State of Utah

SPENCER J. COX
*Governor*

DEIDRE HENDERSON
*Lieutenant Governor*

Department of
Environmental Quality

Kimberly D. Shelley
*Executive Director*

DIVISION OF AIR QUALITY
Bryce C. Bird
*Director*

DAQE-IN101230055-23

May 4, 2023

Eric Benson
HF Sinclair Wood Cross Refining LLC
1070 West 500 South
Woods Cross, UT 84087-1442
eric.benson@hfsinclair.com

Dear Mr. Benson:

Re: Intent to Approve:
Minor Modification to Approval Order DAQE-AN101230053-22 for a Change in Testing Frequency
Project Number: N101230055

The attached document is the Intent to Approve (ITA) for the above-referenced project. The ITA is subject to public review. Any comments received shall be considered before an Approval Order (AO) is issued. The Division of Air Quality is authorized to charge a fee for reimbursement of the actual costs incurred in the issuance of an AO. An invoice will follow upon issuance of the final AO.

Future correspondence on this ITA should include the engineer's name, **John Jenks,** as well as the DAQE number as shown on the upper right-hand corner of this letter. John Jenks, can be reached at (385) 306-6510 or jjenks@utah.gov, if you have any questions.

Sincerely,

Jon L. Black
Jon Black (Apr 27, 2023 09:28 MDT)

Jon L. Black, Manager
New Source Review Section

JLB:JJ:jg

cc: Davis County Health Department
Dan Fagnant, EPA Region 8

**STATE OF UTAH**
**Department of Environmental Quality**
**Division of Air Quality**

# INTENT TO APPROVE
# DAQE-IN101230055-23
# Minor Modification to Approval Order DAQE-AN101230053-22 for a Change in Testing Frequency


**Prepared By**
**John Jenks, Engineer**
**(385) 306-6510**
**jjenks@utah.gov**


**Issued to**
**HF Sinclair - Woods Cross Refinery**

**Issued On**
**May 4, 2023**

Jon L. Black
Jon Black (Apr 27, 2023 09:28 MDT)

**New Source Review Section Manager**
**Jon L. Black**

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# GENERAL INFORMATION

## CONTACT/LOCATION INFORMATION

**Owner Name**
HF Sinclair Wood Cross Refining LLC

**Source Name**
HF Sinclair - Woods Cross Refinery

**Mailing Address**
1070 West 500 South
Woods Cross, UT 840871442

**Physical Address**
393 South 800 West
Woods Cross, UT 84087-1435

**Source Contact**
Name Eric Benson
Phone (801) 299-6623
Email eric.benson@hfsinclair.com

**UTM Coordinates**
424,000 m Easting
4,526,227 m Northing
Datum NAD27
UTM Zone 12

**SIC code** 2911 (Petroleum Refining)

## SOURCE INFORMATION

General Description
The HF Sinclair Woods Cross Refinery is situated on approximately 100 acres of fenced area. The Woods Cross Refinery is a 60,000 barrel per day (bbl) refinery that produces a variety of products including gasoline, natural gas liquids (NGL), propane, butanes, jet fuels, fuel oils, and kerosene products. The refinery receives and distributes products by tanker truck, rail car and pipeline.

NSR Classification
Minor Modification at Major Source

Source Classification
Located in Salt Lake City UT $PM_{2.5}$ NAA, Salt Lake County $SO_2$ NAA
Davis County
Airs Source Size: A

Applicable Federal Standards
NSPS (Part 60), A: General Provisions
NSPS (Part 60), Db: Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units
NSPS (Part 60), Dc: Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units
NSPS (Part 60), J: Standards of Performance for Petroleum Refineries
NSPS (Part 60), Ja: Standards of Performance for Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After May 14, 2007
NSPS (Part 60), K: Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978
NSPS (Part 60), Kb: Standards of Performance for Volatile Organic Liquid Storage Vessels

(Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984
NSPS (Part 60), UU: Standards of Performance for Asphalt Processing and Asphalt Roofing Manufacture
NSPS (Part 60), GGG: Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for which Construction, Reconstruction, or Modification Commenced After January 4, 1983, and on or Before November 7, 2006
NSPS (Part 60), GGGa: Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006
NSPS (Part 60), QQQ: Standards of Performance for VOC Emissions From Petroleum Refinery Wastewater Systems
NSPS (Part 60), IIII: Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
NSPS (Part 60), JJJJ: Standards of Performance for Stationary Spark Ignition Internal Combustion Engines
NESHAP (Part 61), A: General Provisions
NESHAP (Part 61), FF: National Emission Standard for Benzene Waste Operations
MACT (Part 63), A: General Provisions
MACT (Part 63), R: National Emission Standards for Gasoline Distribution Facilities (Bulk Gasoline Terminals and Pipeline Breakout Stations)
MACT (Part 63), CC: National Emission Standards for Hazardous Air Pollutants From Petroleum Refineries
MACT (Part 63), UUU: National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units
MACT (Part 63), ZZZZ: National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines
MACT (Part 63), GGGGG: National Emission Standards for Hazardous Air Pollutants: Site Remediation
Title V (Part 70) Major Source

Project Description

On January 26, 2023, HF Sinclair Woods Cross Refining LLC (HFSWCR) submitted a request for reducing the frequency of testing on several heaters and boilers listed in condition II.B.6.a of its AO (DAQE-AN101230053-22). As outlined in condition II.B.6.a.1, HFSWCR may request approval to conduct $PM_{10}$ testing less frequently than annually upon demonstration through at least three annual tests that the $PM_{10}$ limits are not being exceeded.

The following changes will occur as a result of this request:
-Process heaters 10H2, 19H2, and 33H1, which have not yet been constructed will remain with annual testing requirements.
-All other listed process heaters: 8H2, 20H2, 20H3, 24Hl, 25Hl and boilers: #8, #9, #10, and #11 will now be required to test no less frequently than once every three years (triennially).
-Condition II.B.6.a.1 will be updated to reflect this change.

## SUMMARY OF EMISSIONS

The emissions listed below are an estimate of the total potential emissions from the source. Some rounding of emissions is possible.

| Criteria Pollutant | Change (TPY) | Total (TPY) |
|---|---|---|
| $CO_2$ Equivalent | 0 | 780025.15 |
| Carbon Monoxide | 0 | 897.87 |
| Nitrogen Oxides | 0 | 347.10 |
| Particulate Matter - $PM_{10}$ | 0 | 160.40 |
| Particulate Matter - $PM_{2.5}$ | 0 | 60.70 |
| Sulfur Dioxide | 0 | 110.30 |
| Volatile Organic Compounds | 0 | 223.63 |

| Hazardous Air Pollutant | Change (lbs/yr) | Total (lbs/yr) |
|---|---|---|
| 2,2,4-Trimethylpentane (CAS #540841) | 0 | 5464 |
| Acetaldehyde (CAS #75070) | 0 | 13 |
| Acrolein (CAS #107028) | 0 | 3 |
| Arsenic (TSP) (CAS #7440382) | 0 | 33 |
| Benzene (Including Benzene From Gasoline) (CAS #71432) | 0 | 5925 |
| Beryllium (TSP) (CAS #7440417) | 0 | 2 |
| Cadmium (CAS #7440439) | 0 | 17 |
| Chlorine (CAS #7782505) | 0 | 10600 |
| Chromium Compounds (CAS #CMJ500) | 0 | 21 |
| Cobalt (TSP) (CAS #7440484) | 0 | 1 |
| Ethyl Benzene (CAS #100414) | 0 | 638 |
| Formaldehyde (CAS #50000) | 0 | 1460 |
| Generic HAPs (CAS #GHAPS) | 0 | 1462 |
| Hexane (CAS #110543) | 0 | 35398 |
| Lead (CAS #7439921) | 0 | 36 |
| Manganese (TSP) (CAS #7439965) | 0 | 6 |
| Mercury (Organic) (CAS #22967926) | 0 | 92 |
| Naphthalene (CAS #91203) | 0 | 21 |
| Propylene[1-Propene] (CAS #115071) | 0 | 700 |
| Toluene (CAS #108883) | 0 | 5364 |
| Xylenes (Isomers And Mixture) (CAS #1330207) | 0 | 3137 |
| | **Change (TPY)** | **Total (TPY)** |
| Total HAPs | 0 | 35.20 |

# PUBLIC NOTICE STATEMENT

The NOI for the above-referenced project has been evaluated and has been found to be consistent with the requirements of UAC R307. Air pollution producing sources and/or their air control facilities may not be constructed, installed, established, or modified prior to the issuance of an AO by the Director.

A 30-day public comment period will be held in accordance with UAC R307-401-7. A notification of the intent to approve will be published in the Salt Lake Tribune and Deseret News on May 7, 2023. During the public comment period the proposal and the evaluation of its impact on air quality will be available for the public to review and provide comment. If anyone so requests a public hearing within 15 days of publication, it will be held in accordance with UAC R307-401-7. The hearing will be held as close as practicable to the location of the source. Any comments received during the public comment period and the hearing will be evaluated. The proposed conditions of the AO may be changed as a result of the comments received.

