb/yr

<sup>b</sup> Emissions of VOC are uncontrolled through the Backup SCR

**Annual Emission from Adipic Acid Refining Tanks**

Annual VOC Emission <sup>a</sup> (lb/yr)	VOC Emissions (TPY)
882	<b>0.44</b>

**Total Annual Emissions for 1080 MAR**

Annual VOC Emission (TPY)
<b>55.62</b>

<sup>a</sup> Source: Ascend. Basis: EPA Water 9 Calculations  
0.0016 lb VOC / Ton Adipic Acid

**Table 3. Projected Adipic Acid VOC Emissions - EU090 New Fugitive Emission Sources (1080 MAR)**

**Calculation of Component Leak Rates**

Component Type	(C) Correlation Equation Constant <sup>(1)</sup>	(E) Correlation Equation Exponent <sup>(1)</sup>	(Z) Default- Zero Value <sup>(2)</sup>	(N) Total Number Of Components	(P <sub>2</sub> ) Percent of Components at Default- Zero	(SV <sub>1</sub> ) Screening Value 1 (ppmv)	(P <sub>1</sub> ) Percent of Components at Screening Value 1	(SV <sub>2</sub> ) Screening Value 1 (ppmv)	(P <sub>2</sub> ) Percent of Components at Screening Value 1	(SV <sub>3</sub> ) Screening Value 1 (ppmv)	(P <sub>3</sub> ) Percent of Components at Screening Value 1	Average Emissions per Component (lbs/hr/comp) <sup>(4)</sup>	Average Emissions (lbs/hr) <sup>(5)</sup>	Annual Emissions (tons/yr) <sup>(6)</sup>
Valves, Gas	1.87E-06	0.873	6.60E-07	0	98.00%	500	1.25%	1000	0.50%	1500	0.25%	0.0000278	0.000	
Valves, Liquid	6.41E-06	0.797	4.90E-07	500	98.00%	500	1.25%	1000	0.50%	1500	0.25%	0.0000555	0.028	
Pumps <sup>(3)</sup>	1.90E-05	0.824	7.50E-06	30	98.00%	500	1.25%	1000	0.50%	1500	0.25%	0.0002094	0.006	
Compressors	1.90E-05	0.824	7.50E-06	0	98.00%	500	1.25%	1000	0.50%	1500	0.25%	0.0002094	0.000	
Pressure Relief Valves	1.90E-05	0.824	7.50E-06	5	98.00%	500	1.25%	1000	0.50%	1500	0.25%	0.0002094	0.001	
Connectors	3.05E-06	0.885	6.10E-07	2000	98.00%	10	1.75%	100	0.25%			0.0000032	0.006	
<b>Total VOC Emissions Based on Annual Operation of 8,760 hrs/yr</b>													<b>0.041</b>	<b>0.182</b>

(1) Source: USEPA, Protocol for Equipment Leak Emission Estimates, November 1995: Correlation Equations from Table 2-09

(2) Source: USEPA, Protocol for Equipment Leak Emission Estimates, November 1995: Default-Zero Values from Table 2-11

(3) Use for all other SOCM I compressor seals, pressure relief valves, agitator seals, and heavy liquid pumps.

(4) Calculated as:  $(P_1 \times C \times SV_1^E + P_2 \times C \times SV_2^E + P_3 \times C \times SV_3^E + Z \times P_2) \times 2.2.4026 \text{ lbs/kg}$

(5) Calculated as: Average Emissions per Component (lbs/hr/comp)  $\times$  Total Number of Components

(6) Calculated as: Average Emissions (lbs/hr)  $\times$  Annual Operation (hrs/yr)  $\div$  2,000 lbs/ton

Source: Ascend, 2011.

**Table 4. Projected Therminol No. 9 Emissions - New Emission Unit**

Average Heat Input                  55.6 MMBtu/hr (Natural Gas)  
Annual Operation                          8,760 hrs/yr

Pollutant	Average Operating Rate (MMBtu/hr)	Emission Factor <sup>(1)</sup> (lbs/MMBtu)	Emissions	
			Average <sup>(2)</sup> (lbs/hr)	Annual <sup>(3)</sup> (Tons/yr)
Particulate Matter (PM <sub>10</sub> )	55.6	0.00745	0.414	1.815
Particulate Matter (PM <sub>2.5</sub> )	55.6	0.00745	0.414	1.815
Sulfur Dioxide (SO <sub>2</sub> )	55.6	0.00059	0.033	0.143
Nitrogen Oxides (NO <sub>x</sub> )	55.6	0.04902	2.7	11.94
Carbon Monoxide (CO)	55.6	0.08235	4.58	20.06
Total VOC	55.6	0.00539	0.30	1.313

(1) Emission Factor Sources: For PM, SO<sub>2</sub>, and VOC: AP-42 (7/98); Table 1.4-2  
For NO<sub>x</sub> Design basis for Low NO<sub>x</sub> burners  
For CO: AP-42 (7/98); Table 1.4-1

(2) Calculated as: Average Operating Rate (MMBtu/hr) X Emission Factor (lbs/MMBtu)

(3) Calculated as: Average Emissions (lbs/hr) X Annual Operation (hrs/yr) ÷ 2,000 lbs/ton

Source: Ascend, 2011.



**Table 5. Projected Vaporizer No. 9 Fugitive VOC Emissions - New Fugitive Emission Sources**

**Calculation of Component Leak Rates**

Component Type	(C) Correlation Equation Constant <sup>(1)</sup>	(E) Correlation Equation Exponent <sup>(1)</sup>	(Z) Default- Zero Value <sup>(2)</sup>	(N) Total Number Of Components	(P <sub>2</sub> ) Percent of Components at Devault- Zero	(SV <sub>1</sub> ) Screening Value 1 (ppmv)	(P <sub>1</sub> ) Percent of Components at Screening Value 1	(SV <sub>2</sub> ) Screening Value 1 (ppmv)	(P <sub>2</sub> ) Percent of Components at Screening Value 1	(SV <sub>3</sub> ) Screening Value 1 (ppmv)	(P <sub>3</sub> ) Percent of Components at Screening Value 1	Average Emissions per Component (lbs/hr/comp) <sup>(4)</sup>	Average Emissions (lbs/hr) <sup>(5)</sup>	Annual Emissions (tons/yr) <sup>(6)</sup>
Valves, Gas	1.87E-06	0.873	6.60E-07	75	98.00%	500	1.25%	1000	0.50%	1500	0.25%	0.0000278	0.002	
Valves, Liquid	6.41E-06	0.797	4.90E-07	45	98.00%	500	1.25%	1000	0.50%	1500	0.25%	0.0000555	0.002	
Pumps <sup>(3)</sup>	1.90E-05	0.824	7.50E-06	6	98.00%	500	1.25%	1000	0.50%	1500	0.25%	0.0002094	0.001	
Compressors	1.90E-05	0.824	7.50E-06	0	98.00%	500	1.25%	1000	0.50%	1500	0.25%	0.0002094	0.000	
Pressure Relief Valves	1.90E-05	0.824	7.50E-06	6	98.00%	500	1.25%	1000	0.50%	1500	0.25%	0.0002094	0.001	
Connectors	3.05E-06	0.885	6.10E-07	300	98.00%	10	1.75%	100	0.25%			0.0000032	0.001	
<b>Total VOC Emissions Based on Annual Operation of 8,760 hrs/yr</b>													<b>0.008</b>	<b>0.035</b>

<sup>(1)</sup> Source: USEPA, Protocol for Equipment Leak Emission Estimates, November 1995: Correlation Equations from Table 2-09

<sup>(2)</sup> Source: USEPA, Protocol for Equipment Leak Emission Estimates, November 1995: Default-Zero Values from Table 2-11

<sup>(3)</sup> Use for all other SOCOMI compressor seals, pressure relief valves, agitator seals, and heavy liquid pumps.

<sup>(4)</sup> Calculated as:  $(P_1 \times C \times SV_1^E + P_2 \times C \times SV_2^E + P_3 \times C \times SV_3^E + Z \times P_2) \times 2.24026$  lbs/kg

<sup>(5)</sup> Calculated as: Average Emissions per Component (lbs/hr/comp)  $\times$  Total Number of Components

<sup>(6)</sup> Calculated as: Average Emissions (lbs/hr)  $\times$  Annual Operation (hrs/yr)  $\div$  2,000 lbs/ton

Source: Ascend, 2011.

Table 6. Projected Hydrogen Plant Emissions

I. SMR Stack

Emission Factor	Natural Gas Heat Input MMBtu/hr	Emissions			
		(lb/hr)	(lb/day)	(TPY)	
NOx	0.05 lb/MMBtu <sup>a</sup>	171.3	8.57	205.6	37.53
CO	0.015 lb/MMBtu <sup>a</sup>	171	2.57	61.7	11.26
PM10	0.0076 lb/MMBtu <sup>b</sup>	171	1.30	31.1	5.67
PM2.5	0.0076 lb/MMBtu <sup>b</sup>	171	1.30	31.1	5.67
SOx	0.0020 lb/MMBtu <sup>c</sup>	171	0.35	8.3	1.52
VOC	0.0055 lb/MMBtu <sup>d</sup>	171	0.94	22.5	4.11

<sup>a</sup> Vendor data. Air Products, 2011.

<sup>b</sup> From Vendor based on AP-42, Section 1.4, 1070 Btu/scf. PM2.5 conservatively assumed equal to PM10

<sup>c</sup> From Vendor based 3 grains S per 100scf, Material Balance

<sup>d</sup> From Vendor based on AP-42, 7/98 edition).

II. Flare (Two Natural Gas Pilots, Each Rated at 50 SCFH)

Emission Factor	Natural Gas Heat Input MMBtu/hr	Emissions			
		(lb/hr)	(lb/day)	(TPY)	
NOx	0.05 lb/MMBtu <sup>a</sup>	0.102	0.0051	0.1224	0.022
CO	0.082 lb/MMBtu <sup>a</sup>	0.102	0.0084	0.2016	0.037
PM10	0.0075 lb/MMBtu <sup>b</sup>	0.102	0.0008	0.01824	0.003
PM2.5	0.0075 lb/MMBtu <sup>b</sup>	0.102	0.0008	0.01824	0.003
SOx	0.0006 lb/MMBtu <sup>a</sup>	0.102	0.0001	0.00144	0.0003
VOC	0.0054 lb/MMBtu <sup>a</sup>	0.102	0.0006	0.0132	0.002

<sup>a</sup> Vendor data based on AP-42, 7/98 edition). Small boilers (<100 MMBtu/hr)

<sup>b</sup> Based on AP-42 Table 1.4-2. PM2.5 conservatively assumed equal to PM10.

III. Startup and Shutdown Emissions

Streams are estimated to be routed to the flare for following duration each year.

Vent Stream	Effective Vent Hours @100% Cap
PSA Feed	10
H2 Product	10
PSA Purge Gas	3
Natural Gas	0.3

Component	PSA FEED GAS			PSA H2 PRODUCT				PSA Purge GAS				Natural Gas				Total Uncontrolled Emissions		
	MW	LBMOL/HR	LBS	LBMOL/HR	MOL FRAC	KSCF	LBS	LBMOL/HR	MOL FRAC	KSCF	LBS	LBMOL/HR	MOL FRAC	KSCF	LBS	KSCF	LBS	Tons/yr
CSH12	72.151	0	0	0	0	0	0	0	0	0	0	0.52	0.00	0.06	11.66	0.06	11.66	0.01
C4H10	58.124	0	0	0	0	0	0	0	0	0	0	2.33	0.00	0.28	42.23	0.28	42.23	0.02
C3H8	44.097	0	0	0	0	0	0	0	0	0	0	5.06	0.01	0.60	69.77	0.60	69.77	0.03
C2 H6 (Ethane - Non VOC)	30.07	0	0	0	0	0	0	0	0	0	0	17.31	0.03	2.05	162.63	2.05	162.63	0.08
CH4 (Methane - Non VOC)	16.0429	70.746	11491.6	0.008	0.0	0.0	0.0	70.7	0.1	77.2	3263.0	485.20	0.94	57.54	2432.52	406.54	17187.14	8.59
CO2	44.0097	374.996	167098	0.008	0.0	0.0	3.4	375.0	0.5	409.1	47446.4	4.44	0.01	0.53	61.10	1850.44	214608.48	107.30
<b>CO</b>	<b>28.0108</b>	<b>105.593</b>	<b>29947.3</b>	<b>0.008</b>	<b>0.0</b>	<b>0.0</b>	<b>2.2</b>	<b>105.9</b>	<b>0.1</b>	<b>115.2</b>	<b>8502.9</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>520.92</b>	<b>98452.33</b>	<b>19.23</b>	
H2	2.016	1762.52	35976.6	1592.654	1.0	5817.0	30903.9	169.9	0.2	185.3	984.5	0.00	0.00	0.00	12774.16	67864.96	33.93	
N2	29.013	2.221	629.946	1.592	0.0	5.8	429.2	0.6	0.0	0.7	50.7	2.22	0.00	0.26	19.44	15.30	1129.29	0.56
H2O	18.01511	9.375	1710.03	0.0	0.0	0.0	0.0	9.4	0.0	10.2	485.6	0.00	0.00	0.00	46.25	2195.59	1.10	

<sup>a</sup> Engineering Estimate.

Source: Ascend, 2011.

**Table 7. Projected P2K Emissions Supportive of 1080 MAR Adipic Acid**

<b>Flare Emissions (from P2K Application, 12/18/98 RAI Response)</b>				
5 MMBtu/hr				
8760 hrs/year				
	<b>CO</b>	<b>NOx</b>	<b>PM/PM10/PM2.5*</b>	<b>VOC</b>
Emission Factor	0.021	0.2	0.015	0.003
	0.46	4.38	0.33	0.07
<b>VOC Emissions at max P2K Production</b>				<b>VOC</b>
Emission Factor				2
				8.76
<b>P2K Production Required to support 850 MAR Adipic (at max Halcon production)</b>				
				<b>VOC</b>
				0.876
<b>P2K Production Required to support 1080 MAR Adipic (at max Halcon production)</b>				
				<b>VOC</b>
				5.037
<b>Total Emissions to support 850 MAR Adipic</b>	<b>CO</b>	<b>NOx</b>	<b>PM/PM10/PM2.5*</b>	<b>VOC</b>
	0.46	4.38	0.33	0.94
<b>Total Emissions to support 1080 MAR Adipic</b>	<b>CO</b>	<b>NOx</b>	<b>PM/PM10/PM2.5*</b>	<b>VOC</b>
	0.46	4.38	0.33	5.10
<b>Net Increase 850 MAR to 1080 MAR</b>	<b>CO</b>	<b>NOx</b>	<b>PM/PM10/PM2.5*</b>	<b>VOC</b>
	0.00	0.00	0.00	4.16

\* PM, PM10, and PM2.5 conservatively assumed equal.

Source: Ascend, 2011.

**Table 8. Projected P2K VOC Fugitive Emissions - New Fugitive Emission Sources**

**Barge Loading Additional Component Fugitive Emissions**

**Calculation of Component Leak Rates**

Component Type	(C) Correlation Equation Constant <sup>(1)</sup>	(E) Correlation Equation Exponent <sup>(1)</sup>	(Z) Default- Zero Value <sup>(2)</sup>	(N) Total Number Of Compon- ents	(P <sub>Z</sub> ) Percent of Compon- ents at Default- Zero	(SV <sub>1</sub> ) Screening Value 1 (ppmv)	(P <sub>1</sub> ) Percent of Compon- ents at Screening Value 1	(SV <sub>2</sub> ) Screening Value 1 (ppmv)	(P <sub>2</sub> ) Percent of Compon- ents at Screening Value 1	(SV <sub>3</sub> ) Screening Value 1 (ppmv)	(P <sub>3</sub> ) Percent of Compon- ents at Screening Value 1	Average Emissions per Component (lbs/hr/comp) <sup>(4)</sup>	Average Emissions (lbs/hr) <sup>(5)</sup>	Annual Emissions (tons/yr) <sup>(6)</sup>
Valves, Gas	1.87E-06	0.873	6.60E-07	0	98.00%	500	1.25%	1000	0.50%	1500	0.25%	0.0000278	0.000	
Valves, Liquid	6.41E-06	0.797	4.90E-07	20	98.00%	500	1.25%	1000	0.50%	1500	0.25%	0.000555	0.001	
Pumps <sup>(3)</sup>	1.90E-05	0.824	7.50E-06	2	98.00%	500	1.25%	1000	0.50%	1500	0.25%	0.0002094	0.000	
Compressors	1.90E-05	0.824	7.50E-06	0	98.00%	500	1.25%	1000	0.50%	1500	0.25%	0.0002094	0.000	
Pressure Relief Valves	1.90E-05	0.824	7.50E-06	0	98.00%	500	1.25%	1000	0.50%	1500	0.25%	0.0002094	0.000	
Connectors	3.05E-06	0.885	6.10E-07	60	98.00%	10	1.75%	100	0.25%			0.0000032	0.000	
<b>Total VOC Emissions Based on Annual Operation of 8,760 hrs/yr</b>													<b>0.002</b>	<b>0.008</b>

(1) Source: USEPA, Protocol for Equipment Leak Emission Estimates, November 1995: Correlation Equations from Table 2-09

(2) Source: USEPA, Protocol for Equipment Leak Emission Estimates, November 1995: Default-Zero Values from Table 2-11

(3) Use for all other SOCFI compressor seals, pressure relief valves, agitator seals, and heavy liquid pumps.

(4) Calculated as:  $(P_1 \times C \times SV_1^E + P_2 \times C \times SV_2^E + P_3 \times C \times SV_3^E + Z \times P_Z) \times 2.2.4026 \text{ lbs/kg}$

(5) Calculated as: Average Emissions per Component (lbs/hr/comp)  $\times$  Total Number of Components

(6) Calculated as: Average Emissions (lbs/hr)  $\times$  Annual Operation (hrs/yr)  $\div$  2,000 lbs/ton

Source: Ascend, 2011.



**Table 10. Projected Extruder Emissions - EU 081/082**

Number of Proposed Extruders 1  
 Annual Operation 8,760 hrs/yr

**HEAF Vent**

Pollutant	Production (MAR)	Emission Factor <sup>(1)</sup> (lb/MAR)	Abatement Factor %	Emissions	
				Average <sup>(2)</sup> (lbs/hr)	Annual <sup>(3)</sup> (Tons/yr)
Total VOC	(Production Data Company Confidential)	(Production Data Company Confidential)	0	0.171	0.750
PM/Particulate Matter (PM <sub>10</sub> )	(Production Data Company Confidential)	(Production Data Company Confidential)	95	0.018	0.078
Particulate Matter (PM <sub>2.5</sub> ) <sup>(6)</sup>				0.008	0.034

**Baghouse Vacuum Convey**

Pollutant	Flow Rate (scfm)	Emission Factor <sup>(4)</sup> (grains/scf)	Emissions	
			Average <sup>(5)</sup> (lbs/hr)	Annual <sup>(3)</sup> (Tons/yr)
PM/Particulate Matter (PM <sub>10</sub> )	1,500	0.015	0.193	0.844
Particulate Matter (PM <sub>2.5</sub> ) <sup>(6)</sup>			0.084	0.369

**Total Emissions**

Pollutant	Annual (Tons/yr)
Particulate Matter (PM <sub>10</sub> )	0.922
Particulate Matter (PM <sub>2.5</sub> )	0.403
Total VOCs	0.750

- (1) Emission Factor Sources: ISSN 1047-3289 J. Air & Waste Manage. Assoc. 51:1001-1008, Vol 51 July 2001, Table 3, Nylon 66 Extrusion
- (2) Calculated as: Production (MAR) X Emission Factor (lb/million lb nylon) X (1-Abatement Factor/100%) / 8760 hours/year
- (3) Calculated as: Average Emissions (lbs/hr) X Annual Operation (hrs/yr) ÷ 2,000 lbs/ton
- (4) Emission Factor Sources: Bagfilter vendor specs
- (5) Calculated as: Flow Rate (scfm) X Emission Factor (grains/scf) X 60 (min/hr) X 0.0648 (grams/grain) / 454 (grams/lb)
- (6) Based on test performed by TRC, PM<sub>2.5</sub> = 79.7% of PM<sub>10</sub>, 43.75% of total PM.

Source: Ascend, 2011.

**Table 12. VOC REDUCTION PROJECTS IN HALCON**

Vent Source	VOC Emissions, lbs/yr <sup>1</sup>	VOC Emissions, ton/yr
<b>PROJECT I - TANK VENT RECOVERY</b>		
<u>Project Components</u>		
<u>Average of Baseline 2004 and 2005</u>		
481TA54B	BML	
Tank Conservation Vent		19,434
481TA108	Flasher	9.72
Condensate Vent Tank		2,166
481TA56A A Slurry Tank		1.08
481TA56B B Slurry Tank		0.32
481SE53A A Centrifuge (vents through TA56A)		0.31
481SE53B B Centrifuge (vents through TA56B)		28
		0.01
		28
		0.01
Uncontrolled Project Total	22,902	11.45
Controlled Project Total <sup>2</sup>	16,000	8.00
Emission Reduction (TPY)		3.45
<b>PROJECT II - LP SCRUBBERS EMISSION CONTROL</b>		
<u>Project Components</u>		
<u>Average of Baseline 2004 and 2005</u>		
LP Scrubbers, 401 and 461		58,200
		29.10
Uncontrolled Project Total	58,200	29.10
Controlled Project Total <sup>2</sup>	30,000	15.00
Emission Reduction (TPY)		14.10
<b>Uncontrolled Total TPY VOC (Project I and II)</b>		<b>40.55</b>
<b>Controlled Total TPY VOC (Project I and II)</b>		<b>23.00</b>
<b>Total Change in VOC Emissions<sup>3</sup></b>		<b>-17.55</b>

NOTE:

<sup>1</sup> Emission calculations based on Halcon emissions during baseline period  
Calculations performed using Engineering Models TANKS4 and WATER9

<sup>2</sup> VOC emissions controlled via TRU to PSD avoidance level emissions

<sup>3</sup>Total Reduction VOC Emissions = (VOC Emissions After Control - VOC Vented)

Source: Ascend, 2011.

**Table 13. Cooling Tower PM Emissions (Insignificant Activity)**

Annual Operation 8,760 hrs/yr

**I. Modifications to Existing Cooling Towers 1, 2, 3, 4, and 6.**

Cooling Tower	Baseline Emissions (2003)								Baseline Emissions (2004)								Post Project				
	PM10 Emissions				PM2.5 Emissions				PM10 Emissions				PM2.5 Emissions				Projected Actual Circulation Rate, gpm <sup>a</sup>	Elimination Drift Rate, % <sup>b</sup>	PM10 Emissions		
	Water Circulation, gpm	Elimination Drift Rate, %	TDS	lbs/hr <sup>(1)</sup>	ton/yr <sup>(2)</sup>	fraction of PM10 (%)	i(TPY) <sup>(3)</sup>	Water Circulation, cpm	Elimination Drift Rate, %	TDS	lbs/hr <sup>(1)</sup>	ton/yr <sup>(2)</sup>	fraction of PM10 (%)	(TPY)	TDS <sup>c</sup>	lbs/hr <sup>(1)</sup>			ton/yr <sup>(2)</sup>		
1&2	68700	0.001	834	0.26	1.12	44.3%	0.50	72100	0.001	936	0.30	1.32	44.3%	0.59	92,000	0.001	885	0.36	1.59		
3	42734	0.0027	966	0.48	2.12	43.7%	0.92	39741	0.0027	1027	0.48	2.09	43.7%	0.91	59,000	0.001	996.5	0.25	1.12		
4	10944	0.007	796	0.27	1.20	44.4%	0.53	10776	0.007	785	0.27	1.17	44.4%	0.52	17,000	0.007	790.5	0.42	1.86		
6	9200	0.003	1322	0.15	0.65	42.5%	0.28	11300	0.003	1364	0.19	0.82	42.5%	0.35	17,000	0.003	1343	0.28	1.22		
<b>Total</b>					<b>5.09</b>		<b>2.23</b>					<b>5.41</b>		<b>2.37</b>					<b>5.79</b>		

<sup>a</sup> Post project actual circulation rate = average of baseline + circulation increase.

<sup>b</sup> Baseline emission estimates utilize the current tower drift elimination rate. Cooling Tower No. 3 post project drift rate based on planned maintenance replacement of drift eliminators.

