

Statement of Basis
Indorama Ventures Xylenes & PTA, LLC
Morgan County
712-0002

Indorama Ventures Xylenes & PTA, LLC (“Indorama”) has applied for a renewal of Major Source Operating Permit 712-0002. This proposed Title V Major Source Operating Permit is issued under the provisions of ADEM Admin. Code R. 335-3-16. The above named applicant has requested authorization to perform the work or operate the facility shown on the application and drawings, plans and other documents attached hereto or on file with the Air Division of the Alabama Department of Environmental Management, in accordance with the terms and conditions of this permit.

Background

This facility is a chemical process plant which produces petrochemicals. The facility is allowed to operate 8,760 hours per year unless otherwise specified. Based on the Title V permit application, this facility is a major source for VOCs, HAPs, NO_x, CO, SO₂, PM and CO_{2e}.

Summary of Changes

- Name Change from BP Amoco to Indorama Ventures Xylenes & PTA, LLC
- Revised emission calculations to include neighboring contiguous facility, AlphaPet, Inc.
- Removed methyl acetate hydrolysis (MAH) unit and all associated equipment (reactive distillation column) and requirements (HPA could be a Group 1 vent). IVXP has stated that the MAH unit is no longer in operation and has been removed from the facility.
- Removed No. 1 Px Unit. IVXP has stated that this unit is no longer in operation and has been removed from the facility.
- Removed CRU Unit. IVXP has stated that this unit is no longer in operation and has been removed from the facility.
- Removed Multiphase Extraction Unit for Groundwater Remediation. IVXP has stated that the unit is no longer in operation and has been removed from the facility.
- Removed the liquid fuel requirements for Boiler AB8301. IVXP has stated that the boiler no longer has the capability to fire liquid fuels.
- Consolidated individual permits for the heaters associated with the No. 2 Px unit and combined them under the No. 2 Px permit
- Removed flare visual inspections since the flare is required to meet the requirements of §63.11, which requires the flare to be designed to operate smokeless. Added Method 22 of 40 CFR Part 60 Appendix A as the compliance determiner for the flare.

- Clarified Subpart III and Subpart NNN overlap requirements with the HON. Additionally clarified which individual equipment is subject to each regulation (Subpart III – high pressure absorber; Subpart NNN – low pressure absorber).
- Clarified the VOC monitoring requirements recordkeeping requirement. IVXP requested 30 days instead of 15 to submit the quarterly report due to coordination between units for data.
- Changed monitoring frequency for the individual pieces of equipment associated with the VOC monitoring plan to two times per week due to historically being well below the limit. Additionally, the change is made in order to make the sampling periods consistent and uniform with newer permitted units (i.e., No. 5 Oxidation).
- Clarified that the VOC monitoring requirements are based on a 12-month rolling average and should be calculated as a monthly total which should be utilized to sum to the 12-month rolling average.
- Product silo baghouse monitoring requirements of daily visual inspections have been changed to weekly visual inspections due to historical operation of the source and the inherent nature of being product silos.
- Administratively fixed typos and errors contained within the permits.
- Generally clarified compliance indicators and determiners for each of the emission limitations for each unit.
- Modified the individual tank permits to include the following categories of storage vessels: HON Group 1 tanks, HON Group 2 tanks, MON Group 1 tanks, and MON Group 2 tanks.
- Added requirements for the three (3) emergency generators (Air Permit No. 712-0002-X128).
- Added the requirements of the No. 5 Oxidation/Purification Project (Air Permit Nos. 712-0002-X129/X130/X131).
- Added the requirements of the No. 2 Px Emergency Generator (Air Permit No. 712-0002-X132).
- Added the requirements of the No. 4 Oxidation/PTA Project (Air Permit Nos. X133/X134).

Emission Unit 001: No. 2 Paraxylene (PX) Unit

Unit Specific Changes

The individual heaters KB-101, KB-102, KB-104, KB-401, and KM-503 have been included with the No. 2 Px permit since the units are process heaters specifically for the No. 2 Px unit.

Removed the flare inspections from the No. 2 Px flare (KM-503) due to the flare being required to be designed to be smokeless (except a 5-minute period within 2 hours as determined by Method 22) as stated in §63.11(b)(4). The inspections also required personnel familiar with Method 9. The determiner for a flare in accordance with §63.11 is Method 22. Method 22 of 40 CFR Part 60 Appendix A has been added to the Compliance and Test Methods section for the flare.

The NO_x limitations for each heater have been clarified as anti-PSD limitations and as such are based on a 12-month rolling total. The instantaneous rate (lb/hr) is the maximum potential rate from the unit, but the heat capacity has been limited in order to remain below the PSD significance thresholds. Therefore, the limitation for each heater is the total heat input for the year based on a 12-month rolling total. The determiner would remain as performance testing to confirm the instantaneous emission factor (based on a 3-hour average since the determiner is performance testing). The indicator would remain as maintenance of records of the heat input for each source.

The requirements were clarified to include more detail for 40 CFR Part 60, Subpart RRR; and 40 CFR Part 63, Subpart G, Subpart H, and Subpart DDDDD. No changes were made to emission limitations or monitoring associated with the federal regulations.

Overview

The main emission point from this unit is from the cold end section of the unit. These emissions are routed to the Px flare (KM-503). The unit also has multiple process heaters which support the reactor system. The heaters' identifications and descriptions are listed in the table below.

Emission Point	Description
KB-101	Reactor Heater
KB-102	Reboiler
KB-104	Reboiler
KB-401	Furnace

Emission Standards

Opacity/PM

The state opacity requirement would be applicable to the flare and each of the heaters associated with this unit. Each of the combustion sources are also subject to the state requirement for fuel burning in ADEM Admin. Code r. 335-3-4-.03. Additionally, IVXP has taken a more stringent limitation for PM of 0.59 lb/MMBtu and 4.1 lb/hr on the KB-104 reboiler.

NO_x

Heaters KB-101, KB-102, and KB-401 have taken limitations for nitrogen oxides (NO_x) in order to avoid PSD review. The limitations along with a description of the units is included in the table below.

ID	NO_x Limitation
KB-101	1,752,000 MMBtu/yr and 45.6 TPY (10.4 lb/hr)
KB-102	1,095,000 MMBtu/yr and 30.7 TPY (7.0 lb/hr)
KB-401	826,068 MMBtu/yr and 28.9 TPY (6.6 lb/hr)

SO₂

Each of the heaters is subject to the state regulation for sulfur dioxide (SO₂) emissions from fuel burning equipment. The heaters are required to maintain sulfur emissions of less than 4 lb/MMBtu of heater input per source.

VOC/HAP

This unit is subject to the requirements of 40 CFR Part 60, Subpart RRR. As stated in 60.110(d)(7), compliance with the overlapping provisions of Subpart RRR are determined by compliance with 40 CFR Part 63, Subpart G. IVXP has proposed to comply with the requirements of Subpart RRR by complying with the Group 1 provisions of Subpart G.

This unit is subject to the requirements of 40 CFR Part 63, Subpart F, G, and H (the HON). The reactor system has been classified as a Group 1 process vent with respect to the HON. The facility is required to control the emissions from the reactor system to 98% by weight or 20 ppmv whichever is less stringent. The facility complies by routing the emissions to the fuel gas system which includes the Px flare, process heaters, and the boiler AB-8301.

The wastewater streams associated with this unit are also subject to the requirements of the HON. IVXP complies with these requirements by maintaining the wastewater streams as Group 2. As stated in §63.132(a)(3), since each of the streams is classified as Group 2, only the recordkeeping and reporting requirements of §63.146(b)(1) and §63.147(b)(8) are applicable.

Each of the process heaters is subject to the requirements of 40 CFR Part 63, Subpart DDDDD (“the Boiler MACT”). The heaters are limited to firing natural gas, paraxylene gas, and anaerobic off gas. Since the heaters are limited to firing gas 1 fuels as defined in Subpart DDDDD, the facility would be required to conduct a tune-up of the heaters at the frequency indicated in Table 3 of Subpart DDDDD.

Periodic Monitoring

Opacity/Particulate

Compliance with the opacity and particulate limitations of the combustion sources is determined by Method 9 and Method 5, respectively. Since the furnaces are permitted to fire natural gas and other gas 1 fuels, compliance is indicated by limiting the fuels fired in the source. The limitations are determined for the flare by Method 22 and indicated by designing and operating the flare to meet the requirements of §63.11.

NO_x

Compliance with the NO_x limitations is determined by Method 7 or Method 7e. Since the furnaces are permitted to fire natural gas and other gas 1 fuels only, compliance is indicated by limiting the fuel fired and capacity of each source.

SO₂

Compliance with the SO₂ limitations is determined by Method 6C. Since the furnaces are permitted to fire natural gas and other gas 1 fuels only, compliance is indicated by limiting the fuel fired of each source.

VOC/HAP

Compliance with the requirements of the HON for OHAP is determined by the test methods listed in §63.116 of 40 CFR Part 63, Subpart G. Compliance is indicated by routing the emissions to the fuel gas system as stated in §63.114(a)(3). The fuel gas system can be routed to the furnaces associated with the Px unit, the Px flare, or the boiler AB8301. Since the emissions are routed to the fuel gas system and/or have a capacity greater than 44 megawatts (150 MMBtu/hr), no additional monitoring requirements would be required as stated in §63.114(a)(3).

The pilot light of the No. 2 Px flare is required to be monitored to ensure that a flame is present during operation.