## SECTION I: GENERAL PROVISIONS

The intent is to issue an air quality AO authorizing the project with the following recommended conditions and that failure to comply with any of the conditions may constitute a violation of the AO.

| | |
|---|---|
| I.1 | All definitions, terms, abbreviations, and references used in this AO conform to those used in the UAC R307 and 40 CFR. Unless noted otherwise, references cited in these AO conditions refer to those rules. [R307-101] |
| I.2 | The limits set forth in this AO shall not be exceeded without prior approval. [R307-401] |
| I.3 | Modifications to the equipment or processes approved by this AO that could affect the emissions covered by this AO must be reviewed and approved. [R307-401-1] |
| I.4 | All records referenced in this AO or in other applicable rules, which are required to be kept by the owner/operator, shall be made available to the Director or Director's representative upon request. Unless otherwise specified in this AO or in other applicable state and federal rules, records shall be kept for a minimum of five (5) years. [R307-401-8] |
| I.5 | At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any equipment approved under this AO, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Director which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. All maintenance performed on equipment authorized by this AO shall be recorded. [R307-401-4] |
| I.6 | The owner/operator shall comply with UAC R307-107. General Requirements: Breakdowns. [R307-107] |
| I.7 | The owner/operator shall comply with UAC R307-150 Series. Emission Inventories. [R307-150] |
| I.8 | The owner/operator shall submit documentation of the status of construction or modification of the equipment listed in: II.A.19, II.A.31, II.A.45, II.A.46, II.A.54, II.A.110, II.A.111, II.A.112, II.A.113, II.A.114, II.A.115, II.A.116, II.A.159, II.A.168(9). Documentation shall be submitted to the Director by November 17, 2023. This AO may become invalid if construction is not commenced by November 17, 2023, or if construction is discontinued for 18 months or more. To ensure proper credit when notifying the Director, send the documentation to the Director, attn.: NSR Section. [R307-401-18] |

# SECTION II: PERMITTED EQUIPMENT

The intent is to issue an air quality AO authorizing the project with the following recommended conditions and that failure to comply with any of the conditions may constitute a violation of the AO.

**II.A THE APPROVED EQUIPMENT**

| | |
|---|---|
| II.A.1 | **HF Sinclair Woods Cross Refinery**<br>Permitted Source |
| II.A.2 | **Unit 4: Fluid Catalytic Cracking Unit (FCCU)**<br>8,880 bpd annual average capacity |
| II.A.3 | **4H1: FCC Feed Heater**<br>68.4 MMBtu/hr process furnace, fired on plant gas, restricted to 39.9 MMBtu/hr, equipped with low $NO_x$ burners (LNB) |
| II.A.4 | **4V82 FCC Scrubber**<br>Wet gas scrubber to control Unit 4 FCCU |
| II.A.5 | **Unit 6: Catalytic Reforming Unit (Reformer)** |
| II.A.6 | **6H1**<br>Reformer charge and reheater furnace/waste heat boiler<br>54.7 MMBtu/hr process furnace, fired on plant gas |
| II.A.7 | **6H2: Prefractionator Reboiler Heater**<br>12.0 MMBtu/hr process furnace, fired on plant gas |
| II.A.8 | **6H3: Reformer Reheat Furnace**<br>37.7 MMBtu/hr process furnace, fired on plant gas |
| II.A.9 | **Unit 7: Alkylation Unit** |
| II.A.10 | **7H1: HF Alkylation Regeneration Furnace**<br>4.4 MMBtu/hr process furnace, fired on plant gas |
| II.A.11 | **7H3: HF Alkylation Depropanizer Reboiler**<br>33.3 MMBtu/hr process furnace, fired on plant gas |
| II.A.12 | **Unit 8: Crude Unit**<br>45,000 bpd annual average capacity |
| II.A.13 | **8H2: Crude Furnace #1**<br>99.0 MMBtu/hr process furnace, fired on plant gas, equipped with ultra-low $NO_x$ burner (ULNB) |
| II.A.14 | **Unit 9: Distillate Hydrosulfurization (DHDS) Unit** |
| II.A.15 | **9H1: DHDS Reactor Charge Heater**<br>8.1 MMBtu/hr process furnace, fired on plant gas |
| II.A.16 | **9H2: DHDS Stripper Reboiler**<br>4.1 MMBtu/hr process furnace, fired on plant gas |
| II.A.17 | **Unit 10: Solvent Deasphalting (SDA) Unit** |

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|---|---|
| II.A.18 | **10H1: Asphalt Mix Heater**<br>13.2 MMBtu/hr process furnace, fired on plant gas |
| II.A.19 | **10H2: Hot Oil Furnace**<br>99 MMBtu/hr process furnace, fired on plant gas, equipped with LNB and selective catalytic reduction (SCR) system |
| II.A.20 | **Unit 11: Straight Run Gas Plant (SRGP)** |
| II.A.21 | **11H1: SRGP Depentanizer Reboiler**<br>24.2 MMBtu/hr process furnace, fired on plant gas |
| II.A.22 | **Unit 12: Naphtha Hydrodesulphurization (NHDS) Unit** |
| II.A.23 | **12H1: NHDS Reactor Charge Furnace**<br>50.2 MMBtu/hr process furnace, fired on plant gas, equipped with NGULNB |
| II.A.24 | **Unit 13: Isomerization Unit** |
| II.A.25 | **13H1: Isomerization Reactor Feed Furnace**<br>6.5 MMBtu/hr process furnace, fired on plant gas |
| II.A.26 | **Unit 16: Amine Treatment Unit** |
| II.A.27 | **Unit 17: Sulfur Recovery (SRU)** |
| II.A.28 | **SRU - Tailgas Incinerator**<br>For SRU under 20 LTPD |
| II.A.29 | **Unit 18: Sour Water Stripping (SWS) Unit** |
| II.A.30 | **Unit 19: DHT Unit**<br>Distillate Hydrodesulfurization Treatment |
| II.A.31 | **19H2 DHT Charge Heater**<br>40 MMBtu/hr heater with ULNB |
| II.A.32 | **Unit 20: Gas Oil Hydrocracking (GHC) Unit** |
| II.A.33 | **20H2: Fractionator Charge Heater**<br>47.0 MMBtu/hr process furnace, fired on plant gas, equipped with ULNB |
| II.A.34 | **20H3: Reactor Charge Heater**<br>39.7 MMBtu/hr furnace, fired on plant gas, equipped with ULNB |
| II.A.35 | **Unit 21: NaHS Sour Gas Treatment Unit**<br>Sized at 50 long tons of sulfur per day |
| II.A.36 | **Unit 22: SWS/AS Unit**<br>Sour Water Stripper/Ammonia Stripping |
| II.A.37 | **Unit 23: Benzene Saturation Unit** |
| II.A.38 | **Unit 24: Crude Unit**<br>15,000 bpd annual average capacity |
| II.A.39 | **24H1: Crude Unit Furnace**<br>60.0 MMBtu/hr process furnace, fired on plant gas, equipped with ULNB |

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| II.A.40 | **Unit 25: FCCU**<br>8,500 bpd annual average capacity |
| II.A.41 | **25H1: FCC Feed Heater**<br>17.7 MMBtu/hr process furnace, fired on plant gas, equipped with ULNB |
| II.A.42 | **25FCC Scrubber**<br>Wet gas scrubber to control FCCU Unit 25 and SRU Unit 17<br>Equipped with LoTOx control technology |
| II.A.43 | **Unit 26: Poly Gasoline Unit** |
| II.A.44 | **Unit 29: SRU Backup Scrubber** |
| II.A.45 | **Unit 33: Vacuum Unit** |
| II.A.46 | **33H1: Vacuum Furnace Heater**<br>130.0 MMBtu/hr heater, fired on plant gas, equipped with LNB and SCR |
| II.A.47 | **Unit 45: Asphalt Storage** |
| II.A.48 | **Unit 51: Steam Systems** |
| II.A.49 | **Boiler #4**<br>35.6 MMBtu/hr boiler, fired on plant gas |
| II.A.50 | **Boiler #5**<br>70.0 MMBtu/hr boiler, fired on plant gas, equipped with SCR |
| II.A.51 | **Boiler #8**<br>92.7 MMBtu/hr boiler, fired on plant gas, equipped with LNB and SCR |
| II.A.52 | **Boiler #9**<br>89.3 MMBtu/hr boiler, fired on plant gas, equipped with SCR |
| II.A.53 | **Boiler #10**<br>89.3 MMBtu/hr boiler, fired on plant gas, equipped with SCR |
| II.A.54 | **Boiler #11**<br>150 MMBtu/hr steam boiler, fired on plant gas, equipped with LNB and SCR |
| II.A.55 | **Unit 54: Cooling Towers**<br>All cooling towers implement the Modified El Paso Method utilizing an FID analyzer |
| II.A.56 | **Cooling Tower #4**<br>Built pre 1975 |
| II.A.57 | **Cooling Tower #6**<br>Built pre 1975 |
| II.A.58 | **Cooling Tower #7**<br>Re-built 2006 |
| II.A.59 | **Cooling Tower #8**<br>Built pre 1975 |

