# TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

*Protecting Texas by Reducing and Preventing Pollution*

April 13, 2023

MS BROOKE VANDYGRIFF
CHIEF OPERATING OFFICER
HIF USA LLC
1201 LOUISIANA ST
HOUSTON TX 77002-5600

Re: Initial Permit
Permit Number: 169075
Expiration Date: April 13, 2033
HIF USA LLC
HIF Matagorda eFuels Plant
Bay City, Matagorda County
Regulated Entity Number: RN111500245
Customer Reference Number: CN606018331

Dear Ms. Vandygriff:

HIF USA LLC has requested an initial permit concerning the above-referenced project. In accordance with Title 30 Texas Administrative Code (TAC) Chapter 116 your permit is hereby issued. Enclosed are general conditions, special conditions, and a maximum allowable emission rates table.

This permit will be automatically void upon the occurrence of any of the following, as indicated in 30 TAC §116.120(a):

1. Failure to begin construction within 18 months of the date of issuance,
2. Discontinuance of construction for more than 18 months prior to completion, or
3. Failure to complete construction within a reasonable time.

Upon request, the executive director may grant extensions as allowed in 30 TAC §116.120(b).

If you need further information or have any questions, please contact Ms. Maryam Rasti at (512) 239-1310 or write to the Texas Commission on Environmental Quality, Office of Air, Air Permits Division, MC-163, P.O. Box 13087, Austin, Texas 78711-3087.

Sincerely,

Re: Permit Number: 169075

Samuel Short, Deputy Director
Air Permits Division
Office of Air
Texas Commission on Environmental Quality

Enclosure

cc: Air Section Manager, Region 12 - Houston

Project Number: 342150

# Texas Commission on Environmental Quality
# Air Quality Permit

*A Permit Is Hereby Issued To*
**HIF USA LLC**
*Authorizing the Construction and Operation of*
**HIF Matagorda eFuels Plant**
*Located at* **Bay City, Matagorda County, Texas**
*Latitude 28.8023 Longitude -96.08222*

Permit: 169075
Issuance Date: April 13, 2023
Expiration Date: April 13, 2033

For the Commission

1. **Facilities** covered by this permit shall be constructed and operated as specified in the application for the permit. All representations regarding construction plans and operation procedures contained in the permit application shall be conditions upon which the permit is issued. Variations from these representations shall be unlawful unless the permit holder first makes application to the Texas Commission on Environmental Quality (commission) Executive Director to amend this permit in that regard and such amendment is approved. [Title 30 Texas Administrative Code (TAC) Section 116.116 (30 TAC § 116.116)] [1]
2. **Voiding of Permit**. A permit or permit amendment is automatically void if the holder fails to begin construction within 18 months of the date of issuance, discontinues construction for more than 18 months prior to completion, or fails to complete construction within a reasonable time. Upon request, the executive director may grant an 18-month extension. Before the extension is granted the permit may be subject to revision based on best available control technology, lowest achievable emission rate, and netting or offsets as applicable. One additional extension of up to 18 months may be granted if the permit holder demonstrates that emissions from the facility will comply with all rules and regulations of the commission, the intent of the Texas Clean Air Act (TCAA), including protection of the public's health and physical property; and (b)(1)the permit holder is a party to litigation not of the permit holder's initiation regarding the issuance of the permit; or (b)(2) the permit holder has spent, or committed to spend, at least 10 percent of the estimated total cost of the project up to a maximum of $5 million. A permit holder granted an extension under subsection (b)(1) of this section may receive one subsequent extension if the permit holder meets the conditions of subsection (b)(2) of this section. [30 TAC § 116.120]
3. **Construction Progress**. Start of construction, construction interruptions exceeding 45 days, and completion of construction shall be reported to the appropriate regional office of the commission not later than 15 working days after occurrence of the event. [30 TAC § 116.115(b)(2)(A)]
4. **Start-up Notification**. The appropriate air program regional office shall be notified prior to the commencement of operations of the facilities authorized by the permit in such a manner that a representative of the commission may be present. The permit holder shall provide a separate notification for the commencement of operations for each unit of phased construction, which may involve a series of units commencing operations at different times. Prior to operation of the facilities authorized by the permit, the permit holder shall identify the source or sources of allowances to be utilized for compliance with Chapter 101, Subchapter H, Division 3 of this title (relating to Mass Emissions Cap and Trade Program). [30 TAC § 116.115(b)(2)(B)]
5. **Sampling Requirements**. If sampling is required, the permit holder shall contact the commission's Office of Compliance and Enforcement prior to sampling to obtain the proper data forms and procedures. All sampling and testing procedures must be approved by the executive director and coordinated with the regional representatives of the commission. The permit holder is also responsible for providing sampling facilities and conducting the sampling operations or contracting with an independent sampling consultant. [30 TAC § 116.115(b)(2)(C)]
6. **Equivalency of Methods.** The permit holder must demonstrate or otherwise justify the equivalency of emission control methods, sampling or other emission testing methods, and monitoring methods proposed as alternatives to methods indicated in the conditions of the permit. Alternative methods shall be applied for in writing and must be reviewed and approved by the executive director prior to their use in fulfilling any requirements of the permit. [30 TAC § 116.115(b)(2)(D)]
7. **Recordkeeping.** The permit holder shall maintain a copy of the permit along with records containing the information and data sufficient to demonstrate compliance with the permit, including production records and