<sup>c</sup> Average of baseline TDS

<sup>(1)</sup> Calculated as: Increase Water Circulation X 8.34 lb/gal X 60 minutes/hr X Drift Rate/100 X TDS/10<sup>6</sup> X PM10/PM

Estimated Drift Rate: Performance of drift eliminators as % of tower circulation rate

Estimated TDS: ppm total dissolved solids in tower water

PM10/PM: fraction of total PM that is PM10 = 0.893

<sup>(2)</sup> Calculated as: Average Emissions (lbs/hr) X Annual Operation (hrs/yr) ÷ 2,000 lbs/ton

<sup>(3)</sup> Calculated as: Fraction of PM10, that is PM2.5 = 0.44 PM10

**II. New Cooling Tower**

Cooling Tower	Increase Water Circulation, gpm	Estimated Drift Rate, %	Estimated TDS	PM10 Emissions		PM2.5 Emissions	
				lbs/hr <sup>(1)</sup>	ton/yr <sup>(2)</sup>	lbs/hr <sup>(3)</sup>	ton/yr <sup>(3)</sup>
New Cooling Tower	20,000	0.0010	1,300	0.12	0.51	0.05	0.22
<b>TOTAL</b>				<b>0.12</b>	<b>0.51</b>	<b>0.05</b>	<b>0.22</b>

<sup>(1)</sup> Calculated as: Increase Water Circulation X 8.34 lb/gal X 60 minutes/hr X Drift Rate/100 X TDS/10<sup>6</sup> X PM10/PM

Estimated Drift Rate: Performance of drift eliminators as % of tower circulation rate

Estimated TDS: ppm total dissolved solids in tower water

PM10/PM: fraction of total PM that is PM10 = 0.893

<sup>(2)</sup> Calculated as: Average Emissions (lbs/hr) X Annual Operation (hrs/yr) ÷ 2,000 lbs/ton

<sup>(3)</sup> Calculated as: Fraction of PM10, that is PM2.5 = 0.44 PM10

Source: Ascend, 2011.



**Table 14. Nylon Condensable PM Emission Calculations**

**Ascend Emission Factors Developed from Data of Similar Facility**

Process	PM2.5 (Condensable PM from Process) lb/ton
Monomer Scrubber Controlled	0.1342
Monomer Scrubber Uncontrolled	1.342
Evaporator Uncontrolled	0.316
Reactor Uncontrolled	1.35
Batch Evaporator Uncontrolled	11.52
Batch Autoclave Uncontrolled	4.4
Batch Autoclave Controlled	0.052

**CP - Continuous Polymerization**

Baseline	Production (MAR)			Percent of Operation Uncontrolled			Condensable PM Emissions (PM2.5)			
				Monomer Scrubber	Evaporator	Reactor	Monomer Scrubber	Evaporator	Reactor	Total
Year	Total	Batch	CP	(%)	(%)	(%)	TPY	TPY	TPY	TPY
2003	643.3373		559.2343	1.87%	0.70%	2.28%	21.30	0.31	5.10	26.70
2004	673.62		570.384	1.5%	0.4%	2.7%	21.72	0.18	5.20	27.10
2005	638.9347		544.8727	1.1%	0.1%	1.7%	20.09	0.06	4.97	25.12
2009	337.577		248.156	0.1%	2.9%	0.2%	8.43	0.57	2.26	11.26
2010	670.53		542.64	0.2%	0.1%	2.8%	18.53	0.05	4.94	23.53
Baseline Period Average (2003 and 2004)	656.2773		557.6283				21.51	0.24	5.15	26.90
Demand Growth	863.7	130	733.7				28.30	0.32	6.77	35.39
Post Project	1100	130	970	1.87%	2.9%	2.8%	38.02	2.24	8.84	49.10
<b>CP PM increase (EU-081), TPY</b>										<b>13.70</b>

**Batch Polymerization**

Baseline	Production (MAR)			Controlled Operation	Percent of Operation Uncontrolled			Condensable PM Emissions (PM2.5)			
				Autoclave	Evaporator	Autoclave	Autoclave	Evaporator	Autoclave	Total	
Year	Total	Batch	CP	(%)	(%)	(%)	TPY	TPY	TPY	TPY	
2003	643.3373	84.103		94.5%	1.80%	5.47%	1.03	4.36	5.06	10.45	
2004	673.62	103.236		96.7%	0.1%	3.3%	1.30	0.30	3.75	5.34	
2005	638.9347	94.062		95.9%	0.0%	4.1%	1.17	0.00	4.24	5.41	
2009	337.577	89.421		99.8%	0.1%	0.2%	1.16	0.26	0.20	1.61	
2010	670.53	127.89		99.9%	0.0%	0.1%	1.66	0.00	0.14	1.80	
Baseline Period Average (2003 and 2004)	656.2773	98.649					1.17	2.33	4.40	7.90	
Demand Growth	863.7	130					1.54	3.07	5.80	10.41	
Post Project	1100	130		94.5%	1.80%	5.47%	1.60	6.74	7.82	16.16	
<b>Batch PM increase (EU-082), TPY</b>										<b>5.75</b>	
<b>PM increase total (EU-081 and EU-082), TPY</b>										<b>19.46</b>	

Note: Emissions do not include conversion project emissions of 7.95 TPY PM10 and 3.48 TPY of PM2.5.

**Table 15. PM Emissions Resulting from Secondary Formation of NH4NO3 from Ammonia Slip**

Nitric Acid Unit (EU-042)									
	Nitric Unit Operation - On Stream			Ammonia		PM2.5 Emissions			8760 TPY
	Time		Slip lb/hr	2003	2004	2003	2004	8760	
	2003 hrs	2004 hrs		TPY	TPY	TPY	TPY	TPY	
<b>Baseline Emissions</b>	8202	7740	0.33	1.35	1.28	<u>6.36</u>	<u>6.00</u>	<u>6.79</u>	
<b>Demand Growth based on Year 2003 Operation</b>	8202		0.33	1.35		<u>6.36</u>			

Adipic Acid (Synthesis & Refining) (EU-002)									
	SCR - On Stream Time			Ammonia		PM2.5 Emissions			8760 TPY
	Time		Slip lb/hr	2003	2004	2003	2004	8760	
	2003 hrs	2004 hrs		TPY	TPY	TPY	TPY	TPY	
<b>Baseline Emissions</b>	SCR I	0	4981	0.125	0.00	0.31	0.00	1.48	
<b>Baseline Emissions</b>	SCR II	916	1596	0.042	0.02	0.03	<u>0.09</u>	<u>0.18</u>	
					Sum		<u>0.09</u>	<u>1.62</u>	
<b>Post Project SNCR Emissions (based on Vendor Guarantee)</b>				0.309			<u>6.36</u>		5.50 @ 40 ppmv (Vendor guarantee)

Note: 100% of ammonia slip assumed to convert to PM2.5, NH4NO3 ratio of molecular weights NH4NO3/NH3, (80.04/17.03).  
Site specific data from SARA 313 reporting.

Ammonia Slip lb/hr = TRU Exit Flow (wt lb-mol/hr) \* (1 - Moisture (% Water)/100) / MW Exit Gas \* ((NH3 Slip (ppm) / 1,000,000) \* MW NH3)  
0.309 lb/hr = 12,427 lb-mole/hr \* (1 - 7 / 100) / 25.5 \* ((40 / 1000000) \* 17.031)

**Table 16. EU-020 VOC Emissions Updated based on Revised Tank Emission Calculations**

**I. Step 1, Removal of Tanks Emissions from Baseline Estimates**

	Baseline Emissions (TPY)			
	2004	2005	2007	2008
AOR Reported Total	n/a	n/a	93.0	48.9
AOR Reported LP Scrubbers			29.1	16.6
AOR Reported Tanks	n/a	n/a	14.83	14.6655
Total minus Tanks & LP Scrubbers			49.0	17.7

**I. Step 2, Addition of New Emissions to Baseline Estimates and Projection of Post Project Actual**

Site Specific Emission Factor Based on 2007 and 2008 operation	Conf. tons/MAR		Demand Growth and Post Project Max		
	2004	2005	2007	2008	Max
Production MAR	Conf.	Conf.	Conf.	Conf.	Conf.
OBUD Adjusted Emissions	<b>47.21</b>	<b>42.22</b>			<b>48.78</b>
LP Scrubber Emissions	<b>29.10</b>	<b>29.10</b>			<b>29.1</b>
Tanks Project Controlled*	<b>10.86</b>	<b>12.04</b>			<b>17.31</b>
Non Project Tanks Tanks (Total Minus Project Controlled Tanks)	<b>20.10</b>	<b>20.65</b>			<b>22.43</b>
Total VOC Emissions	<b>107.27</b>	<b>104.01</b>			
Baseline Emissions, TPY	<b>Ave:</b>	<b><u>105.64</u></b>			
Demand Growth/Post Project Emissions, TPY (580 MAR)					<b><u>117.62</u></b>

(Note Tanks were not part of the OBUD permit emission assessment)

\*

Table 17. Projected Emissions for Project Additional Steam Requirement Equivalent to 300,000 Mmbtu/yr

II. Natural Gas Combustion Emissions for additional 1080 MAR

	Emission Factors			
	Boilers 4/5/6 lb/MMBtu	Boilers 7/8 lb/MMBtu	Boiler 9 lb/MMBtu	Cogen lb/MMBtu
CO	0.0235	0.0006	0.038	0.0567
NOX	0.1667	0.0100	0.036	0.0610
PM/PM10	0.0075	0.0178	0.0075	0.0075
PM2.5	0.0075	0.0178	0.0075	0.0075
SO2	0.0006	0.0006	0.000003	0.0006
VOC	0.0054	0.0016	0.004	0.0033

Boiler Usage	Boilers 4/5/6	Boilers 7/8	Boiler 9	Cogen
2002	26.06%	21.71%	0.00%	52.24%
2003	30.28%	24.70%	0.00%	45.02%
2004	28.77%	25.50%	0.00%	45.72%
2005	29.77%	25.69%	0.00%	44.54%
1/1/2010 - 3/31/2011	20.71%	22.76%	4.32%	52.21%

Note: Values represent % of total heat input of powerhouse

Annual Emissions Associated with Additional 1080 MAR Steam Requirement Relative to Steam Generator

300,000 MMBtu/yr required to produce additional steam at 1080 MAR

2002	Boilers 4/5/6	Boilers 7/8	Boiler 9	Cogen	Total
CO	0.92	0.02	0.00	4.44	5.38
NOX	6.51	0.33	0.00	4.78	11.62
PM/PM10	0.29	0.58	0.00	0.58	1.46
PM2.5	0.29	0.58	0.00	0.58	1.46
SO2	0.02	0.02	0.00	0.05	0.09
VOC	0.21	0.05	0.00	0.26	0.52

2003	Boilers 4/5/6	Boilers 7/8	Boiler 9	Cogen	Total
CO	1.07	0.02	0.00	3.83	4.92
NOX	7.57	0.37	0.00	4.12	12.06
PM/PM10	0.34	0.66	0.00	0.50	1.50
PM2.5	0.34	0.66	0.00	0.50	1.50
SO2	0.03	0.02	0.00	0.04	0.09
VOC	0.24	0.06	0.00	0.22	0.53

2004	Boilers 4/5/6	Boilers 7/8	Boiler 9	Cogen	Total
CO	1.02	0.02	0.00	3.89	4.93
NOX	7.19	0.38	0.00	4.19	11.76
PM/PM10	0.32	0.68	0.00	0.51	1.51
PM2.5	0.32	0.68	0.00	0.51	1.51
SO2	0.03	0.02	0.00	0.04	0.09
VOC	0.23	0.06	0.00	0.22	0.52

2005	Boilers 4/5/6	Boilers 7/8	Boiler 9	Cogen	Total
CO	1.05	0.02	0.00	3.79	4.86
NOX	7.44	0.39	0.00	4.08	11.90
PM/PM10	0.33	0.69	0.00	0.50	1.52
PM2.5	0.33	0.69	0.00	0.50	1.52
SO2	0.03	0.02	0.00	0.04	0.09
VOC	0.24	0.06	0.00	0.22	0.52

Current	Boilers 4/5/6	Boilers 7/8	Boiler 9	Cogen	Total
CO	0.73	0.02	0.25	4.44	5.44
NOX	5.18	0.34	0.23	4.78	10.53
PM/PM10	0.23	0.61	0.05	0.58	1.47
PM2.5	0.23	0.61	0.05	0.58	1.47
SO2	0.02	0.02	0.00	0.05	0.08
VOC	0.17	0.05	0.03	0.26	0.50

Projected for NOx Emissions Based on Baseline Years 2002 and 2003

2002/2003 Avg	Boilers 4/5/6	Boilers 7/8	Boiler 9	Cogen	Total
NOX	7.04	0.35	0.00	4.45	11.84

Projected for CO, PM, and SO2 Emissions Based on Baseline Years 2002 and 2003

2003/2004 Avg	Boilers 4/5/6	Boilers 7/8	Boiler 9	Cogen	Total
CO	1.04	0.02	0.00	3.86	4.92
PM/PM10	0.33	0.67	0.00	0.51	1.51
PM2.5	0.33	0.67	0.00	0.51	1.51
SO2	0.03	0.02	0.00	0.04	0.09

Projected for VOC Emissions Based on Baseline Years 2002 and 2003

2004/2005 Avg	Boilers 4/5/6	Boilers 7/8	Boiler 9	Cogen	Total
VOC	0.24	0.06	0.00	0.22	0.52

**ATTACHMENT 1  
POWERHOUSE UNIT FORMS**

## **EMISSIONS UNIT INFORMATION**

### **Section [10]**

**Boiler Nos. 4, 5, 6**

### **III. EMISSIONS UNIT INFORMATION**

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

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

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

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

**EMISSIONS UNIT INFORMATION**

**Section [10]**

**Boiler Nos. 4, 5, 6**

**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:  
**Boiler Nos. 4, 5 and 6 are normally fueled by natural gas.**

3. Emissions Unit Identification Number:  
**EU 014 (Boiler 4), EU 015 (Boiler 5), EU 016 (Boiler 6)**

4. Emissions Unit Status Code: <b>A</b>	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code: <b>28</b>
--	--------------------------------	--------------------------	---

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: **No. 6 fuel oil is an alternate fuel, which may contain blended on-specification used oil as supplemental fuel. Boiler No.4 and/or No.5 may also burn as supplemental fuels AGS (a mixture of organic acids from deep well waste stream), KATT (a mixture of organic esters), DME (Dimethyl Ethers), Amines and Area 480 residue. Emissions are controlled by proper combustion control and by fuel consumption.**

**EMISSIONS UNIT INFORMATION**

**Section [10]**

**Boiler Nos. 4, 5, 6**

**Emissions Unit Control Equipment/Method:** Control \_\_\_ of \_\_\_

1. Control Equipment/Method Description:

2. Control Device or Method Code:

**Emissions Unit Control Equipment/Method:** Control \_\_\_ of \_\_\_

1. Control Equipment/Method Description:

2. Control Device or Method Code:

**Emissions Unit Control Equipment/Method:** Control \_\_\_ of \_\_\_

1. Control Equipment/Method Description:

2. Control Device or Method Code:

**Emissions Unit Control Equipment/Method:** Control \_\_\_ of \_\_\_

1. Control Equipment/Method Description:

2. Control Device or Method Code:



**EMISSIONS UNIT INFORMATION**

Section [10]  
Boiler Nos. 4, 5, 6

**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: <b>723 million Btu/hr<sup>a</sup></b>
4. Maximum Incineration Rate: pounds/hr tons/day
5. Requested Maximum Operating Schedule: 24 hours/day 7 days/week 52 weeks/year 8,760 hours/year
6. Operating Capacity/Schedule Comment:  <b>The aggregate maximum operating rate is 723 MMBtu/hr for Boiler Nos. 4, 5, and 6 with no individual boiler limits. During periods of outage of the cogeneration plant, Boiler Nos. 4, 5, and 6 may operate at a combined maximum operating rate of 864 MMBtu/hr.</b>  <b>For a period of ten years from the effective date of Permit No. 0330040-036-AC, total heat input for EU 003 (Boiler No. 8), 004 (Boiler No. 7), 014 (Boiler No. 4), 015(Boiler No. 5), 016 (Boiler No. 6), 032 (Cogeneration Plant) and 099 (Boiler No. 9) shall not exceed more than 16,360,362 MMBtu/yr from all fuels in any 12-month rolling period.</b>

**EMISSIONS UNIT INFORMATION**

Section [10]

Boiler Nos. 4, 5, 6

**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: <b>14, 15, 16</b>		2. Emission Point Type Code: <b>2</b>	
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: <b>Boilers Nos. 5 and 6 vent to a common stack.</b>			
5. Discharge Type Code: <b>V</b>	6. Stack Height: <b>150 feet</b>	7. Exit Diameter: <b>10 feet</b>	
8. Exit Temperature: <b>450°F</b>	9. Actual Volumetric Flow Rate: <b>74,171 acfm<sup>a</sup></b>	10. Water Vapor: <b>%<sup>a</sup></b>	
11. Maximum Dry Standard Flow Rate: dscfm		12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: <b>17</b> East (km): North (km):		14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment:  <b><sup>a</sup> Boiler No. 4 - 74,171; Boiler No. 5 - 71,541 acfm; Boiler No. 6 - 71,782 acfm</b>			

**EMISSIONS UNIT INFORMATION**

**Section [10]**  
**Boiler Nos. 4, 5, 6**

**D. SEGMENT (PROCESS/FUEL) INFORMATION**

**Segment Description and Rate: Segment 1 of 5**

1. Segment Description (Process/Fuel Type): <b>Natural Gas Combustion</b>		
2. Source Classification Code (SCC): <b>1-02-006-01</b>	3. SCC Units: <b>MM ft<sup>3</sup> Burned</b>	
4. Maximum Hourly Rate: <b>0.85</b>	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit: <b>1,020<sup>1</sup></b>
10. Segment Comment: <b>The aggregate maximum operating rate is 723 MMBtu/hr for Boiler Nos. 4, 5, and 6 with no individual boiler limits. During periods of outage of the cogeneration plant, Boiler Nos. 4, 5, and 6 may operate at a combined maximum operating rate of 864 MMBtu/hr.</b>  <b>Max. Hourly Rate:</b> <b>864 MMBtu/hr x 1 MM ft<sup>3</sup> Burned /1020 MMBtu = 0.847 MM ft<sup>3</sup> burned/hr for all boilers.</b>		

**Segment Description and Rate: Segment 2 of 5**

1. Segment Description (Process/Fuel Type): <b>Combustion of AGS; a mixture of organic acids</b>		
2. Source Classification Code (SCC): <b>1-02-013-01</b>	3. SCC Units: <b>Thousand Gallons Burned</b>	
4. Maximum Hourly Rate: <b>See Segment Comment</b>	5. Maximum Annual Rate: <b>See Segment Comment</b>	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment: <b>AGS may be burned in Boiler No 4 and 5 only, in conjunction with burning of gas or fuel oil. Title V Permit No 0330040-029-AV limits combustion to a maximum of 8,000 pounds of AGS on an hourly basis. The equivalent annual rate based on 8760 hours of operation is 70,080,000 lbs per year.</b>		

<sup>1</sup> The natural gas heat content has ranged from 1010 Btu/cuft to 1040 Btu/cuft based on supplier data.

**EMISSIONS UNIT INFORMATION**

Section [10]  
Boiler Nos. 4, 5, 6

**D. SEGMENT (PROCESS/FUEL) INFORMATION**

**Segment Description and Rate: Segment 3 of 5**

1. Segment Description (Process/Fuel Type): <b>KATT composite fuel, consisting of KATT (Ketone Alcohol Topper Tails), DME (mixture of Dimethyl Easters), Amines (from nylon and nylon intermediates manufacturing), and Area 480 residue (a mixture of alcohol a d ketone by-products)</b>		
2. Source Classification Code (SCC): <b>1-02-013-01</b>	3. SCC Units: <b>Thousand Gallons Burned</b>	
4. Maximum Hourly Rate: <b>See Segment Comment</b>	5. Maximum Annual Rate: <b>See Segment Comment</b>	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment: <b>KATT composite fuel may be burned in Boiler No 4 and 5 only, in conjunction with burning of gas or fuel oil. Title V Permit No 0330040-029-AV limits combustion to a maximum of 10,000 pounds of KATT composite fuel on an hourly basis.</b>		

**Segment Description and Rate: Segment 4 of 5**

1. Segment Description (Process/Fuel Type): <b>Used Oil</b>		
2. Source Classification Code (SCC): <b>1-02-013-2</b>	3. SCC Units: <b>Thousand Gallons Burned</b>	
4. Maximum Hourly Rate: <b>See Segment Comment</b>	5. Maximum Annual Rate: <b>See Segment Comment</b>	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit
10. Segment Comment: <b>Boilers Nos. 4, 5, and 6 are permitted to burn on-specification used oil. On-specification used oil is defined as used oil that meets the specifications of 40 CFR 279 - Standards for the Management of Used Oil, see APM-FUEL.</b>		

# EMISSIONS UNIT INFORMATION

Section [10]  
Boiler Nos. 4, 5, 6

## D. SEGMENT (PROCESS/FUEL) INFORMATION

### Segment Description and Rate: Segment **5** of **5**

1. Segment Description (Process/Fuel Type): <b>No. 6 Fuel Oil Combustion</b>		
2. Source Classification Code (SCC): <b>1-02-004-01</b>		3. SCC Units: <b>Thousand Gallons Burned</b>
4. Maximum Hourly Rate: <b>5.448</b>	5. Maximum Annual Rate: <b>38,987.9</b>	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: <b>2.48</b>	8. Maximum % Ash:	9. Million Btu per SCC Unit: <b>158.6</b>
10. Segment Comment: <b>No. 6 fuel oil, blended with on-specification used oil, may be used as an alternate fuel provided the Department is notified in writing within seven days of the fuel change over.</b>  <b>The aggregate maximum operating rate is 723 MMBtu/hr for Boiler Nos. 4, 5, and 6 with no individual boiler limits. During periods of outage of the cogeneration plant, Boiler Nos. 4, 5, and 6 may operate at a combined maximum operating rate of 864 MMBtu/hr.</b>  <b><u>Max. Hourly Rate:</u></b> <b>864 MMBtu/hr x 1,000 gallon /158.6 MMBtu = 5.448 x 10<sup>3</sup> gallon burned/hr for all boilers.</b>		

**EMISSIONS UNIT INFORMATION**

**Section [10]**

**Boiler Nos. 4, 5, 6**

**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
<b>PM/PM<sub>10</sub></b>	----	----	<b>EL</b>
<b>CO</b>	----	----	<b>NS</b>
<b>VOC</b>	----	----	<b>NS</b>
<b>SO<sub>2</sub></b>	----	----	<b>EL</b>
<b>NO<sub>x</sub></b>	----	----	<b>NS</b>
<b>PM<sub>2.5</sub></b>	----	----	<b>EL</b>

**EMISSIONS UNIT INFORMATION**

**POLLUTANT DETAIL INFORMATION**

Section [10]  
Boiler Nos. 4, 5, 6

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**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –  
POTENTIAL/ESTIMATED FUGITIVE 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: <b>PM/PM10</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: lb/hour <b>240 tons/year</b>		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: <b>PSD Avoidance Limit</b>  Reference:		7. Emissions Method Code: <b>0</b>	
8.a. Baseline Actual Emissions (if required): tons/year <b>273.6</b>		8.b. Baseline 24-month Period: From: To: <b>1/1/2003 to 12/31/2004</b>	
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:			
11. Potential, Fugitive, and Actual Emissions Comment: <b>Potential emissions are for the powerhouse group (Boilers 4, 5, 6, 7, 8, 9, and cogen) (see RAI Response 5/3/11). Baseline emissions include powerhouse group and do not include demand growth, see Attachment A, Table 1a for complete emissions comparison.</b>			

**EMISSIONS UNIT INFORMATION**

**POLLUTANT DETAIL INFORMATION**

Section [10]  
Boiler Nos. 4, 5, 6

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**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: <b>ESPSD</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>240 tons/year</b>	4. Equivalent Allowable Emissions: lb/hour <b>240 tons/year</b>
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method): <b>Allowable emissions are for the powerhouse group (Boilers 4, 5, 6, 7, 8, 9, and cogen) (see RAI Response 5/3/11).</b>	