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|---|---|
| II.A.60 | **Cooling Tower #10**<br>10,700 gallons per minute capacity induced draft multi-cell flow, equipped with high efficiency drift eliminators (permitted 2013) |
| II.A.61 | **Cooling Tower #11**<br>10,700 gallons per minute capacity induced draft flow, equipped with high efficiency drift eliminators (permitted 2013) |
| II.A.62 | **Unit 56: Wastewater Treatment**<br>Oil/Water Separator<br>Dissolved Gas Floatation Unit<br>Moving Bed Bioreactors |
| II.A.63 | **Unit 66: Flares** |
| II.A.64 | **Unit 66-1: Process Flare South**<br>17,000 standard cubic feet per hour |
| II.A.65 | **Unit 66-2: Process Flare North** |
| II.A.66 | **Unit 68: Tank Farm** |
| II.A.67 | **68H2: North In-tank Asphalt Heater**<br>0.8 MMBtu/hr tank heater at Tank 79, fired with natural gas |
| II.A.68 | **68H3: South In-Tank Asphalt Heater**<br>0.8 MMBtu/hr tank heater at Tank 79, fired with natural gas |
| II.A.69 | **Tank 11: Petroleum Liquids (1932)**<br>9,868 bbl capacity storage tank with fixed roof |
| II.A.70 | **Tank 12: Petroleum Liquids (1932)**<br>9,868 bbl capacity storage tank with internal floating roof, primary seal |
| II.A.71 | **Tank 14: Petroleum Liquids (1932)**<br>2,539 bbl capacity storage tank with fixed roof |
| II.A.72 | **Tank 15: Petroleum Liquids (1932)**<br>5,181 bbl capacity storage tank with fixed roof |
| II.A.73 | **Tank 19: Petroleum Liquids (1933)**<br>7,463 bbl capacity storage tank with fixed roof |
| II.A.74 | **Tank 20: Petroleum Liquids (1935)**<br>7,504 bbl capacity storage tank with fixed roof |
| II.A.75 | **Tank 21: Petroleum Liquids (1935)**<br>354 bbl capacity storage horizontal storage tank |
| II.A.76 | **Tank 23: Petroleum Liquids (2001)**<br>14,600 bbl capacity storage tank with fixed roof |
| II.A.77 | **Tank 24: Petroleum Liquids (1936)**<br>15,016 bbl capacity storage tank with fixed roof |

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|---|---|
| II.A.78 | **Tank 28: Petroleum Liquids (1941)**<br>29,663 bbl capacity storage tank with fixed roof |
| II.A.79 | **Tank 29: Petroleum Liquids (1938)**<br>336 bbl capacity storage tank with fixed roof |
| II.A.80 | **Tank 31: Petroleum Liquids (1940)**<br>29,756 bbl capacity storage tank with fixed roof |
| II.A.81 | **Tank 35: Petroleum Liquids (2001)**<br>105,000 bbl capacity storage tank with fixed roof |
| II.A.82 | **Tank 37: Petroleum Liquids**<br>3,217 bbl capacity storage tank with fixed roof<br>(under re-construction) |
| II.A.83 | **Tank 42A: Petroleum Liquids (1995)**<br>20 bbl capacity vertical storage tank |
| II.A.84 | **Tank 47: Petroleum Liquids (1947)**<br>30,129 bbl capacity storage tank with fixed roof |
| II.A.85 | **Tank 48: Petroleum Liquid (1948)**<br>29,782 bbl capacity storage tank with fixed roof |
| II.A.86 | **Tank 50: Petroleum Liquids (1948)**<br>700 bbl capacity horizontal storage tank |
| II.A.87 | **Tank 51: Petroleum Liquids (1948)**<br>580 bbl capacity horizontal storage tank |
| II.A.88 | **Tank 52: Petroleum Liquids (1948)**<br>1,008 bbl capacity storage tank with fixed roof |
| II.A.89 | **Tank 53: Petroleum Liquids (1948)**<br>1,008 bbl capacity storage tank with fixed roof |
| II.A.90 | **Tank 54: Petroleum Liquids (1948)**<br>1,008 bbl capacity storage tank with fixed roof |
| II.A.91 | **Tank 55: Petroleum Liquids (1948)**<br>1,008 bbl capacity storage tank with fixed roof |
| II.A.92 | **Tank 56: Petroleum Liquids (1948)**<br>1,008 bbl capacity storage tank with fixed roof |
| II.A.93 | **Tank 57: Petroleum Liquids (1948)**<br>1,008 bbl capacity storage tank with fixed roof |
| II.A.94 | **Tank 58: Petroleum Liquids (1949)**<br>15,229 bbl capacity storage tank with fixed roof |
| II.A.95 | **Tank 59: Petroleum Liquids (1948)**<br>30,019 bbl capacity storage tank with fixed roof |

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|---|---|
| II.A.96 | **Tank 61: Petroleum Liquids (1948)**<br>1,008 bbl capacity storage tank with fixed roof |
| II.A.97 | **Tank 63: Petroleum Liquids (1949)**<br>30,135 bbl capacity storage tank with fixed roof |
| II.A.98 | **Tank 65: Petroleum Liquids (1950)**<br>1,011 bbl capacity storage tank with fixed roof |
| II.A.99 | **Tank 70: Heavy Crude (1956)**<br>80,306 bbl capacity storage tank with fixed roof |
| II.A.100 | **Tank 71: Heavy Crude (1969)**<br>67,155 bbl capacity storage tank with internal floating roof, primary and secondary seals |
| II.A.101 | **Tank 72: Heavy Crude (1971)**<br>106,811 bbl liquids storage tank with internal floating roof, primary and secondary seals |
| II.A.102 | **Tank 73: Petroleum Liquids (1975)**<br>1,077 bbl storage tank with fixed roof |
| II.A.103 | **Tank 74: Petroleum Liquids (1975)**<br>2,039 bbl storage tank with fixed roof |
| II.A.104 | **Tank 75: Petroleum Liquids (1975)**<br>2,039 bbl storage tank with fixed roof |
| II.A.105 | **Tank 76: Petroleum Liquids (1975)**<br>2,039 bbl storage tank with fixed roof |
| II.A.106 | **Tank 77: Petroleum Liquids (1983)**<br>5,141 bbl storage tank with fixed roof |
| II.A.107 | **Tank 78: Petroleum Liquids (1952)**<br>5,141 bbl storage tank with fixed roof |
| II.A.108 | **Tank 79: Petroleum Liquids (2006)**<br>10,000 bbl capacity storage tank with fixed roof |
| II.A.109 | **Tank 86: Petroleum Liquids**<br>109,660 bbl capacity storage tank with fixed cone roof |
| II.A.110 | **Tank 87: Petroleum Liquids**<br>109,660 bbl capacity storage tank with fixed cone roof |
| II.A.111 | **Tank 89: Petroleum Liquids**<br>26,730 bbl capacity storage tank with fixed cone roof |
| II.A.112 | **Tank 90: Petroleum Liquids**<br>100,000 bbl capacity storage tank with an external floating roof, and primary and secondary seals |
| II.A.113 | **Tank 91: Petroleum Liquids**<br>109,660 bbl capacity storage tank with fixed roof |
| II.A.114 | **Tank 92: Petroleum Liquids**<br>109,660 bbl capacity storage tank with an external floating roof and primary and secondary seals |

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|---|---|
| II.A.115 | **Tank 93: Petroleum Liquids**<br>109,660 bbl capacity storage tank with an external floating roof and primary and secondary seals |
| II.A.116 | **Tank 94: Petroleum Liquids**<br>109,660 bbl capacity storage tank with an external floating roof and primary and secondary seals |
| II.A.117 | **Tank 99: Petroleum Liquids (2016)**<br>66,000 bbl capacity storage tank with fixed cone roof |
| II.A.118 | **Tank 100: Petroleum Liquids (1952)**<br>53,372 bbl capacity storage tank with external floating roof, primary and secondary seals |
| II.A.119 | **Tank 101: Petroleum Liquids (1952)**<br>53,564 bbl capacity storage tank with external floating roof, primary and secondary seals |
| II.A.120 | **Tank 102: Petroleum Liquids (1952)**<br>52,990 bbl capacity storage tank with external floating roof, primary and secondary seals |
| II.A.121 | **Tank 103: Petroleum Liquids (1952)**<br>24,686 bbl capacity storage tank with fixed roof |
| II.A.122 | **Tank 104: Petroleum Liquids (1952)**<br>24,435 bbl capacity storage tank with external floating roof, primary and secondary seals |
| II.A.123 | **Tank 105: Petroleum Liquids (1952)**<br>24,501 bbl capacity storage tank with external floating roof, primary and secondary seals |
| II.A.124 | **Tank 106: Petroleum Liquids (1952)**<br>24,524 bbl capacity storage tank with an internal floating roof, primary and secondary seals |
| II.A.125 | **Tank 107: Petroleum Liquids (1952)**<br>24,501 bbl capacity storage tank with external floating roof, primary and secondary seals |
| II.A.126 | **Tank 108: Petroleum Liquids (1952)**<br>24,450 bbl capacity storage tank with external floating roof, primary and secondary seals |
| II.A.127 | **Tank 109: Petroleum Liquids (1952)**<br>24,490 bbl capacity storage tank with external floating roof, primary and secondary seals |
| II.A.128 | **Tank 117: Petroleum Liquids (1944)**<br>506 bbl capacity storage tank with no roof |
| II.A.129 | **Tank 118: Petroleum Liquids (2019)**<br>657 bbl capacity storage tank with fixed roof |
| II.A.130 | **Tank 121: Petroleum Liquids (1954)**<br>100,129 bbl capacity storage tank with external floating roof, primary and secondary seals |
| II.A.131 | **Tank 122: Petroleum Liquids (1954)**<br>400 bbl capacity horizontal storage tank |
| II.A.132 | **Tank 123: Petroleum Liquids (1954)**<br>400 bbl capacity horizontal storage tank |
| II.A.133 | **Tank 126: Petroleum Liquids (1955)**<br>64,675 bbl capacity storage tank with external floating roof, primary and secondary seals |