This unit is subject to the LDAR requirements of the HON as listed in 40 CFR Part 63, Subpart H.

Emission Unit 002 - No. 3 Oxidation Unit

Unit Specific Changes

The sampling frequency for the individual pieces of equipment associated with the anti-PSD VOC limitation of the Nos. 3-5 Oxidation units was changed to reflect more recent permitted units and to make the requirement uniform across the units. Additionally, the sources calculated emissions for the history of the unit have been well below the permitted levels. The monitoring was changed to two times per week, no less than three (3) days apart. The monitoring plan is to be submitted when changed, which details the procedures utilized to calculate the VOC emissions. The time period to submit the quarterly report was also modified from 15 days to 30 days to provide extra time to obtain the data since multiple units are involved.

The No. 5 Oxidation Unit low pressure absorber was added to the VOC monitoring recordkeeping and reporting provision No. 12. The low pressure absorber was added to the monitoring plan as a result of the No. 5 Oxidation/Purification project (X133).

The Group 1 requirements for the high pressure absorber (FT-403) and methyl acetate hydrolysis (MAH) system have been removed. The facility has stated in the current renewal application that the unit has been removed from service.

The requirements were clarified to include more detail for 40 CFR Part 60, Subpart III, Subpart NNN; and 40 CFR Part 63, Subpart G, Subpart H and Subpart DDDDD. No changes were made to emission limitations or monitoring associated with the federal regulations.

Overview

The process vents in this unit are the low pressure absorber (FT-603), high pressure absorber (FT-403), catalytic oxidizer (CatOx) system (FT-407 and FB-405), and the azeotropic distillation column bottoms (FT-741). The catalytic oxidizer (CatOx) system consists of a reactor and scrubber (FT-407). The No. 3 Oxidization unit CatOx system also has a dedicated natural gas fired pre-heater (FB-405). The unit also has storage silos which are routed to a scrubber for control.

Emission Standards

Opacity/Particulate

The state opacity requirement is applicable to each of the sources associated with this unit. Each of the particulate sources in this unit is subject to the process weight curve for general process industry. Additionally, IVXP has taken a more stringent anti-PSD limitation for PM of 6.8 lb/hr on the oxidation storage silo scrubber.

The catalytic oxidizer (CatOx) pre-heater is subject to the state opacity requirement and the particulate matter limitation for fuel burning equipment.

SO₂

The catalytic oxidizer (CatOx) pre-heater is subject to the state requirement for sulfur dioxide (SO₂) from fuel burning installations. The heater would be required to maintain SO₂ emissions of less than 4 lb/MMBtu.

VOC/HAP

The process vents within this unit are subject to 40 CFR Part 63, Subpart III, Subpart NNN, and 40 CFR Part 63, Subpart F, G, and H (the "HON"). The oxidation reactor is routed through a recovery device, the high pressure absorber. The reactor and associated recovery device(s) is subject to 40 CFR Part 60, Subpart III. Compliance with Subpart III is determined by the overlap requirements of 40 CFR Part 63, Subpart G, as listed in §63.110(d)(1)-(3) or (d)(10). The azeotropic distillation column is routed through a recovery device, the low pressure absorber. The distillation column and associated recovery device(s) are subject to 40 CFR Part 63, Subpart NNN. Compliance with Subpart NNN is determined by the overlap requirements of 40 CFR Part 63, Subpart G, as listed in §63.110(d)(4)-(6) or (d)(10).

Each emission point associated with a process vent is maintained with a TRE value greater than 1.0 in order to remain a HON Group 2 process vent. Historically, the high pressure absorber (FT-403) has had the flexibility to be a Group 1 process vent due to the operation of the methyl acetate hydrolysis (MAH) system. In the current Title V renewal application, the facility has permanently removed the MAH system from service. The MAH system included the reactive distillation column (FT-761). All requirements associated with this source have been removed from the current renewal.

The wastewater streams associated with this unit are also subject to the requirements of the HON. IVXP complies with these requirements by maintaining the wastewater streams as Group 2. As stated in §63.132(a)(3), since each of the streams is classified as Group 2, only the recordkeeping and reporting requirements of §63.146(b)(1) and §63.147(b)(8) are applicable

The pre-heater associated with the catalytic oxidizer (CatOx) system is subject to 40 CFR Part 63, Subpart DDDDD. Since the heater fires natural gas only as fuel, the work practice standards of §63.7500 and Table 3 of 40 CFR Part 63, Subpart DDDDD would be applicable. The facility would be required to perform a tune-up at the frequency specified in Table 3.

The No. 3 Oxidation unit is subject to an anti-PSD limitation for VOC. The Nos. 3-5 Oxidation units are required to maintain overall VOC emissions of less than 8,248.3 tons per year (TPY). Additionally, the low pressure absorber and azeotropic distillation column have VOC limitations of 101.2 tons per 12 months and 30.7 tons per 12 months, respectively. The catalytic oxidizer (CatOx) has no specific limitations; however, the unit is required to operate in order to meet the VOC emission limitations. The unit is also allowed to bypass the CatOx and vent emissions from the high pressure absorber (HPA) for a period of no more than 280 hours/year.

Periodic Monitoring

Opacity/Particulate

Compliance with the opacity and particulate limitations is determined by Method 9 and Method 5, respectively. Since the catalytic oxidizer (CatOx) heater (FB-405) is permitted to fire natural gas, compliance is indicated by limiting the fuels fired in this source. The storage silo scrubber is subject to compliance assurance monitoring (CAM). Compliance is indicated by monitoring and recording the reflux scrubber flow rate (CPMS). The flow rate is calculated based on a daily average.

SO₂

Compliance with the SO₂ limitations is determined by Method 6C. Since the catalytic oxidizer (CatOx) heater (FB-405) is permitted to fire natural gas and other gas 1 fuels only, compliance is indicated by limiting the fuel fired.

VOC/HAP

Compliance with the process vent requirements is determined by §63.116 of 40 CFR Part 63, Subpart G. Compliance with the requirements of 40 CFR Part 63, Subpart F, G, and H is indicated by maintaining the process vents and wastewater as Group 2 sources. When the TRE of process vents is maintained at greater than 1.0 but less than 4.0 the additional monitoring requirements of §63.114(b) or (c) would be applicable. When the TRE is maintained at greater than 4.0, only the recordkeeping and reporting requirements of §§63.117(b) and 63.118(c) and (h) would be applicable. Since all wastewater sources would be classified as Group 2 only the recordkeeping and reporting requirements listed in §§63.146(b)(1) and 63.147(b)(8) would be applicable as indicated in §63.132(a)(3).

This unit is subject to the LDAR requirements of the HON as listed in Subpart H. In addition to LDAR requirements for HAP, the azeotropic distillation column is required to include all applicable equipment in VOC service within the HON LDAR program. "In VOC service" is

defined as a piece of equipment that either contains or contacts a fluid (liquid or gas) that is at least 5% VOC by weight.

Compliance with the anti-PSD VOC limitations is indicated by conducting sampling and calculating the annual VOC emissions from each source within this unit in accordance the most recently submitted VOC monitoring plan.

Emission Unit 003 – No. 3 PTA Unit

Unit Specific Changes

Revised the description of the baghouses to indicate that there are twelve (12) baghouses associated with the storage silos.

The frequency of visual observation as an indicator of compliance for the particulate matter and opacity requirements on the storage silos has been changed from dailies to weeklies. IVXP has requested this reduction in frequency due to historical operation of the source and the inherent nature of product silos.

Overview

The process vents in this unit are the crystallizer, feed slurry drum, dryer vent, and storage silos. Each of the emissions points, with the exception of the storage silos, is controlled by an independent scrubber for each source. The storage silos are routed to dust collectors while loading.

Emission Standards

Opacity/Particulate

The state opacity requirement would be applicable to each of the sources associated with this unit. Each of the particulate sources in this unit is subject to the process weight curve for general process industry. Additionally, IVXP has taken more stringent anti-PSD limitations of 4.1 lb/hr on the crystallizer scrubber, the feed slurry drum scrubber, and the dryer vent scrubber total and 5.7 lb/hr on the silo dust collectors

VOC/HAP

This unit is subject to the requirement of 40 CFR Part 63, Subpart F, G, and H due to association with the oxidation unit; however, there are no process vent, wastewater, or storage tank provisions which are applicable to this unit. Additionally, IVXP has taken a more stringent anti-PSD limitation of 40 lb/hr for VOC on the crystallizer scrubber.

Periodic Monitoring

Opacity/Particulate

Compliance with the opacity and particulate limitations is determined by Method 9 and Method 5, respectively. The crystallizer is subject to compliance assurance monitoring (CAM) for PM. Compliance with the opacity and particulate limitations is indicated for the crystallizer, feed slurry drum, and dryer vent by maintaining and recording the scrubber flow rate (CPMS) of each source.

The scrubber flow rates are calculated based on a daily average. Compliance is indicated for the storage silo dust collectors by performing visual inspections.

VOC/HAP

Compliance with the VOC limitations is determined by Method 18.

Emission Unit 004: No. 4 Oxidation Unit

Unit Specific Changes

The sampling frequency for the individual pieces of equipment associated with the anti-PSD VOC limitation of the Nos. 3-5 Oxidation units was changed to reflect more recent permitted units and to make the requirement uniform across the units. Additionally, the sources calculated emissions for the history of the unit have been well below the permitted levels. The monitoring was changed to two times per week no less than 3 days apart. The monitoring plan is to be submitted when changed, which details the procedures utilized to calculate the VOC emissions. The time period to submit the quarterly report was also modified from 15 days to 30 days to provide extra time to obtain the data since multiple units are involved.