Allowable Emissions Allowable Emissions \_\_\_\_ of \_\_\_\_

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

Allowable Emissions Allowable Emissions \_\_\_\_ of \_\_\_\_

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



**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –  
POTENTIAL/ESTIMATED FUGITIVE 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: <b>CO</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: lb/hour		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:  Reference:		7. Emissions Method Code:	
8.a. Baseline Actual Emissions (if required): tons/year <b>175.2</b>		8.b. Baseline 24-month Period: From: To: <b>1/1/2003 to 12/31/2004</b>	
9.a. Projected Actual Emissions (if required): tons/year <b>231.36</b>		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:			
11. Potential, Fugitive, and Actual Emissions Comment: <b>Potential emissions are for the powerhouse group (Boilers 4, 5, 6, 7, 8, 9, and cogen) (see RAI Response 5/3/11). Baseline and emissions include powerhouse group and do not include demand growth, see Attachment A, Table 1a for complete emissions comparison.</b>			

**EMISSIONS UNIT INFORMATION**

**POLLUTANT DETAIL INFORMATION**

Section [10]  
Boiler Nos. 4, 5, 6

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CO

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

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

Allowable Emissions Allowable Emissions \_\_\_\_ of \_\_\_\_

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

Allowable Emissions Allowable Emissions \_\_\_\_ of \_\_\_\_

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

Allowable Emissions Allowable Emissions \_\_\_\_ of \_\_\_\_

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

**EMISSIONS UNIT INFORMATION**

**POLLUTANT DETAIL INFORMATION**

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VOC

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –  
POTENTIAL/ESTIMATED FUGITIVE 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: <b>VOC</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: lb/hour		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:  Reference:		7. Emissions Method Code:	
8.a. Baseline Actual Emissions (if required): tons/year <b>47.7</b>		8.b. Baseline 24-month Period: From: To: <b>1/1/2004 to 12/31/2005</b>	
9.a. Projected Actual Emissions (if required): tons/year <b>63.55</b>		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:			
11. Potential, Fugitive, and Actual Emissions Comment: <b>Potential emissions are for the powerhouse group (Boilers 4, 5, 6, 7, 8, 9, and cogen) (see RAI Response 5/3/11). Baseline emissions include powerhouse group and do not include demand growth, see Attachment A, Table 1a for complete emissions comparison.</b>			

**EMISSIONS UNIT INFORMATION****POLLUTANT DETAIL INFORMATION**

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Boiler Nos. 4, 5, 6

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VOC

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

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

**Allowable Emissions** Allowable Emissions \_\_\_\_\_ of \_\_\_\_\_

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

**Allowable Emissions** Allowable Emissions \_\_\_\_\_ of \_\_\_\_\_

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

**Allowable Emissions** Allowable Emissions \_\_\_\_\_ of \_\_\_\_\_

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

**EMISSIONS UNIT INFORMATION**

**POLLUTANT DETAIL INFORMATION**

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SO<sub>2</sub>

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –  
POTENTIAL/ESTIMATED FUGITIVE 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: <b>SO<sub>2</sub></b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: lb/hour		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: <b>57.5 tons per 24 hour period</b>  Reference: <b>Title V Permit 0330040-029-AV</b>		7. Emissions Method Code: <b>0</b>	
8.a. Baseline Actual Emissions (if required): tons/year <b>3,563.9</b>		8.b. Baseline 24-month Period: From: To: <b>1/1/2003 to 12/31/2004</b>	
9.a. Projected Actual Emissions (if required): tons/year <b>4603.99</b>		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:			
11. Potential, Fugitive, and Actual Emissions Comment: <b>Potential emissions are for the powerhouse group (Boilers 4, 5, 6, 7, 8, 9, and cogen) (see RAI Response 5/3/11). Baseline emissions include powerhouse group and do not include demand growth, see Attachment A, Table 1a for complete emissions comparison.</b>			

**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: <b>RULE</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>57.5 tons per 24-hour period</b>	4. Equivalent Allowable Emissions: lb/hour    tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method): <b>Aggregate maximum total sulfur dioxide emissions from Boiler Nos. 4, 5, and 6 is limited to 57.5 tons in any 24-hour period.</b>	

Allowable Emissions Allowable Emissions    of   

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

Allowable Emissions Allowable Emissions    of   

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

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –  
POTENTIAL/ESTIMATED FUGITIVE 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: <b>NOx</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: lb/hour		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:  Reference:		7. Emissions Method Code:	
8.a. Baseline Actual Emissions (if required): tons/year <b>1,021.2</b>		8.b. Baseline 24-month Period: From: To: <b>1/1/2002 to 12/31/2003</b>	
9.a. Projected Actual Emissions (if required): tons/year <b>1249.91</b>		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:			
11. Potential, Fugitive, and Actual Emissions Comment: <b>Potential emissions are for the powerhouse group (Boilers 4, 5, 6, 7, 8, 9, and cogen) (see RAI Response 5/3/11). Baseline emissions include powerhouse group and do not include demand growth, see Attachment A, Table 1a for complete emissions comparison.</b>			

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

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

**Allowable Emissions** Allowable Emissions \_\_\_\_\_ of \_\_\_\_\_

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

**Allowable Emissions** Allowable Emissions \_\_\_\_\_ of \_\_\_\_\_

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

**Allowable Emissions** Allowable Emissions \_\_\_\_\_ of \_\_\_\_\_

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



**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –  
POTENTIAL/ESTIMATED FUGITIVE 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: <b>PM2.5</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: lb/hour <b>143 tons/year</b>		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: <b>PSD Avoidance Limit</b>  Reference:		7. Emissions Method Code: <b>0</b>	
8.a. Baseline Actual Emissions (if required): tons/year <b>169.3</b>		8.b. Baseline 24-month Period: From: To: <b>1/1/2003 to 12/31/2004</b>	
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:			
11. Potential, Fugitive, and Actual Emissions Comment: <b>Potential emissions are for the powerhouse group (Boilers 4, 5, 6, 7, 8, 9, and cogen) (see RAI Response 5/3/11). Baseline emissions include powerhouse group and do not include demand growth, see Attachment A, Table 1a for complete emissions comparison.</b>			

**EMISSIONS UNIT INFORMATION**

**POLLUTANT DETAIL INFORMATION**

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Boiler Nos. 4, 5, 6

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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.**

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: <b>ESPSD</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>143 tons/year</b>	4. Equivalent Allowable Emissions: lb/hour <b>143 tons/year</b>
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method): <b>Allowable emissions are for the powerhouse group (Boilers 4, 5, 6, 7, 8, 9, and cogen) (see RAI Response 5/3/11).</b>	

Allowable Emissions Allowable Emissions \_\_\_\_ of \_\_\_\_

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

Allowable Emissions Allowable Emissions \_\_\_\_ of \_\_\_\_

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

**EMISSIONS UNIT INFORMATION**

Section [10]

Boiler Nos. 4, 5, 6

**G. VISIBLE EMISSIONS INFORMATION**

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

**Visible Emissions Limitation:** Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: <b>VE20- Visible Emissions</b>	2. Basis for Allowable Opacity: <input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: <b>20 %</b> Exceptional Conditions: <b>40 %</b> Maximum Period of Excess Opacity Allowed: <b>2 min/hour</b>	
4. Method of Compliance: <b>EPA Method 9</b>	
5. Visible Emissions Comment:  <b>Rule 62-296-406(1).</b>	

**Visible Emissions Limitation:** Visible Emissions Limitation \_ of \_

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

**EMISSIONS UNIT INFORMATION**

**Section [10]**  
**Boiler Nos. 4, 5, 6**

**H. CONTINUOUS MONITOR INFORMATION**

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

**Continuous Monitoring System:** Continuous Monitor \_\_\_\_\_ of \_\_\_\_\_

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

**Continuous Monitoring System:** Continuous Monitor \_\_\_\_\_ of \_\_\_\_\_

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

**EMISSIONS UNIT INFORMATION**

**Section [10]**  
**Boiler Nos. 4, 5, 6**

**I. EMISSIONS UNIT ADDITIONAL INFORMATION**

**Additional Requirements for All Applications, Except as Otherwise Stated**

1. Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <b>3/21/11</b>
2. Fuel Analysis or Specification: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <b>3/21/11</b>
3. Detailed Description of Control Equipment: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <b>3/21/11</b>
4. Procedures for Startup and Shutdown: (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date _____ <input checked="" type="checkbox"/> Not Applicable (construction application)
5. Operation and Maintenance Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date _____ <input checked="" type="checkbox"/> Not Applicable
6. Compliance Demonstration Reports/Records: <input type="checkbox"/> Attached, Document ID: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> Previously Submitted, Date: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> To be Submitted, Date (if known): _____ Test Date(s)/Pollutant(s) Tested: _____ <input checked="" type="checkbox"/> Not Applicable Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.
7. Other Information Required by Rule or Statute: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

**EMISSIONS UNIT INFORMATION**

**Section [10]**

**Boiler Nos. 4, 5, 6**

**I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)**

**Additional Requirements for Air Construction Permit Applications**

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

**Additional Requirements for Title V Air Operation Permit Applications**

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

**Additional Requirements Comment**

## **EMISSIONS UNIT INFORMATION**

### **Section [11]**

#### **Boiler Nos. 8, 7**

### **III. EMISSIONS UNIT INFORMATION**

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

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

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

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

# EMISSIONS UNIT INFORMATION

Section [11]

Boiler Nos. 8, 7

## 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:  
**Two B & W Boilers each rated for 388 MMBtu/hour and 225,000 pounds/hour steam production.**

3. Emissions Unit Identification Number:  
**EU 003 (Boiler 8), EU 004 (Boiler 7)**

4. Emissions Unit Status Code: <b>A</b>	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code: <b>28</b>
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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 [11]**

**Boiler Nos. 8, 7**

**Emissions Unit Control Equipment/Method: Control 1 of 1**

1. Control Equipment/Method Description:

**Low NOx Burners**

2. Control Device or Method Code: **024**

**Emissions Unit Control Equipment/Method: Control \_\_\_ of \_\_\_**

1. Control Equipment/Method Description:

2. Control Device or Method Code:

**Emissions Unit Control Equipment/Method: Control \_\_\_ of \_\_\_**

1. Control Equipment/Method Description:

2. Control Device or Method Code:

**Emissions Unit Control Equipment/Method: Control \_\_\_ of \_\_\_**

1. Control Equipment/Method Description:

2. Control Device or Method Code:



**EMISSIONS UNIT INFORMATION**

Section [11]

Boiler Nos. 8, 7

**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: <b>04, 03</b>		2. Emission Point Type Code: <b>2</b>	
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: <b>V</b>	6. Stack Height: <b>125</b> feet	7. Exit Diameter: <b>12</b> feet	
8. Exit Temperature: <b>352°F<sup>a</sup></b>	9. Actual Volumetric Flow Rate: <b>237,845</b> acfm <sup>a</sup>	10. Water Vapor: <b>%<sup>a</sup></b>	
11. Maximum Dry Standard Flow Rate: dscfm		12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: <b>17</b> East (km): North (km):		14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment:  <b>Data above for Boiler No. 7.</b> <b>Boiler No. 8 - 12 feet (exit diameter), 227,074 acfm, 369 deg. F</b>  <b>Stack data based on September 2, 2010 TRC Emission Test Report</b>			

**EMISSIONS UNIT INFORMATION**

**Section [11]  
Boiler Nos. 8, 7**

**D. SEGMENT (PROCESS/FUEL) INFORMATION**

**Segment Description and Rate: Segment 1 of 3**

1. Segment Description (Process/Fuel Type): <b>Natural Gas Combustion</b>		
2. Source Classification Code (SCC): <b>1-02-006-01</b>	3. SCC Units: <b>Million Cubic Feet</b>	
4. Maximum Hourly Rate: <b>0.38 per boiler</b>	5. Maximum Annual Rate: <b>1,100 per boiler</b>	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit: <b>1,020<sup>1</sup></b>
10. Segment Comment: <b>Each boiler is rated for 388 MMBtu/hr.</b>  <b>388 MMBtu/hr x 1 MMcuft /1,020 MMBtu = 0.38 MMcuft /hr per boiler (Estimated for informational purposes only)</b>  <b>Per Permit No. 0330040-029-AV, the maximum total natural gas usage shall be limited to 1,100 million standard cubic feet per year for each boiler (Boiler No. 7 and Boiler No. 8).</b>		

**Segment Description and Rate: Segment 2 of 3**

1. Segment Description (Process/Fuel Type): <b>Maleic Anhydride Production Off-Gas</b>		
2. Source Classification Code (SCC): <b>1-02-007-99</b>	3. SCC Units: <b>Million Cubic Feet</b>	
4. Maximum Hourly Rate: <b>6.5 per boiler</b>	5. Maximum Annual Rate: <b>56,940 per boiler</b>	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment: <b>Per Permit No. 0330040-029-AV, Maleic is limited to 6.5 MMscf/hr gas flow rate to each boiler.</b> <b>6.5 MMscf/hr x 8760 hr/year = 56,940 MMscf/year per boiler.</b>		

<sup>1</sup> The natural gas heat content has ranged from 1010 Btu/cuft to 1040 Btu/cuft based on supplier data.  
DEP Form No. 62-210.900(1) – Form  
Effective: 03/11/2010

**EMISSIONS UNIT INFORMATION**

**Section [11]**

**Boiler Nos. 8, 7**

**D. SEGMENT (PROCESS/FUEL) INFORMATION**

**Segment Description and Rate: Segment 3 of 5**

1. Segment Description (Process/Fuel Type):  <b>Pentane Vapor Steam</b>		
2. Source Classification Code (SCC): <b>1-02-013001</b>		3. SCC Units: <b>Pounds per Hour</b>
4. Maximum Hourly Rate: <b>886 per boiler</b>	5. Maximum Annual Rate: <b>3,881</b>	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment: <b>Based on April 9, 1991 FDEP approval to route the pentane vapor stream from the butane purification process to Boiler No. 7 and 8 natural gas header. The maximum flow of pentane vapor is estimated at 886 lb/hr to the natural gas header system.</b>		

**EMISSIONS UNIT INFORMATION**

**Section [11]**

**Boiler Nos. 8, 7**

**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
PM/PM <sub>10</sub>	-----	-----	EL
CO	-----	-----	EL
VOC	-----	-----	EL
SO <sub>2</sub>	-----	-----	NS
NO <sub>x</sub>	024	-----	EL
PM2.5	-----	-----	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: <b>PM/PM<sub>10</sub></b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: <b>38.8 lb/hour                      240 tons/year*</b>		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: <b>0.1 lb/MMBtu</b>		7. Emissions Method Code: <b>0</b>	
Reference: <b>Title V Permit 0330040-029-AV</b>			
8.a. Baseline Actual Emissions (if required): <b>273 tons/year</b>		8.b. Baseline 24-month Period: From: <b>1/1/2003</b> To: <b>12/31/2004</b>	
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:  <b>Emissions provided per boiler. Each boiler is rated for 388 MMBtu/hr.</b>  <b>388 MMBtu/hr x 0.1lb/MMBtu = 38.8 lb/hr per boiler</b>  <b>* Potential annual emissions are for the powerhouse group (Boilers 4, 5, 6, 7, 8, 9, and cogen) (see RAI Response 5/3/11).</b>			
11. Potential, Fugitive, and Actual Emissions Comment: <b>Baseline emissions include powerhouse group and do not include demand growth, see Attachment A, Table 1a for complete emissions comparison</b>			

**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 2

1. Basis for Allowable Emissions Code: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>0.1 lb/MMBtu</b>	4. Equivalent Allowable Emissions: <b>38.8 lb/hour*</b> tons/year*
5. Method of Compliance: <b>EPA Method 5</b>	
6. Allowable Emissions Comment (Description of Operating Method):  <b>*Per Boiler</b>	

**Allowable Emissions** Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: <b>ESPSD</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>240 tons/year</b>	4. Equivalent Allowable Emissions: lb/hour <b>240 tons/year</b>
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method): <b>Allowable annual emissions are for the powerhouse group (Boilers 4, 5, 6, 7, 8, 9, and cogen) (see RAI Response 5/3/11).</b>	

**Allowable Emissions** Allowable Emissions    of   

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



**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –  
POTENTIAL/ESTIMATED FUGITIVE 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: <b>CO</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: <b>54.8 lb/hour</b> 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: <b>54.8 lb/hour</b>  Reference: <b>Title V Permit 0330040-029-AV</b>		7. Emissions Method Code: <b>0</b>	
8.a. Baseline Actual Emissions (if required): <b>175.2 tons/year</b>		8.b. Baseline 24-month Period: From: <b>1/1/2003 to 12/31/2004</b>	
9.a. Projected Actual Emissions (if required): <b>231.36 tons/year</b>		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: <b>Lb/Hour Emissions provided per boiler.</b>			
11. Potential, Fugitive, and Actual Emissions Comment: <b>Baseline actual emissions include powerhouse group and do not include demand growth, see Attachment A, Table 1a for complete emissions comparison</b>			

**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: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>54.8 lb/hr</b>	4. Equivalent Allowable Emissions: <b>54.8 lb/hour          tons/year</b>
5. Method of Compliance: <b>EPA Method 10</b>	
6. Allowable Emissions Comment (Description of Operating Method): <b>Per Boiler</b>	

**Allowable Emissions** Allowable Emissions \_\_\_\_ of \_\_\_\_

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

**Allowable Emissions** Allowable Emissions \_\_\_\_ of \_\_\_\_

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

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –  
POTENTIAL/ESTIMATED FUGITIVE 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: <b>VOC</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: <b>7.04 lb/hour</b> 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: <b>7.04 lb/hour</b>  Reference: <b>Title V Permit 0330040-029-AV</b>		7. Emissions Method Code: <b>0</b>	
8.a. Baseline Actual Emissions (if required): <b>47.7 tons/year</b>		8.b. Baseline 24-month Period: From: <b>1/1/2004 to 12/31/2005</b>	
9.a. Projected Actual Emissions (if required): <b>63.55 tons/year</b>		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: <b>Lb/Hour Emissions provided per boiler.</b>			
11. Potential, Fugitive, and Actual Emissions Comment: <b>Baseline emissions include powerhouse group and do not include demand growth, see Attachment A, Table 1a for complete emissions comparison</b>			

**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: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>7.04 lb/hr</b>	4. Equivalent Allowable Emissions: <b>7.04 lb/hour</b> tons/year
5. Method of Compliance: <b>EPA Method 25A</b>	
6. Allowable Emissions Comment (Description of Operating Method): <b>Per Boiler</b>	

Allowable Emissions Allowable Emissions \_\_\_\_ of \_\_\_\_

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

Allowable Emissions Allowable Emissions \_\_\_\_ of \_\_\_\_

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

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –  
POTENTIAL/ESTIMATED FUGITIVE 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: <b>NO<sub>x</sub></b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: <b>22.5 lb/hour</b> 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: <b>22.5 lb/hour</b>  Reference: <b>Title V Permit 0330040-029-AV</b>		7. Emissions Method Code: <b>0</b>	
8.a. Baseline Actual Emissions (if required): <b>1,021.2 tons/year</b>		8.b. Baseline 24-month Period: From: <b>1/1/2002 to 12/31/2003</b>	
9.a. Projected Actual Emissions (if required): <b>1249.9 tons/year</b>		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: <b>Lb/Hour Emissions provided per boiler.</b>			
11. Potential, Fugitive, and Actual Emissions Comment: <b>Baseline emissions include powerhouse group and do not include demand growth, see Attachment A, Table 1a for complete emissions comparison</b>			

**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: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>22.5 lb/hr</b>	4. Equivalent Allowable Emissions: <b>22.5 lb/hour</b> tons/year
5. Method of Compliance: <b>EPA Method 7E</b>	
6. Allowable Emissions Comment (Description of Operating Method): <b>Per Boiler</b>	

**Allowable Emissions** Allowable Emissions \_\_\_\_ of \_\_\_\_

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

**Allowable Emissions** Allowable Emissions \_\_\_\_ of \_\_\_\_

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

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –  
POTENTIAL/ESTIMATED FUGITIVE EMISSIONS**

(Optional for unregulated emissions units.)

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

**Potential, Estimated Fugitive and Baseline & Projected Actual Emissions**

1. Pollutant Emitted: SO2		2. Total Percent Efficiency of Control:	
3. Potential Emissions: lb/hour		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:  Reference:		7. Emissions Method Code:	
8.a. Baseline Actual Emissions (if required): 3,563.9 tons/year		8.b. Baseline 24-month Period: From: 1/1/2003 to 12/31/2004	
9.a. Projected Actual Emissions (if required): 4,603.99 tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:			
11. Potential, Fugitive, and Actual Emissions Comment: <b>Baseline and projected actual emissions include powerhouse group and do not include demand growth, see Attachment A, Table 1a for complete emissions comparison</b>			

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

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

**Allowable Emissions** Allowable Emissions of \_\_\_\_\_

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

**Allowable Emissions** Allowable Emissions \_\_\_\_\_ of \_\_\_\_\_

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

**Allowable Emissions** Allowable Emissions \_\_\_\_\_ of \_\_\_\_\_

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



**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –  
POTENTIAL/ESTIMATED FUGITIVE 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: <b>PM2.5</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: lb/hour <b>143 tons/year</b>		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: <b>PSD Avoidance Limit</b>  Reference:		7. Emissions Method Code: <b>0</b>	
8.a. Baseline Actual Emissions (if required): <b>169.3 tons/year</b>		8.b. Baseline 24-month Period: From: <b>1/1/2003 to 12/31/2004</b>	
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:			
11. Potential, Fugitive, and Actual Emissions Comment: <b>Potential annual emissions are for the powerhouse group (Boilers 4, 5, 6, 7, 8, 9, and cogen) (see RAI Response 5/3/11).</b>  <b>Baseline emissions include powerhouse group and do not include demand growth, see Attachment A, Table 1a for complete emissions comparison</b>			

**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: <b>ESPSD</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>143 tons/year</b>	4. Equivalent Allowable Emissions: lb/hour <b>143 tons/year</b>
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method): <b>Allowable annual emissions are for the powerhouse group (Boilers 4, 5, 6, 7, 8, 9, and cogen) (see RAI Response 5/3/11).</b>	

**Allowable Emissions** Allowable Emissions \_\_\_\_ of \_\_\_\_

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

**Allowable Emissions** Allowable Emissions \_\_\_\_ of \_\_\_\_

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

**EMISSIONS UNIT INFORMATION**

**Section [11]**

**Boiler Nos. 8, 7**

**G. VISIBLE EMISSIONS INFORMATION**

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

**Visible Emissions Limitation:** Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: <b>VE20</b>	2. Basis for Allowable Opacity: <input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: <b>20 %</b> Exceptional Conditions: <b>27 %</b> Maximum Period of Excess Opacity Allowed: <b>6 min/hour</b>	
4. Method of Compliance: <b>EPA Method 9</b>	
5. Visible Emissions Comment:  <b>Rule 62-296.405(1)(a)</b>	

**Visible Emissions Limitation:** Visible Emissions Limitation    of   

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

**EMISSIONS UNIT INFORMATION**

**Section [11]**

**Boiler Nos. 8, 7**

**H. CONTINUOUS MONITOR INFORMATION**

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

**Continuous Monitoring System:** Continuous Monitor 1 of 1

1. Parameter Code: <b>EM</b>	2. Pollutant(s): <b>CO</b>
3. CMS Requirement:	<input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: <b>Thermo Electron Corporation</b> Model Number: <b>48i-ANSCB</b> Serial Number: <b>0710021365 -Boiler 7</b> <b>0710021364 -Boiler8</b>	
5. Installation Date: <b>9/27/07</b>	6. Performance Specification Test Date: <b>12/14/10</b>
7. Continuous Monitor Comment:  <b>Per Title V Permit 0330040-029-AV, Construction Permit AC17-250268</b>	

**Continuous Monitoring System:** Continuous Monitor \_\_\_\_ of \_\_\_\_

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

**EMISSIONS UNIT INFORMATION**

**Section [11]**  
**Boiler Nos. 8, 7**

**I. EMISSIONS UNIT ADDITIONAL INFORMATION**

**Additional Requirements for All Applications, Except as Otherwise Stated**

1. Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input checked="" type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date <u>3/21/11</u>
2. Fuel Analysis or Specification: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input checked="" type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date <u>3/21/11</u>
3. Detailed Description of Control Equipment: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input checked="" type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date <u>3/21/11</u>
4. Procedures for Startup and Shutdown: (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>3/21/11</u> <input type="checkbox"/> Not Applicable (construction application)
5. Operation and Maintenance Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>3/21/11</u> <input type="checkbox"/> Not Applicable
6. Compliance Demonstration Reports/Records: <input type="checkbox"/> Attached, Document ID: _____ Test Date(s)/Pollutant(s) Tested: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> To be Submitted, Date (if known): _____ Test Date(s)/Pollutant(s) Tested: _____ <input checked="" type="checkbox"/> Not Applicable Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.
7. Other Information Required by Rule or Statute: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable



## **EMISSIONS UNIT INFORMATION**

### **Section [13]**

#### **Boiler No. 9**

### **III. EMISSIONS UNIT INFORMATION**

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

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

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

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

**EMISSIONS UNIT INFORMATION**

**Section [13]**

**Boiler No. 9**

**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:  
**Boiler No. 9. Natural gas fired boiler with maximum heat input of 344 million Btu per hour, with a design rating of 250,000 pounds per hour steam.**

3. Emissions Unit Identification Number:  
**EU 099 (Boiler 9)**

4. Emissions Unit Status Code: <b>A</b>	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code: <b>28</b>
--	--------------------------------	--------------------------	---

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

- Acid Rain Unit
- CAIR Unit

9. Package Unit:  
Manufacturer: **Indeck/Volcano**                      Model Number: **A5-250-S**

10. Generator Nameplate Rating: **MW**

11. Emissions Unit Comment:



**EMISSIONS UNIT INFORMATION**

**Section [13]**

**Boiler No. 9**

**Emissions Unit Control Equipment/Method: Control 1 of 2**

1. Control Equipment/Method Description:  <b>Low NOx Burners</b>
2. Control Device or Method Code: <b>024</b>

**Emissions Unit Control Equipment/Method: Control 2 of 2**

1. Control Equipment/Method Description:  <b>Flue gas recirculation</b>
2. Control Device or Method Code: <b>026</b>

**Emissions Unit Control Equipment/Method: Control \_\_\_ of \_\_\_**

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

**Emissions Unit Control Equipment/Method: Control \_\_\_ of \_\_\_**

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



**EMISSIONS UNIT INFORMATION**

Section [13]

Boiler No. 9

**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: <b>99</b>		2. Emission Point Type Code: <b>1</b>	
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: <b>V</b>	6. Stack Height: <b>60 feet</b>	7. Exit Diameter: <b>6 feet</b>	
8. Exit Temperature: <b>379°F</b>	9. Actual Volumetric Flow Rate: <b>72,948cfm</b>	10. Water Vapor: <b>%</b>	
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:			

**EMISSIONS UNIT INFORMATION****Section [13]****Boiler No. 9****D. SEGMENT (PROCESS/FUEL) INFORMATION****Segment Description and Rate: Segment 1 of 1**

1. Segment Description (Process/Fuel Type): <b>Natural Gas Combustion</b>		
2. Source Classification Code (SCC): <b>1-02-006-02</b>		3. SCC Units: <b>MCuft Burned</b>
4. Maximum Hourly Rate:	5. Maximum Annual Rate: <b>1,845,732</b>	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit: <b>1,020<sup>1</sup></b>
10. Segment Comment:  <b>As a result of elimination of Boiler 10 from the permit, the total fuel allowed for both boilers combined (Boiler No. 9 and Boiler No. 10) is now proposed as Boiler No. 9 only. In Phase I, Boiler No. 9 shall not exceed 1,845,732 thousand standard cubic feet per 12-month rolling period (MSCF/yr) of natural gas.</b>		

**Segment Description and Rate: Segment \_ of \_**

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

<sup>1</sup> The natural gas heat content has ranged from 1010 Btu/cuft to 1040 Btu/cuft based on supplier data.