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| II.A.134 | **Tank 127: Petroleum Liquids (1957)**<br>30,497 bbl capacity storage tank with fixed roof |
| II.A.135 | **Tank 128: Petroleum Liquids (1958)**<br>10,100 bbl capacity storage tank with external floating roof, primary and secondary seals |
| II.A.136 | **Tank 129: Petroleum Liquids (1958)**<br>69,600 bbl capacity storage tank with external floating roof, primary and secondary seals |
| II.A.137 | **Tank 131: Petroleum Liquids (1958)**<br>65,159 bbl capacity storage tank with internal floating roof, primary and secondary seals |
| II.A.138 | **Tank 132: Petroleum Liquids (1960)**<br>24,455 bbl capacity storage tank with external floating roof, primary and secondary seals |
| II.A.139 | **Tank 133: Petroleum Liquids (1949)**<br>1,582 bbl capacity horizontal storage tank |
| II.A.140 | **Tank 134: Petroleum Liquids (1949)**<br>1,582 bbl capacity horizontal storage tank |
| II.A.141 | **Tank 135: Petroleum Liquids (1962)**<br>44,154 bbl capacity storage tank with external floating roof, primary and secondary seals |
| II.A.142 | **Tank 136: Petroleum Liquids (1962)**<br>806 bbl capacity horizontal storage tank |
| II.A.143 | **Tank 138: Petroleum Liquids (1963)**<br>44,247 bbl capacity storage tank with internal floating roof and primary seal |
| II.A.144 | **Tank 139: Petroleum Liquids (1965)**<br>14,957 bbl capacity storage tank with fixed roof |
| II.A.145 | **Tank 140: Petroleum Liquids (1965)**<br>14,857 bbl capacity storage tank with fixed roof |
| II.A.146 | **Tank 141: Petroleum Liquids (1965)**<br>1,618 bbl capacity horizontal storage tank |
| II.A.147 | **Tank 143: Petroleum Liquids (1968)**<br>4,008 bbl capacity storage pit with fixed roof |
| II.A.148 | **Tank 145: Petroleum Liquids (1974)**<br>3,985 bbl capacity storage tank with external floating roof, primary and secondary seals |
| II.A.149 | **Tank 146: Petroleum Liquids (1974)**<br>3,985 bbl capacity storage tank with external floating roof, primary and secondary seals |
| II.A.150 | **Tank 147: Petroleum Liquids (1948)**<br>714 bbl capacity horizontal storage tank |
| II.A.151 | **Tank 148: Petroleum Liquids (1948)**<br>714 bbl capacity horizontal storage tank |
| II.A.152 | **Tank 149: Petroleum Liquids (1948)**<br>714 bbl capacity horizontal storage tank |

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| II.A.153 | **Tank 150: Petroleum Liquids (1948)**<br>714 bbl capacity horizontal storage tank |
| II.A.154 | **Tank 151: Petroleum Liquids (1948)**<br>714 bbl capacity horizontal storage tank |
| II.A.155 | **Tank 152: Petroleum Liquids (1948)**<br>714 bbl capacity horizontal storage tank |
| II.A.156 | **Tank 153: Petroleum Liquids (1948)**<br>714 bbl capacity horizontal storage tank |
| II.A.157 | **Tank 159: Petroleum liquids (1987)**<br>4,999 bbl capacity spherical storage tank |
| II.A.158 | **Tank 169: Petroleum Liquids (2020)**<br>750 bbl capacity storage tank with vapor control |
| II.A.159 | **Tank 170: Petroleum Liquids**<br>66,000 bbl capacity storage tank with fixed cone roof |
| II.A.160 | **Tank 171: Petroleum Liquids (2017)**<br>1,600 bbl capacity horizontal storage tank |
| II.A.161 | **Tank 172: Petroleum Liquids (2017)**<br>1,600 bbl capacity horizontal storage tank |
| II.A.162 | **Tank 323: Petroleum Liquids (1992)**<br>14,686 bbl capacity storage tank with internal floating roof, primary seal |
| II.A.163 | **Tank 324: Petroleum Liquids (1947)**<br>714 bbl capacity horizontal storage tank |
| II.A.164 | **East Tank Farm (ETF) Portable Diesel Generator**<br>135 kW diesel fired generator |
| II.A.165 | **Unit 87: Loading/Unloading**<br>Sixteen (16) crude/gas oil/NGL truck unloading bays<br>One (1) NaHS truck loading spot<br>Two (2) NaHS/caustic rail car loading/unloading spots<br>Three (3) caustic truck unloading spot<br>Two (2) sulfur truck loading arms<br>One (1) fuel oil truck loading spot<br>One (1) fuel oil truck unloading spot<br>Four (4) fuel oil/asphalt rail car loading/unloading spots<br>Four (4) oil/diesel/caustic rail car loading/unloading and ethanol rail car unloading spots |

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| II.A.166 | **Unit 87: Loading/Unloading (continued)**<br>Four (4) NGL rail car loading/unloading spots<br>Five (5) NGL/Olefin rail car loading/unloading spots<br>One (1) asphalt truck loading spot<br>One (1) diesel truck unloading spot<br>One (1) light cycle oil truck unloading spot<br>Two (2) propane truck loading spot<br>One (1) kerosene truck loading spot<br>One (1) gasoline truck unloading spot<br>Fourteen (14) fuel oil or asphalt loading spots<br>Twenty-four (24) lube oil loading spots<br>Two (2) bio diesel rail unloading spots |
| II.A.167 | **Ethanol Unloading**<br>Three (3) dedicated ethanol unloading areas which include:<br>One (1) 250 gpm truck unloading pump<br>One (1) 400 gpm LOD charge pump<br>One (1) 250 gpm LOD charge pump<br>Four (4) unloading arms |
| II.A.168 | **Emergency Equipment (Diesel)**<br>1. Diesel powered water well No. 3 (224 hp)<br>2. Caterpillar diesel fire pump No. 1 (393 hp)<br>3. Caterpillar diesel fire pump No. 2 (393 hp)<br>4. Detroit diesel fire pump (180 hp)<br>5. Three (3) diesel powered plant air backup compressors (220 hp each)<br>6. Diesel powered standby generator, Boiler House (470 hp)<br>7. Diesel powered standby generator, Central Control Room (380 hp)<br>8. Diesel powered standby generator (540 hp)<br>9. Diesel powered plant air backup compressor (580 hp) |
| II.A.169 | **Emergency Equipment (Natural Gas)**<br>Two (2) natural gas fired standby generators, Administration Bldg (170 kw each) |

# SECTION II: SPECIAL PROVISIONS

The intent is to issue an air quality AO authorizing the project with the following recommended conditions and that failure to comply with any of the conditions may constitute a violation of the AO.