The requirements as a result of the modifications made to the unit in the project “No. 4 Ox/PTA Unit Upgrade” (X134) were included.

The No. 5 Oxidation Unit low pressure absorber was added to the VOC monitoring recordkeeping and reporting provision No. 14. The low pressure absorber was added to the monitoring plan as a result of the No. 5 Oxidation/Purification project (X133).

The requirements were clarified to include more detail for 40 CFR Part 60, Subpart NNN; and 40 CFR Part 63, Subpart G, Subpart H. No changes were made to emission limitations or monitoring associated with the federal regulations.

Overview

The process vents in this unit are the low pressure absorber (HT-603), high pressure absorber (HT-403), catalytic oxidizer (CatOx) system, the blower vent (HHC-757), and the azeotropic distillation column bottoms (HT-741). The catalytic oxidizer (CatOx) system consists of a reactor and scrubber.

Emission Standards

Opacity/Particulate

The state opacity requirement would be applicable to each of the sources associated with this unit. Each of the particulate sources in this unit is subject to the process weight curve for general process industry. Additionally, IVXP has taken a more stringent anti-PSD limitation for PM of 8.00 lb/hr on the oxidation storage silo scrubber.

CO

The catalytic oxidizer (CatOx) system is subject to an anti-PSD limitation for carbon monoxide (CO) of 210 tons per 12 months.

VOC/HAP

The process vents within this unit are subject to 40 CFR Part 60, Subpart NNN, Subpart VVa and 40 CFR Part 63, Subpart F, G, and H (the "HON"). The oxidation reactor is routed through a recovery device, the high pressure absorber. The azeotropic distillation column is routed through a recovery device, the low pressure absorber. The distillation column and associated recovery device(s) is subject to 40 CFR Part 63, Subpart NNN. Compliance with Subpart NNN is determined by the overlap requirements of 40 CFR Part 63, Subpart G, as listed in §63.110(d)(4)-(6) or (d)(10).

Each emission point is maintained with a TRE value greater than 1.0 in order to remain a HON Group 2 process vent.

The wastewater streams associated with this unit are also subject to the requirements of the HON. IVXP complies with these requirements by maintaining the wastewater streams as Group 2. As stated in §63.132(a)(3), since each of the streams is classified as Group 2, only the recordkeeping and reporting requirements of §63.146(b)(1) and §63.147(b)(8) are applicable.

The Nos. 3-5 Oxidation units are required to maintain overall VOC emissions of less than 8,248.3 tons per year (TPY). Additionally, the low pressure absorber, azeotropic distillation column, and catalytic oxidizer (CatOx) system have VOC limitations of 103 tons per 12 months, 70 tons per 12 months, and 26 tons per 12 months, respectively. The unit is also allowed bypass time on the high pressure absorber (HPA) of no more than 360 hours per 12 month period and the blower vent for 1,000 hours per 12 month period.

Periodic Monitoring

Opacity/Particulate

Compliance with the opacity and particulate limitations is determined by Method 9 and Method 5, respectively. The storage silos are subject to compliance assurance monitoring (CAM). Compliance is indicated with the storage silo scrubber by monitoring and recording the reflux scrubber flow rate (CPMS). The scrubber flow rate is calculated based on a daily average.

The facility implemented a project (Air Permit No. 712-0002-X134) which has additional monitoring requirements as listed in ADEM admin. Code r. 335-3-14-.04(17)(e) for PM2.5. Records of the particulate emissions (PM2.5) from all sources affected by the "Unit 4 Upgrade Project" are required to be maintained and reported annually for a period of five (5) years following resumption of regular operations.

SO2

Compliance with the SO2 limitations is determined by Method 6C. Since the catalytic oxidizer (CatOx) heater (FB-405) is permitted to fire natural gas and other gas 1 fuels only, compliance is indicated by limiting the fuel fired.

CO

Compliance with the carbon monoxide (CO) limitations on the catalytic oxidizer (CatOx) system is determined by Method 10 or 10B. The catalytic oxidizer is subject to compliance assurance monitoring (CAM). Compliance with the CO limitations is indicated by monitoring and recording the reactor temperature (CPMS) of the CatOx. The temperature is calculated based on a daily average.

VOC/HAP

Compliance with the process vent requirements is determined by §63.116 of 40 CFR Part 63, Subpart G. Compliance with the requirements of 40 CFR Part 63, Subpart F, G, and H is indicated by maintaining the process vents and wastewater as Group 2 sources. When the TRE of process vents is maintained at greater than 1.0 but less than 4.0 the additional monitoring requirements of §63.114(b) or (c) would be applicable. When the TRE is maintained at greater than 4.0, only the recordkeeping and reporting requirements of §§63.117(b) and 63.118(c) and (h) would be applicable. Since all wastewater sources would be classified as Group 2 only the recordkeeping and reporting requirements listed in §§63.146(b)(1) and 63.147(b)(8) would be applicable as indicated in §63.132(a)(3).

This unit is subject to the LDAR requirements of the HON as listed in Subpart H for HAP and 40 CFR Part 60, Subpart VVa for VOC. Compliance with Subpart VVa is determined by compliance with Subpart H as stated in §60.480a(e)(2).

Compliance with the anti-PSD VOC limitations is indicated by conducting sampling and calculating the annual VOC emissions from each source within this unit in accordance the most recently submitted VOC monitoring plan.

Emission Unit 005: No. 4 Purified Terephthalic Acid (PTA) Unit

Unit Specific Changes

The frequency of visual observation as an indicator of compliance for the particulate matter and opacity requirements on the storage silos has been changed from dailies to weeklies. IVXP has requested this reduction in frequency due to historical operation of the source and the inherent nature of product silos.

Overview

The process vents in this unit are the crystallizer, feed slurry drum, dryer vent, centrifuge hold tank, loading operations and storage silos. Each of the emissions points with the exception of the storage silos and loading operations is controlled by an independent scrubber for each source. The storage silos and loading operations are routed to dust collectors.

Emission Standards

Opacity/Particulate

The state opacity requirement would be applicable to each of the sources associated with this unit. Each of the particulate sources in this unit is subject to the process weight curve for general process industry.

VOC/HAP

This unit is subject to the requirement of 40 CFR Part 63, Subpart F, G, and H due to association with the oxidation unit; however, there are no process vent, wastewater, or storage tank provisions which are applicable to this unit.

Periodic Monitoring

Opacity/Particulate

Compliance with the opacity and particulate limitations is determined by Method 9 and Method 5, respectively. The crystallizer scrubber is subject to compliance assurance monitoring (CAM). Compliance with the opacity and particulate limitations is indicated for the crystallizer, feed slurry drum, and dryer vent by maintaining and recording the scrubber flow rate (CPMS) of each source. The flow rate is calculated based on a daily average. Compliance is indicated for the storage silo dust collectors by performing visual inspections.

VOC/HAP

This unit is subject to the LDAR requirements of the HON as listed in Subpart H for HAP and 40 CFR Part 60, Subpart VVa for VOC. Compliance with Subpart VVa is determined by compliance with Subpart H as stated in §60.480a(e)(2).

Emission Unit 006: No. 5 Oxidation Unit

Unit Specific Changes

The sampling frequency for the individual pieces of equipment associated with the anti-PSD VOC limitation of the Nos. 3-5 Oxidation units was changed to reflect more recent permitted units and to make the requirement uniform across the units. Additionally, the sources calculated emissions for the history of the unit have been well below the permitted levels. The monitoring was changed to two times per week no less than three (3) days apart. The monitoring plan is to be submitted when changed, which details the procedures utilized to calculate the VOC emissions. The time period to submit the quarterly report was also modified from 15 days to 30 days to provide extra time to obtain the data since multiple units are involved.

The requirements were clarified to include more detail for 40 CFR Part 60, Subpart III, Subpart NNN; and 40 CFR Part 63, Subpart G, Subpart H. No changes were made to emission limitations or monitoring associated with the federal regulations.

The requirements as a result of the modifications made to the unit in the project “No. 5 Unit Oxidation/Purification Project” (X133) were included.

Overview

The process vents in this unit are the low pressure absorber (HHT-603), the blower vent (HHC-757), storage silos baghouse and scrubber (HHF-501 A/B and HHM-505, respectively), high pressure absorber (HGT-403), catalytic oxidizer (CatOx) system (HHT-2407), and the azeotropic

distillation column bottoms (HHT-761). The catalytic oxidizer (CatOx) system consists of a reactor and scrubber.

Emission Standards

Opacity/Particulate

The state opacity requirement would be applicable to each of the sources associated with this unit. Each of the particulate sources in this unit is subject to the process weight curve for general process industry. Additionally, IVXP has taken a more stringent anti-PSD limitation for PM of 8.00 lb/hr on the oxidation storage silo scrubber.

CO

The catalytic oxidizer (CatOx) system is subject to an anti-PSD limitation for carbon monoxide (CO) of 48.4 lb/hr.

VOC/HAP

The process vents within this unit are subject to 40 CFR Part 63, Subpart III, Subpart NNN, Subpart VVa and 40 CFR Part 63, Subpart F, G, and H (the "HON"). The oxidation reactor is routed through a recovery device, the high pressure absorber. The reactor and associated recovery device(s) is subject to 40 CFR Part 60, Subpart III. Compliance with Subpart III is determined by the overlap requirements of 40 CFR Part 63, Subpart G, as listed in §63.110(d)(1)-(3) or (d)(10). The azeotropic distillation column is routed through a recovery device, the low pressure absorber. The distillation column and associated recovery device(s) is subject to 40 CFR Part 63, Subpart NNN. Compliance with Subpart NNN is determined by the overlap requirements of 40 CFR Part 63, Subpart G, as listed in §63.110(d)(4)-(6) or (d)(10).