**EMISSIONS UNIT INFORMATION**

**Section [13]**

**Boiler No. 9**

**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
PM/PM <sub>10</sub>	-----	-----	EL
PM <sub>2.5</sub>	-----	-----	EL
CO	026	-----	EL
VOC	026	-----	NS
SO <sub>2</sub>	-----	-----	NS
NO <sub>x</sub>	024	026	EL



**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: <b>ESPSD</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>240 tons/year</b>	4. Equivalent Allowable Emissions: lb/hour* <b>240 1tons/year*</b>
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method): <b>Allowable annual emissions are for the powerhouse group (Boilers 4, 5, 6, 7, 8, 9, and cogen) (see RAI Response 5/3/11).</b>	

**Allowable Emissions Allowable Emissions 2 of 2**

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

**Allowable Emissions Allowable Emissions    of**

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





**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: <b>ESPSD</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>143 tons/year</b>	4. Equivalent Allowable Emissions: lb/hour* <b>143 tons/year*</b>
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method): <b>Allowable annual emissions are for the powerhouse group (Boilers 4, 5, 6, 7, 8, 9, and cogen) (see RAI Response 5/3/11).</b>	

**Allowable Emissions** Allowable Emissions 2 of 2

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

**Allowable Emissions** Allowable Emissions    of   

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

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –  
POTENTIAL/ESTIMATED FUGITIVE 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: <b>CO</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: lb/hour <b>93.9 tons/year</b>		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: <b>93.9 tons/yr</b>  Reference: <b>Permit No. 0330040-029-AV</b>		7. Emissions Method Code: <b>0</b>	
8.a. Baseline Actual Emissions (if required): <b>175.2 tons/year</b>		8.b. Baseline 24-month Period: From: <b>1/1/2003 to 12/31/2004</b>	
9.a. Projected Actual Emissions (if required): <b>231.36 tons/year</b>		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:			
11. Potential, Fugitive, and Actual Emissions Comment: <b>Baseline actual emissions include powerhouse group and do not include demand growth, see Attachment A, Table 1a for complete emissions comparison</b>			

**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: <b>ESCPSD</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>93.9 tons/year</b>	4. Equivalent Allowable Emissions: lb/hour <b>93.9 tons/year</b>
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions \_\_\_\_ of \_\_\_\_

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

Allowable Emissions Allowable Emissions \_\_\_\_ of \_\_\_\_

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



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

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

**Allowable Emissions** Allowable Emissions of \_\_\_\_\_

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: lb/hr	4. Equivalent Allowable Emissions: 7.04 lb/hour          tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

**Allowable Emissions** Allowable Emissions \_\_\_\_\_ of \_\_\_\_\_

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

**Allowable Emissions** Allowable Emissions \_\_\_\_\_ of \_\_\_\_\_

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



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

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

**Allowable Emissions** Allowable Emissions of

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

**Allowable Emissions** Allowable Emissions \_\_\_\_ of \_\_\_\_

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

**Allowable Emissions** Allowable Emissions \_\_\_\_ of \_\_\_\_

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

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –  
POTENTIAL/ESTIMATED FUGITIVE 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: <b>NO<sub>x</sub></b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: lb/hour <b>34.6 tons/year</b>		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: <b>34.6</b>  Reference: <b>Permit No. 0330040-029-AV</b>		7. Emissions Method Code: <b>0</b>	
8.a. Baseline Actual Emissions (if required): <b>1,021.2 tons/year</b>		8.b. Baseline 24-month Period: From: <b>1/1/2002 to 12/31/2003</b>	
9.a. Projected Actual Emissions (if required): <b>1249.91tons/year</b>		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:			
11. Potential, Fugitive, and Actual Emissions Comment: <b>Baseline emissions include powerhouse group and do not include demand growth, see Attachment A, Table 1a for complete emissions comparison</b>			



**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 2

1. Basis for Allowable Emissions Code: <b>RULE</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>0.2 lb/MMBtu* (30-day rolling average)</b>	4. Equivalent Allowable Emissions: lb/hour                      tons/year
5. Method of Compliance: <b>NO<sub>x</sub> CEMs</b>	
6. Allowable Emissions Comment (Description of Operating Method): <b>*NO<sub>x</sub> emissions are limited to 0.2 lbs per MMBtu (30-day rolling average), by 40 CFR 60 Subpart Db.</b>	

Allowable Emissions Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: <b>ESCPSD</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>34.6 tons/year</b>	4. Equivalent Allowable Emissions: lb/hour <b>34.6tons/year</b>
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions \_\_\_\_ of \_\_\_\_

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

**EMISSIONS UNIT INFORMATION**

**Section [13]**

**Boiler No. 9**

**G. VISIBLE EMISSIONS INFORMATION**

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

**Visible Emissions Limitation:** Visible Emissions Limitation    of   

1. Visible Emissions Subtype: <b>VE20</b>	2. Basis for Allowable Opacity: <input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: <b>20 %</b> Exceptional Conditions: <b>27 %</b> Maximum Period of Excess Opacity Allowed: <b>6 min/hour</b>	
4. Method of Compliance:	
5. Visible Emissions Comment: <b>FDEP Rule 62-296.405(1)(a).</b>	

**Visible Emissions Limitation:** Visible Emissions Limitation    of   

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

**EMISSIONS UNIT INFORMATION**

**Section [13]**

**Boiler No. 9**

**H. CONTINUOUS MONITOR INFORMATION**

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

**Continuous Monitoring System:** Continuous Monitor 1 of 1

1. Parameter Code: <b>EM</b>	2. Pollutant(s): <b>NOx</b>
3. CMS Requirement:	<input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: <b>Thermo Electron</b> Model Number: <b>42i</b> Serial Number: <b>0701720041</b>	
5. Installation Date: <b>May 31, 2007</b>	6. Performance Specification Test Date: <b>July 27, 2010</b>
7. Continuous Monitor Comment: <b>NOx CEM as per 40 CFR Part 60 Subpart Db.</b>  <b>Note Subpart Db requires an oxygen CEMS, data as follows: Yokagawa Oxygen analyzer serial # 0701720041, installation and performance testing same as above.</b>	

**Continuous Monitoring System:** Continuous Monitor \_ of \_

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

**EMISSIONS UNIT INFORMATION**

**Section [13]**

**Boiler No. 9**

**I. EMISSIONS UNIT ADDITIONAL INFORMATION**

**Additional Requirements for All Applications, Except as Otherwise Stated**

1. Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>3/21/11</u>
2. Fuel Analysis or Specification: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>3/21/11</u>
3. Detailed Description of Control Equipment: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>3/21/11</u>
4. Procedures for Startup and Shutdown: (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>3/21/11</u> <input type="checkbox"/> Not Applicable (construction application)
5. Operation and Maintenance Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>3/21/11</u> <input type="checkbox"/> Not Applicable
6. Compliance Demonstration Reports/Records: <input type="checkbox"/> Attached, Document ID: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> Previously Submitted, Date: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> To be Submitted, Date (if known): _____ Test Date(s)/Pollutant(s) Tested: _____ <input checked="" type="checkbox"/> Not Applicable Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.
7. Other Information Required by Rule or Statute: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

**EMISSIONS UNIT INFORMATION**  
**Section [13]**  
**Boiler No. 9**

**I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)**

**Additional Requirements for Air Construction Permit Applications**

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

**Additional Requirements for Title V Air Operation Permit Applications**

1. Identification of Applicable Requirements: <input checked="" type="checkbox"/> Attached, Document ID: <u>APM-FI-C5</u> <input type="checkbox"/> Not Applicable
2. Compliance Assurance Monitoring: <input type="checkbox"/> Attached, Document ID: <input checked="" type="checkbox"/> Not Applicable
3. Alternative Methods of Operation: <input type="checkbox"/> Attached, Document ID: <input checked="" type="checkbox"/> Not Applicable
4. Alternative Modes of Operation (Emissions Trading): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

**Additional Requirements Comment**

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## **EMISSIONS UNIT INFORMATION**

### **Section [12]**

#### **Cogeneration**

### **III. EMISSIONS UNIT INFORMATION**

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

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

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

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



**EMISSIONS UNIT INFORMATION**

**Section [12]**

**Cogeneration**

**Emissions Unit Control Equipment/Method: Control 1 of 1**

1. Control Equipment/Method Description:

**Steam Injection, Low NOx Burners (duct burners)**

2. Control Device or Method Code: **28, 24**

**Emissions Unit Control Equipment/Method: Control \_\_\_ of \_\_\_**

1. Control Equipment/Method Description:

2. Control Device or Method Code:

**Emissions Unit Control Equipment/Method: Control \_\_\_ of \_\_\_**

1. Control Equipment/Method Description:

2. Control Device or Method Code:

**Emissions Unit Control Equipment/Method: Control \_\_\_ of \_\_\_**

1. Control Equipment/Method Description:

2. Control Device or Method Code:



# EMISSIONS UNIT INFORMATION

Section [12]

Cogeneration

## 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: million Btu/hr <sup>a</sup>
4. Maximum Incineration Rate: pounds/hr tons/day
5. Requested Maximum Operating Schedule: 24 hours/day 52 weeks/year 7 days/week 8,760 hours/year
6. Operating Capacity/Schedule Comment: <b><sup>a</sup>The maximum allowable heat input is 184 MMBtu per hour for the heat recovery steam generator Duct Burner. The maximum allowable heat input for the Combustion Turbine varies with the ambient air temperature as specified in Table A-1 of Permit No. 0330040-029-AV. Table A-1 is used to determine rated capacity. Ambient temperatures other than table values can be linearly interpolated or extrapolated.</b>  <b>For a period of ten years from the effective date of Permit No. 0330040-036-AC, total heat input for EU 003 (Boiler No. 8), 004 (Boiler No. 7), 014 (Boiler No. 4), 015 (Boiler No. 5), 016 (Boiler No. 6), 032 (Cogeneration Plant) and 099 (Boiler No. 9) shall not exceed more than 16,360,362 MMBtu/yr from all fuels in any 12-month rolling period.</b>

**EMISSIONS UNIT INFORMATION**

Section [12]

Cogeneration

**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: <b>32</b>		2. Emission Point Type Code: <b>1</b>	
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: <b>V</b>	6. Stack Height: <b>100</b> feet	7. Exit Diameter: <b>15</b> feet	
8. Exit Temperature: <b>332°F<sup>a</sup></b>	9. Actual Volumetric Flow Rate: <b>826,004</b> acfm <sup>a</sup>	10. Water Vapor: <b>%<sup>a</sup></b>	
11. Maximum Dry Standard Flow Rate: dscfm		12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: <b>16</b> East (km): <b>476</b> North (km): <b>3385</b>		14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment:  <b><sup>a</sup>Fields No. 8 and No. 9 per TRC Emission Test Report dated September 17, 2010, (field No. 9 will vary with ambient temperature)-.</b>			

## EMISSIONS UNIT INFORMATION

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### D. SEGMENT (PROCESS/FUEL) INFORMATION

#### Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): <b>Natural Gas Combustion - Turbine</b>		
2. Source Classification Code (SCC): <b>2-02-002-01</b>		3. SCC Units: <b>Million Cubic Feet</b>
4. Maximum Hourly Rate: <b>1.061</b>	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit: <b>1,020<sup>1</sup></b>
10. Segment Comment:  <b>The maximum allowable heat input for the Combustion Turbine varies with the ambient air temperature as specified in Table A-1 of Permit No. 0330040-029-AV. Based on 20 deg. F ambient temperature.</b>		

#### Segment Description and Rate: Segment 2 of 2

1. Segment Description (Process/Fuel Type): <b>Natural Gas Combustion – Duct Burner</b>		
2. Source Classification Code (SCC): <b>2-88-888-02</b>		3. SCC Units: <b>Million Cubic Feet</b>
4. Maximum Hourly Rate: <b>0.18</b>	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit: <b>1,020</b>
10. Segment Comment: <b>The maximum allowable heat input is 184 MMBtu per hour for the heat recovery steam generator Duct Burner.</b>  <b>184 MMBtu/hr x 1MMCuFt/1,020 MMBTU Burned = 0.18 MMCuFt burned/hr</b>		

<sup>1</sup> The natural gas heat content has ranged from 1010 Btu/cuft to 1040 Btu/cuft based on supplier data.

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**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
<b>PM/PM<sub>10</sub></b>	-----	-----	<b>EL</b>
<b>PM<sub>2.5</sub></b>	-----	-----	<b>EL</b>
<b>CO</b>	-----	-----	<b>EL</b>
<b>VOC</b>	-----	-----	<b>EL</b>
<b>SO<sub>2</sub></b>	-----	-----	<b>NS</b>
<b>NO<sub>x</sub></b>	<b>028</b>	<b>024</b>	<b>EL</b>

**EMISSIONS UNIT INFORMATION**

**POLLUTANT DETAIL INFORMATION**

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PM/PM<sub>10</sub>

**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: <b>PM/PM<sub>10</sub></b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: lb/hour <b>240 tons/year</b>		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: <b>PSD Avoidance Limit</b>		7. Emissions Method Code:	
Reference:		<b>0</b>	
8.a. Baseline Actual Emissions (if required): <b>273 tons/year</b>		8.b. Baseline 24-month Period: From: <b>1/1/2003</b> To: <b>12/31/2004</b>	
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:			
11. Potential, Fugitive, and Actual Emissions Comment: <b>Potential annual emissions are for the powerhouse group (Boilers 4, 5, 6, 7, 8, 9, and cogen) (see RAI Response 5/3/11).</b>  <b>Baseline emissions include powerhouse group and do not include demand growth, see Attachment A, Table 1a for complete emissions comparison</b>			

**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: <b>ESPSD</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>240 tons/year</b>	4. Equivalent Allowable Emissions: lb/hour* <b>240 1tons/year*</b>
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method): <b>Allowable annual emissions are for the powerhouse group (Boilers 4, 5, 6, 7, 8, 9, and cogen) (see RAI Response 5/3/11).</b>	

**Allowable Emissions** Allowable Emissions 2 of 2

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

**Allowable Emissions** Allowable Emissions    of   

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

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

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

**Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions**

1. Pollutant Emitted: <b>PM2.5</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: lb/hour <b>143 tons/year</b>		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: <b>PSD Avoidance Limit</b>  Reference:		7. Emissions Method Code: <b>0</b>	
8.a. Baseline Actual Emissions (if required): <b>169.3 tons/year</b>		8.b. Baseline 24-month Period: From: <b>1/1/2003</b> To: <b>12/31/2004</b>	
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:			
11. Potential, Fugitive, and Actual Emissions Comment: <b>Potential annual emissions are for the powerhouse group (Boilers 4, 5, 6, 7, 8, 9, and cogen) (see RAI Response 5/3/11).</b>  <b>Baseline emissions include powerhouse group and do not include demand growth, see Attachment A, Table 1a for complete emissions comparison</b>			

**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: <b>ESPSD</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>143 tons/year</b>	4. Equivalent Allowable Emissions: lb/hour* <b>143 tons/year*</b>
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method): <b>Allowable annual emissions are for the powerhouse group (Boilers 4, 5, 6, 7, 8, 9, and cogen) (see RAI Response 5/3/11).</b>	

**Allowable Emissions** Allowable Emissions 2 of 2

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

**Allowable Emissions** Allowable Emissions    of   

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



**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –  
POTENTIAL/ESTIMATED FUGITIVE 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: <b>CO</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: <b>83.5 lb/hour                      365.7 tons/year</b>		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: <b>83.5 lb/hr</b> Reference: <b>Permit 0330040-029-AV</b>		7. Emissions Method Code: <b>0</b>	
8.a. Baseline Actual Emissions (if required): <b>175.2 tons/year</b>		8.b. Baseline 24-month Period: From: <b>1/1/2003 to 12/31/2004</b>	
9.a. Projected Actual Emissions (if required): <b>231.36 tons/year</b>		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  <b>[83.5 lb/hour x 8,760 hours/yr x 1 ton/2,000 lb] = 365.7 TPY (Estimated for informational purposes only.)</b>			
11. Potential, Fugitive, and Actual Emissions Comment: <b>Baseline emissions include powerhouse group and do not include demand growth, see Attachment A, Table 1a for complete emissions comparison</b>			

**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: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>83.5 lb/hr</b>	4. Equivalent Allowable Emissions: lb/hour      tons/year
5. Method of Compliance: <b>EPA Method 10, testing is required only upon permit renewal</b>	
6. Allowable Emissions Comment (Description of Operating Method): <b>Permit No. 0330040-029-AV, AC17-213374</b>	

Allowable Emissions Allowable Emissions \_\_\_\_ of \_\_\_\_

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

Allowable Emissions Allowable Emissions \_\_\_\_ of \_\_\_\_

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

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –  
POTENTIAL/ESTIMATED FUGITIVE 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: <b>VOC</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: <b>10.9 lb/hour                      47.7 tons/year</b>		4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to                      tons/year			
6. Emission Factor: <b>10.9 lb/hr</b>  Reference: <b>Permit AC17-213374</b>		7. Emissions Method Code: <b>0</b>	
8.a. Baseline Actual Emissions (if required): <b>47.7 tons/year</b>		8.b. Baseline 24-month Period: From: <b>1/1/2004 to 12/31/2005</b>	
9.a. Projected Actual Emissions (if required): <b>63.55 tons/year</b>		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:  <b>[10.9 lb/hour x 8,760 hours/yr x 1 ton/2,000 lb] = 47.7 TPY (Estimated for informational purposes only.)</b>			
11. Potential, Fugitive, and Actual Emissions Comment: <b>Baseline emissions include powerhouse group and do not include demand growth, see Attachment A, Table 1a for complete emissions comparison</b>			

**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: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>10.9 lb/hr</b>	4. Equivalent Allowable Emissions: lb/hour                      tons/year
5. Method of Compliance: <b>EPA test Method 25A. Testing is required only upon permit renewal.</b>	
6. Allowable Emissions Comment (Description of Operating Method): <b>Permit No. 0330040-029-AV</b>	

**Allowable Emissions** Allowable Emissions \_\_\_\_ of \_\_\_\_

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

**Allowable Emissions** Allowable Emissions \_\_\_\_ of \_\_\_\_

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

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –  
 POTENTIAL/ESTIMATED FUGITIVE 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: <b>NO<sub>x</sub></b>	2. Total Percent Efficiency of Control:	
3. Potential Emissions: <b>106.6 lb/hour</b>	<b>466.9 tons/year</b>	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: <b>106.6 lb/hour</b>  Reference: <b>0330040-029-AV</b>		7. Emissions Method Code: <b>2</b>
8.a. Baseline Actual Emissions (if required): <b>1,021.2 tons/year</b>	8.b. Baseline 24-month Period: From: <b>1/1/2002 to 12/31/2003</b>	
9.a. Projected Actual Emissions (if required): <b>1249.91 tons/year</b>	9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: <b>[106.6 lb/hour x 8,760 hours/yr x 1 ton/2,000 lb] = 466.9 TPY (Estimated for informational purposes only.)</b>		
11. Potential, Fugitive, and Actual Emissions Comment: <b>Baseline emissions include powerhouse group and do not include demand growth, see Attachment A, Table 1a for complete emissions comparison</b>		

**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 2

1. Basis for Allowable Emissions Code: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>106.6 lb/hr</b>	4. Equivalent Allowable Emissions: lb/hour                      tons/year
5. Method of Compliance: <b>Test method 20 or 7e, testing is required only upon permit renewal</b>	
6. Allowable Emissions Comment (Description of Operating Method): <b>Combined emissions (combustion turbine &amp; duct burner)</b>	

**Allowable Emissions** Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: <b>RULE</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>0.2 lb/MMBtu</b>	4. Equivalent Allowable Emissions: lb/hour                      tons/year
5. Method of Compliance: <b>Test method 20 or 7e, testing is required only upon permit renewal</b>	
6. Allowable Emissions Comment (Description of Operating Method): <b>Duct Burner: 36.8 lb/hr (at maximum allowable operating rate of 184 MMBtu/hr heat input)</b>	

**Allowable Emissions** Allowable Emissions \_\_\_\_ of \_\_\_\_

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

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –  
 POTENTIAL/ESTIMATED FUGITIVE EMISSIONS**

**(Optional for unregulated emissions units.)**

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

**Potential, Estimated Fugitive and Baseline & Projected Actual Emissions**

1. Pollutant Emitted: SO2		2. Total Percent Efficiency of Control:	
3. Potential Emissions: lb/hour		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:  Reference:		7. Emissions Method Code:	
8.a. Baseline Actual Emissions (if required): 3,563.9 tons/year		8.b. Baseline 24-month Period: From: 1/1/2003 to 12/31/2004	
9.a. Projected Actual Emissions (if required): 4,603.99 tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions:			
11. Potential, Fugitive, and Actual Emissions Comment: <b>Baseline actual emissions include powerhouse group and do not include demand growth, see Attachment A, Table 1a for complete emissions comparison</b>			