## II.B REQUIREMENTS AND LIMITATIONS

| II.B.1 | **Conditions on Permitted Source** |
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| II.B.1.a | For all stack testing performed at this source:<br><br>1. The applicant shall provide a pre-test protocol at least 30 days prior to the test. A pretest conference between the owner/operator, the tester, and the Director shall be held at least 30 days prior to the test if directed by the Director. The emission point shall conform to the requirements of 40 CFR 60, Appendix A, Method 1.<br><br>2. Occupational Safety and Health Administration (OSHA)-approved access shall be provided to the test location.<br><br>3. The production rate during all compliance testing shall be no less than 90% of the maximum production rate achieved in the previous three (3) years. If the desired production rate is not achieved at the time of the test, the maximum production rate shall be 110% of the tested achieved rate, but not more than the maximum allowable production rate. This new allowable maximum production rate shall remain in effect until successfully tested at a higher rate. The owner/operator shall request a higher production rate when necessary. Testing at no less than 90% of the higher rate shall be conducted. A new maximum production rate (110% of the new rate) will then be allowed if the test is successful. This process may be repeated until the maximum allowable production rate is achieved.<br><br>4. As applicable and unless otherwise specified in this AO, the following test methods shall be used, although other EPA-approved test methods acceptable to the Director can be substituted and approved through the pre-test protocol:<br><br>Volumetric flow rate - 40 CFR 60, Appendix A, Method 2<br><br>$SO_2$ emissions - 40 CFR 60, Appendix A, Method 6C<br><br>$NO_x$ emissions - 40 CFR 60, Appendix A, Method 7E<br><br>$PM_{10}$ and $PM_{2.5}$ emissions - 40 CFR 51, Appendix M, Methods 5, 5B, 5F, 201a, 202, and CTM-039<br><br>CO emissions - 40 CFR 60, Appendix A, Method 10<br><br>VOC emissions - 40 CFR 60, Appendix A, Method 25a<br><br>5. To determine mass emission rates (lbs/hr, etc.), the pollutant concentration, as determined by the appropriate methods above, shall be multiplied by the volumetric flow rate and any necessary conversion factors determined by the Director to give the results in the specified units of the emission limitation.<br><br>[R307-165, R307-401-8, SIP Section IX.H.1.e, SIP Section IX.H.11.e] |

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| II.B.1.b | For all continuous monitoring devices, the following shall apply:<br><br>1. Except for system breakdown, repairs, calibration checks, and zero and span adjustments required under paragraph (d) 40 CFR 60.13, the owner/operator of an affected source shall continuously operate all required continuous monitoring systems and shall meet minimum frequency of operation requirements as outlined in R307-170 and 40 CFR 60.13. Flow measurement shall be in accordance with the requirements of 40 CFR 52, Appendix E; 40 CFR 60 Appendix B; or 40 CFR 75, Appendix A.<br><br>2. The monitoring system shall comply with all applicable sections of R307-170; 40 CFR 60.13; and 40 CFR 60, Appendix B - Performance Specifications.<br><br>[SIP Section IX.H.1.f.i] |
| II.B.1.c | Visible emissions shall not exceed the following opacity limits:<br><br>All baghouses: 10% opacity<br>FCC Units/FCC Wet Gas Scrubbers: 20% opacity<br>All other scrubbers: 15% opacity<br>Flares: 20% opacity<br>All other combustion sources: 10% opacity<br>All fugitive emission points: 20% opacity.<br><br>[R307-401-8(1)(a)] |
| II.B.1.c.1 | Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9. [SIP Section IX.H.11.f.ii] |
| II.B.1.d | Compliance with any annual limitations shall be determined on a rolling 12-month total except where specifically exempted or otherwise provided for. No later than 20 days after the end of each month, a new 12-month total shall be calculated using data from the previous 12 months. [R307-401] |
| II.B.1.e | The in-plant access road shall be paved, and shall be periodically swept, or sprayed clean as dry conditions warrant or as determined necessary by the Director. [R307-309-12] |
| II.B.1.e.1 | Records of cleaning paved roads shall be kept.<br><br>Records of inclement weather that prevented sweeping/cleaning of in-plant access roads shall also be kept. These records shall include the relevant dates and conditions that prevented sweeping/cleaning, including temperature and precipitation records. [R307-309-12] |
| II.B.1.f | The vehicle speed on in-plant roads shall not exceed 15 miles per hour. The vehicle speed limit on in-plant roads shall be posted and large enough to be read by the drivers. [R307-401-8] |
| II.B.1.g | The owner/operator shall either<br><br>1) install and operate a flare gas recovery system designed to limit hydrocarbon flaring produced from each affected flare during normal operations to levels below the values listed in 40 CFR 60.103a(c), or<br><br>2) limit flaring during normal operations to 500,000 scfd for each affected flare.<br><br>Flare gas recovery is not required for dedicated SRU flare and header systems, or HF flare and header systems.<br><br>[SIP Section IX.H.1.g.v.B] |

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| II.B.1.h | The owner/operator shall:<br><br>A. Comply with the requirements of 40 CFR 60.590a to 60.593a as soon as practicable.<br><br>B. For units complying with the Sustainable Skip Period, previous process unit monitoring results may be used to determine the initial skip period interval provided that each valve has been monitored using the 500-ppm leak definition.<br><br>[SIP Section IX.H.11.g.iv] |
| II.B.2 | **Source-Wide $PM_{10}$ Requirements** |
| II.B.2.a | $PM_{10}$ emissions from all sources shall not exceed 0.416 tons per day (tpd).<br>[SIP Section IX.H.2.f.i] |
| II.B.2.a.1 | The owner/operator shall demonstrate compliance with the source-wide $PM_{10}$ Cap each day as follows:<br><br>A. Total 24-hour $PM_{10}$ emissions for the emission points shall be calculated by adding the daily results of the $PM_{10}$ emissions equations listed below for natural gas, plant gas, and fuel oil combustion. These emissions shall be added to the emissions from the cooling towers and wet scrubbers to arrive at a combined daily $PM_{10}$ emission total<br><br>B. For purposes of this subsection a "day" is defined as a period of 24-hours commencing at midnight and ending at the following midnight<br><br>C. Daily natural gas and plant gas consumption shall be determined through the use of flow meters on all gas-fueled combustion equipment<br><br>D. Daily fuel oil consumption shall be monitored by means of leveling gauges on all tanks that supply fuel oil to combustion sources<br><br>E. The equations used to determine emissions for the boilers and furnaces shall be as follows:<br><br>Emissions (tons/day) = Emission Factor (lb/MMscf) * Natural/Plant Gas Consumption (MMscf/day)/(2,000 lb/ton)<br><br>Emissions (tons/day) = Emission Factor (lb/kgal) * Fuel Oil Consumption (kgal/day)/(2,000 lb/ton)<br><br>F. Results shall be tabulated for each day, and records shall be kept which include all meter readings (in the appropriate units), and the calculated emissions.<br><br>[SIP Section IX.H.2.f.i.C] |

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| II.B.2.a.2 | The emission factors derived from the most current performance test shall be applied to the relevant quantities of fuel combusted. Unless adjusted by performance testing, the default emission factors to be used are as follows:<br><br>A. Natural gas or Plant gas:<br><br>Combustion equipment not listed in condition II.B.6.a: 7.65 lb $PM_{10}$/MMscf<br><br>Combustion equipment listed in condition II.B.6.a: 0.52 lb $PM_{10}$/MMscf<br><br>B. Fuel oil:<br><br>The filterable $PM_{10}$ emission factor for fuel oil combustion shall be determined based on the sulfur content of the oil as follows:<br><br>$PM_{10}$ (lb/1000 gal) = (10 * wt. % S) + 3.22<br><br>The condensable $PM_{10}$ emission factor for fuel oil combustion shall be determined from the latest edition of AP-42.<br><br>C. Cooling Towers:<br><br>The $PM_{10}$ emission factor shall be determined from the latest edition of AP-42.<br><br>D. FCC Wet Scrubbers:<br><br>The $PM_{10}$ emission factors shall be based on the most recent stack test and verified by parametric monitoring.<br><br>[R307-401-8(1)(a), SIP Section IX.H.2.f.i.A] |

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| II.B.2.a.3 | The default emission factors listed in condition II.B.2.a.2 above apply until such time as stack testing is conducted.<br><br>A. Initial stack testing on all equipment listed in condition II.B.6.a that has been constructed as of the date of this permit shall be conducted no later than January 1, 2021, and at least once every three years from the date of the last stack test.<br><br>B. For such equipment which has not been installed as of January 1, 2021, initial stack testing shall follow the schedule as described in 40 CFR 60.8, and at least once every three years from the date of the last stack test.<br><br>C. Stack testing on all existing units listed in condition II.B.6.a shall also be performed at least once every three years from the date of the last stack test.<br><br>Stack testing on all equipment listed in condition II.B.2.a.2 shall be performed as outlined in conditions II.B.1.a and as follows:<br><br>The emission factor for $PM_{10}$ shall be determined through use of CTM-039, or other EPA-approved testing method, as acceptable to the Director. Both the condensable and filterable fractions shall be included. The $PM_{10}$ emission factor from each affected heater and boiler shall be based on the most recent $PM_{10}$ stack test at the affected heater or boiler and its daily fuel consumption (MMBtu/day, HHV). For each day of operation prior to the initial stack test of a newly installed boiler or process heater, the BACT emission factor of 0.0070 lb/MMBtu shall be used.<br><br>D. For combustion equipment not listed in condition II.B.6.a, initial stack testing is not required.<br><br>[40 CFR 60.8, R307-165, SIP Section IX.H.2.f.i.B] |
| II.B.3 | **Source-wide $PM_{2.5}$ Requirements** |
| II.B.3.a | $PM_{2.5}$ emissions (filterable + condensable) from all combustion sources shall not exceed 47.6 tons per rolling 12-month period and 0.134 tons per day (tpd). [SIP Section IX.H.12.g.i] |