operating hours; keep all required records in a file at the plant site. If, however, the facility normally operates unattended, records shall be maintained at the nearest staffed location within Texas specified in the application; make the records available at the request of personnel from the commission or any air pollution control program having jurisdiction in a timely manner; comply with any additional recordkeeping requirements specified in special conditions in the permit; and retain information in the file for at least two years following the date that the information or data is obtained. [30 TAC § 116.115(b)(2)(E)]

1. **Maximum Allowable Emission Rates**. The total emissions of air contaminants from any of the sources of emissions must not exceed the values stated on the table attached to the permit entitled "Emission Sources--Maximum Allowable Emission Rates." [30 TAC § 116.115(b)(2)(F)] [1]
2. **Maintenance of Emission Control**. The permitted facilities shall not be operated unless all air pollution emission capture and abatement equipment is maintained in good working order and operating properly during normal facility operations. The permit holder shall provide notification in accordance with 30 TAC §101.201, 101.211, and 101.221 of this title (relating to Emissions Event Reporting and Recordkeeping Requirements; Scheduled Maintenance, Startup, and Shutdown Reporting and Recordkeeping Requirements; and Operational Requirements). [30 TAC§ 116.115(b)(2)(G)]
3. **Compliance with Rules**. Acceptance of a permit by an applicant constitutes an acknowledgment and agreement that the permit holder will comply with all rules and orders of the commission issued in conformity with the TCAA and the conditions precedent to the granting of the permit. If more than one state or federal rule or regulation or permit condition is applicable, the most stringent limit or condition shall govern and be the standard by which compliance shall be demonstrated. Acceptance includes consent to the entrance of commission employees and agents into the permitted premises at reasonable times to investigate conditions relating to the emission or concentration of air contaminants, including compliance with the permit. [30 TAC § 116.115(b)(2)(H)]
4. **This** permit may not be transferred, assigned, or conveyed by the holder except as provided by rule. [30 TAC § 116.110(e)]
5. **There** may be additional special conditions attached to a permit upon issuance or modification of the permit. Such conditions in a permit may be more restrictive than the requirements of Title 30 of the Texas Administrative Code. [30 TAC § 116.115(c)]
6. **Emissions** from this facility must not cause or contribute to "air pollution" as defined in Texas Health and Safety Code (THSC) §382.003(3) or violate THSC § 382.085. If the executive director determines that such a condition or violation occurs, the holder shall implement additional abatement measures as necessary to control or prevent the condition or violation.
7. **The** permit holder shall comply with all the requirements of this permit. Emissions that exceed the limits of this permit are not authorized and are violations of this permit. [1]

[1] Please be advised that the requirements of this provision of the general conditions may not be applicable to greenhouse gas emissions.