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

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

**Allowable Emissions** Allowable Emissions of \_\_\_\_\_

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

**Allowable Emissions** Allowable Emissions \_\_\_\_\_ of \_\_\_\_\_

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

**Allowable Emissions** Allowable Emissions \_\_\_\_\_ of \_\_\_\_\_

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



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**G. VISIBLE EMISSIONS INFORMATION**

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

**Visible Emissions Limitation:** Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: <b>VE20 – Visible Emissions</b>	2. Basis for Allowable Opacity: <input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: <b>20 %</b> Exceptional Conditions: <b>27 %</b> Maximum Period of Excess Opacity Allowed: <b>6 min/hour</b>	
4. Method of Compliance: <b>Annual VE Test EPA Method 9</b>	
5. Visible Emissions Comment:  <b>FDEP Rule 62-296.406(1) and Permit No. 033040-029-AV</b>	

**Visible Emissions Limitation:** Visible Emissions Limitation    of   

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

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**H. CONTINUOUS MONITOR INFORMATION**

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

**Continuous Monitoring System:** Continuous Monitor 1 of 1

1. Parameter Code: <b>Rule</b>	2. Pollutant(s): <b>Steam/Fuel Ratio</b>
3. CMS Requirement: <input type="checkbox"/> Rule <input type="checkbox"/> Other	
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:  <b>Rules 62-213.4404), and 62-210.700, F.A.C.</b>	

**Continuous Monitoring System:** Continuous Monitor \_\_\_\_ of \_\_\_\_

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

**EMISSIONS UNIT INFORMATION**

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**I. EMISSIONS UNIT ADDITIONAL INFORMATION**

**Additional Requirements for All Applications, Except as Otherwise Stated**

1. Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>3/21/11</u>
2. Fuel Analysis or Specification: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>3/21/11</u>
3. Detailed Description of Control Equipment: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>3/21/11</u>
4. Procedures for Startup and Shutdown: (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>3/21/11</u> <input type="checkbox"/> Not Applicable (construction application)
5. Operation and Maintenance Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>3/21/11</u> <input type="checkbox"/> Not Applicable
6. Compliance Demonstration Reports/Records: <input type="checkbox"/> Attached, Document ID: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> Previously Submitted, Date: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> To be Submitted, Date (if known): _____ Test Date(s)/Pollutant(s) Tested: _____ <input checked="" type="checkbox"/> Not Applicable Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.
7. Other Information Required by Rule or Statute: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable



**ATTACHMENT 2  
REVISED APPLICATION PAGES**

## APPLICATION INFORMATION

### Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Processing Fee
002	Area II Adipic Acid/TRU/SCR II	AC1B	NA
020	Cyclohexane Oxidation Process	AC1B	NA
042	Nitric Acid Plant	AC1B	NA
088 and 089	Area 480 KA and Area 480 KA Fugitives	AC1E	NA
081	Continuous Nylon Polymerization Lines	AC1C	NA
082	Batch Nylon Polymerization Lines	AC1C	NA
	Therminol Vaporizer No. 9	AC1E	NA
	Hydrogen Generating Plant No. 2	AC1D	NA
	Area II Adipic Acid – 1080 MAR Project Fugitive Emissions	AC1F	NA
014, 015, 016	Boilers Nos. 4, 5, and 6	AC1B	NA
004, 003	Boilers Nos. 7 and 8	AC1B	NA
099	Boilers No. 9	AC1B	NA
032	Cogeneration Plant	AC1B	NA

### Application Processing Fee

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

**EMISSIONS UNIT INFORMATION**

Section [1]

EU 002 – Area II Adipic Acid

**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: <b>02, 02A</b>		2. Emission Point Type Code: <b>2</b>	
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: <b>Nitric acid reaction and Cyclohexane oxidation off-gas are burned in the TRU.</b>			
5. Discharge Type Code: <b>V</b>	6. Stack Height: <b>85 feet</b>	7. Exit Diameter: <b>7 feet</b>	
8. Exit Temperature: <b>434°F</b>	9. Actual Volumetric Flow Rate: <b>98,000 acfm</b>	10. Water Vapor: <b>%</b>	
11. Maximum Dry Standard Flow Rate: dscfm		12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: <b>17</b> East (km): North (km):		14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment: <b>Based on September 28, 2010 Engineering Test. Stack discharge parameters may change with the addition of SNCR control technology.</b>  <b>Stack parameters are for the TRU (ID 02).</b>			

**EMISSIONS UNIT INFORMATION**

Section [2]

**Cyclohexane Oxidation Process**

**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: <b>02, 20A, LP 401, LP461, EV401, EV461</b>		2. Emission Point Type Code: <b>2</b>	
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: <b>Cyclohexane oxidation off-gases are burned in the TRU or OBUD.</b>			
5. Discharge Type Code: <b>V</b>	6. Stack Height: <b>85 feet</b>	7. Exit Diameter: <b>7 feet</b>	
8. Exit Temperature: <b>434 °F</b>	9. Actual Volumetric Flow Rate: <b>98,000 acfm</b>	10. Water Vapor: <b>%</b>	
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: <b>Stack parameters are for the TRU (ID 02).</b>  <b>Stack parameters based on September 28, 2010 engineering test. VOC and CO emissions are controlled by TRU. When TRU is down VOC and CO emissions are controlled by OBUD. Parameters above are for TRU.</b>  <b>Stack parameters for OBUD: 50 ft stack height; 5.5 ft stack diameter; 1,300 °F and 59,000 acfm. Venting from the high pressure scrubber occurs during change from TRU to OBUD during emergency events.</b>			



**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: <b>PM/PM10</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: lb/hour _____ 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:	
8.a. Baseline Actual Emissions (if required): <b>22.68 tons/year</b>		8.b. Baseline 24-month Period: From: <b>1/1/2003</b> To: <b>12/31/2004</b>	
9.a. Projected Actual Emissions (if required): <b>73.21 tons/year</b>		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input checked="" type="checkbox"/> 10 years	
10. Calculation of Emissions: <b>Projected actual emissions include emissions from continuous and batch polymerization lines and 7.95 TPY from recent line conversion projects.</b>  <b>CP27 Conversion project (Permit No. 0330040-020-AC) – 0.5 TPY</b> <b>CP26 Conversion project (Permit No. 0330040-021-AC) – 1.0 TPY</b> <b>CP24&amp;25 Conversion project (Permit No. 0330040-023-AC) – 1.5 TPY</b> <b>CP28&amp;29 Conversion project (Permit No. 0330040-025-AC) – 1.45 TPY</b> <b>CP22&amp;23 Conversion project (Permit No. 0330040-030-AC) – 1.8 TPY</b> <b>CP16&amp;17 Conversion project (Permit No. 0330040-033-AC) – 1.7 TPY</b>  <p align="center"><b>Total 7.95 TPY</b></p>			
11. Potential, Fugitive, and Actual Emissions Comment: <b>Baseline emissions do not include demand growth, see Attachment A, Table 1 for complete baseline, demand growth and projected actual emissions comparison.</b>			

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

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

**Allowable Emissions** Allowable Emissions \_\_\_ of \_\_\_

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

**Allowable Emissions** Allowable Emissions \_\_\_ of \_\_\_

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

**Allowable Emissions** Allowable Emissions \_\_\_ of \_\_\_

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

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

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

**Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions**

1. Pollutant Emitted: <b>PM2.5</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: lb/hour		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:	
8.a. Baseline Actual Emissions (if required): <b>22.68</b> tons/year		8.b. Baseline 24-month Period: From: <b>1/1/2003</b> To: <b>12/31/2004</b>	
9.a. Projected Actual Emissions (if required): <b>68.74</b> tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input checked="" type="checkbox"/> 10 years	
10. Calculation of Emissions: <b>Projected actual emissions include emissions from continuous and batch polymerization lines and 3.48 TPY from recent line conversion projects.</b>			
11. Potential, Fugitive, and Actual Emissions Comment: <b>Baseline emissions do not include demand growth, see Attachment A, Table 1 for complete baseline, demand growth and projected actual emissions comparison.</b>			

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

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

**Allowable Emissions** Allowable Emissions \_\_ of \_\_

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

**Allowable Emissions** Allowable Emissions \_\_ of \_\_

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

**Allowable Emissions** Allowable Emissions \_\_ of \_\_

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

**EMISSIONS UNIT INFORMATION**

**Section [7]**

**Hydrogen Generating Plant No. 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: <b>H2A, H2B</b>		2. Emission Point Type Code: <b>1</b>	
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: <b>V</b>	6. Stack Height: <b>TPD feet</b>	7. Exit Diameter: <b>TBD feet</b>	
8. Exit Temperature: <b>TBD °F</b>	9. Actual Volumetric Flow Rate: <b>TBD acfm</b>	10. Water Vapor: <b>%</b>	
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:  <b>TBD = To be determined. Project currently under engineering review.</b>			

**EMISSIONS UNIT INFORMATION**

**Section [3]**

**Nitric Acid Plant**

**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: <b>42</b>		2. Emission Point Type Code: <b>1</b>	
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: <b>V</b>	6. Stack Height: <b>130 feet</b>	7. Exit Diameter: <b>5 feet</b>	
8. Exit Temperature: <b>354 °F</b>	9. Actual Volumetric Flow Rate: <b>145,319 acfm</b>	10. Water Vapor: <b>%</b>	
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:  <b>Stack parameters based on stack test dated December 7, 2010.</b>			

**EMISSIONS UNIT INFORMATION**

**Section [4]**

**Area 480 KA**

**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: <b>88</b>		2. Emission Point Type Code: <b>1</b>	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: <b>Flare #1 and Flare #2</b>			
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:			
5. Discharge Type Code: <b>V</b>	6. Stack Height: <b>60 feet</b>	7. Exit Diameter: <b>2 feet</b>	
8. Exit Temperature:	9. Actual Volumetric Flow Rate:	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:			

**EMISSIONS UNIT INFORMATION**

Section [5]

**Continuous and Batch Nylon Polymerization Lines**

**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: <b>17, 18, 19, 21, 22, 23, 24, 25, 26, 27, 78, 81, 48, EL1, EL2, EL3, EL4, EL5, EL6, EL7, EL8, DPPC1, DPPC2, PM-1, PM-2, PM-3, PM-4, PM-5</b>		2. Emission Point Type Code: <b>3</b>	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:  <b>Distillation column controls emissions from continuous polymerization evaporator and pre-reactors and from batch polymer evaporator and autoclaves.</b>			
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:			
5. Discharge Type Code: <b>V</b>	6. Stack Height: <b>45 feet</b>	7. Exit Diameter: <b>2 feet</b>	
8. Exit Temperature: <b>212 °F</b>	9. Actual Volumetric Flow Rate: <b>16,920 acfm</b>	10. Water Vapor: <b>%</b>	
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:  <b>Stack parameters are for the yarn plant distillation column (ID 81).</b>			



**EMISSIONS UNIT INFORMATION**

Section [6]

**Therminol Vaporizers No. 9**

**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: <b>VAP9</b>		2. Emission Point Type Code: <b>1</b>	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: <b>Therminol Vaporizer No. 9</b>			
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:			
5. Discharge Type Code: <b>V</b>	6. Stack Height: <b>TBD</b> feet	7. Exit Diameter: <b>TBD</b> feet	
8. Exit Temperature: <b>TBD</b> °F	9. Actual Volumetric Flow Rate: <b>TBD</b> 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:  <b>TBD = To be determined. Project currently under engineering review.</b>			

**EMISSIONS UNIT INFORMATION**

**POLLUTANT DETAIL INFORMATION**

Section [3]  
Nitric Acid Plant

Page [1] of [1]  
NOx

**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: <b>NOx</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: lb/hour <b>285 tons/year</b>		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: <b>3 lb per ton 100% Nitric Acid</b> Reference: <b>Title V Permit 0330040-029-AV; 40 CFR 60.72(a)(1)</b>		7. Emissions Method Code: <b>0</b>	
8.a. Baseline Actual Emissions (if required): <b>316.7 tons/year</b>		8.b. Baseline 24-month Period: From: <b>1/1/2002</b> To: <b>12/31/2003</b>	
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:  <b>Baseline emissions do not include demand growth, see Table 1a of RAI Response 5/3/11 for emission calculations.</b>			
11. Potential, Fugitive, and Actual Emissions Comment:  <b>Potential emissions based on requested limit of 285 TPY.</b>			

**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 3**

1. Basis for Allowable Emissions Code: <b>RULE</b>	2. Future Effective Date of Allowable Emissions:
Allowable Emissions and Units: <b>3 lb per ton 100% Nitric Acid</b>	4. Equivalent Allowable Emissions: lb/hour <b>285 tons/year</b>
5. Method of Compliance: <b>NOx CEM</b>	
6. Allowable Emissions Comment (Description of Operating Method): <b>A limit of 3 lb per ton 100% Nitric Acid is allowed under 40 CFR 60.72(a)(1).</b>	

**Allowable Emissions Allowable Emissions 2 of 3**

1. Basis for Allowable Emissions Code: <b>ESPSD</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>285 tons per year</b>	4. Equivalent Allowable Emissions: lb/hour <b>285 tons/year</b>
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method): <b>Emissions based on projected actual emissions of 310 TPY.</b>	

**Allowable Emissions Allowable Emissions 3 of 3**

1. Basis for Allowable Emissions Code: <b>RULE</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>643.5 lb of NO/ 594 lb of NO<sub>2</sub>, per Event</b>	4. Equivalent Allowable Emissions: lb/hour <b>tons/year</b>
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method): <b>Event is equal to startup, shutdown, or malfunction and may not exceed 3 hours in any 24-hour period. 40 CFR 60.73(e), Rule 62-210.700(1), F.A.C.</b>	

**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: <b>VOC</b>		2. Total Percent Efficiency of Control:	
3. Potential Emissions: lb/hour <b>94.21 tons/year</b>		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:  Reference:		7. Emissions Method Code: <b>0</b>	
8.a. Baseline Actual Emissions (if required): <b>101.7 tons/year</b>		8.b. Baseline 24-month Period: From: <b>1/1/2004</b> To: <b>12/31/2005</b>	
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:  <b>Baseline emissions do not include demand growth, see Attachment A, Table 1 for complete emission calculations.</b>			
11. Potential, Fugitive, and Actual Emissions Comment:  <b>Potential emissions based on requested limit of 94.21 TPY. Sum of HP, LP, and Tank Emissions.</b>			

**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 2

1. Basis for Allowable Emissions Code: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>10.4 lb/hr based on 24-hour average (OBUD only)</b>	4. Equivalent Allowable Emissions: <b>10.4 lb/hour          45.5 tons/year</b>
5. Method of Compliance: <b>EPA Method 25A</b>	
6. Allowable Emissions Comment (Description of Operating Method):  <b>Per Title V Permit 0330040-029-AV emission limitations are from the backup thermal oxidizer (OBUD) only.</b>	

**Allowable Emissions** Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: <b>ESPSD</b>	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: <b>94.21 tons/year</b>	4. Equivalent Allowable Emissions: <b>lb/hour          94.21 tons/year</b>
5. Method of Compliance: <b>Sum of HP, LP, and Tank Emissions.</b>	
6. Allowable Emissions Comment (Description of Operating Method):	

**Allowable Emissions** Allowable Emissions \_\_\_ of \_\_\_

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

**ATTACHMENT 3  
REVISED PLOT PLAN**

**ATTACHMENT 4  
SNCR MANUFACTURER INFORMATION**

International Headquarters  
PO Box 21220  
Tulsa, OK 74121-1220  
918/234-1800

Chris Buechler  
Ascend Performance Materials  
PO Box 97  
Gonzalez, FL 32560

April 6, 2011

Chris,  
Please see performance guarantee below:

**John Zink/KEU SNCR - DeNOx-system:**

***Guarantee of Emissions***

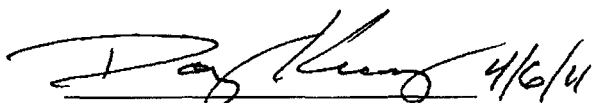
John Zink Company guarantees the performance as follows provided that the equipment is operated in compliance with John Zink operating and maintenance manual parameters, temperature parameters of between 960°C and 980°C, and within the normal design conditions. The operating and maintenance manual will be provided with the equipment order.

	Unit	Guaranteed	Expected
Outlet NO <sub>x</sub>	ppmv	100	50
NH <sub>3</sub> SLIP	ppmvd@ 7% vol Dry O <sub>2</sub>	40	<10

John Zink Company is responsible only for those emissions that pass through the thermal oxidizer system. Performance testing shall be conducted by the customer within sixty (60) days after the equipment has been placed in operation or no longer than one year after notification to ship, whichever occurs first. If performance tests are not executed within this time period, the Performance Guarantee shall be considered to have been met. Test protocol shall be mutually agreed upon. John Zink shall be notified in writing two weeks prior to any testing. It shall be the customer's responsibility to maintain equipment in good working order prior to and during testing. Performance testing is the customer's responsibility.

Subject to the provisions of John Zink Company's Limitation of Liability Clause, should the equipment not meet the Performance Guarantee, John Zink Company, in accordance with recognized engineering procedures and practices shall determine any design deficiencies. John Zink Company shall take such action as it may determine necessary to correct the equipment to meet such guarantees. Customer agrees to provide John Zink Company all necessary operating and historical data and access to the equipment when requested for the purpose of taking corrective action.

Doug Kenney

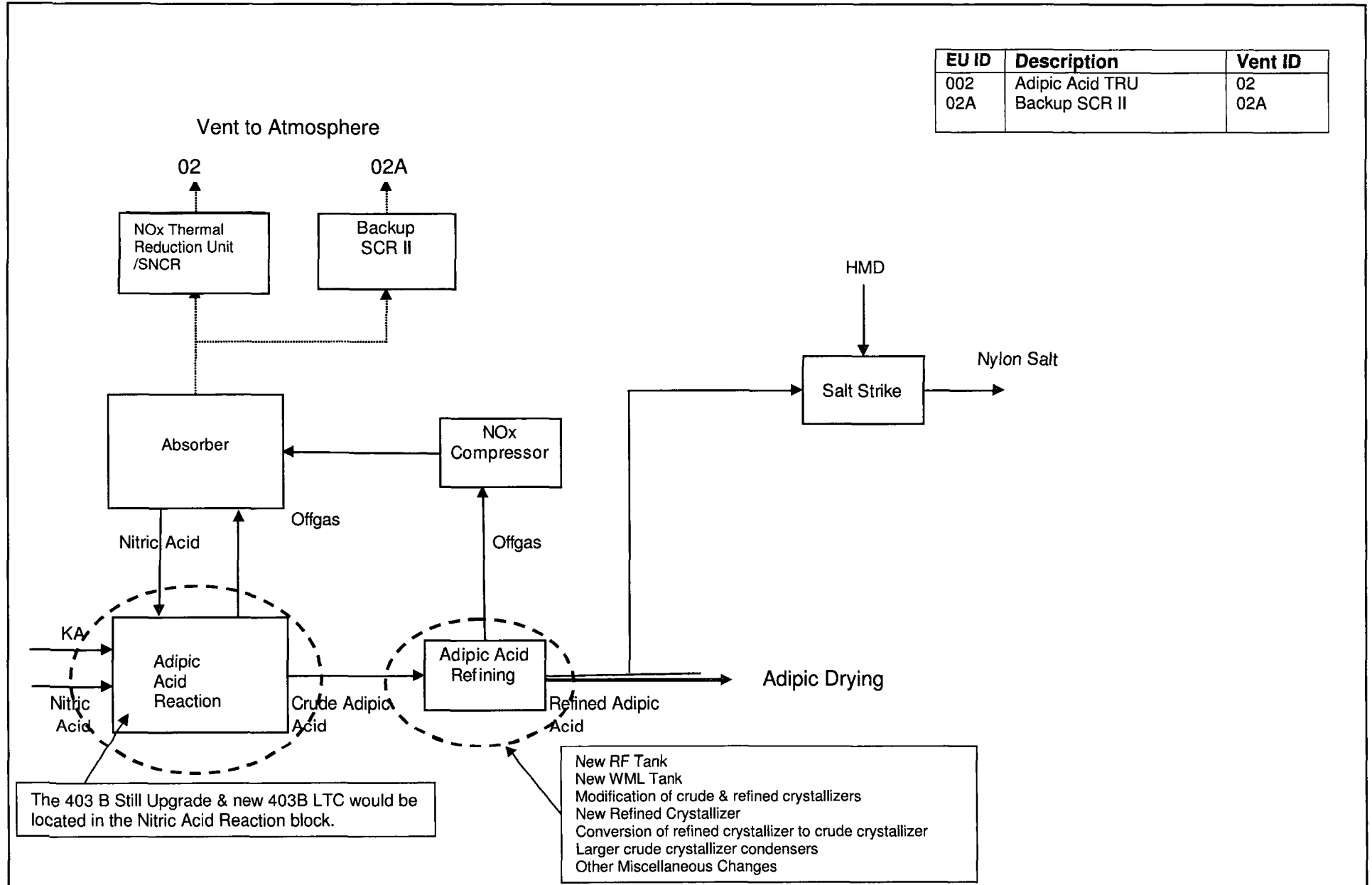


John Zink Company LLC  
Director Aftermarket Sales and Service  
Thermal Oxidizer Systems