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| II.B.3.a.1 | The owner/operator shall demonstrate compliance with the source-wide $PM_{2.5}$ Cap each day as follows:<br><br>A. Total 24-hour $PM_{2.5}$ emissions for the emission points shall be calculated by adding the daily results of the $PM_{2.5}$ emissions equations listed below for natural gas, plant gas, and fuel oil combustion. These emissions shall be added to the emissions from the wet scrubbers to arrive at a combined daily $PM_{2.5}$ emission total.<br><br>B. For purposes of this subsection a "day" is defined as a period of 24-hours commencing at midnight and ending at the following midnight.<br><br>C. Daily natural gas and plant gas consumption shall be determined through the use of flow meters on all gas-fueled combustion equipment.<br><br>D. Daily fuel oil consumption shall be monitored by means of leveling gauges on all tanks that supply fuel oil to combustion sources.<br><br>E. The equations used to determine emissions for the boilers and furnaces shall be as follows:<br><br>Emissions (tons/day) = Emission Factor (lb/MMscf) * Natural/Plant Gas Consumption (MMscf/day)/(2,000 lb/ton)<br><br>Emissions (tons/day) = Emission Factor (lb/kgal) * Fuel Oil Consumption (kgal/day)/(2,000 lb/ton)<br><br>F. Results shall be tabulated for each day, and records shall be kept which include all meter readings (in the appropriate units), and the calculated emissions.<br><br>[SIP Section IX.H.12.g.i.C] |

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| II.B.3.a.2 | The emission factors derived from the most current performance test shall be applied to the relevant quantities of fuel combusted. Unless adjusted by performance testing, the default emission factors to be used are as follows:<br><br>A. Natural gas or Plant gas:<br><br>Combustion equipment not listed in condition II.B.6.a: 7.65 lb $PM_{2.5}$/MMscf<br><br>Combustion equipment listed in condition II.B.6.a: 0.52 lb $PM_{2.5}$/MMscf<br><br>B. Fuel oil:<br><br>The filterable $PM_{2.5}$ emission factor for fuel oil combustion shall be determined based on the sulfur content of the oil as follows:<br><br>$PM_{2.5}$ (lb/1000 gal) = (10 * wt. % S) + 3<br><br>The condensable $PM_{2.5}$ emission factor for fuel oil combustion shall be determined from the latest edition of AP-42.<br><br>C. FCC Wet Scrubbers:<br><br>The $PM_{2.5}$ emission factors shall be based on the most recent stack test and verified by parametric monitoring.<br><br>[R307-401-8(1)(a), SIP Section IX.H.12.g.i.A] |
| II.B.3.a.3 | The default emission factors listed in condition II.B.3.a.2 above apply until such time as stack testing is conducted.<br><br>A. Initial stack testing on all equipment listed in condition II.B.6.a that has been constructed as of the date of this permit shall be conducted no later than January 1, 2021, and at least once every three years from the date of the last stack test.<br><br>B. For such equipment which has not been installed as of January 1, 2021, initial stack testing shall follow the schedule as described in 40 CFR 60.8, and at least once every three years from the date of the last stack test.<br><br>C. Stack testing on all existing units listed in condition II.B.6.a shall also be performed at least once every three years from the date of the last stack test.<br><br>Stack testing on all equipment listed in condition II.B.3.a.2 shall be performed as outlined in conditions II.B.1.a and as follows:<br><br>The emission factor for $PM_{2.5}$ shall be determined through use of CTM-039, or other EPA-approved testing method, as acceptable to the Director. Both the condensable and filterable fractions shall be included. The $PM_{2.5}$ emission factor from each affected heater and boiler shall be based on the most recent $PM_{2.5}$ stack test at the affected heater or boiler and its daily fuel consumption (MMBtu/day, HHV). For each day of operation prior to the initial stack test of a newly installed boiler or process heater, the default emission factor of 0.52 lb/MMscf shall be used.<br><br>D. For combustion equipment not listed in condition II.B.6.a, initial stack testing is not required.<br><br>[40 CFR 60.8, R307-165, SIP Section IX.H.12.g.i.B] |

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| II.B.4 | **Source-wide $NO_x$ Requirements** |
| II.B.4.a | $NO_x$ emissions into the atmosphere from all emission points shall not exceed 347.1 tons per rolling 12-month period and 2.09 tons per day (tpd). [SIP Section IX.H.12.g.ii] |
| II.B.4.a.1 | The owner/operator shall demonstrate compliance with the source-wide $NO_x$ Cap each day as follows:<br><br>A. Total daily $NO_x$ emissions for emission points shall be calculated by adding the results of the $NO_x$ equations for plant gas, fuel oil, and natural gas combustion listed below.<br><br>B. For purposes of this subsection a "day" is defined as a period of 24-hours commencing at midnight and ending at the following midnight.<br><br>C. Daily natural gas and plant gas consumption shall be determined through the use of flow meters.<br><br>D. Daily fuel oil consumption shall be monitored by means of leveling gauges on all tanks that supply combustion sources.<br><br>E. The equations used to determine emissions for the boilers and furnaces shall be as follows:<br><br>Emissions (tons/day) = Emission Factor (lb/MMscf) * Natural Gas Consumption (MMscf/day)/(2,000 lb/ton)<br><br>Emissions (tons/day) = Emission Factor (lb/MMscf) * Plant Gas Consumption (MMscf/day)/(2,000 lb/ton)<br><br>Emissions (tons/day) = Emission Factor (lb/MMBTU) * Burner Heat Rating (BTU/hr)* 24 hours per day /(2,000 lb/ton)<br><br>Emissions (tons/day) = Emission Factor (lb/kgal) * Fuel Oil Consumption (kgal/day)/(2,000 lb/ton)<br><br>F. Results shall be tabulated for each day; and records shall be kept which include the meter readings (in the appropriate units), emission factors, and the calculated emissions.<br><br>[SIP Section IX.H.12.g.ii.C] |

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| II.B.4.a.2 | Unless adjusted by performance testing, the default emission factors to be used are as follows:<br><br>A. Natural gas/refinery fuel gas combustion using:<br><br>Low $NO_x$ burners (LNB): 41 lbs/MMscf<br><br>Ultra-Low $NO_x$ (ULNB) burners: 0.04 lbs/MMbtu<br><br>Next Generation Ultra-Low $NO_x$ burners (NGULNB): 0.10 lbs/MMbtu<br><br>Boiler #5: 0.02 lbs/MMbtu<br><br>All other boilers with selective catalytic reduction (SCR): 0.02 lbs/MMbtu<br><br>All other combustion burners: 100 lb/MMscf<br><br>Where: "Natural gas/refinery fuel gas" shall represent any combustion of natural gas, refinery fuel gas, or combination of the two in the associated burner.<br><br>B. All fuel oil combustion: 120 lbs/Kgal.<br><br>[SIP Section IX.H.12.g.ii.A] |
| II.B.4.a.3 | The default emission factors listed above apply until such time as stack testing is conducted as outlined in II.B.1.a or by NSPS. [SIP Section IX.H.12.g.ii.B] |
| II.B.5 | **Source-wide $SO_2$ Requirements** |
| II.B.5.a | Emissions of $SO_2$ from all emission points (excluding routine SRU turnaround maintenance emissions) shall not exceed 110.3 tons per rolling 12- month period and 0.31 tons per day (tpd). [SIP Section IX.H.12.g.iii] |

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| II.B.5.a.1 | The owner/operator shall demonstrate compliance with the source-wide $SO_2$ Cap each day as follows:<br><br>A. Total daily $SO_2$ emissions shall be calculated by adding daily results of the $SO_2$ emissions equations listed below for natural gas, plant gas, and fuel oil combustion.<br><br>B. For purposes of this subsection a "day" is defined as a period of 24-hours commencing at midnight and ending at the following midnight.<br><br>C. The equations used to determine emissions are:<br><br>Emissions (tons/day) = Emission Factor (lb/MMscf) * Natural Gas Consumption (MMscf/day)/(2,000 lb/ton)<br><br>Emissions (tons/day) = Emission Factor (lb/MMscf) * Plant Gas Consumption (MMscf/day)/(2,000 lb/ton)<br><br>Emissions (tons/day) = Emission Factor (lb/kgal) * Fuel Oil Consumption (kgal/24 hrs)/(2,000 lb/ton)<br><br>D. For purposes of these equations, fuel consumption shall be measured as outlined below:<br><br>Daily natural gas and plant gas consumption shall be determined through the use of flow meters.<br><br>Daily fuel oil consumption shall be monitored by means of leveling gauges on all tanks that supply combustion sources.<br><br>E. Results shall be tabulated for each day, and records shall be kept which include CEM readings for $H_2S$ (averaged for each one-hour period), all meter readings (in the appropriate units), fuel oil parameters (density and wt% sulfur for each day any fuel oil is burned), and the calculated emissions.<br><br>[SIP Section IX.H.12.g.iii.B] |