# Common Acronyms in Air Permits

°C = Temperature in degrees Celsius
°F = Temperature in degrees Fahrenheit
°K = Temperature in degrees Kelvin
µg = microgram
$\mu g/m^3$ = microgram per cubic meter
acfm = actual cubic feet per minute
AMOC = alternate means of control
AOS = alternative operating scenario
AP-42 = Air Pollutant Emission Factors, 5th edition
APD = Air Permits Division
API = American Petroleum Institute
APWL = air pollutant watch list
BPA = Beaumont/ Port Arthur
BACT = best available control technology
BAE = baseline actual emissions
bbl = barrel
bbl/day = barrel per day
bhp = brake horsepower
BMP = best management practices
Btu = British thermal unit
Btu/scf = British thermal unit per standard cubic foot or feet
CAA = Clean Air Act
CAM = compliance-assurance monitoring
CEMS = continuous emissions monitoring systems
cfm = cubic feet (per) minute
CFR = Code of Federal Regulations
CN = customer ID number
CNG = compressed natural gas
CO = carbon monoxide
COMS = continuous opacity monitoring system
CPMS = continuous parametric monitoring system
DFW = Dallas/ Fort Worth (Metroplex)
DE = destruction efficiency
DRE = destruction and removal efficiency
dscf = dry standard cubic foot or feet
dscfm = dry standard cubic foot or feet per minute
ED = (TCEQ) Executive Director
EF = emissions factor
EFR = external floating roof tank
EGU = electric generating unit
EI = Emissions Inventory
ELP = El Paso
EPA = (United States) Environmental Protection Agency
EPN = emission point number
ESL = effects screening level
ESP = electrostatic precipitator
FCAA = Federal Clean Air Act
FCCU = fluid catalytic cracking unit
FID = flame ionization detector
FIN = facility identification number
ft = foot or feet
ft/sec = foot or feet per second
g = gram
gal/wk = gallon per week
gal/yr = gallon per year
GLC = ground level concentration
$GLC_{max}$ = maximum (predicted) ground-level concentration
gpm = gallon per minute
gr/1000scf = grain per 1000 standard cubic feet
gr/dscf = grain per dry standard cubic feet
$H_2CO$ = formaldehyde
$H_2S$ = hydrogen sulfide
$H_2SO_4$ = sulfuric acid
HAP = hazardous air pollutant as listed in § 112(b) of the Federal Clean Air Act or Title 40 Code of Federal Regulations Part 63, Subpart C
HC = hydrocarbons
HCl = hydrochloric acid, hydrogen chloride
Hg = mercury
HGB = Houston/Galveston/Brazoria
hp = horsepower
hr = hour
IFR = internal floating roof tank
in $H_2O$ = inches of water
in Hg = inches of mercury
IR = infrared
ISC3 = Industrial Source Complex, a dispersion model
ISCST3 = Industrial Source Complex Short-Term, a dispersion model
K = Kelvin; extension of the degree Celsius scaled-down to absolute zero
LACT = lease automatic custody transfer
LAER = lowest achievable emission rate
lb = pound
lb/day = pound per day
lb/hr = pound per hour
lb/MMBtu = pound per million British thermal units
LDAR = Leak Detection and Repair (Requirements)
LNG = liquefied natural gas
LPG = liquefied petroleum gas
LT/D = long ton per day
m = meter
$m^3$ = cubic meter
m/sec = meters per second
MACT = maximum achievable control technology
MAERT = Maximum Allowable Emission Rate Table
MERA = Modeling and Effects Review Applicability
mg = milligram
mg/g = milligram per gram
mL = milliliter
MMBtu = million British thermal units
MMBtu/hr = million British thermal units per hour
MSDS = material safety data sheet
MSS = maintenance, startup, and shutdown
MW = megawatt
NAAQS = National Ambient Air Quality Standards
NESHAP = National Emission Standards for Hazardous Air Pollutants
NGL = natural gas liquids
NNSR = nonattainment new source review
$NO_x$ = total oxides of nitrogen
NSPS = New Source Performance Standards
PAL = plant-wide applicability limit
PBR = Permit(s) by Rule
PCP = pollution control project