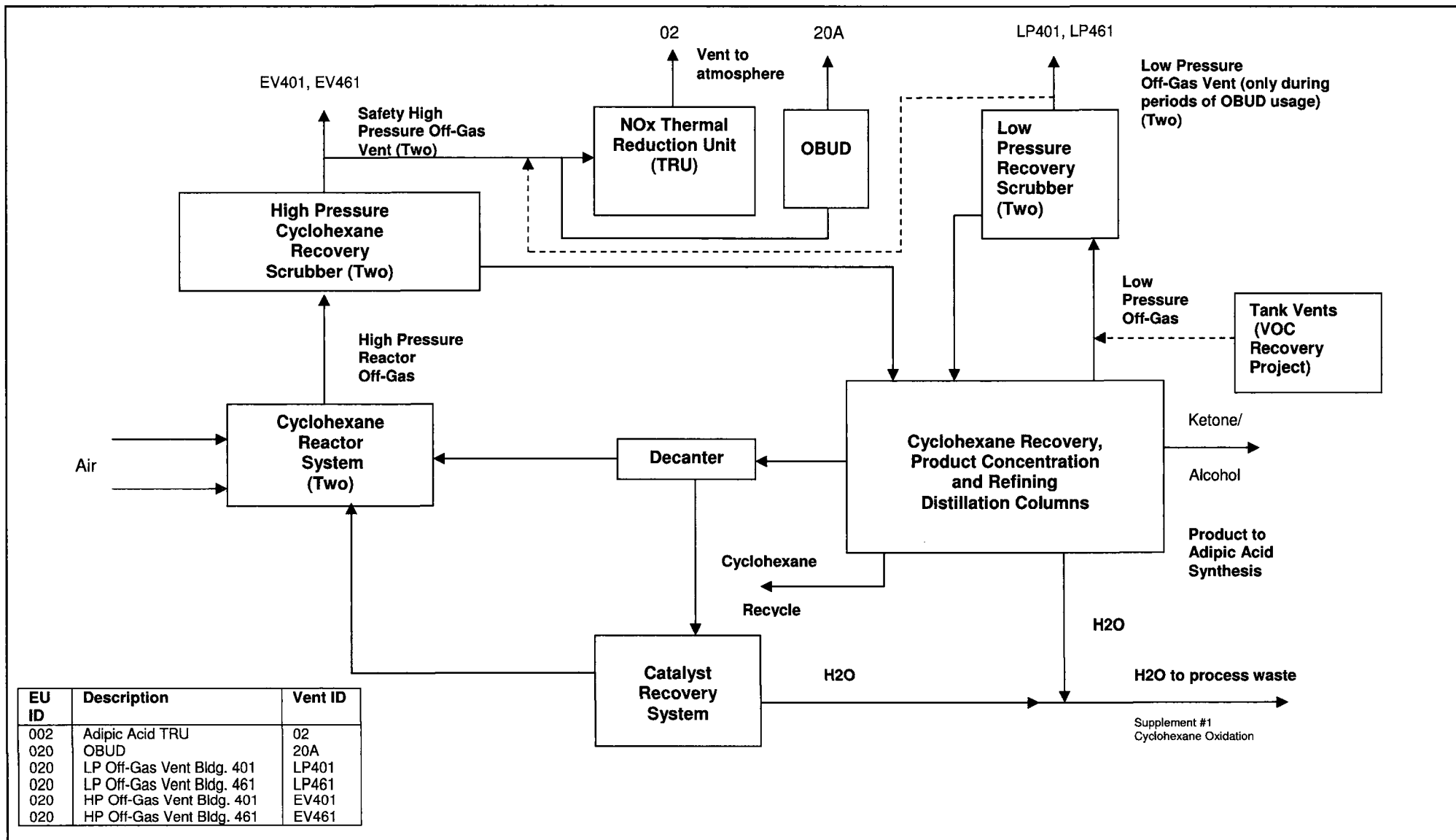


**ATTACHMENT 5  
REVISED PROCESS FLOW DIAGRAMS (PFDS)**

ATTACHMENT APM-EU1-I1  
Adipic Acid Process Flow Diagram



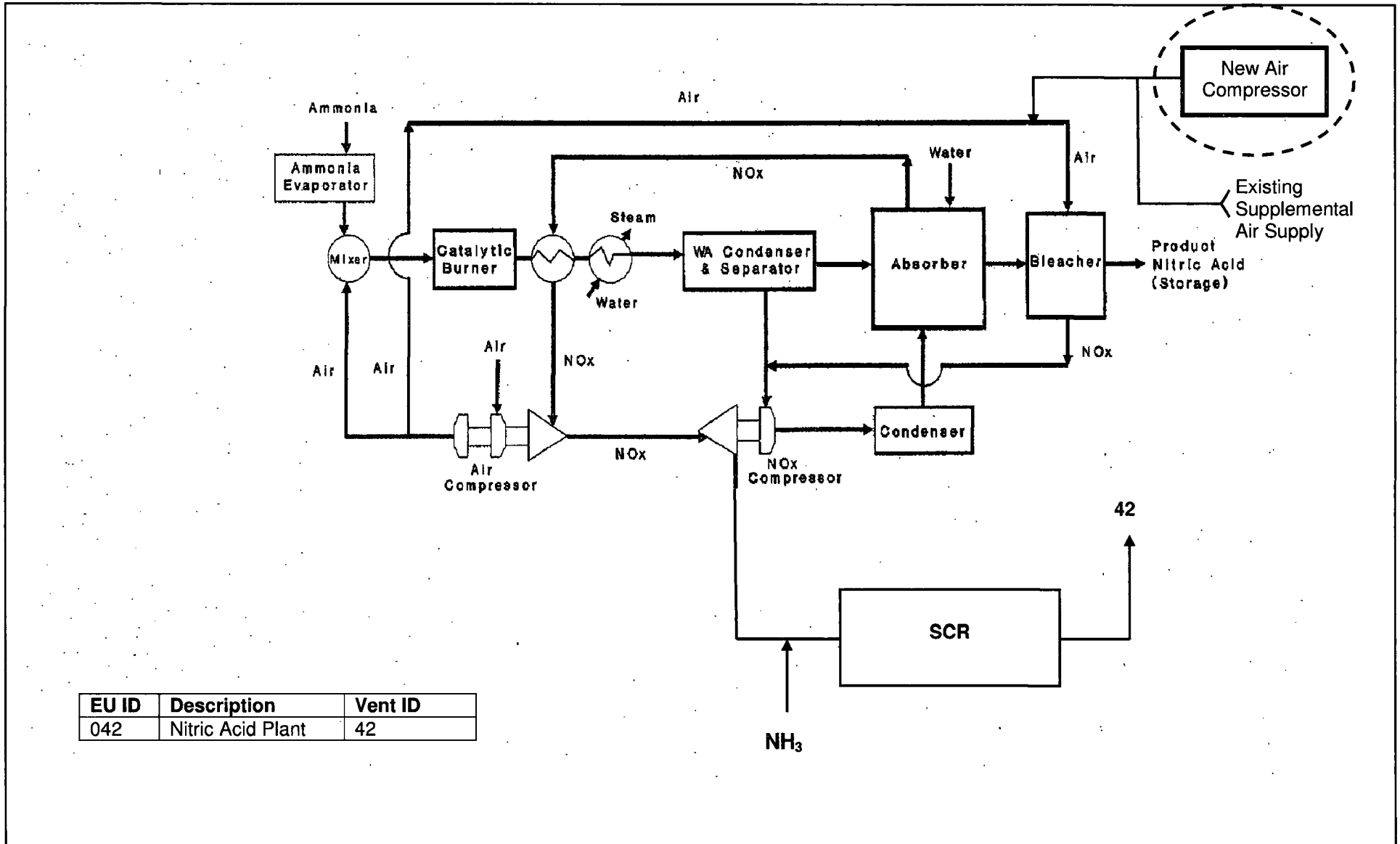
ATTACHMENT APM-EU2-I1  
Cyclohexane Oxidation Process Flow Diagram



EU ID	Description	Vent ID
002	Adipic Acid TRU	02
020	OBUD	20A
020	LP Off-Gas Vent Bldg. 401	LP401
020	LP Off-Gas Vent Bldg. 461	LP461
020	HP Off-Gas Vent Bldg. 401	EV401
020	HP Off-Gas Vent Bldg. 461	EV461

Supplement #1  
Cyclohexane Oxidation

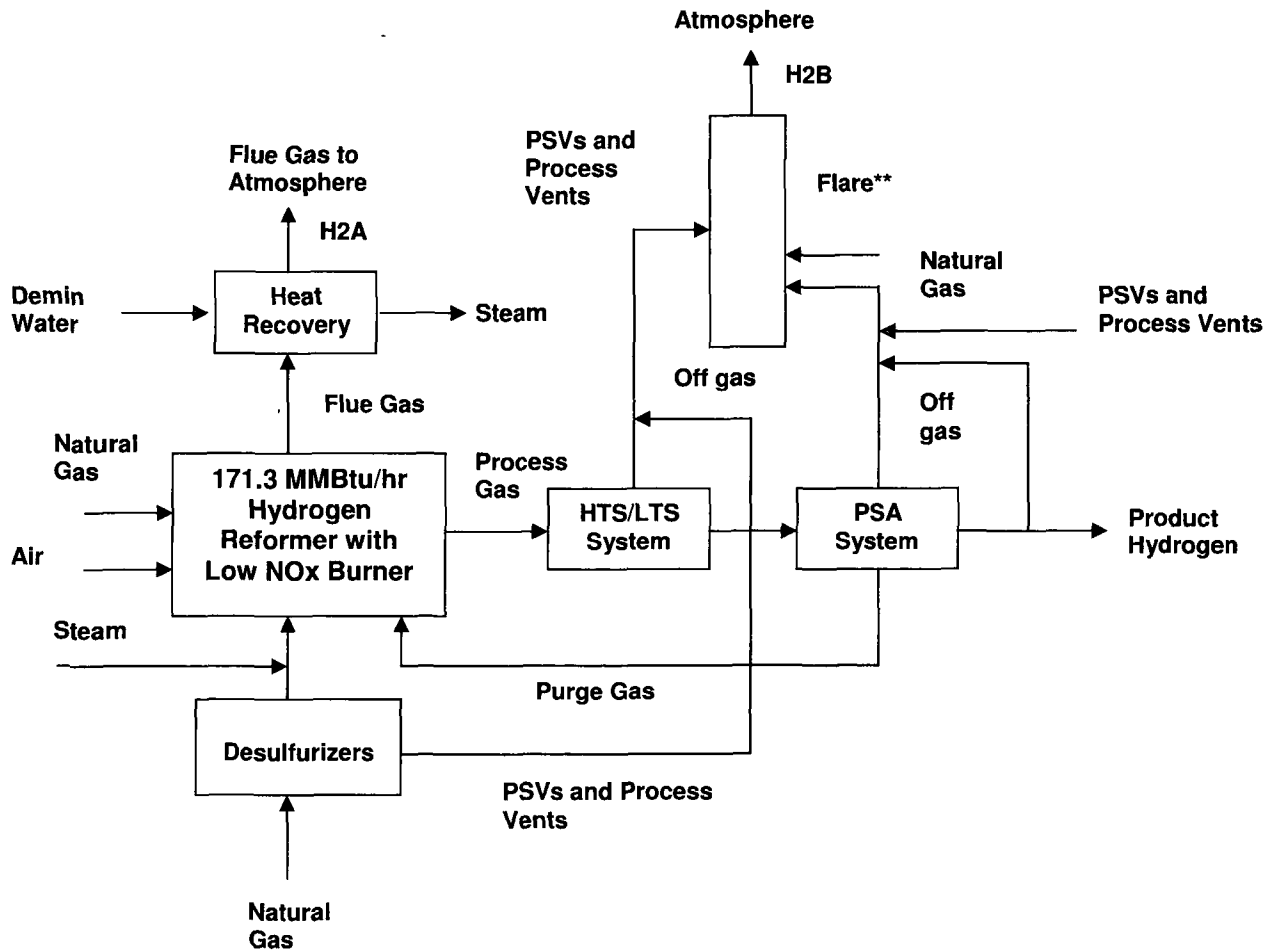
ATTACHMENT APM-EU3-I1  
Nitric Acid Plant Process Flow Diagram



EU ID	Description	Vent ID
042	Nitric Acid Plant	42

ATTACHMENT APM-EU7-I1  
Process Flow Diagram

Hydrogen Generating Plant

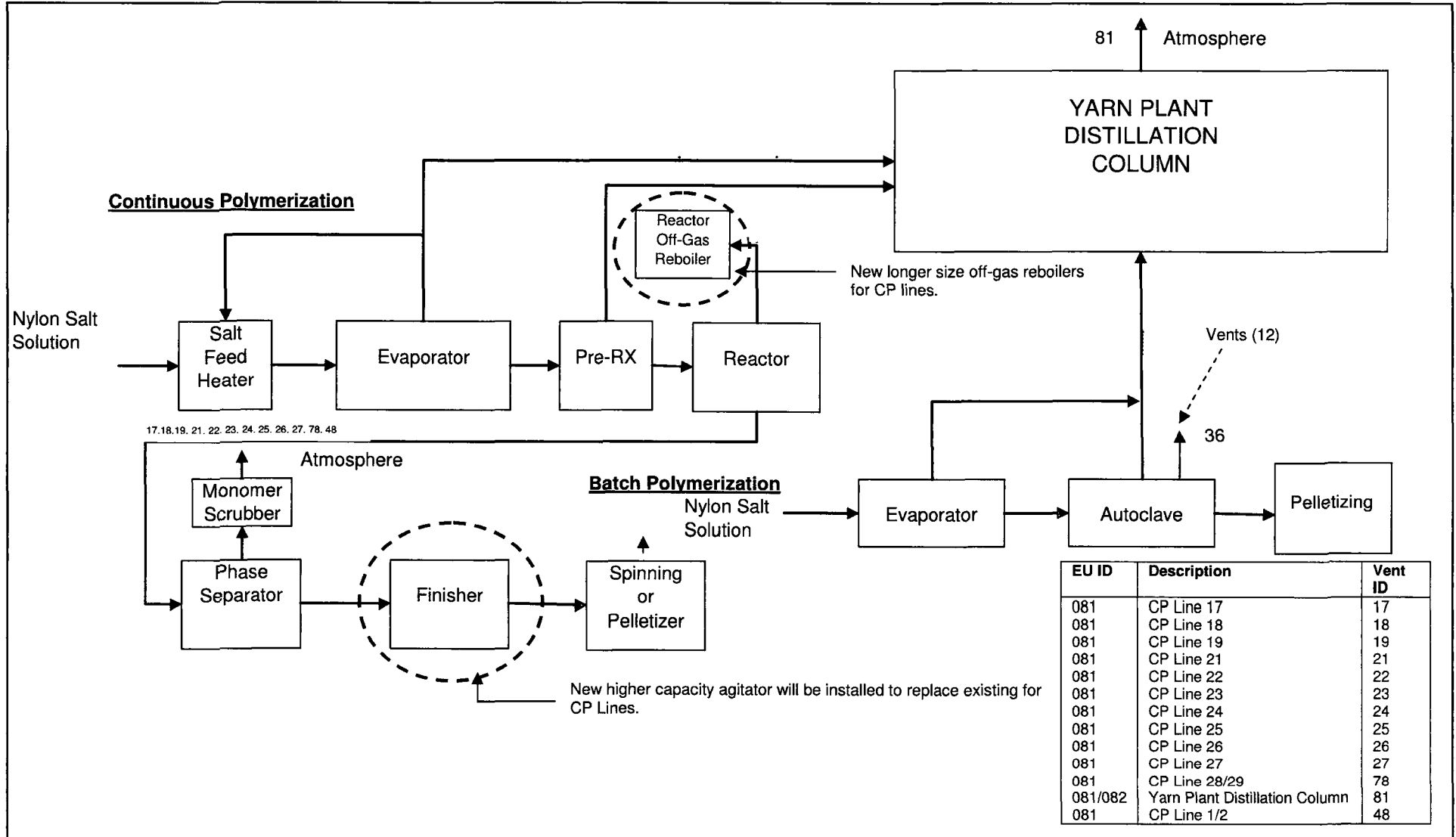


\*New plant will most likely not have LTS Rx.

\*\*Flare will we used to collect and dispose of combustible gases vented during SSM events.

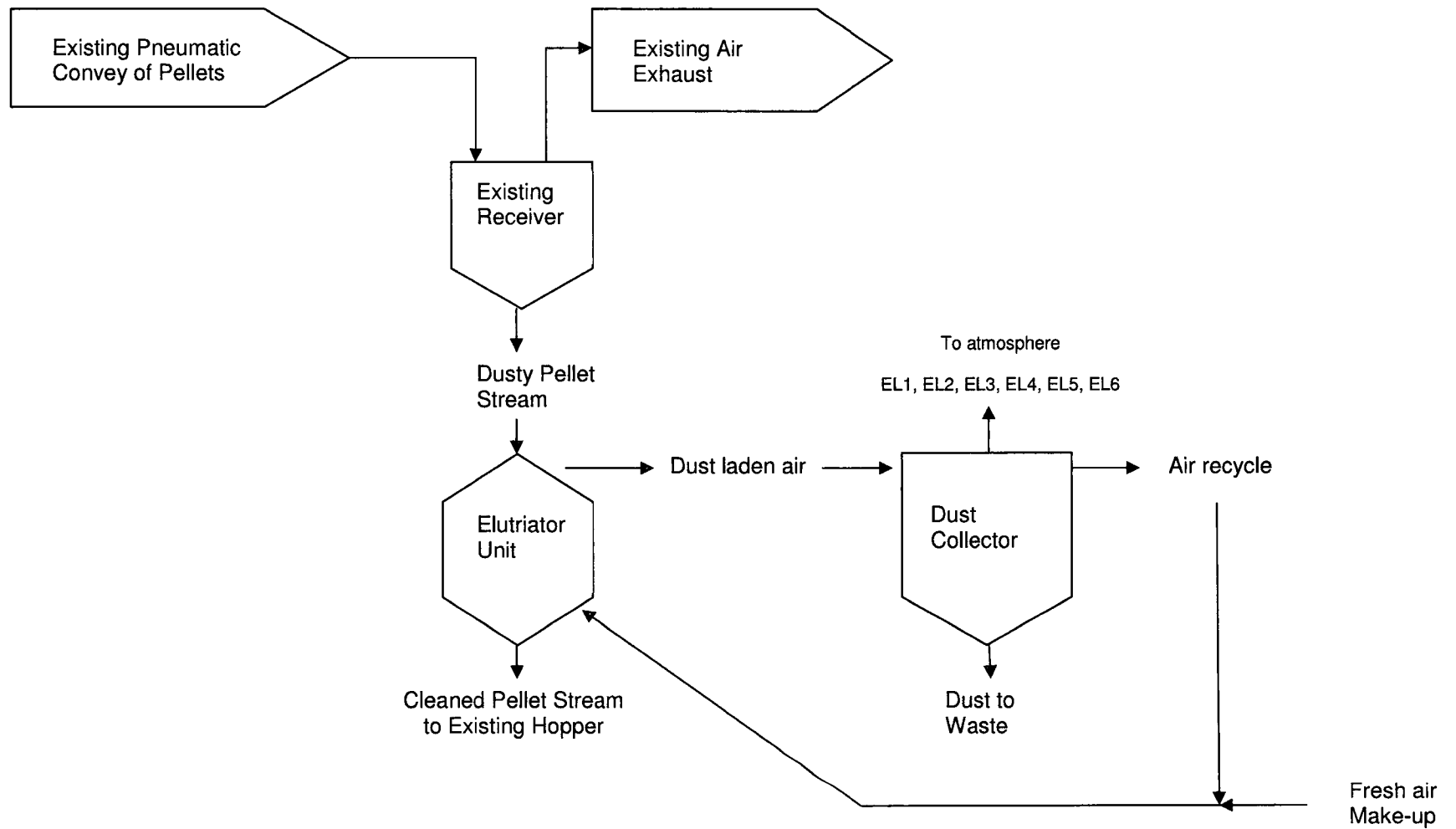
ATTACHMENT APM-EU5-I1  
Continuous/Batch Polymerization Process Flow Diagram

Emission Units 081 and 082



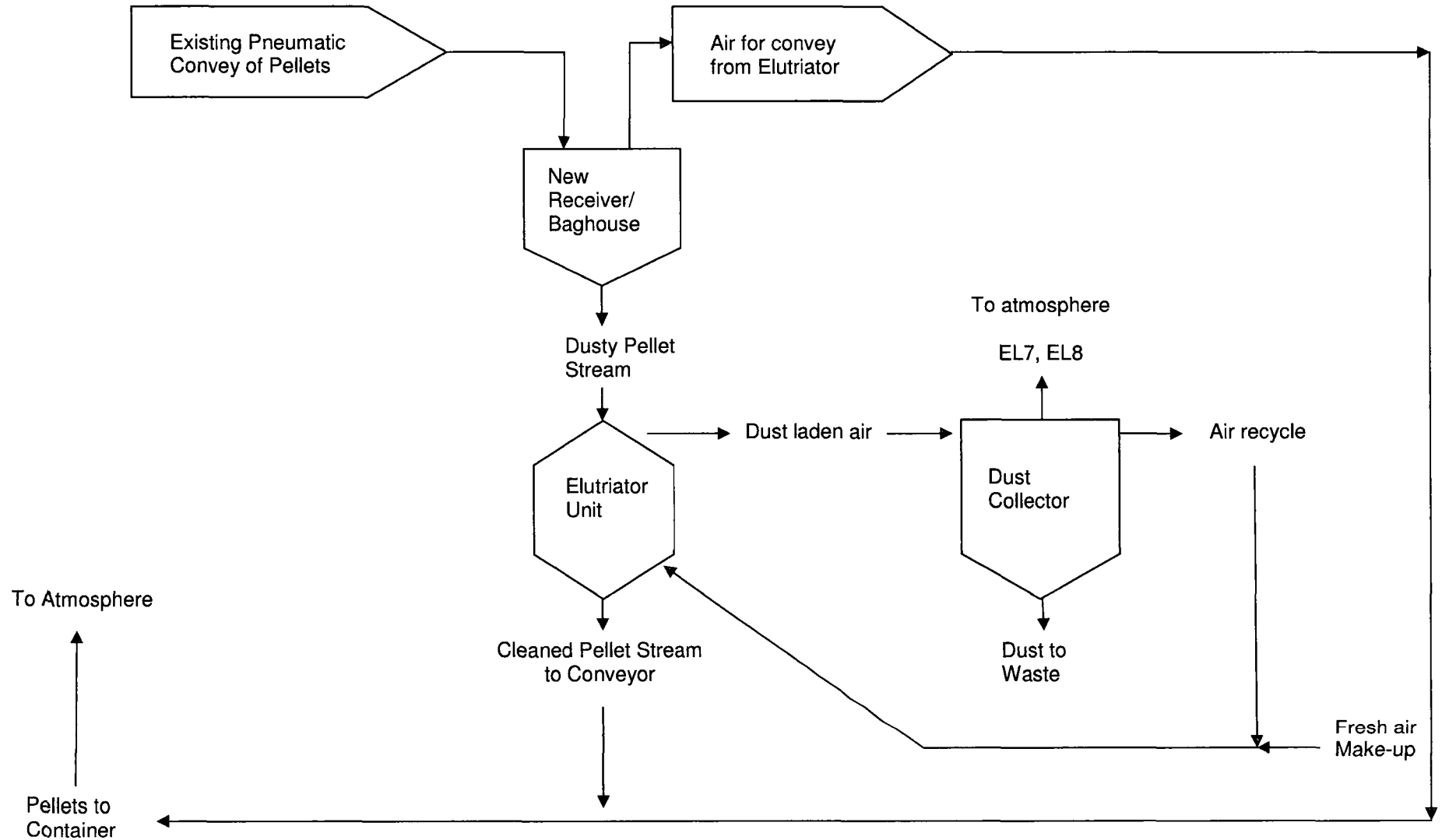
ATTACHMENT APM-EU5-I1  
Emission Units 081 and 082

Elutriator & Dust Collector With Gravity Pellet Discharge – Six Total



ATTACHMENT APM-EU5-I1  
Emission Units 081 and 082

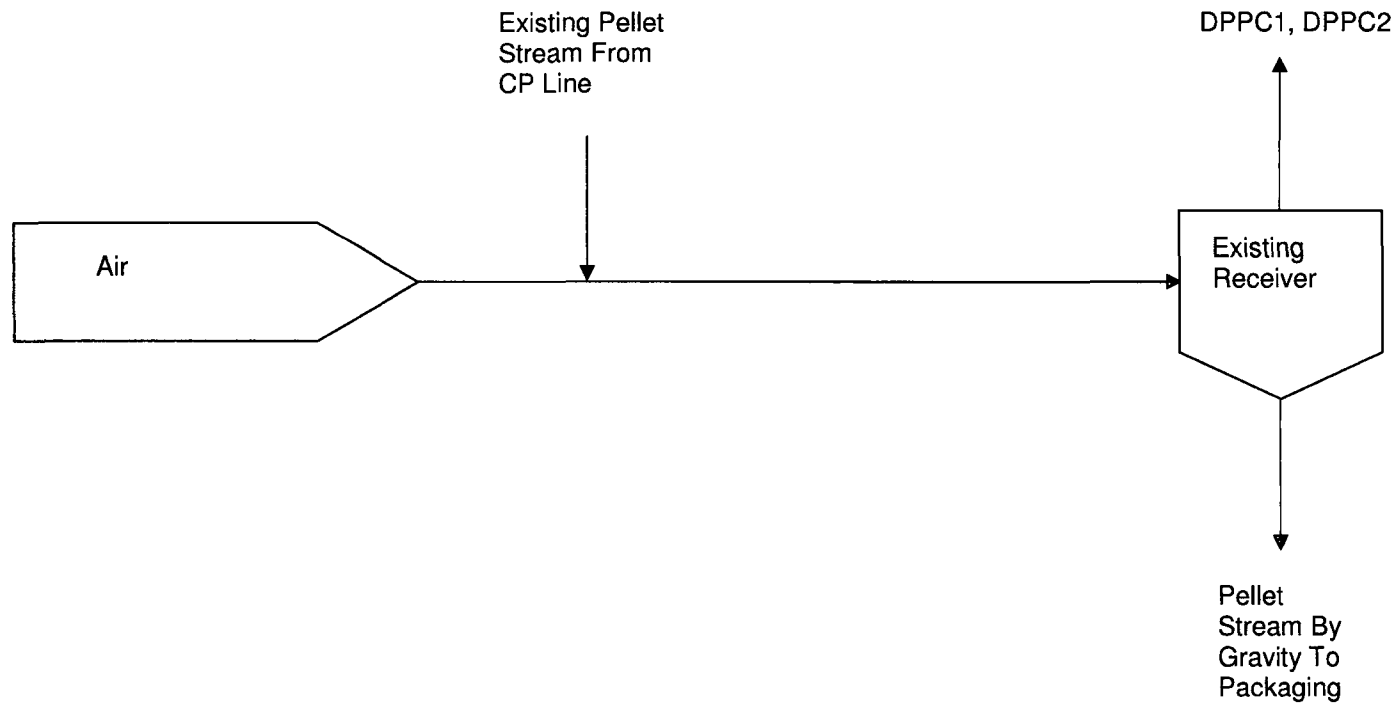
Elutriator & Dust Collector With Pneumatic Discharge – Two Total