Each emission point is maintained with a TRE value greater than 1.0 in order to remain a HON Group 2 process vent.

The wastewater streams associated with this unit are also subject to the requirements of the HON. IVXP complies with these requirements by maintaining the wastewater streams as Group 2. As stated in §63.132(a)(3), since each of the streams is classified as Group 2, only the recordkeeping and reporting requirements of §63.146(b)(1) and §63.147(b)(8) are applicable.

The Nos. 3-5 Oxidation units are required to maintain overall VOC emissions of less than 8,248.3 tons per year (TPY). Additionally, the low pressure absorber and catalytic oxidizer (CatOx) system have VOC limitations of 103 tons per 12 months and 55 tons per 12 months, respectively. The unit is also allowed bypass time on the high pressure absorber (HPA) of no more than 360 hours/year and the blower vent for 1,000 hours/year.

Periodic Monitoring

Opacity/Particulate

Compliance with the opacity and particulate limitations is determined by Method 9 and Method 5, respectively. The storage silos are subject to compliance assurance monitoring (CAM).

Compliance is indicated with the storage silo scrubber by monitoring and recording the reflux scrubber flow rate. The flow rate is calculated based on a daily average. Compliance with the storage silo baghouse during periods of bypass of the scrubber is indicated by daily visual observations.

CO

Compliance with the carbon monoxide (CO) limitations on the catalytic oxidizer (CatOx) system is determined by Method 10 or 10B. The catalytic oxidizer (CatOx) is subject to compliance assurance monitoring (CAM). Compliance with the CO limitations is indicated by monitoring and recording the firebox temperature (CPMS) of the CatOx. The temperature is calculated based on a daily average.

VOC/HAP

Compliance with the requirements of 40 CFR Part 63, Subpart F, G, and H are indicated by maintained the process vents as Group 2 process vents. When the TRE is maintained at greater than 1.0 but less than 4.0 the additional monitoring requirements of §63.114(b) or (c) would be applicable. When the TRE is maintained at greater than 4.0, only the recordkeeping and reporting requirements of §63.117(b) and 63.118(c) and (h) would be applicable.

This unit is subject to the LDAR requirements of the HON as listed in Subpart H for HAP and 40 CFR Part 60, Subpart VVa for VOC. Compliance with Subpart VVa is determined by compliance with Subpart H as stated in §60.480a(e)(2).

Compliance with the anti-PSD VOC limitations is indicated by conducting weekly sampling and calculating the annual VOC emissions from each source within this unit.

Emission Unit 007: No. 5 Purification Unit

Unit Changes

The requirements as a result of the modifications made to the unit in the project “No. 5 Unit Oxidation/Purification Project” (X133) were included.

Overview

The process vents in this unit are the crystallizer, feed slurry drum, dryer vent, storage silos and loading operations, and the product bagging area. Each of the emissions points with the exception of the storage silos and loading operations and the product bagging area is controlled by an independent scrubber for each source. The storage silos and loading operations and product bagging area are routed to dust collectors.

Emission Standards

Opacity/Particulate

The state opacity requirement would be applicable to each of the sources associated with this unit. Each of the particulate sources in this unit is subject to the process weight curve for general process

industry. Additionally, IVXP has taken more stringent anti-PSD limitations of 0.76 lb/hr on the product bagging area.

VOC/HAP

This unit is subject to the requirements of 40 CFR Part 63, Subpart F, G, and H due to association with the oxidation unit; however, there are no process vent, wastewater, or storage tank provisions which are applicable to this unit.

Periodic Monitoring

Opacity/Particulate

Compliance with the opacity and particulate limitations is determined by Method 9 and Method 5, respectively. The crystallizer scrubber is subject to compliance assurance monitoring (CAM). Compliance with the opacity and particulate limitations is indicated for the crystallizer, feed slurry drum, and dryer vent by maintaining and recording the scrubber flow rate (CPMS) of each source. The flow rate is calculated based on a daily average. Compliance is indicated for the storage silo dust collectors by performing visual inspections.

VOC/HAP

This unit is subject to the LDAR requirements of the HON as listed in Subpart H for HAP and 40 CFR Part 60, Subpart VVa for VOC. Compliance with Subpart VVa is determined by compliance with Subpart H as stated in §60.480a(e)(2).

Emission Unit 008: NDC Unit – Feedstock

Unit Specific Changes

Removed the flare inspections from the NDC flare due to the flare being required to be designed to be smokeless (except a 5-minute period within 2 hours as determined by Method 22) as stated in §63.11(b)(4). The inspections also required personnel familiar with Method 9. The determiner for a flare in accordance with §63.11 is Method 22. Method 22 of 40 CFR Part 60 has been added to the Compliance and Test Methods section for the flare.

Added the requirements of 40 CFR Part 63, Subpart DDDDD for the process heaters.

Overview

The process vents within this unit are the alkylation process vessels including the reactor and recovery system and the catalyst feed hopper. The process vents are routed to the flare. The catalyst feed hopper is routed to a baghouse. In addition to the process vents, the NDC unit is supported by the NB410, NB420, NB430, and NB440 process heaters.

Emission Standards

Opacity/Particulate

The state opacity requirement would be applicable to the sources associated with this unit. The particulate sources in this unit are subject to the process weight curve for general process industry.

Each of the process heaters is subject to the particulate matter (PM) emission limitations of ADEM Admin. Code r. 335-3-4-.01 for fuel burning equipment.

SO2

Each of the process heaters is subject to the sulfur dioxide (SO₂) emission limitation of ADEM Admin. Code r. 335-3-5-.01. The heaters are each required to maintain SO₂ emissions below 4 lb/MMBtu.

VOC/HAP

This unit is subject to 40 CFR Part 63, Subpart FFFF. The emissions from Group 1 vents are required to be routed to a control device capable of reducing emissions by 98% by weight or to 20 ppmv, whichever is less stringent. Compliance with the requirements of 40 CFR Part 63, Subpart FFFF is achieved by routing the emissions from the Group 1 process vent to the NDC flare. The wastewater streams in this unit have been classified as MON Group 2 wastewater streams.

The process heaters are subject to 40 CFR Part 63, Subpart DDDDD. Since the heaters are permitted to fire gas 1 fuels, a tune-up shall be conducted on the heaters at the frequency specified in Table 3.

Periodic Monitoring

Opacity/Particulate

Compliance with the opacity and particulate limitations is determined by Method 9 and Method 5, respectively. Compliance with the opacity and particulate limitations is indicated for the process heaters by limiting the fuel fired in the source to natural gas. The limitations are determined for the flare by Method 22 and indicated by designing and operating the flare to meet the requirements of §63.11.

SO2

Compliance with the SO₂ emission limitations is determined by performance testing. Compliance is indicated by limiting the fuel fired in the furnaces to natural gas.

VOC/HAP

Compliance with the Group 1 requirements is indicated by monitoring the flare pilot light to ensure that the flame is present.

This unit is subject to the LDAR requirements of 40 CFR part 63, Subpart UU for HAP as a requirement for equipment leaks of 40 CFR Part 63, Subpart FFFF. Additionally, the facility has implemented a Subpart UU LDAR program for VOC as an anti-PSD VOC limitation.

NB-410, 420, 430, and 440 are subject to the Boiler MACT Part 63 Subpart DDDDD. A performance tune-up is required periodically by §63.7515(d).

Emission Unit 009 – NDC Oxidation

Unit Specific Changes

Added 40 CFR Part 63, Subpart DDDDD requirements for the process heater BB-1813.

Overview

The process vents within this unit include the catalytic oxidizer scrubber, metals recovery unit with baghouse, and the catalytic oxidizer (CatOx) system. The catalytic oxidizer (CatOx) system consists of a heater, reactor, and scrubber.

Emission Standards

Opacity/Particulate

The state opacity requirement would be applicable to the sources associated with this unit. The particulate sources in this unit are subject to the process weight curve for general process industry. Additionally, IVXP has proposed a more stringent limitation on the NDC metals recovery unit with baghouse of 1.7 lb/hr.

NO_x

The NDC metals recovery unit with baghouse has an anti-PSD limitation of 1.17 lb/hr.

VOC/HAP

This unit is subject to 40 CFR Part 63, Subpart FFFF. The emissions from Group 1 vents are required to be routed to a control device capable of reducing emissions by 98% by weight or to 20 ppmv, whichever is less stringent. Compliance with the requirements of 40 CFR Part 63, Subpart FFFF is achieved by routing the emissions from the Group 1 process vent to the catalytic oxidizer (CatOx) system. The wastewater streams in this unit have been classified as MON Group 2 wastewater streams.

The catalytic oxidizer (CatOx) heater is subject to 40 CFR Part 63, Subpart DDDDD. Since the heater is permitted to fire gas 1 fuels, a tune-up shall be conducted at the frequency specified in Table 3.

The NDC metals recovery unit has an anti-PSD limitation of 12 lb/hr.