PEMS = predictive emission monitoring system
PID = photo ionization detector
PM = periodic monitoring
PM = total particulate matter, suspended in the atmosphere, including $PM_{10}$ and $PM_{2.5}$, as represented
$PM_{2.5}$ = particulate matter equal to or less than 2.5 microns in diameter
$PM_{10}$ = total particulate matter equal to or less than 10 microns in diameter, including $PM_{2.5}$, as represented
POC = products of combustion
ppb = parts per billion
ppm = parts per million
ppmv = parts per million (by) volume
psia = pounds (per) square inch, absolute
psig = pounds (per) square inch, gage
PTE = potential to emit
RA = relative accuracy
RATA = relative accuracy test audit
RM = reference method
RVP = Reid vapor pressure
scf = standard cubic foot or feet
scfm = standard cubic foot or feet (per) minute
SCR = selective catalytic reduction
SIL = significant impact levels
SNCR = selective non-catalytic reduction
$SO_2$ = sulfur dioxide
SOCMI = synthetic organic chemical manufacturing industry
SRU = sulfur recovery unit
TAC = Texas Administrative Code
TCAA = Texas Clean Air Act
TCEQ = Texas Commission on Environmental Quality
TD = Toxicology Division
TLV = threshold limit value
TMDL = total maximum daily load
tpd = tons per day
tpy = tons per year
TVP = true vapor pressure
VOC = volatile organic compounds as defined in Title 30 Texas Administrative Code § 101.1
VRU = vapor recovery unit or system

## Special Conditions

Permit Number 169075

1. This permit covers only those sources of emissions listed in the attached table entitled “Emission Sources - Maximum Allowable Emission Rates” (MAERT), and those sources are limited to the emission limits and other conditions specified in that table.

2. Non-fugitive emissions from relief valves, safety valves, or rupture discs of gases containing volatile organic compounds (VOC) at a concentration of greater than 1 percent are not authorized by this permit unless authorized on the MAERT. Any releases directly to atmosphere from relief valves, safety valves, or rupture discs of gases containing VOC at a concentration greater than 1 weight percent are not consistent with good practice for minimizing emissions.

### Federal Applicability

3. These facilities shall comply with all applicable requirements of the U.S. Environmental Protection Agency (EPA) regulations on Standards of Performance for New Stationary Sources promulgated in Title 40 Code of Federal Regulations Part 60 (40 CFR Part 60):

   A. Subpart A, General Provisions.

   B. Subpart Db, Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units

   C. Subpart Kb, Standards of Performance for Volatile Organic Liquids Storage Vessels for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984

   D. Subpart VVa, Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006

   E. Subpart NNN, Standards of Performance for Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations

   F. Subpart RRR, Standards of Performance for Volatile Organic Compound Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes

   G. Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

4. These facilities shall comply with all applicable requirements of the U.S. Environmental Protection Agency (EPA) regulations on National Emission Standards for Hazardous Air Pollutants for Source Categories in 40 CFR Part 63:

   A. Subpart A, General Provisions.

   B. Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

   C. Subpart JJJJJJ, National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources

### Heaters and Boilers

5. The heaters (EPNs F-501, F-801, F-590A, F-590B, F-902, F-901, and F-951) and boilers (EPNs F-1701A and F-1701B) shall be fired with plant fuel gas containing a sulfur content of no more than

12.4 ppmv. Compliance with this limit is based on fuel sampling per Special Condition 8. During commissioning and startup/shutdown, boilers F1701-A and F-1701B may fire hydrogen gas if sufficient plant fuel gas is not available.

6. NOx and CO emissions from the heaters (EPNs F-501, F-801, F-590A, F-590B, F-902, F-901, and F-951) shall not exceed the following, except during periods of planned maintenance, startup, and shutdown (MSS):

   0.04 pounds per million British thermal unit (lb/MMBtu) of nitrogen oxides (NOx) on a one hour average; and

   50 parts per million by volume, dry basis (ppmvd) carbon monoxide (CO) at 3% oxygen ($O_2$) on a three hour average

7. $NO_x$ and CO emissions from the boilers (EPNs F-1701A and F-1701B) shall not exceed the following, except during periods of planned maintenance, startup, and shutdown (MSS):

   0.015 lb $NO_x$/MMBtu on an hourly average during normal operation

   40 ppmvd CO corrected to 3% oxygen on an annual average basis and 50 ppmvd on an hourly average basis.

8. The plant fuel gas shall be sampled at least every 6 months to determine total sulfur and net heating value.

9. The permit holder shall install, calibrate, and maintain a continuous emission monitoring system (CEMS) to measure and record the in-stack concentration of NOx, CO, and $O_2$ from the steam boilers (EPNs F-1701A and F-1701B).

   A. The CEMS shall meet the design and performance specifications, pass the field tests, and meet the installation requirements and the data analysis and reporting requirements specified in the applicable Performance Specification Nos. 1 through 9, Title 40 Code of Federal Regulation Part 60 (40 CFR Part 60), Appendix B. If there are no applicable performance specifications in 40 CFR Part 60, Appendix B, contact the TCEQ Office of Air, Air Permits Division for requirements to be met.