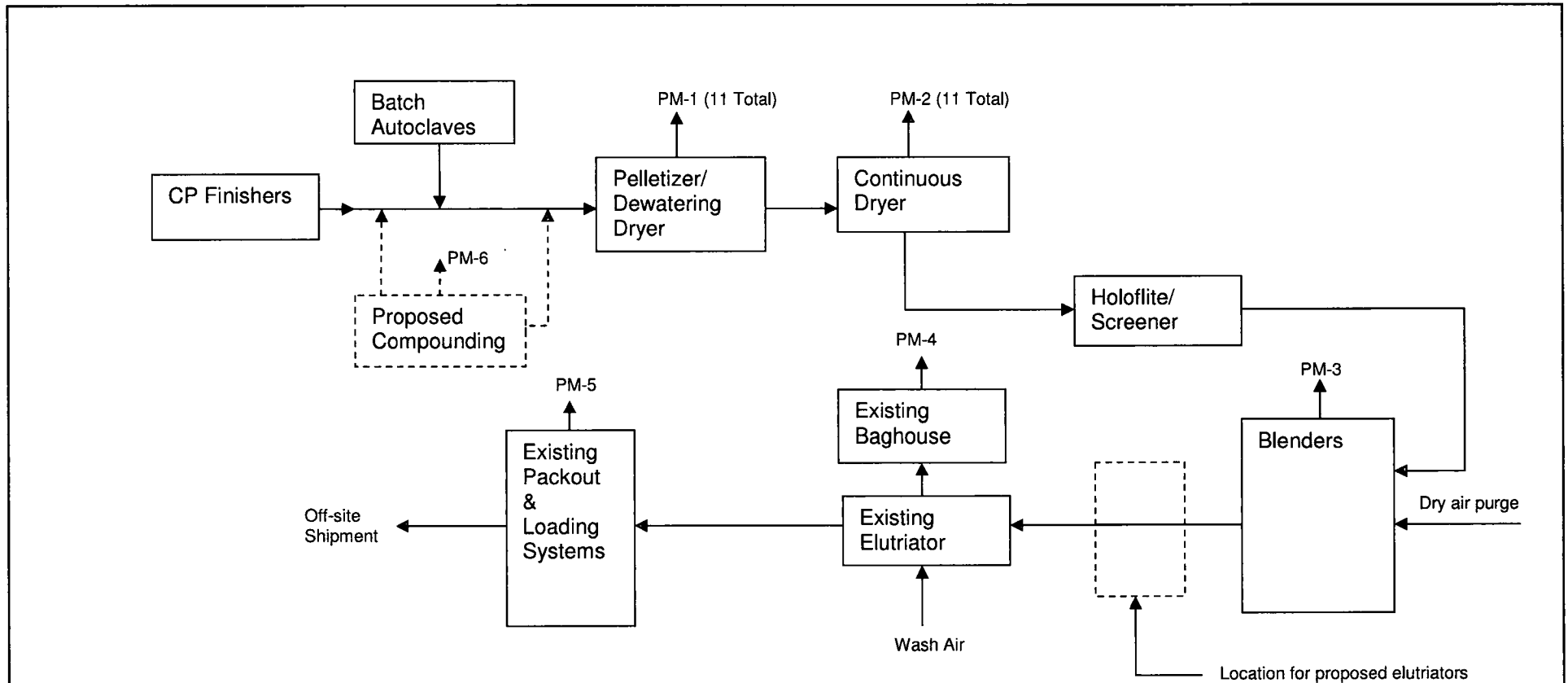
ATTACHMENT APM-EU5-I1  
Emission Units 081 and 082

Dilute Phase Pneumatic Conveyors – Two Total



ATTACHMENT APM-EU5-I1  
Continuous/Batch Polymerization Process Flow Diagram

Emission Units 081 and 082



**Notes:**

1. Some PM-1 vents are inside building.
2. Continuous dryer and holoelite not installed on all lines.
3. PM-3 vents are from various blender/silos on site (may have cyclone separators on top of blenders).
4. PM-4 vents are from existing elutriator and baghouse for CP 16/17 and some batch products, proposed new elutriators will be between blenders and packaging and use bag filters.
5. PM-5 vents are from conveyed material to 3 packaging/loading areas.
6. Proposed vent PM-6 is for the HEAF filter (including VOCs).

**ATTACHMENT 6  
NATURAL GAS SULFUR ANALYSIS**



# Report of Analysis

**Client:** Ascend Performance Materials, LLC  
**Job Location:** Mobile, AL, USA  
**Our Reference Number:** US290-0014115

**Client Reference Number:**  
NONE

**Sample ID:** 2011-MOBL-000407-001  
**Sample Designated As:** NATURAL GAS  
**Vessel/Location:** SUBMITTED NATURAL GAS  
**Representing:** NATURAL GAS - ASCEND

**Date Taken:** 09-March-2011  
**Date Submitted:** 09-March-2011  
**Date Tested:** 09-March-2011  
**Drawn By:** Client

Method	Test	Result	Units
ITM 6016	Determination of Sulfur by Gas Chromatography Total Sulfur	< 1.0	ppm

Signed: \_\_\_\_\_

Date: \_\_\_\_\_

Intertek  
James Herring, Laboratory Manager

**ATTACHMENT 7  
REVISED EMISSION CALCULATION TABLES**

WASTEWATER TREATMENT SUMMARY I 03-08-2011 11:17:23

Project Q:\Halcon VOC Emissions\BML Tank\BML Tank WATER9 Calculations 2004

COMPOUND	RATE (g/s) Air	Removal	Exit	Fraction Adsorb	error	emissions
CYCLOHEXANE	2.29E-01	.26	.	.7362	0.0000	0.0000 (7.21E+00 Mg/yr)
CYCLOHEXANOL	3.02E-02	.00	.	.9972	0.0000	0.0000 (9.54E-01 Mg/yr)
CYCLOHEXANONE	2.04E-04	.00	.	.9982	0.0000	0.0000 (6.44E-03 Mg/yr)
FORMIC ACID	2.90E-03	.00	.	.9993	0.0000	0.0000 (9.14E-02 Mg/yr)
TOTAL ALL COMPOUNDS	2.62E-01 g/s air emissions					
TOTAL ALL COMPOUNDS	8.27E+00 Mg/yr air emissions					

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Tank Identification and Physical Characteristics**

**Identification**

User Identification: 481TA56A  
City: Pensacola  
State: Florida  
Company: Ascend Performance Materials  
Type of Tank: Vertical Fixed Roof Tank  
Description: A Slurry Tank

**Tank Dimensions**

Shell Height (ft): 5.35  
Diameter (ft): 8.50  
Liquid Height (ft) : 2.10  
Avg. Liquid Height (ft): 2.10  
Volume (gallons): 891.42  
Turnovers: 238.50  
Net Throughput(gal/yr): 212,602.62  
Is Tank Heated (y/n): Y

**Paint Characteristics**

Shell Color/Shade: Aluminum/Specular  
Shell Condition: Good  
Roof Color/Shade: Aluminum/Specular  
Roof Condition: Good

**Roof Characteristics**

Type: Cone  
Height (ft) 0.00  
Slope (ft/ft) (Cone Roof) 0.00

**Breather Vent Settings**

Vacuum Settings (psig): 0.00  
Pressure Settings (psig) 0.00

Meteorological Data used in Emissions Calculations: Pensacola, Florida (Avg Atmospheric Pressure = 14.73 psia)

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Liquid Contents of Storage Tank**

**481TA56A - Vertical Fixed Roof Tank**  
**Pensacola, Florida**

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Cyclohexane	All	122.00	122.00	122.00	122.00	5.2544	5.2544	5.2544	84.1600			84.16	Option 2: A=6.841, B=1201.53, C=222.65

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Detail Calculations (AP-42)**

**481TA56A - Vertical Fixed Roof Tank**  
**Pensacola, Florida**

**Annual Emission Calculations**

Standing Losses (lb):	0.0000
Vapor Space Volume (cu ft):	184.4213
Vapor Density (lb/cu ft):	0.0708
Vapor Space Expansion Factor:	0.0000
Vented Vapor Saturation Factor:	0.5249
<b>Tank Vapor Space Volume:</b>	
Vapor Space Volume (cu ft):	184.4213
Tank Diameter (ft):	8.5000
Vapor Space Outage (ft):	3.2500
Tank Shell Height (ft):	5.3500
Average Liquid Height (ft):	2.1000
Roof Outage (ft):	0.0000
<b>Roof Outage (Cone Roof)</b>	
Roof Outage (ft):	0.0000
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0000
Shell Radius (ft):	4.2500
<b>Vapor Density</b>	
Vapor Density (lb/cu ft):	0.0708
Vapor Molecular Weight (lb/lb-mole):	84.1600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	5.2544
Daily Avg. Liquid Surface Temp. (deg. R):	581.6700
Daily Average Ambient Temp. (deg. F):	67.6708
Ideal Gas Constant R (psia cu ft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	581.6700
Tank Paint Solar Absorptance (Shell):	0.3900
Tank Paint Solar Absorptance (Roof):	0.3900
Daily Total Solar Insulation Factor (Btu/sqft day):	1,384.3333

Vapor Space Expansion Factor



Vapor Space Expansion Factor:	0.0000
Daily Vapor Temperature Range (deg. R):	0.0000
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	5.2544
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	5.2544
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	5.2544
Daily Avg. Liquid Surface Temp. (deg R):	581.6700
Daily Min. Liquid Surface Temp. (deg R):	581.6700
Daily Max. Liquid Surface Temp. (deg R):	581.6700
Daily Ambient Temp. Range (deg. R):	17.6917
Vented Vapor Saturation Factor:	0.5249
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	5.2544
Vapor Space Outage (ft):	3.2500
Working Losses (lb):	654.6480
Vapor Molecular Weight (lb/lb-mole):	84.1600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	5.2544
Annual Net Throughput (gal/yr.):	212,602.6175
Annual Turnovers:	238.5000
Turnover Factor:	0.2925
Maximum Liquid Volume (gal):	891.4156
Maximum Liquid Height (ft):	2.1000
Tank Diameter (ft):	8.5000
Working Loss Product Factor:	1.0000
Total Losses (lb):	654.6480

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Individual Tank Emission Totals**

**Emissions Report for: Annual**

**481TA56A - Vertical Fixed Roof Tank**  
**Pensacola, Florida**

Components	Losses(lbs)		
	Working Loss:	Breathing Loss:	Total Emissions:
Cyclohexane	654.65	0.00	654.65

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Tank Identification and Physical Characteristics**

**Identification**

User Identification: 481TA56B  
City: Pensacola  
State: Florida  
Company: Ascend Performance Materials  
Type of Tank: Vertical Fixed Roof Tank  
Description: B Slurry Tank

**Tank Dimensions**

Shell Height (ft): 5.35  
Diameter (ft): 8.50  
Liquid Height (ft) : 2.10  
Avg. Liquid Height (ft): 2.10  
Volume (gallons): 891.42  
Turnovers: 217.40  
Net Throughput(gal/yr): 193,793.75  
Is Tank Heated (y/n): Y

**Paint Characteristics**

Shell Color/Shade: Aluminum/Specular  
Shell Condition: Good  
Roof Color/Shade: Aluminum/Specular  
Roof Condition: Good

**Roof Characteristics**

Type: Cone  
Height (ft) 0.00  
Slope (ft/ft) (Cone Roof) 0.00

**Breather Vent Settings**

Vacuum Settings (psig): 0.00  
Pressure Settings (psig) 0.00

Meteorological Data used in Emissions Calculations: Pensacola, Florida (Avg Atmospheric Pressure = 14.73 psia)

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Liquid Contents of Storage Tank**

**481TA56B - Vertical Fixed Roof Tank**  
**Pensacola, Florida**

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Cyclohexane	All	122.00	122.00	122.00	122.00	5.2544	5.2544	5.2544	84.1600			84.16	Option 2: A=6.841, B=1201.53, C=222.65

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Detail Calculations (AP-42)**

**481TA56B - Vertical Fixed Roof Tank**  
**Pensacola, Florida**

**Annual Emission Calculations**

Standing Losses (lb):	0.0000
Vapor Space Volume (cu ft):	184.4213
Vapor Density (lb/cu ft):	0.0708
Vapor Space Expansion Factor:	0.0000
Vented Vapor Saturation Factor:	0.5249
<b>Tank Vapor Space Volume:</b>	
Vapor Space Volume (cu ft):	184.4213
Tank Diameter (ft):	8.5000
Vapor Space Outage (ft):	3.2500
Tank Shell Height (ft):	5.3500
Average Liquid Height (ft):	2.1000
Roof Outage (ft):	0.0000
<b>Roof Outage (Cone Roof)</b>	
Roof Outage (ft):	0.0000
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0000
Shell Radius (ft):	4.2500
<b>Vapor Density</b>	
Vapor Density (lb/cu ft):	0.0708
Vapor Molecular Weight (lb/lb-mole):	84.1600
<b>Vapor Pressure at Daily Average Liquid Surface Temperature (psia):</b>	5.2544
Daily Avg. Liquid Surface Temp. (deg. R):	581.6700
Daily Average Ambient Temp. (deg. F):	67.6708
<b>Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):</b>	10.731
Liquid Bulk Temperature (deg. R):	581.6700
Tank Paint Solar Absorptance (Shell):	0.3900
Tank Paint Solar Absorptance (Roof):	0.3900
<b>Daily Total Solar Insulation Factor (Btu/sqft day):</b>	1,384.3333

Vapor Space Expansion Factor

Vapor Space Expansion Factor:	0.0000
Daily Vapor Temperature Range (deg. R):	0.0000
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	5.2544
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	5.2544
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	5.2544
Daily Avg. Liquid Surface Temp. (deg R):	581.6700
Daily Min. Liquid Surface Temp. (deg R):	581.6700
Daily Max. Liquid Surface Temp. (deg R):	581.6700
Daily Ambient Temp. Range (deg. R):	17.6917
Vented Vapor Saturation Factor	0.5249
Vented Vapor Saturation Factor:	0.5249
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	5.2544
Vapor Space Outage (ft):	3.2500
Working Losses (lb):	621.6418
Vapor Molecular Weight (lb/lb-mole):	84.1600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	5.2544
Annual Net Throughput (gal/yr.):	193,793.7486
Annual Turnovers:	217.4000
Turnover Factor:	0.3047
Maximum Liquid Volume (gal):	891.4156
Maximum Liquid Height (ft):	2.1000
Tank Diameter (ft):	8.5000
Working Loss Product Factor:	1.0000
Total Losses (lb):	621.6418

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Individual Tank Emission Totals**

**Emissions Report for: Annual**

**481TA56B - Vertical Fixed Roof Tank**  
**Pensacola, Florida**

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Cyclohexane	621.64	0.00	621.64

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Tank Identification and Physical Characteristics**

**Identification**

User Identification: 481TA108  
City: Pensacola  
State: Florida  
Company: Ascend Performance Materials  
Type of Tank: Vertical Fixed Roof Tank  
Description: Flasher Condensate Tank

**Tank Dimensions**

Shell Height (ft): 5.70  
Diameter (ft): 5.91  
Liquid Height (ft) : 2.00  
Avg. Liquid Height (ft): 2.00  
Volume (gallons): 410.42  
Turnovers: 101.00  
Net Throughput(gal/yr): 39,810.70  
Is Tank Heated (y/n): Y

**Paint Characteristics**

Shell Color/Shade: Aluminum/Specular  
Shell Condition: Good  
Roof Color/Shade: Aluminum/Specular  
Roof Condition: Good

**Roof Characteristics**

Type: Dome  
Height (ft) 0.00  
Radius (ft) (Dome Roof) 5.91

**Breather Vent Settings**

Vacuum Settings (psig): 0.00  
Pressure Settings (psig) 0.00

Meteorological Data used in Emissions Calculations: Pensacola, Florida (Avg Atmospheric Pressure = 14.73 psia)

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Liquid Contents of Storage Tank**

**481TA108 - Vertical Fixed Roof Tank**  
**Pensacola, Florida**

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Cyclohexane	All	149.00	113.00	158.00	149.00	8.9193	4.3471	10.5123	84.1600			84.16	Option 2: A=6.841, B=1201.53, C=222.65

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Detail Calculations (AP-42)**

**481TA108 - Vertical Fixed Roof Tank**  
**Pensacola, Florida**

**Annual Emission Calculations**

Standing Losses (lb):	1,822.6414
Vapor Space Volume (cu ft):	112.6204
Vapor Density (lb/cu ft):	0.1149
Vapor Space Expansion Factor:	1.1346
Vented Vapor Saturation Factor:	0.3401
<b>Tank Vapor Space Volume:</b>	
Vapor Space Volume (cu ft):	112.6204
Tank Diameter (ft):	5.9100
Vapor Space Outage (ft):	4.1054
Tank Shell Height (ft):	5.7000
Average Liquid Height (ft):	2.0000
Roof Outage (ft):	0.4054
<b>Roof Outage (Dome Roof)</b>	
Roof Outage (ft):	0.4054
Dome Radius (ft):	5.9100
Shell Radius (ft):	2.9550
<b>Vapor Density</b>	
Vapor Density (lb/cu ft):	0.1149
Vapor Molecular Weight (lb/lb-mole):	84.1600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	8.9193
Daily Avg. Liquid Surface Temp. (deg. R):	608.6700
Daily Average Ambient Temp. (deg. F):	67.6708
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	608.6700
Tank Paint Solar Absorptance (Shell):	0.3900
Tank Paint Solar Absorptance (Roof):	0.3900
Daily Total Solar Insulation Factor (Btu/sqft day):	1,384.3333
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	1.1346

Daily Vapor Temperature Range (deg. R):	45.0000
Daily Vapor Pressure Range (psia):	6.1651
Breather Vent Press. Setting Range(psia):	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	8.9193
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	4.3471
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	10.5123
Daily Avg. Liquid Surface Temp. (deg R):	608.6700
Daily Min. Liquid Surface Temp. (deg R):	572.6700
Daily Max. Liquid Surface Temp. (deg R):	617.6700
Daily Ambient Temp. Range (deg. R):	17.6917
Vented Vapor Saturation Factor:	0.3401
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	8.9193
Vapor Space Outage (ft):	4.1054
Working Losses (lb):	329.9286
Vapor Molecular Weight (lb/lb-mole):	84.1600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	8.9193
Annual Net Throughput (gal/yr.):	39,810.6959
Annual Turnovers:	101.0000
Turnover Factor:	0.4637
Maximum Liquid Volume (gal):	410.4195
Maximum Liquid Height (ft):	2.0000
Tank Diameter (ft):	5.9100
Working Loss Product Factor:	1.0000
Total Losses (lb):	2,152.5700

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Individual Tank Emission Totals**

**Emissions Report for: Annual**

**481TA108 - Vertical Fixed Roof Tank**  
**Pensacola, Florida**

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Cyclohexane	329.93	1,822.64	2,152.57

High Pressure Offgas Composition

VOC Calcs

Component	Mass Fraction in Offgas
Methane (1)	7.370E-05
Ethane (1)	2.530E-04
Propane (1)	5.830E-04
Butane (2)	0.000E+00
Pentane (2)	0.000E+00
Hexane (1)	1.200E-06
Cyclohexane (1)	1.345E-03
Acetaldehyde (1)	2.027E-04
Acetone (2)	0.000E+00
MEK (1)	1.037E-04
Formaldehyde (1)	9.100E-07
Methanol (1)	6.600E-06
Cyclohexanol (1)	1.027E-04
Propionaldehyde (1)	5.680E-05
Benzene (1)	8.460E-07
Butanol (1)	2.844E-04
OTHER (2)	0.000E+00
<b>TOTAL ORGANICS</b>	

Calc lb VOC emissions/yr @ 15 SCFH (1.1714 pph) purge flow	
5.98	
0.01	
13.80	
2.08	
1.06	
0.01	
0.07	
1.05	
0.58	
2.92	
<b>TOTAL VOC's</b>	<b>27.57</b>



WASTEWATER TREATMENT SUMMARY I 03-08-2011 11:53:42

Project Q:\Halcon VOC Emissions\Amy's Calculations\481\481TA54B Boric Mother Liquor Tank\BML Tank WATER9 Calculations 2005

COMPOUND	RATE (g/s) Air	Removal	Exit	Fraction Adsorb	error	emissions
CYCLOHEXANE	2.59E-01	.25	.	.7427	0.0000	0.0000 (8.17E+00 Mg/yr)
CYCLOHEXANOL	3.40E-02	.00	.	.9973	0.0000	0.0000 (1.07E+00 Mg/yr)
CYCLOHEXANONE	2.29E-04	.00	.	.9983	0.0000	0.0000 (7.24E-03 Mg/yr)
FORMIC ACID	3.26E-03	.00	.	.9994	0.0000	0.0000 (1.03E-01 Mg/yr)
TOTAL ALL COMPOUNDS	2.96E-01 g/s air emissions					
TOTAL ALL COMPOUNDS	9.36E+00 Mg/yr air emissions					

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Tank Identification and Physical Characteristics**

**Identification**

User Identification:	481TA56A
City:	Pensacola
State:	Florida
Company:	Ascend Performance Materials
Type of Tank:	Vertical Fixed Roof Tank
Description:	A Slurry Tank

**Tank Dimensions**

Shell Height (ft):	5.35
Diameter (ft):	8.50
Liquid Height (ft) :	2.10
Avg. Liquid Height (ft):	2.10
Volume (gallons):	891.42
Turnovers:	211.40
Net Throughput(gal/yr):	188,445.26
Is Tank Heated (y/n):	Y

**Paint Characteristics**

Shell Color/Shade:	Aluminum/Specular
Shell Condition	Good
Roof Color/Shade:	Aluminum/Specular
Roof Condition:	Good

**Roof Characteristics**

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.00

**Breather Vent Settings**

Vacuum Settings (psig):	0.00
Pressure Settings (psig)	0.00

Meteorological Data used in Emissions Calculations: Pensacola, Florida (Avg Atmospheric Pressure = 14.73 psia)

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Liquid Contents of Storage Tank**

**481TA56A - Vertical Fixed Roof Tank**  
**Pensacola, Florida**

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Cyclohexane	All	122.00	122.00	122.00	122.00	5.2544	5.2544	5.2544	84.1600			84.16	Option 2: A=6.841, B=1201.53, C=222.65

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Detail Calculations (AP-42)**

**481TA56A - Vertical Fixed Roof Tank**  
**Pensacola, Florida**

**Annual Emission Calculations**

Standing Losses (lb):	0.0000
Vapor Space Volume (cu ft):	184.4213
Vapor Density (lb/cu ft):	0.0708
Vapor Space Expansion Factor:	0.0000
Vented Vapor Saturation Factor:	0.5249
<b>Tank Vapor Space Volume:</b>	
Vapor Space Volume (cu ft):	184.4213
Tank Diameter (ft):	8.5000
Vapor Space Outage (ft):	3.2500
Tank Shell Height (ft):	5.3500
Average Liquid Height (ft):	2.1000
Roof Outage (ft):	0.0000
<b>Roof Outage (Cone Roof)</b>	
Roof Outage (ft):	0.0000
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0000
Shell Radius (ft):	4.2500
<b>Vapor Density</b>	
Vapor Density (lb/cu ft):	0.0708
Vapor Molecular Weight (lb/lb-mole):	84.1600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	5.2544
Daily Avg. Liquid Surface Temp. (deg. R):	581.6700
Daily Average Ambient Temp. (deg. F):	67.6708
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	581.6700
Tank Paint Solar Absorptance (Shell):	0.3900
Tank Paint Solar Absorptance (Roof):	0.3900
Daily Total Solar Insulation Factor (Btu/sqft day):	1,384.3333

Vapor Space Expansion Factor

Vapor Space Expansion Factor:	0.0000
Daily Vapor Temperature Range (deg. R):	0.0000
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	5.2544
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	5.2544
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	5.2544
Daily Avg. Liquid Surface Temp. (deg R):	581.6700
Daily Min. Liquid Surface Temp. (deg R):	581.6700
Daily Max. Liquid Surface Temp. (deg R):	581.6700
Daily Ambient Temp. Range (deg. R):	17.6917
Vented Vapor Saturation Factor:	0.5249
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	5.2544
Vapor Space Outage (ft):	3.2500
Working Losses (lb):	612.2562
Vapor Molecular Weight (lb/lb-mole):	84.1600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	5.2544
Annual Net Throughput (gal/yr.):	188,445.2551
Annual Turnovers:	211.4000
Turnover Factor:	0.3086
Maximum Liquid Volume (gal):	891.4156
Maximum Liquid Height (ft):	2.1000
Tank Diameter (ft):	8.5000
Working Loss Product Factor:	1.0000
Total Losses (lb):	612.2562