Periodic Monitoring

Opacity/Particulate

Compliance with the opacity and particulate limitations is determined by Method 9 and Method 5, respectively. The NDC metals recovery unit with baghouse is subject to compliance assurance monitoring (CAM). Compliance is indicated for the NDC metals recovery unit with baghouse by monitoring the pressure drop of the baghouse. The pressure drop is calculated based on a daily

average. Compliance with the opacity and particulate limitations is indicated for the catalytic oxidizer (CatOx) heater by limiting the fuel fired in the source to natural gas.

NO_x

Compliance with the NDC metals recovery unit with baghouse NO_x limitations is determined by Method 7 or 7E. Compliance is indicated by maintaining the firebox temperature at greater than or equal to 1700 °F.

VOC/HAP

Compliance is determined by the test methods and procedures of §63.2455(b) of 40 CFR Part 63, Subpart FFFF. Compliance with the Group 1 requirements is indicated by monitoring the inlet and outlet of the catalytic oxidizer's reactor. This was an alternative monitoring request by the facility previously approved by EPA. The temperature is calculated based on a daily average.

This unit is subject to the LDAR requirements of 40 CFR part 63, Subpart UU for HAP as a requirement for equipment leaks of 40 CFR Part 63, Subpart FFFF. Additionally, the facility has implemented a UU LDAR program for VOC as an anti-PSD VOC limitation.

The catalytic oxidizer (CatOx) heater is subject to the Boiler MACT Part 63 Subpart DDDDD. A performance tune-up is required periodically by §63.7515(d).

Compliance with the NDC metals recovery unit limitations is determined by Method 18. Compliance is indicated by maintaining a minimum firebox temperature of greater than or equal to 1700 °F.

Emission Unit 010: NDC Unit - Esterification

Unit Specific Changes

There were no significant changes made to this unit during the renewal period.

Overview

The process vents associated with this unit are the CM101A, and CM101B storage silos, slurry recycle hopper, recycle ester hopper, product recycle silo, bagging facility, and the molten hopper operations. Each hopper and silo is routed to dust collectors with the exception of the molten hopper which is routed to a scrubber.

Emission Standards

Opacity/Particulate

The state opacity requirement would be applicable to the sources associated with this unit. The particulate sources in this unit are subject to the process weight curve for general process industry. Additionally, the product tower bottoms molten hopping operation is routed to the CM453 scrubber.

VOC/HAP

This unit is subject to 40 CFR Part 63, Subpart FFFF. The emissions from Group 1 vents are required to be routed to a control device capable of reducing emissions by 98% by weight or to 20 ppmv, whichever is less stringent. Compliance with the requirements of 40 CFR Part 63, Subpart FFFF is achieved by routing the emissions from the Group 1 process vent to the NDC flare. The wastewater streams in this unit have been classified as MON Group 2 wastewater streams.

Periodic Monitoring

Opacity/Particulate

Compliance with the opacity and particulate limitations is determined by Method 9 and Method 5, respectively. Compliance with the opacity and particulate limitations is indicated for the process vent sources by performing visual inspections on the baghouses. Compliance is indicated for the molten hopper by maintaining the scrubber flow rate (CPMS). The flow rate is calculated on a daily average basis.

VOC/HAP

Compliance with the Group 1 requirements is indicated by monitoring the flare pilot light to ensure that the flame is present.

This unit is subject to the LDAR requirements of 40 CFR part 63, Subpart UU for HAP as a requirement for equipment leaks of 40 CFR Part 63, Subpart FFFF. Additionally, the facility has implemented a UU LDAR program for VOC as an anti-PSD VOC limitation.

Emission Unit 011: AB-8103 NDC Hot Oil Furnace

Unit Specific Changes

Added the requirements of 40 CFR Part 63, Subpart DDDDD.

Overview

The AB-8103 Hot Oil Furnace is a 178.3 MMBtu/hr process heater. This unit is limited to burning natural gas and NDC by-product fuel gas as fuel.

Emission Standards

Opacity/Particulate

This boiler is subject to the state opacity requirements and the state process weight curve for fuel burning equipment. Additionally, IVXP has proposed a more stringent anti-PSD emission limitation of 0.85 lb/hr.

SO₂

This boiler is subject to the requirements for SO₂ emissions from fuel combustion. The SO₂ emissions are limited to 4 lb/MMBtu.

NO_x

This unit is subject to NSPS, Subpart Db. Since only natural gas and NDC by-product fuel gas is utilized, the NO_x requirement of 0.1 lb/MMBTU would be applicable to this unit. Additionally, IVXP has proposed a more stringent anti-PSD limitation of 6.95 lb/hr.

VOC/HAP

The boiler would be subject to the requirements of 40 CFR Part 63, Subpart DDDDD. Additionally, IVXP has proposed a more stringent anti-PSD limitation of 3.59 lb/hr.

Periodic Monitoring

Opacity/Particulate

Compliance with the opacity and particulate limitations is determined by Method 9 and Method 5, respectively. Compliance with the opacity and particulate limitations is indicated by limiting this source to firing natural gas and NDC by-product (gaseous) fuels.

NO_x

Compliance with the NO_x requirements is determined by a continuous emissions monitoring system (CEMS) as required by Subpart Db.

VOC/HAP

Compliance with the VOC requirements is determined by the test methods and procedures of §63.7520 of 40 CFR Part 63, Subpart DDDDD. Compliance is indicated by complying with the management practices of Subpart DDDDD. A tune-up is required periodically by §63.7515(d).

Emission Unit 012: Marine Barge Loading Dock

Unit Specific Changes

There were no significant changes made to this unit during the renewal period.

Overview

The marine barge loading dock has various transfer racks for loading benzene and other materials.

Emission Standards

Opacity/Particulate

The flare associated with this unit is subject to the state opacity requirements.

VOC/HAP

The transfer racks are subject to the requirements of 40 CFR Part 61, Subpart BB. Subpart BB requires the emissions from loading of benzene to be reduced by 98% by weight. IVXP routes the

emissions from the loading rack to a flare. Additionally, IVXP has taken a more stringent anti-PSD limitation on the flare of 73 lb/hr.

The storage vessels are subject to 40 CFR Part 63, Subpart Y. The vessels are routed to a flare during loading.

Periodic Monitoring

VOC/HAP

Compliance with the VOC requirements is determined by designing and operating the flare in accordance with §60.18(b) through (f) as stated in §61.302 of 40 CFR Part 61, Subpart BB and §61.272(d) of 40 CFR Part 61, Subpart Y.

The pilot light is required to be monitored to ensure that a flame is present during operation.

Emission Unit 013: Px Loading

Unit Specific Changes

There were no significant changes made to this unit during the renewal period.

Overview

The Px loading facility emission point is a transfer rack.

Emission Standards

VOC/HAP

The Px loading operations is subject to 40 CFR Part 63, Subpart F, G, and H. The transfer rack is maintained as a HON Group 2 transfer rack. Additionally, the source is limited to transferring 379,600,000 gallons of Px during any 12 month period and must be equipped with a submerged fill loader.

This source is subject to the leak detection and repair (LDAR) program of 40 CFR Part 60, Subpart H.

Periodic Monitoring

VOC/HAP

Compliance is determined by the test methods and procedures for transfer racks in §63.128 of 40 CFR Part 63, Subpart G. Compliance is indicated by maintaining records of the amount of material transferred.

The pilot light is required to be monitored to ensure that a flame is present during operation.

Emission Unit 014: Boiler AB8301

Unit Specific Changes

Clarified and added 40 CFR Part 63, Subpart DDDDD requirements and removed liquid fired requirements. IVXP has stated that the unit is no longer capable of firing liquid fuel.

Overview

The AB-8301 boiler a 400 MMBtu/hr natural gas, light liquid, and heavy liquid fired unit. This unit is allowed to fire natural gas and paraxylene gas.

Emission Standards

Opacity/Particulate

This boiler would be subject to the state opacity requirements and the state process weight curve for fuel burning equipment. Additionally, IVXP has proposed a more stringent limitation of 0.85 lb/hr.

SO₂

This boiler is subject to the requirements for SO₂ emissions from fuel combustion. The SO₂ emissions are limited to 4 lb/MMBtu.

NO_x

This unit is subject to NSPS, Subpart Db. Subpart Db requires that the facility maintain NO_x emissions of less than 0.10 lb/MMBtu when firing natural gas. Additionally, the boiler is subject to anti-PSD limitations.

CO

The boiler is subject to an anti-PSD limitation of 45.6 lb/hr for CO.

HAP

The boiler is subject to the requirements of 40 CFR Part 63, Subpart DDDDD. The boiler is subject to the management practices and would require a tune-up every 5 years.

Periodic Monitoring

Opacity/Particulate

Compliance with the opacity and particulate limitations is determined by Method 9 and Method 5, respectively. Compliance is indicated by limiting the type of fuel fired in the source.

NO_x

Compliance with the NO_x requirements is determined by a continuous emissions monitoring system (CEMS) as required by Subpart Db.

HAP

Compliance with the HAP requirements is determined by test methods and procedures of §63.7520 of 40 CFR Part 63, Subpart DDDDD. A performance tune-up is required periodically by §63.7515(d).

Emission Unit 015: Boiler 6351B

Unit Specific Changes

Added specific requirements of 40 CFR Part 63, Subpart DDDDD.

Overview

The Boiler 6351B is a 249 MMBtu/hr natural gas fired boiler.

Emission Standards

Opacity/Particulate

This boiler would be subject to the state opacity requirements and the state process weight curve for fuel burning equipment.

SO₂

This boiler is subject to the requirements for SO₂ emissions from fuel combustion. The SO₂ emissions are limited to 4 lb/MMBtu.