   B. Section 1 below applies to sources subject to the quality-assurance requirements of 40 CFR Part 60, Appendix F; section 2 applies to all other sources:

      (1) The permit holder shall assure that the CEMS meets the applicable quality-assurance requirements specified in 40 CFR Part 60, Appendix F, Procedure 1. Relative accuracy exceedances, as specified in 40 CFR Part 60, Appendix F, Section 5.2.3 and any CEMS downtime shall be reported to the appropriate TCEQ Regional Manager, and necessary corrective action shall be taken. Supplemental stack concentration measurements may be required at the discretion of the appropriate TCEQ Regional Manager.

      (2) The system shall be zeroed and spanned daily, and corrective action taken when the 24-hour span drift exceeds two times the amounts specified in the applicable Performance Specification Nos. 1 through 9, 40 CFR Part 60, Appendix B, or as specified by the TCEQ if not specified in Appendix B. Zero and span is not required on weekends and plant holidays if instrument technicians are not normally scheduled on those days.

      Each monitor shall be quality-assured at least quarterly using Cylinder Gas Audits (CGA) in accordance with 40 CFR Part 60, Appendix F, Procedure 1, Section 5.1.2, with the following exception: a relative accuracy test audit (RATA) is not required once

every four quarters (i.e., four successive quarterly CGA may be conducted). An equivalent quality-assurance method approved by the TCEQ may also be used. Successive quarterly audits shall occur no closer than two months.

All CGA exceedances of +15 percent accuracy indicate that the CEMS is out of control.

C. The permit holder shall install and operate a fuel flow meter to measure the gas fuel usage for each steam boiler (EPNs F-1701A and F-1701B). The monitored data shall be reduced to an hourly average flow rate at least once every day, using a minimum of four equally-spaced data points from each one-hour period. Each monitoring device shall be calibrated at a frequency in accordance with the manufacturer's specifications or at least annually, whichever is more frequent, and shall be accurate to within 5 percent. In lieu of monitoring fuel flow, the permit holder may monitor stack exhaust flow using the flow monitoring specifications of 40 Code of Federal Regulations (CFR) Part 60, Appendix B, Performance Specification 6 or 40 CFR Part 75, Appendix A.

The individual average concentrations shall be reduced to units of pounds per million BTU at least once every week as follows: The measured hourly average concentration from the CEMS shall be multiplied by the design maximum firing rate identified in the permit application, PI-1 dated January 5, 2023 (Project 342150) to determine the hourly emission rate.

D. All monitoring data and quality-assurance data shall be maintained by the source. The data from the CEMS may, at the discretion of the TCEQ, be used to determine compliance with the conditions of this permit.

E. The appropriate TCEQ Regional Office shall be notified at least 30 days prior to any required RATA in order to provide them the opportunity to observe the testing.

F. Quality-assured (or valid) data must be generated when the steam boilers are operating except during the performance of a daily zero and span check. Loss of valid data due to periods of monitor break down, out-of-control operation (producing inaccurate data), repair, maintenance, or calibration may be exempted provided it does not exceed 5 percent of the time (in minutes) that the steam boilers are operated over the previous rolling 12-month period. The measurements missed shall be estimated using engineering judgment and the methods used recorded. Options to increase system reliability to an acceptable value, including a redundant CEMS, may be required by the TCEQ Regional Manager.

10. The concentration of ammonia ($NH_3$) from EPNs F-1701A and F-1701B shall not exceed 10 parts per million by volume dry (ppmvd) corrected to 3 percent oxygen ($O_2$), on a rolling 24-hour average and an annual average. This concentration limit shall not apply to MSS activities, during which emissions are limited by the emission rates shown on the MAERT.

11. The $NH_3$ concentration in the stack of EPNs F-1701A and F-1701B shall be tested or calculated according to one of the methods listed below and shall be monitored according to one of the methods listed below. Monitoring $NH_3$ slip is only required on days when the SCR unit is in operation.

A. The holder of this permit may install, calibrate, maintain, and operate a CEMS to measure and record the concentrations of $NH_3$. The $NH_3$ concentrations shall be corrected and reported in accordance with Special Condition No. 10 above.