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Individual Tank Emission Totals**

**Emissions Report for: Annual**

**481TA56A - Vertical Fixed Roof Tank**  
**Pensacola, Florida**

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Cyclohexane	612.26	0.00	612.26

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Tank Identification and Physical Characteristics**

**Identification**

User Identification:	481TA56B
City:	Pensacola
State:	Florida
Company:	Ascend Performance Materials
Type of Tank:	Vertical Fixed Roof Tank
Description:	B Slurry Tank

**Tank Dimensions**

Shell Height (ft):	5.35
Diameter (ft):	8.50
Liquid Height (ft) :	2.10
Avg. Liquid Height (ft):	2.10
Volume (gallons):	891.42
Turnovers:	230.70
Net Throughput(gal/yr):	193,793.75
Is Tank Heated (y/n):	Y

**Paint Characteristics**

Shell Color/Shade:	Aluminum/Specular
Shell Condition	Good
Roof Color/Shade:	Aluminum/Specular
Roof Condition:	Good

**Roof Characteristics**

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.00

**Breather Vent Settings**

Vacuum Settings (psig):	0.00
Pressure Settings (psig)	0.00

Meteorological Data used in Emissions Calculations: Pensacola, Florida (Avg Atmospheric Pressure = 14.73 psia)

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Liquid Contents of Storage Tank**

**481TA56B - Vertical Fixed Roof Tank**  
**Pensacola, Florida**

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Cyclohexane	All	122.00	122.00	122.00	122.00	5.2544	5.2544	5.2544	84.1600			84.16	Option 2: A=6.841, B=1201.53, C=222.65

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Detail Calculations (AP-42)**

**481TA56B - Vertical Fixed Roof Tank**  
**Pensacola, Florida**

**Annual Emission Calculations**

Standing Losses (lb):	0.0000
Vapor Space Volume (cu ft):	184.4213
Vapor Density (lb/cu ft):	0.0708
Vapor Space Expansion Factor:	0.0000
Vented Vapor Saturation Factor:	0.5249
<b>Tank Vapor Space Volume:</b>	
Vapor Space Volume (cu ft):	184.4213
Tank Diameter (ft):	8.5000
Vapor Space Outage (ft):	3.2500
Tank Shell Height (ft):	5.3500
Average Liquid Height (ft):	2.1000
Roof Outage (ft):	0.0000
<b>Roof Outage (Cone Roof)</b>	
Roof Outage (ft):	0.0000
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0000
Shell Radius (ft):	4.2500
<b>Vapor Density</b>	
Vapor Density (lb/cu ft):	0.0708
Vapor Molecular Weight (lb/lb-mole):	84.1600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	5.2544
Daily Avg. Liquid Surface Temp. (deg. R):	581.6700
Daily Average Ambient Temp. (deg. F):	67.6708
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	581.6700
Tank Paint Solar Absorptance (Shell):	0.3900
Tank Paint Solar Absorptance (Roof):	0.3900
Daily Total Solar Insulation Factor (Btu/sqft day):	1,384.3333

Vapor Space Expansion Factor

Vapor Space Expansion Factor:	0.0000
Daily Vapor Temperature Range (deg. R):	0.0000
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	5.2544
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	5.2544
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	5.2544
Daily Avg. Liquid Surface Temp. (deg R):	581.6700
Daily Min. Liquid Surface Temp. (deg R):	581.6700
Daily Max. Liquid Surface Temp. (deg R):	581.6700
Daily Ambient Temp. Range (deg. R):	17.6917
Vented Vapor Saturation Factor:	0.5249
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	5.2544
Vapor Space Outage (ft):	3.2500
Working Losses (lb):	605.4092
Vapor Molecular Weight (lb/lb-mole):	84.1600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	5.2544
Annual Net Throughput (gal/yr.):	193,793.7486
Annual Turnovers:	230.7000
Turnover Factor:	0.2967
Maximum Liquid Volume (gal):	891.4156
Maximum Liquid Height (ft):	2.1000
Tank Diameter (ft):	8.5000
Working Loss Product Factor:	1.0000
Total Losses (lb):	605.4092

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Individual Tank Emission Totals**

**Emissions Report for: Annual**

**481TA56B - Vertical Fixed Roof Tank**  
**Pensacola, Florida**

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Cyclohexane	605.41	0.00	605.41

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Tank Identification and Physical Characteristics**

**Identification**

User Identification:	481TA108
City:	Pensacola
State:	Florida
Company:	Ascend Performance Materials
Type of Tank:	Vertical Fixed Roof Tank
Description:	Flasher Condensate Tank

**Tank Dimensions**

Shell Height (ft):	5.70
Diameter (ft):	5.91
Liquid Height (ft) :	2.00
Avg. Liquid Height (ft):	2.00
Volume (gallons):	410.42
Turnovers:	111.80
Net Throughput(gal/yr):	45,884.91
Is Tank Heated (y/n):	Y

**Paint Characteristics**

Shell Color/Shade:	Aluminum/Specular
Shell Condition	Good
Roof Color/Shade:	Aluminum/Specular
Roof Condition:	Good

**Roof Characteristics**

Type:	Dome
Height (ft)	0.00
Radius (ft) (Dome Roof)	5.91

**Breather Vent Settings**

Vacuum Settings (psig):	0.00
Pressure Settings (psig)	0.00

Meteorological Data used in Emissions Calculations: Pensacola, Florida (Avg Atmospheric Pressure = 14.73 psia)

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Liquid Contents of Storage Tank**

**481TA108 - Vertical Fixed Roof Tank**  
**Pensacola, Florida**



Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Cyclohexane	All	149.00	113.00	158.00	149.00	8.9193	4.3471	10.5123	84.1600			84.16	Option 2: A=6.841, B=1201.53, C=222.65

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Detail Calculations (AP-42)**

**481TA108 - Vertical Fixed Roof Tank**  
**Pensacola, Florida**

**Annual Emission Calculations**

Standing Losses (lb):	1,822.8414
Vapor Space Volume (cu ft):	112.6204
Vapor Density (lb/cu ft):	0.1149
Vapor Space Expansion Factor:	1.1346
Vented Vapor Saturation Factor:	0.3401
<b>Tank Vapor Space Volume:</b>	
Vapor Space Volume (cu ft):	112.6204
Tank Diameter (ft):	5.9100
Vapor Space Outage (ft):	4.1054
Tank Shell Height (ft):	5.7000
Average Liquid Height (ft):	2.0000
Roof Outage (ft):	0.4054
<b>Roof Outage (Dome Roof)</b>	
Roof Outage (ft):	0.4054
Dome Radius (ft):	5.9100
Shell Radius (ft):	2.9550
<b>Vapor Density</b>	
Vapor Density (lb/cu ft):	0.1149
Vapor Molecular Weight (lb/lb-mole):	84.1600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	8.9193
Daily Avg. Liquid Surface Temp. (deg. R):	608.6700
Daily Average Ambient Temp. (deg. F):	67.6708
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	608.6700
Tank Paint Solar Absorptance (Shell):	0.3900
Tank Paint Solar Absorptance (Roof):	0.3900
Daily Total Solar Insulation Factor (Btu/sqft day):	1,384.3333
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	1.1346

Daily Vapor Temperature Range (deg. R):	45.0000
Daily Vapor Pressure Range (psia):	6.1651
Breather Vent Press. Setting Range(psia):	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	8.9193
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	4.3471
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	10.5123
Daily Avg. Liquid Surface Temp. (deg R):	608.6700
Daily Min. Liquid Surface Temp. (deg R):	572.6700
Daily Max. Liquid Surface Temp. (deg R):	617.6700
Daily Ambient Temp. Range (deg. R):	17.6917
Vented Vapor Saturation Factor:	0.3401
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	8.9193
Vapor Space Outage (ft):	4.1054
Working Losses (lb):	356.7374
Vapor Molecular Weight (lb/lb-mole):	84.1600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	8.9193
Annual Net Throughput (gal/yr.):	45,884.9051
Annual Turnovers:	111.8000
Turnover Factor:	0.4350
Maximum Liquid Volume (gal):	410.4195
Maximum Liquid Height (ft):	2.0000
Tank Diameter (ft):	5.9100
Working Loss Product Factor:	1.0000
Total Losses (lb):	2,179.3787

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Individual Tank Emission Totals**

**Emissions Report for: Annual**

**481TA108 - Vertical Fixed Roof Tank**  
**Pensacola, Florida**

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Cyclohexane	356.74	1,822.64	2,179.38

High Pressure Offgas Composition

VOC Calcs

Component	Mass Fraction in Offgas
Methane (1)	7.370E-05
Ethane (1)	2.530E-04
Propane (1)	5.830E-04
Butane (2)	0.000E+00
Pentane (2)	0.000E+00
Hexane (1)	1.200E-06
Cyclohexane (1)	1.345E-03
Acetaldehyde (1)	2.027E-04
Acetone (2)	0.000E+00
MEK (1)	1.037E-04
Formaldehyde (1)	9.100E-07
Methanol (1)	6.600E-06
Cyclohexanol (1)	1.027E-04
Propionaldehyde (1)	5.680E-05
Benzene (1)	8.460E-07
Butanol (1)	2.844E-04
OTHER (2)	0.000E+00
<b>TOTAL ORGANICS</b>	

Calc lb VOC emissions/yr @ 15 SCFH (1.1714 pph) purge flow	
5.98	
0.01	
13.80	
2.08	
1.06	
0.01	
0.07	
1.05	
0.58	
2.92	
<b>TOTAL VOC's:</b>	<b>27.57</b>

**ATTACHMENT 8  
FLARE VENDOR DATA**

## I. PROJECT DESCRIPTION

### 1. Job Summary:

FII Job #	99-258
Customer PO #	99824-56314
Customer Name	PSI Construction
Customer Address	1790 Kirby Parkway, Suite 300 Memphis, TN 38138
Job Location	Solutia – Pensacola , Fl.
Date Ordered	September 23, 1999
Date Shipped	February 2, 2000

Flare Industries, Inc. was contracted by PSI Construction to engineer, design, fabricate, and supply two (2) Enclosed Flares with the required controls for automated operation.

The enclosed flares were designed by FII using engineering criteria supplied by PSI Construction. The flares incorporate the use of the FII Biogas burner element which provides for efficient combustion of digester gas composed of 60-70% methane. The element is constructed of 310 Stainless Steel to prevent premature degradation due to heat or chemical corrosion from the H<sub>2</sub>S content.

Each flare uses three (3) Model MR-1000 electronic ignitors along with a control system to provide ignition of the pilot gases. A UV scanner proves the pilot source before combustion of the biogas can proceed.

The flares were engineered by FII with one (1) air damper each to add combustion and cooling air to the Biogas burner element.

The flare has one (1) thermocouple that will monitor internal combustion temperature, which is transmitted to the PLC in the control panel. If the temperature increases above 1,450° F, the manual damper will need to be adjusted to maintain 1,450° F. If the temperature increases above 1,800° F, the entire flare system will shut down.

The enclosed flares were engineered by FII with a 1/8" corrosion allowance and are able to withstand 130 mph wind conditions with minimum deflection. The base section of the Flare is equipped with a base plate assembly to resist the bending loads produced by the wind.

*removed low temp interlock*

## 2. Scope of Supply

Item	Qty.	Equipment Item	Note:
1	2	Model 648 Enclosed Flare	48" Dia. x 60' O.A.H.
2	6	FII Bio-Gas burner; 310SS	(3) inside each flare
3	6	MR-1000 pilots w/ valve train	Attached to flare for main gas ignition
4	6	UV Scanner (Self Check)	Attached to flare. Used to verify pilot flame before allowing waste gas to enter the flare
5	6	Transformer	(3) per flare. Attached to flare, next to pilot. Used to convert 120 VAC to 10K VAC for spark needed for pilot ignition
6	2	Control Panel; NEMA 4X	To control flare operation
7	2	Thermocouple	(1) on each stack; Generates temperature signal
8	2	Air Dampers	(1) lever actuated on each stack; Maintains temperature
9	2	Purge Blowers	Located at the base of the stack; Required to purge 4 volumes of air before each start-up

## 3. Process Conditions

Design Flow Rate	816 Lbs/Hr
Inlet Pressure	12" WC
Inlet Temperature	68° F to 123° F

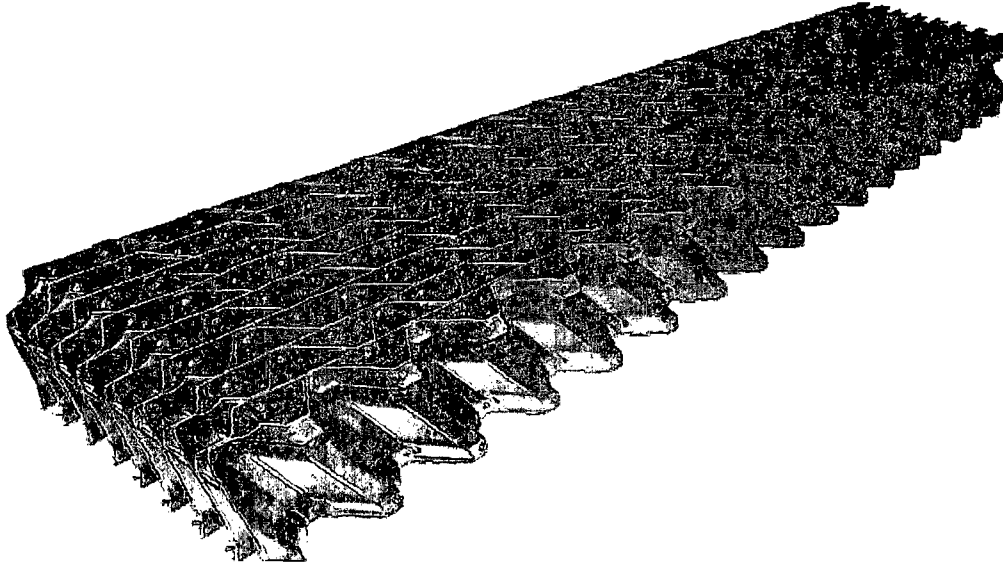
## 4. Site Conditions

Design Wind Speed	130 MPH
Elevation	Sea Level
Exposure	C
Seismic Zone	0
Humidity	High

## 5. Utility Requirements

Fuel Gas- Pilots	Natural Gas; 44 SCFH @ 8-250 PSIG
Electrical-1 Phase	120 VAC / 60 HZ
Electrical Classification	NEMA 4

**ATTACHMENT 9  
COOLING TOWER INFORMATION**



Brentwood Industries is pleased to introduce the XF-150Max, a high-efficiency, cellular drift eliminator *specifically designed for crossflow tower applications*. Its design maximizes drift reduction by providing an upward flow path and discharge angle of 40°-55° from the horizontal depending on installation angle. It can also be installed vertically and be fully effective. The upward flow path and molded-in drainage channels keep drift emissions minimized by directing the collected drift back to the wet section of the tower, even when impacted with water spray. It also incorporates our patented MA (mechanical assembly) technology which provides a number of benefits, including environmental. With its fully nesting design, Dri Seals, and careful installation, a properly designed crossflow cooling tower can achieve 0.001% drift emissions or less per the CTI STD-140 test method. In retrofit projects, older cooling towers will also see a vast improvement of drift emissions. Made from rigid, UV protected PVC that meets CTI STD-136, the XF-150Max is offered in two material gauges; 15 mil (0.38mm) standard gauge and 20 mil (0.51mm) heavy duty gauge.

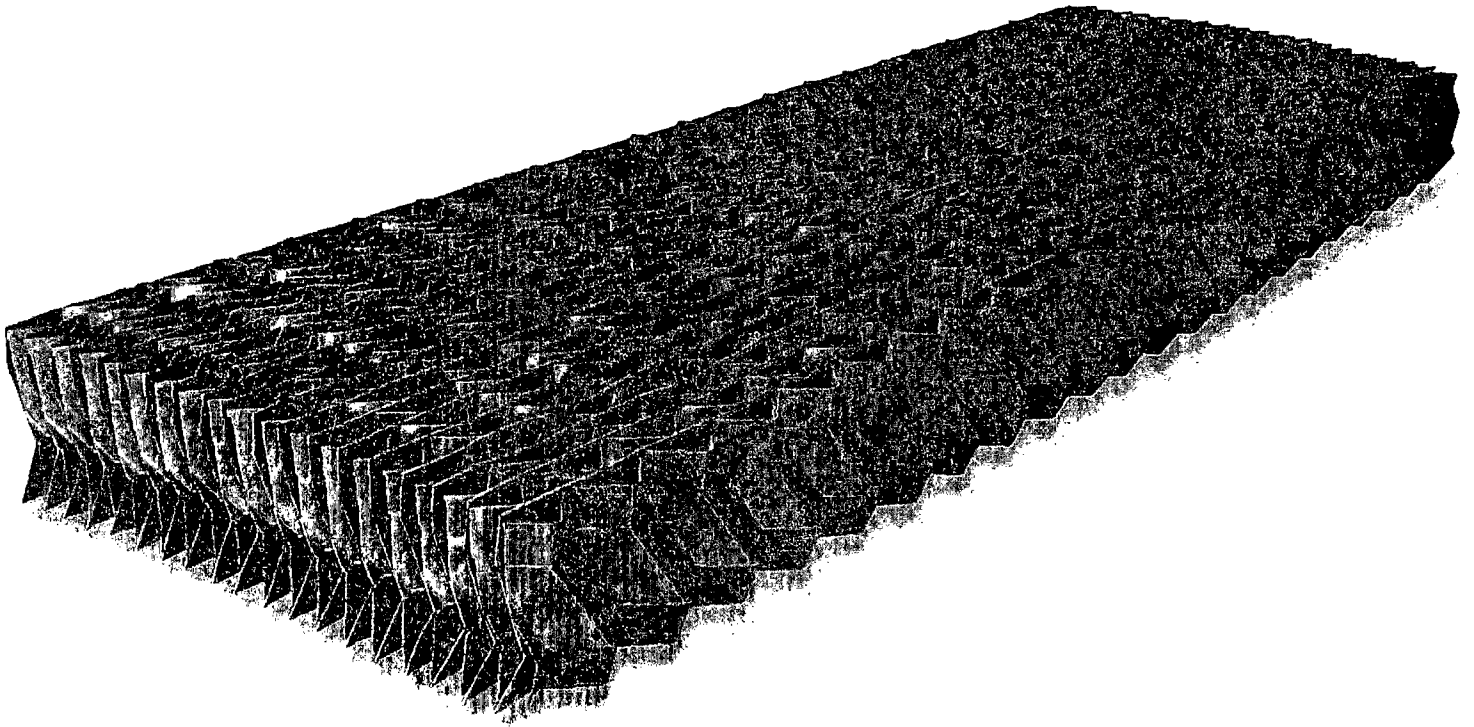
### Example Specification

Drift eliminators shall be of the cellular type, Brentwood XF-150Max or approved equal and be designed specifically for crossflow cooling towers. The modules shall be made from self-extinguishing, rigid PVC that meets CTI STD-136 with UV protection and be assembled without adhesives or solvents. It shall have a flame spread rating of 15 or less (per ASTM E-84) and be designed to nest to prevent drift-bypass between modules. The air passageways shall cause the air to make at least three directional changes and provide an upward discharge flow path angle of at least 40°. Water management drainage channels shall be integral to the design.

In the standard 10° from vertical crossflow configuration, the modules shall be able to be supported on up to 96" centers with minimal deflection (up to 120" spans with optional heavy duty material). The drift eliminator modules shall measure 5.25" deep, up to 18" wide, and up to 144" long.



## **/ Marley XCEL<sup>®</sup>plus Eliminator /**



Marley developed the first cellular drift eliminator in the 1970s when eliminator designs were primarily ineffective blade type configurations. Next, Marley patented the XCEL generation of eliminators in the early 80s. No other eliminator could come close to XCEL eliminator's low drift rate and low pressure drop. Now, virtually every eliminator is a nesting cellular PVC type design.

XCEL<sup>plus</sup> is a more advanced design that meets or exceeds today's demanding specifications for drift emissions without sacrificing fan horsepower. Now you can have drift rates half of the original XCEL with equivalent pressure drop.

The eliminator discharge angle is important enough to warrant two separate eliminator designs—one for crossflow and one for counterflow towers. Tests show the air direction leaving the eliminator is extremely important—imperfect designs create additional work for the fan. This means either increased fan horsepower—or reduced cooling tower performance. The crossflow version features drainage slots within the eliminator pack to insure trapped drift is returned to the wet side of the cooling tower.

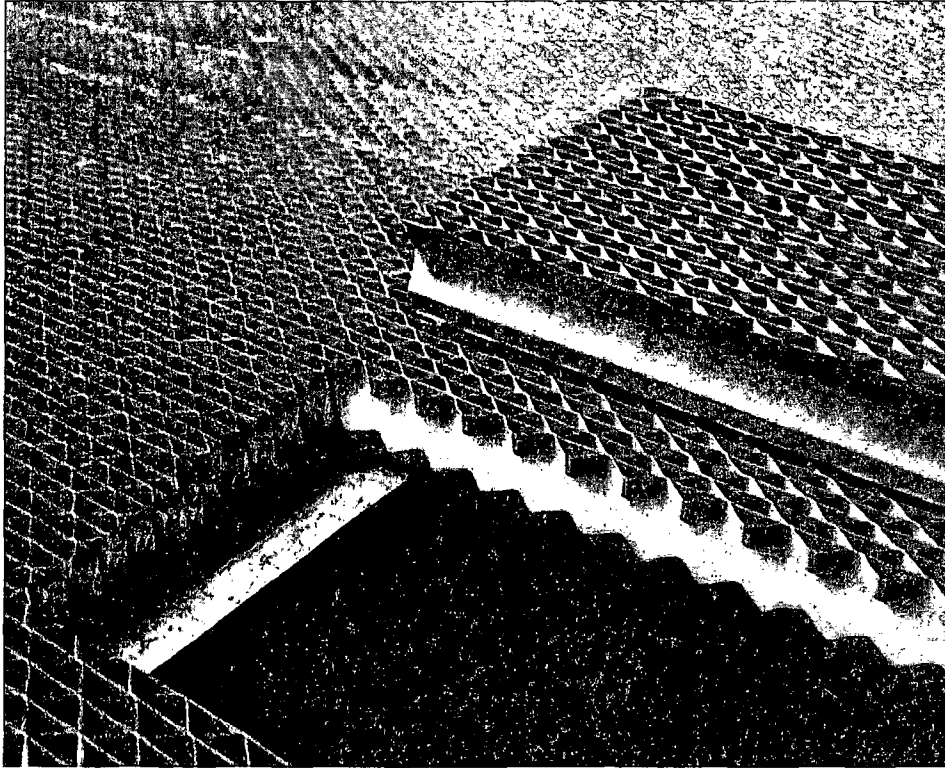
Low drift rate is the primary goal of eliminator design. XCEL<sup>plus</sup> boasts typical drift rates of .001% of the total GPM. Lower drift rates are available depending upon tower configuration.

Considering low drift rates and low pressure drop, XCEL<sup>plus</sup> is the most effective cooling tower drift eliminator available in the market place today.

**SPX<sup>®</sup>**

**COOLING TECHNOLOGIES**

## **/ Marley XCELplus Eliminator /**



### **/ Suggested Specification /**

Drift eliminators shall be of cellular type, Marley XCELplus or approved equal. The eliminators shall be thermoformed from 17 mil (.017") PVC (polyvinyl chloride) material into a configuration providing at least three changes of air direction and solvent welded into multiple sheet packs. Flame spread rating of the material must not exceed 25 per ASTM E-84.

Eliminators used in crossflow towers must provide a discharge angle (as defined by the angle of the last section of the eliminator itself) of at least 42° from the horizontal when installed.

The mass drift quantity, determined by the CTI Drift Test Code ATC-140 shall not exceed \_\_\_\_\_% of the total GPM and shall be guaranteed for all operating conditions.

The eliminator packs shall be able to span 66" unsupported for counterflow configurations and 72" for crossflow, with minimal deflection at design conditions. Eliminators shall be FM approved.

Eliminator packs shall measure up to 24" wide, 5.75" in depth and up to 12'-0" long.

# **SPX**

**COOLING TECHNOLOGIES**

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XCEL-05