HAP

The boiler is subject to the requirements of 40 CFR Part 63, Subpart DDDDD. The boiler is subject to the management practices and would require a tune-up every 5 years.

Periodic Monitoring

Opacity/Particulate

Compliance with the opacity and particulate limitations is determined by Method 9 and Method 5, respectively. Compliance with the opacity and particulate limitations is indicated by limiting this source to firing natural gas as fuel.

HAP

Compliance with the HAP requirements is determined by test methods and procedures of §63.7520 of 40 CFR Part 63, Subpart DDDDD. A performance tune-up is required periodically by §63.7515(d).

Emission Unit 016: HON Group 1 Tanks

The tanks presented in the following table are considered Group 1 storage tanks with respect to the HON. The capacity, vapor pressure of the material stored, and control requirement of the tanks is included in the table.

Emission Point	Capacity	Pollutant	Vapor Pressure	Control Requirement	Standard
AF-116	≥ 151 m ³	HAP	≥ 5.2 kPa but < 76.6 kPa	Internal Floating Roof	335-3-11-.06(6)
AF-6116	≥ 151 m ³	HAP	≥ 5.2 kPa, but < 76.6 kPa	External Floating Roof	335-3-11-.06(6)
AF-6116	N/A	HAP	<3.13 psia at annual avg. T of 60.6 °F	External Floating Roof	335-3-14-.04
AF-6117	≥ 151 m ³	VOC/HAP	≤ 3.13 psia at annual avg. T of 60.6 °F	Internal Floating Roof	335-3-10-.02(9) 335-3-14-.04
AF-6861	≥ 151 m ³	VOC/HAP	≤ 3.13 psia at annual avg. T of 60.6 °F	Internal Floating Roof	335-3-10-.02(9) 335-3-14-.04
AF-6117 AF-6861	N/A	HAP	≥ 5.2 kPa but < 76.6 kPa	HON, Subpart G Group 1 Tank while storing light aromatics	335-3-11-.06(6)
AF-6117 AF-6861	N/A	HAP	N/A	HON, Subpart G Group 2 Tank while storing mixed xylenes	335-3-11-.06(6)
HON Storage Vessels		HAP		Subpart H LDAR program	335-3-11-.06(7)

Emission Unit 017: HON Group 2 Tanks

The tanks presented in the following table are considered Group 2 storage tanks with respect to 40 CFR Part 63, Subpart G, vessels subject to 40 CFR Part 60, Subpart K, and/or have taken limitations in order to avoid PSD review. The tanks documentation (storage material, vapor pressure, etc.) must be maintained for the life of the tanks.

Emission Point	Capacity	Vapor Pressure	Control Requirement	Standard
AF-117	≥ 151 m ³	< 5.2 kPa	HON Group 2 Storage Vessel	335-3-11-.06(6)
AF-121	≥ 151 m ³	< 5.2 kPa	HON Group 2 Storage Vessel	335-3-11-.06(6)
AF-6111	≥ 151 m ³	< 5.2 kPa	HON Group 2 Storage Vessel	335-3-11-.06(6)
AF-6112	≥ 151 m ³	< 5.2 kPa	HON Group 2 Storage Vessel	335-3-11-.06(6)
AF-6113	≥ 151 m ³	< 5.2 kPa	HON Group 2 Storage Vessel	335-3-11-.06(6)
AF-6114	≥ 151 m ³	< 5.2 kPa	HON Group 2 Storage Vessel	335-3-11-.06(6)
AF-6120	≥ 151 m ³	< 5.2 kPa	HON Group 2 Storage Vessel	335-3-11-.06(6)

AF-6122	$\geq 151 \text{ m}^3$	< 5.2 kPa	HON Group 2 Storage Vessel	335-3-11-.06(6)
AF-6101	$\geq 151 \text{ m}^3$	< 5.2 kPa	HON Group 2 Storage Vessel	335-3-11-.06(6)
AF-6851	$\geq 151 \text{ m}^3$	< 5.2 kPa	HON Group 2 Storage Vessel	335-3-11-.06(6)
AF-6851	N/A	< 570 mmHg	Internal Floating Roof	335-3-10-.02(9)
AF-6851	N/A	N/A	Annual throughput of 48,000,000 gallons	335-3-14-.04
AF-1106	$\geq 151 \text{ m}^3$	< 5.2 kPa	HON Group 2 Storage Vessel	335-3-11-.06(6)
NF-405	$\geq 151 \text{ m}^3$	< 5.2 kPa	HON Group 2 Storage Vessel	335-3-11-.06(6)
AF-8802	$\geq 151 \text{ m}^3$	< 5.2 kPa	HON Group 2 Storage Vessel	335-3-11-.06(6)
BF-105	$\geq 151 \text{ m}^3$	< 5.2 kPa	HON Group 2 Storage Vessel	335-3-11-.06(6)
AF-8104	$\geq 151 \text{ m}^3$	< 5.2 kPa	HON Group 2 Storage Vessel	335-3-11-.06(6)
AF-4117	$\geq 151 \text{ m}^3$	< 5.2 kPa	HON Group 2 Storage Vessel	335-3-11-.06(6)
AF-120	$\geq 151 \text{ m}^3$	< 5.2 kPa	HON Group 2 Storage Vessel	335-3-11-.06(6)
FD-781	$\geq 151 \text{ m}^3$	< 5.2 kPa	HON Group 2 Storage Vessel	335-3-11-.06(6)
AF-6100	$\geq 151 \text{ m}^3$	< 5.2 kPa	HON Group 2 Storage Vessel	335-3-11-.06(6)
AF-6151	$\geq 151 \text{ m}^3$	< 5.2 kPa	HON Group 2 Storage Vessel	335-3-11-.06(6)
AF-6152	$\geq 151 \text{ m}^3$	< 5.2 kPa	HON Group 2 Storage Vessel	335-3-11-.06(6)
AF-6152	N/A	< 570 mmHg	Internal Floating Roof	335-3-10-.02(9)
AF-6152	N/A	N/A	Annual Throughput of 83,451,900 gallons	335-3-14-.04
AF-6102	$\geq 151 \text{ m}^3$	< 5.2 kPa	HON Group 2 Storage Vessel	335-3-11-.06(6)
AF-4131	$\geq 151 \text{ m}^3$	< 5.2 kPa	HON Group 2 Storage Vessel	335-3-11-.06(6)
AF-1105	$\geq 151 \text{ m}^3$	< 5.2 kPa	HON Group 2 Storage Vessel	335-3-11-.06(6)

Emission Point 018: MON Group 1 Tanks

The tanks presented in the following table are considered Group 1 storage tanks with respect to 40 CFR Part 63, Subpart FFFF. The capacity, vapor pressure of the material stored, and control requirement of the tanks is included in the table.

Emission Point	Capacity	Vapor Pressure	Control Requirement	Standard
AF-103	> 10,000 gallons	≥ 6.9 kPa, but < 76.6 kPa	Internal Floating Roof	335-3-11-.06(83)
AF-104	> 10,000 gallons	≥ 6.9 kPa but < 76.6 kPa	Internal Floating Roof	335-3-11-.06(83)
Process Fugitives			Subpart UU LDAR Program	335-3-11-.06(83)

Emission Point 019: MON Group 2 Tanks

The tanks presented in the following table are considered Group 2 storage vessels with respect to 40 CFR Part 63, Subpart FFFF, subject to 40 CFR Part 60, Subpart Kb, and/or have taken limitations in order to avoid PSD review. The tanks documentation (storage material, vapor pressure, etc.) must be maintained for the life of the tanks. In addition to the requirements of the MON, multiple storage vessels are subject to anti-PSD limitations and BF-104 is subject to the requires of 40 CFR Part 60, Subpart Kb.

Emission Point	Capacity	Vapor Pressure	Control Requirement	Standard
AD-8801	$\geq 10,000$ gallons	< 6.9 kPa	MON Group 2 Storage Vessel	335-3-11-.06(83)
AD-8801	N/A	N/A	Vent to NDC Flare	335-3-14-.04
AF-101	$\geq 10,000$ gallons	< 6.9 kPa	MON Group 2 Storage Vessel	335-3-11-.06(83)
AF-102	$\geq 10,000$ gallons	< 6.9 kPa	MON Group 2 Storage Vessel	335-3-11-.06(83)
AF-111	$\geq 10,000$ gallons	< 6.9 kPa	MON Group 2 Storage Vessel	335-3-11-.06(83)
AF-111	N/A	N/A	Internal Floating Roof	335-3-14-.04
AF-112	$\geq 10,000$ gallons	< 6.9 kPa	MON Group 2 Storage Vessel	335-3-11-.06(83)
AF-112	$\geq 10,000$ gallons	< 6.9 kPa	Internal Floating Roof	335-3-14-.04
AF-1801	$\geq 10,000$ gallons	< 6.9 kPa	MON Group 2 Storage Vessel	335-3-11-.06(83)
AF-8104	N/A	< 3.5 kPa	N/A	335-3-14-.04
AF-8802	N/A	< 3.5 kPa	N/A	335-3-14-.04
BF-104	$\geq 10,000$ gallons	< 6.9 kPa	MON Group 2 Storage Vessel	335-3-11-.06(83)