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| II.B.5.a.2 | The emission factors listed below shall be applied to the relevant quantities of fuel combusted:<br><br>A. Natural gas - 0.60 lb $SO_2$/MMscf<br><br>B. Plant gas - The emission factor to be used in conjunction with plant gas combustion shall be determined through the use of a CEM which will measure the $H_2S$ content of the fuel gas.<br><br>The CEM shall operate as outlined in condition II.B.1.b.<br><br>C. Fuel oil - The emission factor to be used in conjunction with fuel oil combustion shall be calculated based on:<br><br>the weight percent of sulfur, as determined by ASTM Method D-4294-89 or EPA-approved equivalent<br><br>the density of the fuel oil<br><br>and the following equation:<br><br>EF (lb of $SO_2$/kgal) = (density lb/gal) * (1000 gal/kgal) * (wt. %S)/100 * (64 g $SO_2$/32 g S)<br><br>The weight percent sulfur and the fuel oil density shall be recorded for each day any fuel oil is combusted.<br><br>[SIP Section IX.H.12.g.iii.A] |
| II.B.6 | **Conditions on Specific Heaters and Boilers** |
| II.B.6.a | The emissions of $PM_{10}$ from process heaters 8H2, 10H2, 19H2, 20H2, 20H3, 24H1, 25H1, and 33H1, and boilers #8, #9, #10, and #11 shall not exceed:<br><br>1. 9.9 tons per year, combined total, based on a daily rolling 365-day sum<br><br>2. 0.0070 lb/MMbtu each.<br><br>[R307-401-8(1)(a), R307-403-2] |

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| II.B.6.a.1 | To demonstrate compliance with the $PM_{10}$ BACT limits, as expressed in II.B.6.a #2 above, the owner/operator shall conduct stack testing to verify the $PM_{10}$ emissions. This stack testing shall be conducted as follows:<br><br>A. Process heaters: 10H2, 19H2 and 33H1 - testing at least once annually. Upon demonstration through at least three (3) annual tests that the $PM_{10}$ limits are not being exceeded, the owner/operator may request approval to conduct stack testing less frequently than annually.<br><br>B. Process heaters: 8H2, 20H2, 20H3, 24Hl, 25Hl, and boilers #8, #9, #10, and #11 - testing at least once every three years (triennially).<br><br>C. Emissions of $PM_{10}$ shall be determined through use of CTM-039, or other EPA-approved testing method, as acceptable to the Director. The condensable particle emissions shall be used for compliance demonstration and for inventory purposes.<br><br>D. To demonstrate compliance with the $PM_{10}$ emissions cap of 9.9 tons per year, the owner/operator shall calculate and record on a daily basis the daily and 365-day rolling sum $PM_{10}$ emissions for each affected process heater and boiler individually and for the combined total of twelve affected units. The daily $PM_{10}$ emissions from each affected heater and boiler shall be based on the emission factor (lb/MMBtu, HHV) from the most recent $PM_{10}$ stack test at the affected heater or boiler and its daily fuel consumption (MMBtu/day, HHV). For each day of operation prior to the initial stack test of a newly installed boiler or process heater, the BACT emission factor of 0.0070 lb/MMBtu (HHV) shall be used.<br><br>[R307-165] |
| II.B.6.b | The emissions of $NO_x$ shall not exceed:<br><br>1. From process heater 12H1: 0.10 lb/MMBtu each<br><br>2. From process heaters 10H2, 33H1, and boilers #8, #9, #10, #11: 0.02 lb/MMBtu each<br><br>3. From boiler #5: 0.02 lb/MMBtu<br><br>4. From process heaters 8H2, 19H2, 20H3, 24H1, and 25H1: 0.04 lb/MMBtu each.<br><br>[R307-401-8(1)(a)] |
| II.B.6.b.1 | To demonstrate compliance, the owner/operator shall conduct stack testing to verify the $NO_x$ emissions. This stack testing shall be conducted at least once every three years. [R307-165] |
| II.B.6.c | The CO emissions shall not exceed:<br><br>1. From process heaters 19H2, 20H3, 24H1, 25H1, and 33H1: 0.040 lb/MMbtu each<br><br>2. From Boiler #11: 0.037 lb/MMBtu each.<br><br>[R307-401-8(1)(a)] |
| II.B.6.c.1 | To determine compliance the owner/operator shall conduct stack testing to verify the CO emissions. This stack testing shall be conducted at least once every three years. [R307-165] |

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| II.B.6.d | The VOC emissions shall not exceed:<br><br>1. From Boiler #11: 0.004 lb/MMBtu each<br><br>2. From process heaters 19H2, 20H3, 24H1, 25H1, and 33H1: 0.0054 lb/MMbtu each.<br><br>[R307-401-8(1)(a)] |
| II.B.6.d.1 | To demonstrate compliance the owner/operator shall conduct stack testing to verify the VOC emissions. This stack testing shall be conducted at least once every three years. [R307-165] |
| II.B.7 | **Conditions on Green House Gases** |
| II.B.7.a | Total plant wide emissions (excluding emissions covered under 40 CFR 98 Subpart MM - Suppliers of Petroleum Products) of GHG shall not exceed 1,003,300 short tons of $CO_2$e per rolling 12-month period. GHG emissions shall include combined emissions of $CO_2$, CH4 and $N_2O$. Compliance with the rolling 12-month period shall be determined as follows:<br><br>The owner/operator shall multiply the actual rolling 12-month heat input for all fuel gas combustion units by the appropriate emissions factor and global warming potential listed below to calculate emissions of each GHG. The sum of all GHG emissions from all fuel gas combustion units shall be used to evaluate compliance with the $CO_2$e limit. Actual heat input values of natural gas shall be determined by natural gas purchasing records. Actual heat input values of plant gas shall be determined through refinery testing and multiplied by monthly flow rates.<br><br>GHG — Emission Factor — Global Warming Potential<br>$CO_2$ — 53.02 kg/MMBtu — 1<br>CH4 — 0.001 kg/MMBtu — 25<br>$N_2O$ — 0.0001 kg/MMBtu — 298<br><br>Compliance with each limitation shall be determined on a rolling 12-month total. No later than 20 days after the end of each month, a new 12-month total shall be calculated using data from the previous 12 months.<br><br>The owner/operator shall conduct stack testing to verify the $CO_2$ emissions from the fuel gas combustion equipment with heat input greater than or equal to 99.0 MMBtu/hr are no greater than the $CO_2$e emission factors listed above. This stack testing shall be conducted at least once every three (3) years from the date of this AO. $CO_2$ emissions shall be determined using the procedures outlined in 40 CFR 60 Appendix A, Method 3, 3A, or other EPA-approved test method, as acceptable to the Director.<br><br>Calculation, fuel purchase records, and stack test results verifying the $CO_2$e emission factors shall be recorded and maintained. [R307-401-8] |

| II.B.8 | **Conditions on the Fluid Catalytic Cracking Units (Unit 4 & 25)** |
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| II.B.8.a | 1. The emissions of filterable $PM_{10}$ from the FCC Unit 4 wet gas scrubber (4V82 FCC Scrubber) and FCC Unit 25 wet gas scrubber (25 FCC Scrubber) shall not exceed 0.50 lb/1000 lb coke burned.<br><br>Emissions of filterable $PM_{10}$ shall be determined through stack testing to be performed at least once every three (3) years. Stack testing shall be performed through use of 40 CFR 60, Appendix M, Method 5, 5B or 5F, or other EPA-approved testing method, as acceptable to the Director. All particulate captured shall be considered $PM_{10}$.<br><br>2. The emissions of total $PM_{10}$ (filterable plus condensable) from the FCC Unit 25 wet gas scrubber (25 FCC Scrubber) shall not exceed 0.60 lb/1000 lb coke burned.<br><br>Emissions of total $PM_{10}$ shall be determined through stack testing to be performed at least once annually. Upon demonstration through at least three annual tests that the $PM_{10}$ limits are not being exceeded, the owner/operator may request approval to conduct stack testing less frequently than annually. Stack testing shall be performed through use of 40 CFR 60, Appendix M, Method 5 and 202, or other EPA-approved testing method, as acceptable to the Director. All particulate captured shall be considered $PM_{10}$.<br><br>[Consent Decree 1:08-cv-00041, R307-401-8(1)(a), SIP Section IX.H.1.g.i.B] |
| II.B.8.b | $NO_x$ emissions for FCC Unit 4 shall not exceed the following concentrations:<br><br>22.5 ppmvd at 0% $O_2$ per 365-day rolling average; and<br>40 ppmvd at 0% $O_2$ per 7-day rolling average<br><br>$NO_x$ emissions for FCC Unit 25 shall not exceed the following concentrations:<br><br>40 ppmvd at 0% $O_2$ per 365-day rolling average; and<br>80 ppmvd at 0% $O_2$ per 7-day rolling average<br>$SO_2$ emissions for the FCC Units shall not exceed the following concentrations:<br><br>25 ppmvd at 0% $O_2$ per 365-day rolling average; and<br>50 ppmvd at 0% $O_2$ per 7-day rolling average.<br><br>[40 CFR 60 Subpart Ja, R307-401, SIP Section IX.H.1.g.i.A.I] |
| II.B.8.b.1 | Emissions of $NO_x$ and $SO_2$ from the FCC Units shall be determined through use of a CEM. The monitoring system shall perform as outlined in condition II.B.1.b.<br>[R307-170, SIP Section IX.H.1.g.i.A.II] |
| II.B.8.c | CO emissions from the FCC Units shall not exceed 500 ppm by volume (dry basis) one-hour average at 0% oxygen. [40 CFR 60 Subpart J] |
| II.B.8.c.1 | The owner/operator shall install, calibrate, maintain, and operate a CEMs to measure the effluent FCC Units CO emissions. The CEMs shall comply with all applicable sections of R307-170 and 40 CFR 60, Appendix B, Specifications. [R307-170] |
| II.B.8.d | The owner/operator shall utilize monitors to measure volumetric flow rates from the wet gas scrubber stacks. The flow measurement shall be in accordance with the requirements of 40 CFR 52, Appendix E; 40 CFR 60 Appendix B; or 40 CFR 75, Appendix A.<br>[SIP Section IX.H.12.g.i.A] |