B. The $NH_3$ slip may be measured using a sorbent or stain tube device specific for $NH_3$ measurement in the appropriate range. The frequency of sorbent or stain tube testing shall be monthly.

(1) If the sorbent or stain tube testing indicates an ammonia ($NH_3$) slip concentration that exceeds 10 parts per million (ppm) at any time, the permit holder shall begin $NH_3$

testing by either the Phenol-Nitroprusside Method, the Indophenol Method, or EPA Conditional Test Method (CTM) 27 on a quarterly basis in addition to the monthly sorbent or stain tube testing.

(2) If the quarterly testing indicates $NH_3$ slip is 10 ppm or less, the Phenol Nitroprusside Indophenol CTM 27 tests may be suspended until sorbent or stain tube testing again indicate 10 ppm $NH_3$ slip or greater.

C. The permit holder may install and operate a second $NO_x$ CEMS probe located before the SCR, upstream of the stack $NO_x$ CEMS, which may be used in association with the SCR efficiency and $NH_3$ injection rate to estimate $NH_3$ slip. This condition shall not be construed to set a minimum $NO_x$ reduction efficiency on the SCR unit.

D. The permit holder may install and operate a dual stream system of $NO_x$ CEMS at the exit of the SCR. One of the exhaust streams would be routed, in an unconverted state, to one $NO_x$ CEMS and the other exhaust stream would be routed through a $NH_3$ converter to convert $NH_3$ to $NO_x$ and then to a second $NO_x$ CEMS. The $NH_3$ slip concentration shall be calculated from the delta between the two $NO_x$ CEMS readings (converted and unconverted).

E. Any other method used for measuring $NH_3$ slip shall require prior approval from the TCEQ Office of Air, Air Permits Division.

12. The permit holder shall maintain prevention and protection measures for the $NH_3$ storage system which include the following:

A. marking and securing the $NH_3$ storage tank so as to protect the tank from accidents that could cause a rupture.

B. A water deluge system shall be installed to cover the tank and loading area to mitigate any airborne releases of $NH_3$. The water deluge system must activate when an ambient safety sensor level of 200 parts per million by volume of $NH_3$ is detected.

13. The permit holder shall maintain the piping and valves in $NH_3$ service as follows:

A. Audio, olfactory, and visual checks for $NH_3$ leaks within the operating area shall be made every eight hours.

B. Immediately, but no later than 24 hours upon detection of a leak, plant personnel shall take one or more of the following actions:

(1) Locate and isolate the leak, if necessary.

(2) Commence repair or replacement of the leaking component.

(3) Use a leak collection or containment system to control the leak until repair or replacement can be made if immediate repair is not possible.

C. Stored $NH_3$ must have a concentration of less than 20% $NH_3$ by weight.

14. Records of AVO checks, any maintenance performed on piping and valves in $NH_3$ service, accidental releases, venting, and any corrective actions taken shall be maintained by the holder of this permit.

**Engines**

15. Each firewater pump and emergency engine (EPNs FPUMP1, FPUMP2, FPUMP3, FPUMP4, FPUMP5, and EGEN1) is limited to 100 hours of non-emergency operation per rolling 12-month

period for readiness testing and maintenance. Records of the hours of operation kept on a monthly and rolling 12-month basis shall be maintained by the holder of this permit.

16. A non-resettable run time meter shall be installed on each firewater pump and emergency engine.

17. Fuel for firewater pumps and emergency engines is limited to ultra-low sulfur diesel (ULSD) containing no more than 15 parts per million by weight (ppmw) sulfur.

18. The engine(s) and after-treatment control device(s) shall be operated and maintained according to the manufacturer's emission-related written instructions.

19. Startup and shutdown of each engine, where the after-treatment control device is not controlling emissions, shall not exceed 1 hour per event.