BF-104	≥ 151 m ³	< 5.2 kPa	Vent to Scrubber BT-101 or Low Pressure Absorber BT-603	335-3-10-.02(9)(b) 335-3-14-.04
BF-105	≥ 10,000 gallons	< 6.9 kPa	MON Group 2 Storage Vessel	335-3-11-.06(83)
BF-105	N/A	< 3.5 kPa	Vent to Scrubber BT-101	335-3-14-.04
BF-106	≥ 10,000 gallons	< 6.9 kPa	MON Group 2 Storage Vessel	335-3-11-.06(83)
BF-106	N/A	N/A	Vent to Scrubber NT-1501	335-3-14-.04
ND-302	≥ 10,000 gallons	< 6.9 kPa	MON Group 2 Storage Vessel	335-3-11-.06(83)
ND-302	N/A	< 3.5 kPa	Vent to NDC Flare	335-3-14-.04
ND-610A	≥ 10,000 gallons	< 6.9 kPa	MON Group 2 Storage Vessel	335-3-11-.06(83)
ND-610A	N/A	< 3.5 kPa	Vented to Scrubber NT-1501	335-3-14-.04
ND-610B	≥ 10,000 gallons	< 6.9 kPa	MON Group 2 Storage Vessel	335-3-11-.06(83)
ND-610B	N/A	< 3.5 kPa	Vent to Scrubber NT-1501	335-3-14-.04
NF-405	≥ 10,000 gallons	< 6.9 kPa	MON Group 2 Storage Vessel	335-3-11-.06(83)
NF-405	N/A	< 3.5 kPa	Vent to NDC Flare	335-3-14-.04
Process Fugitives			Subpart UU LDAR Program	335-3-11-.06(83)

Emission Unit 020: RICE

The engine identification, rated power, ignition type, service, emission standards, and standard for which the engine is subject to is listed below for each engine.

Emission Point	Rated Power (hp)	Ignition Type (CI or SI) ¹	Service	Emission Standards	Standard
AM-2010A	217	SI	Emergency	N/A	335-3-11-.06(103)
AM-901	67	SI			335-3-11-.06(103)
FM-101-1	1005	CI			335-3-11-.06(103)
HM-101-1	749	CI			335-3-11-.06(103)
HHM-101-1	749	CI			335-3-11-.06(103)
AG-218B	552	CI			335-3-11-.06(103)
AG-203B	552	CI			335-3-11-.06(103)

AM-8915	150	CI			335-3-11-.06(103)
AM-3003B	122	CI			335-3-11-.06(103)
AM-6860A	60	CI			335-3-11-.06(103)
AM-3000	606	SI			335-3-11-.06(103)
AM-6511	321	SI			335-3-11-.06(103)
EM-1101	270	SI			335-3-11-.06(103)
BM-101-1	1141	CI			335-3-11-.06(103)
AM-4000	480	CI	Emergency	6.4 g/KW-hr HC + NOx	335-3-10-.02(87) 335-3-11-.06(103)
				3.5 g/KW-hr CO	
				0.20 g/KW-hr	
AM-902	36	SI		10 g/HP-hr HC + NOx	335-3-10-.02(88) 335-3-11-.06(103)
				387 g/HP-hr CO	
AM-903	14.8	SI		8 g/HP-hr HC + NOx	335-3-10-.02(88) 335-3-11-.06(103)
				610 g/HP-hr CO	
AM-904	14.8	SI		8 g/HP-hr HC+NOx	335-3-10-.02(88) 335-3-11-.06(103)
				610 g/HP-hr CO	
KM-806-2	531	CI		2.98 g/HP-hr HC + NOx	335-3-10-.02(87) 335-3-11-.06(103)
			0.15 g/HP-hr PM		
			2.61 g/HP-hr CO		
AG-6860A	60	CI	Non-Emergency	N/A	335-3-11-.06(103)
AG-6860B	42	CI			335-3-11-.06(103)
AG-6860E	50	CI			335-3-11-.06(103)
HCD1	67	CI			335-3-11-.06(103)
HCD2	67	CI			335-3-11-.06(103)
CM-3	80	CI			335-3-11-.06(103)

CAM

In accordance with Section 64.5 (a)(2), CAM submittals are required for significant permit revisions, including Title V renewals, for pollutant-specific emissions units that use a control device to comply with an applicable standard or emission limitation and are units with a PTE at or greater than 100 percent of the major source threshold for a given pollutant without taking into account emissions reductions achieved by air pollution control devices. The CAM rule requires facilities to monitor compliance indicators for emission units to provide reasonable assurance for compliance with regulatory emission limitations. Based on the Title V application, the facility currently has the following emission sources subject to CAM.

- No. 3 OX (PM)
- No. 3 PTA (PM)
- No. 4 OX (PM & CO)
- No. 4 PTA (PM)
- No. 5 OX (PM & CO)
- No. 5 PTA (PM)
- NDC (PM)

The facility has developed a compliance assurance monitoring (CAM) plan for the units listed above. The CAM plan is outlined in appendix A of this statement.

Appendix A

CAM
Indorama Ventures Xylenes & PTA, LLC
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CAM Plan for No. 3 OX - Storage Silo Scrubber

I.	Indicator	Scrubber Reflux Flow Rate
	Measurement Approach	Measure reflux flow with flow meter
II.	Indicator Range	The monitoring range of greater than 20 gpm for the scrubber reflux flow is based on any combination of the following to reasonably assure compliance with the applicable PM emission limit: operational and stack test data, vendor recommendations, equipment design properties, and visual inspections. During source tests for CAM, the range may be exceeded in order to determine the compliance curve.
III.	Performance Criteria	
	Data Representativeness	Normal data accuracy expected with common flow measurement devices
	Verification of Operational Status	The silo will be determined to be operational when transfers are occurring to the silo.
	Quality Assurance and Control Practices	Calibrate, maintain, and operate the devices in accordance with manufacturer specifications.
	Monitoring Frequency	Measured continuously.
	Data Collection Procedures	Recorded at least once per 15-minutes.
	Averaging Period	A daily average will be calculated from all valid 15-minute monitoring periods and recorded. A 15-minute monitoring period will be valid when at least one measured value for a given monitoring parameter is available while the process was operating
	Excursions	<p>A monitoring excursion will be deemed to have occurred if either of the following are met:</p> <ul style="list-style-type: none"> ▪ The daily average for flow is outside the approved monitoring range. ▪ The number of valid monitoring periods is less than 50% of the actual hours of operation in a day

CAM Plan for No. 3 PTA - Crystallizer Vent Scrubber

I.	Indicator	Scrubber Reflux Flow Rate
	Measurement Approach	The liquid flow rate will be monitored with a flow meter
II.	Indicator Range	The monitoring range of greater than 226 gpm for the scrubber liquid flow is based on a combination of the following to reasonably assure compliance with the applicable PM emission limit: operational and stack test data, vendor recommendations, equipment design properties, and visual inspections. During source tests for CAM, the range may be exceeded in order to determine the compliance curve.
III.	Performance Criteria	
	Data Representativeness	Normal data accuracy expected with common flow measurement devices
	Verification of Operational Status	The scrubber will be determined to be operational when the unit is operating.
	Quality Assurance and Control Practices	Calibrate, maintain, and operate the devices in accordance with manufacturer specifications.
	Monitoring Frequency	Measured continuously.
	Data Collection Procedures	Recorded at least once per 15-minutes.
	Averaging Period	A daily average will be calculated from all valid 15-minute monitoring periods and recorded. A 15-minute monitoring period will be valid when at least one measured value for a given monitoring parameter is available while the process was operating
	Excursions	<p>A monitoring excursion will be deemed to have occurred if either of the following are met:</p> <ul style="list-style-type: none"> ▪ The daily average for flow is outside the approved monitoring range. ▪ The number of valid monitoring periods is less than 50% of the actual hours of operation in a day

CAM Plan for No. 4 OX - HPVGT Reactor

I.	Indicator	HPVGT Reactor outlet temperature
	Measurement Approach	The outlet temperature is monitored with a thermocouple.
II.	Indicator Range	The monitoring range of greater than 530 degrees Fahrenheit has been established for the HPVGT Reactor outlet temperature based on a combination of the following to reasonably assure compliance with the applicable CO emission limit: operational and stack test data, vendor recommendations, equipment design properties, and visual inspections. During source tests for CAM, the range may be exceeded in order to determine the compliance curve.
III.	Performance Criteria	
	Data Representativeness	Normal data accuracy expected with common temperature measurement devices
	Verification of Operational Status	The HPVGT will be determined to be operational when the oxidation unit is operating and gas is being fed to the HPVGT.
	Quality Assurance and Control Practices	Calibrate, maintain, and operate the devices in accordance with manufacturer specifications.
	Monitoring Frequency	Measured continuously.
	Data Collection Procedures	Recorded at least once per 15-minutes.
	Averaging Period	A daily average will be calculated from all valid 15-minute monitoring periods and recorded. A 15-minute monitoring period will be valid when at least one measured value for the monitoring parameter is available while the process was operating.
	Excursions	<p>A monitoring excursion will be deemed to have occurred if either of the following are met:</p> <ul style="list-style-type: none"> ▪ The daily average for temperature is outside the approved monitoring range. ▪ The number of valid monitoring periods is less than 50% of the actual hours of operation in a day.