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| II.B.9 | **Conditions on the 4H1 FCC Feed Heater** |
| II.B.9.a | The owner/operator shall limit operation of the 4H1 FCC Feed Heater to no more than 39.9 MMBtu/hr maximum firing rate. [Consent Decree] |
| II.B.10 | **Conditions on the Amine Unit** |
| II.B.10.a | The owner/operator shall reduce the $H_2S$ content of the refinery plant gas to 60 ppm or less as described in 40 CFR 60.102a. Compliance shall be based on a rolling average of 365 days. The owner/operator shall comply with the fuel gas monitoring requirements of 40 CFR 60.107a and the related recordkeeping and reporting requirements of 40 CR 60.108a. As used herein, refinery "plant gas" shall have the meaning of "fuel gas" as defined in 40 CFR 60.101a, and may be used interchangeably. [SIP Section IX.H.1.g.ii.A] |
| II.B.11 | **Conditions on the Unit 17 SRU/Tail gas incinerator** |
| II.B.11.a | SRU off gas shall at all times be routed to the 4V82 FCC Scrubber or 25 FCC Scrubber (wet gas scrubbers) prior to being vented to the atmosphere. [R307-401-8(1)(a)] |
| II.B.11.a.1 | SRU off gas shall be routed to the tail gas incinerator for venting directly to the atmosphere only during emergency operations or during plant shutdown when both wet gas scrubbers 4V82 FCC Scrubber and 25 FCC Scrubber are off line. [R307-401-8(1)(a)] |
| II.B.11.b | During periods of SRU downtime, all plant fuel gas will be treated through the SRU Backup Scrubber. [R307-401-8(1)(a), SIP Section IX.H.12] |
| II.B.12 | **Conditions on Cooling Towers** |
| II.B.12.a | The owner/operator shall perform monthly monitoring of Cooling Towers 4, 6, 7, 8, 10, and 11 to comply with the requirements of 40 CFR 63.654 for heat exchange systems in VOC service.<br><br>The owner or operator may elect to use another EPA-approved method other than the Modified El Paso Method if approved by the Director.<br><br>The following applies in lieu of 40 CFR 63.654(b): A heat exchange system is exempt from the requirements in paragraphs 63.654(c) through (g), if it meets any one of the criteria in the following paragraphs (1) through (2) of this section.<br><br>1. All heat exchangers that are in VOC service within the heat exchange system that either:<br><br>a. Operate with the minimum pressure on the cooling water side at least 35 kilopascals greater than the maximum pressure on the process side; or<br><br>b. Employ an intervening cooling fluid, containing less than 10% by weight of VOCs, between the process and the cooling water. This intervening fluid must serve to isolate the cooling water from the process fluid and must not be sent through a cooling tower or discharged. For purposes of this section, discharge does not include emptying for maintenance purposes.<br><br>2. The heat exchange system cools process fluids that contain less than 10% by weight VOCs (i.e., the heat exchange system does not contain any heat exchangers that are in VOC service).<br><br>[40 CFR 63 Subpart CC, R307-401-8(1)(a)] |
| II.B.13 | **Conditions on Portable Diesel Engines and Emergency Equipment** |
| II.B.13.a | The ETF portable diesel generator shall not be operated more than 1,100 hours per rolling 12-month period without prior approval in accordance with R307-401. [R307-401-8(1)(a)] |

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| II.B.13.b | The owner/operator shall not operate each emergency engine on site for more than 100 hours per calendar year during non-emergency situations. There is no time limit on the use of the engines during emergencies. The operation of these engines shall be as outlined in 40 CFR 63 Subpart ZZZZ. [40 CFR 60 Subpart ZZZZ, R307-401-8] |
| II.B.13.b.1 | To determine the duration of operation, the owner/operator shall install a non-resettable hour meter for each emergency engine and the ETF portable diesel generator. [R307-401-8] |
| II.B.13.b.2 | To determine compliance with a rolling 12-month total, the owner/operator shall calculate a new 12-month total by the 20th day of each month using data from the previous 12 months. Records documenting the operation of each emergency engine shall be kept in a log and shall include the following:<br><br>a. The date the emergency engine was used<br><br>b. The duration of operation in hours<br><br>c. The reason for the emergency engine usage<br><br>[R307-401-8, 40 CFR 63 Subpart ZZZZ] |
| II.B.13.c | Small (<100 HP) portable fuel oil-powered equipment is exempt from the requirements of this AO and related emissions are not to be used for purposes of determining compliance. [R307-401-8(1)(a)] |
| II.B.14 | **Conditions on Fuels** |
| II.B.14.a | Except for use in emergency and portable equipment, fuel oil shall not be burned in any existing combustion device at the refinery except during periods of natural gas curtailment.<br><br>The owner/operator shall only use diesel fuel (e.g. fuel oil #1, #2, or diesel fuel oil additives) as a fuel source for the diesel fuel-fired emergency generators and ETF portable diesel generator. [R307-401-8(1)(a)] |
| II.B.14.a.1 | The owner/operator shall only combust diesel fuel that meets the definition of ultra-low sulfur diesel (ULSD) as found in 40 CFR 80.520(a). [R307-401-8(1)(a)] |
| II.B.14.a.2 | To demonstrate compliance with the fuel oil requirements, the owner/operator shall keep and maintain fuel purchase invoices. The fuel purchase invoices shall indicate that the diesel fuel meets the ULSD requirements, or the owner/operator shall obtain certification of sulfur content from the fuel supplier. [R307-401-8(1)(a)] |
| II.B.14.b | Torch oil may be burned in the FCCU (Units 4 and 25) regenerators to assist in starting, restarting, maintaining hot standby, or maintaining regenerator heat balance. [R307-401-8(1)(a)] |

# PERMIT HISTORY

This Approval Order shall supersede (if a modification) or will be based on the following documents:

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| Supersedes | AO DAQE-AN101230053-22 dated September 1, 2022 |
| Is Derived From | NOI dated January 26, 2023 |

# ACRONYMS

The following lists commonly used acronyms and associated translations as they apply to this document:

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| 40 CFR | Title 40 of the Code of Federal Regulations |
| AO | Approval Order |
| BACT | Best Available Control Technology |
| CAA | Clean Air Act |
| CAAA | Clean Air Act Amendments |
| CDS | Classification Data System (used by Environmental Protection Agency to classify sources by size/type) |
| CEM | Continuous emissions monitor |
| CEMS | Continuous emissions monitoring system |
| CFR | Code of Federal Regulations |
| CMS | Continuous monitoring system |
| CO | Carbon monoxide |
| $CO_2$ | Carbon Dioxide |
| $CO_2e$ | Carbon Dioxide Equivalent - Title 40 of the Code of Federal Regulations Part 98, Subpart A, Table A-1 |
| COM | Continuous opacity monitor |
| DAQ/UDAQ | Division of Air Quality |
| DAQE | This is a document tracking code for internal Division of Air Quality use |
| EPA | Environmental Protection Agency |
| FDCP | Fugitive dust control plan |
| GHG | Greenhouse Gas(es) - Title 40 of the Code of Federal Regulations 52.21 (b)(49)(i) |
| GWP | Global Warming Potential - Title 40 of the Code of Federal Regulations Part 86.1818-12(a) |
| HAP or HAPs | Hazardous air pollutant(s) |
| ITA | Intent to Approve |
| LB/YR | Pounds per year |
| MACT | Maximum Achievable Control Technology |
| MMBTU | Million British Thermal Units |
| NAA | Nonattainment Area |
| NAAQS | National Ambient Air Quality Standards |
| NESHAP | National Emission Standards for Hazardous Air Pollutants |
| NOI | Notice of Intent |
| $NO_x$ | Oxides of nitrogen |
| NSPS | New Source Performance Standard |
| NSR | New Source Review |
| $PM_{10}$ | Particulate matter less than 10 microns in size |
| $PM_{2.5}$ | Particulate matter less than 2.5 microns in size |
| PSD | Prevention of Significant Deterioration |
| PTE | Potential to Emit |
| R307 | Rules Series 307 |
| R307-401 | Rules Series 307 - Section 401 |
| $SO_2$ | Sulfur dioxide |
| Title IV | Title IV of the Clean Air Act |
| Title V | Title V of the Clean Air Act |
| TPY | Tons per year |
| UAC | Utah Administrative Code |
| VOC | Volatile organic compounds |