CAM Plan for No. 4 OX - Storage Silos Baghouses

I.	Indicator	Scrubber Reflux Flow Rate
	Measurement Approach	Measure reflux with flow meter
II.	Indicator Range	Compliance with the applicable PM emission limit will be demonstrated by maintaining the scrubber reflux flow greater than the average flow in the most recent PM compliance test. During subsequent PM compliance tests for CAM, the scrubber reflux flow may drop below this average flow limit in order to determine the compliance curve.
III.	Performance Criteria	
	Data Representativeness	Normal data accuracy expected with common pressure reading devices
	Verification of Operational Status	The silo will be determined to be operational when transfers are occurring to the silo.
	Quality Assurance and Control Practices	Calibrate, maintain, and operate the devices in accordance with manufacturer specifications.
	Monitoring Frequency	Measured continuously.
	Data Collection Procedures	Recorded at least once per 15-minutes.
	Averaging Period	A daily average will be calculated from all valid 15-minute monitoring periods and recorded. A 15-minute monitoring period will be valid when at least one measured value for a given monitoring parameter is available while the process was operating.
	Excursions	<p>A monitoring excursion will be deemed to have occurred if either of the following are met:</p> <ul style="list-style-type: none"> ▪ The daily average for scrubber reflux flow rate is outside the approved monitoring range. ▪ The number of valid monitoring periods is less than 50% of the actual hours of operation in a day

CAM Plan for No. 4 PTA - Crystallizer Vent Scrubber

I.	Indicator	Scrubber reflux flow rate
	Measurement Approach	The reflux flow rate will be monitored with a flow meter.
II.	Indicator Range	The monitoring range of greater than 150 gpm for the scrubber liquid flow is based on a combination of the following to reasonably assure compliance with the applicable PM emission limit: operational and stack test data, vendor recommendations, equipment design properties, and visual inspections. During source tests for CAM, the range may be exceeded in order to determine the compliance curve.
III.	Performance Criteria	
	Data Representativeness	Normal data accuracy expected with common flow measurement devices
	Verification of Operational Status	The scrubber will be determined to be operational when the unit is operating.
	Quality Assurance and Control Practices	Calibrate, maintain, and operate the devices in accordance with manufacturer specifications.
	Monitoring Frequency	Measured continuously.
	Data Collection Procedures	Recorded at least once per 15-minutes.
	Averaging Period	A daily average will be calculated from all valid 15-minute monitoring periods and recorded. A 15-minute monitoring period will be valid when at least one measured value for a given monitoring parameter is available while the process was operating
	Excursions	<p>A monitoring excursion will be deemed to have occurred if either of the following are met:</p> <ul style="list-style-type: none"> ▪ The daily average for flow is outside the approved monitoring range. ▪ The number of valid monitoring periods is less than 50% of the actual hours of operation in a day

CAM Plan for No. 5 OX - CATOX Reactor

I.	Indicator	CATOX Reactor outlet temperature
	Measurement Approach	The outlet temperature is monitored with a thermocouple.
II.	Indicator Range	The monitoring range of greater than the average outlet temperature that demonstrated CO compliance in the most recent source test. If the CATOX catalyst is replaced, the vendor's recommended temperature for CO destruction will be the limit until CO testing is completed. The CATOX Reactor outlet temperature is based on a combination of the following to reasonably assure compliance with the applicable CO emission limit: operational and stack test data, vendor recommendations, and equipment design properties. During subsequent CO source tests for CAM, the minimum temperature may drop below the minimum range in order to determine the compliance curve..
III.	Performance Criteria	
	Data Representativeness	Normal data accuracy expected with common temperature measurement devices
	Verification of Operational Status	The CATOX will be determined to be operational when the oxidation unit is operating and gas is being fed to the CATOX reactor.
	Quality Assurance and Control Practices	Calibrate, maintain, and operate the devices in accordance with manufacturer specifications.
	Monitoring Frequency	Measured continuously.
	Data Collection Procedures	Recorded at least once per 15-minutes.
	Averaging Period	A daily average will be calculated from all valid 15-minute monitoring periods and recorded. A 15-minute monitoring period will be valid when at least one measured value for the monitoring parameter is available while the process was operating.
	Excursions	<p>A monitoring excursion will be deemed to have occurred if either of the following are met:</p> <ul style="list-style-type: none"> ▪ The daily average for temperature is outside the approved monitoring range. ▪ The number of valid monitoring periods is less than 50% of the actual hours of operation in a day.

CAM Plan for No.5 OX - Storage Silos Baghouses

I.	Indicator	Visual emissions greater than normal
	Measurement Approach	Visual emissions from the baghouse exhaust will be monitored when bypass occurs by personnel familiar with Method 9.
II.	Indicator Range	An excursion is defined as visible emissions greater than normal.
III.	Performance Criteria	
	Data Representativeness	Observations are made at the baghouse exhaust.
	Verification of Operational Status	The silo will be determined to be operational when transfers are occurring to the silo.
	Quality Assurance and Control Practices	Calibrate, maintain, and operate the devices in accordance with manufacturer specifications. The observer will be familiar with baghouse operations. The observer shall be at least 15 feet, but not more than 0.25 miles, away from the emission source during the observation. The observer shall select a position where the sun is not directly in the observer's eyes.
	Monitoring Frequency	When the oxidation silo scrubber is bypassed, a daily visual observation of the oxidation silo baghouse exhaust shall be conducted.
	Data Collection Procedures	Visual observation recorded once a day indicating whether or not emissions greater than normal occurred during a bypassing event.
	Averaging Period	N/A
	Excursions	<p>A monitoring excursion will be deemed to have occurred if either of the following are met:</p> <ul style="list-style-type: none"> ▪ When bypassing, visual emissions greater than normal, OR ▪ When bypassing, visual observations are not performed.

CAM Plan for No. 5 PTA - Crystallizer Vent Scrubber

I.	Indicator	Scrubber reflux flow rate
	Measurement Approach	The reflux flow rate will be monitored with a flow meter.
II.	Indicator Range	The monitoring range of greater than 150 gpm for the scrubber liquid flow is based on a combination of the following to reasonably assure compliance with the applicable PM emission limit: operational and stack test data, vendor recommendations, equipment design properties, and visual inspections. During source tests for CAM, the range may be exceeded in order to determine the compliance curve.
III.	Performance Criteria	
	Data Representativeness	Normal data accuracy expected with common flow measurement devices
	Verification of Operational Status	The scrubber will be determined to be operational when the unit is operating.
	Quality Assurance and Control Practices	Calibrate, maintain, and operate the devices in accordance with manufacturer specifications.
	Monitoring Frequency	Measured continuously.
	Data Collection Procedures	Recorded at least once per 15-minutes.
	Averaging Period	A daily average will be calculated from all valid 15-minute monitoring periods and recorded. A 15-minute monitoring period will be valid when at least one measured value for a given monitoring parameter is available while the process was operating
	Excursions	<p>A monitoring excursion will be deemed to have occurred if either of the following are met:</p> <ul style="list-style-type: none"> ▪ The daily average for flow is outside the approved monitoring range. ▪ The number of valid monitoring periods is less than 50% of the actual hours of operation in a day

CAM Plan for CRU - D-640 Vent Scrubber

I.	Indicator	Scrubber Reflux Flow Rate
	Measurement Approach	The liquid flow rate will be monitored with a flow meter
II.	Indicator Range	Compliance with the applicable PM emission limit will be demonstrated by maintaining the scrubber reflux flow greater than the average flow in the most recent PM compliance test. During subsequent PM compliance tests for CAM, the scrubber reflux flow may drop below this average flow limit in order to determine the compliance curve.
III.	Performance Criteria	
	Data Representativeness	Normal data accuracy expected with common flow measurement devices
	Verification of Operational Status	The scrubber will be determined to be operational when transfers are occurring to the silo.
	Quality Assurance and Control Practices	Calibrate, maintain, and operate the devices in accordance with manufacturer specifications.
	Monitoring Frequency	Measured continuously.
	Data Collection Procedures	Recorded at least once per 15-minutes.
	Averaging Period	A daily average will be calculated from all valid 15-minute monitoring periods and recorded. A 15-minute monitoring period will be valid when at least one measured value for a given monitoring parameter is available while the process was operating
	Excursions	<p>A monitoring excursion will be deemed to have occurred if either of the following are met:</p> <ul style="list-style-type: none"> ▪ The daily average for flow is outside the approved monitoring range. ▪ The number of valid monitoring periods is less than 50% of the actual hours of operation in a day.

CAM Plan for NDC - NDC Metals Recovery Unit and Baghouse

I.	Indicator	Pressure drop (ΔP) across baghouse cell
	Measurement Approach	The pressure drop will be monitored with a differential pressure gauge on each baghouse cell
II.	Indicator Range	The monitoring range of >0.2 to <30 inches of water for the baghouse cell pressure drop is based on a combination of the following to reasonably assure compliance with the applicable PM emission limit: operational and stack test data, vendor recommendations, equipment design properties, and visual inspections.
III.	Performance Criteria	
	Data Representativeness	Normal data accuracy expected with common pressure reading devices.
	Verification of Operational Status	Incinerator will be considered operational when feed is going to incinerator. Zero feed will negate the need for monitoring data to be collected.
	Quality Assurance and Control Practices	Calibrate, maintain, and operate the devices in accordance with manufacturer specifications.
	Monitoring Frequency	Measured continuously
	Data Collection Procedures	Recorded at least once per 15-minutes.
	Averaging Period	A daily average will be calculated from all valid 15-minute monitoring periods and recorded. A 15-minute monitoring period will be valid when at least one measured value for a given monitoring parameter is available while the process was operating.
	Excursions	<p>A monitoring excursion will be deemed to have occurred if either of the following are met:</p> <ul style="list-style-type: none"> ▪ The daily average for ΔP is outside the approved monitoring range. ▪ The number of valid monitoring periods is less than 50% of the actual hours of operation in a day