**Storage Tanks**

20. Storage tank throughput and service shall be limited to the following:

| Tank Identifier | Tank Type | Service | Fill/Withdrawal rate (gallons/hour) | Rolling 12 Month Throughput (gallons) |
|---|---|---|---|---|
| TK-2005 | IFR | On-Spec Gasoline | 26,277 | 292,000,000 |
| Tk-2007A | IFR | Blended Gasoline | 26,471 | 207,033,502 |
| TK-2007B | IFR | Blended Gasoline | 26,471 | 207,033,502 |
| TK-2006 | IFR | Off-spec Gasoline | 26,250 | 229,950,000 |
| TK-2002 | VFR | Stripped Process Condensate | 49,477 | 541,771,096 |
| TK-2401 | VFR | Slop Oil | 18,600 | 203,670,000 |
| TK-2402 | VFR | Slop Methanol | 7,500 | 82,125,000 |
| TK-1901 | VFR | Wastewater | 49,500 | 542,025,000 |
| TK-1902 | VFR | Off Spec Wastewater | 49,500 | 542,025,000 |
| OWS | HFR | Oil water Separator | 1,500 | 16,425,000 |
| DSL-TNK | HFR | Diesel Tank for Emergency Engines | 2,000 | 20,000 |

21. The true vapor pressure of any liquid stored at this facility in an atmospheric tank shall not exceed 11.0 psia.

22. Storage tanks are subject to the following requirements: The control requirements specified in parts A–E of this condition shall not apply (1) where the VOC has an aggregate partial pressure of less than 0.50 psia at the maximum feed temperature or 95°F, whichever is greater, or (2) to storage tanks smaller than 25,000 gallons. (parts A through E are not necessary if only fixed roof tanks are authorized)

    A. The tank emissions must be controlled as specified in one of the paragraphs below:

        (1) An internal floating deck or “roof” shall be installed. A domed external floating roof tank is equivalent to an internal floating roof tank. The floating roof shall be equipped with

one of the following closure devices between the wall of the storage vessel and the edge of the floating roof: (1) a liquid-mounted seal, (2) two continuous seals mounted one above the other, or (3) a mechanical shoe seal.

(2) All vents from Tanks (TK-2002, TK-2401, TK-2402, TK-1901, TK-1902, and OWS) shall be routed to the vapor combustor unit (EPN VCU).

B. For any tank equipped with a floating roof, the permit holder shall perform the visual inspections and any seal gap measurements specified in Title 40 Code of Federal Regulations § 60.113b (40 CFR § 60.113b) Testing and Procedures (as amended at 54 FR 32973, Aug. 11, 1989) or according to the alternative specified in 40 CFR § 60.110b(e) (as amended at 86 FR 5019, Jan. 19, 2021) to verify fitting and seal integrity. Records shall be maintained of the dates inspection was performed, any measurements made, results of inspections and measurements made (including raw data), and actions taken to correct any deficiencies noted.

C. The floating roof design shall incorporate sufficient flotation to conform to the requirements of API Code 650 dated November 1, 1998 except that an internal floating cover need not be designed to meet rainfall support requirements and the materials of construction may be steel or other materials.

D. The tanks shall be designed to completely drain its entire contents to a sump in a manner that leaves no more than 9 gallons of free-standing liquid in the tank or the sump.

E. Tanks shall be constructed or equipped with a connection to a vapor recovery system that routes vapors from the vapor space under the landed roof to a control device.

F. Except for labels, logos, etc. not to exceed 15 percent of the tank total surface area, uninsulated tank exterior surfaces exposed to the sun shall be white or unpainted aluminum. Storage tanks must be equipped with permanent submerged fill pipes.

G. The permit holder shall maintain a record of tank throughput for the previous month and the past consecutive 12 month period for each tank.

**Fugitives**

Piping, Valves, Connectors, Pumps, Agitators, and Compressors – 28VHP

23. The following requirements apply to piping, valves, connectors, pumps, agitators, and compressors containing or in contact with fluids that could reasonably be expected to contain greater than or equal to 10 weight percent volatile organic compounds (VOC) at any time.

A. The requirements of paragraphs F and G shall not apply (1) where the VOC has an aggregate partial pressure or vapor pressure of less than 0.044 pounds per square inch, absolute (psia) at 68°F or (2) operating pressure is at least 5 kilopascals (0.725 psi) below ambient pressure. Equipment excluded from this condition shall be identified in a list or by one of the methods described below to be made readily available upon request.

The exempted components may be identified by one or more of the following methods:

- piping and instrumentation diagram (PID);
- a written or electronic database or electronic file;
- color coding;
- a form of weatherproof identification; or
- designation of exempted process unit boundaries.

B. Construction of new and reworked piping, valves, pump systems, and compressor systems shall conform to applicable American National Standards Institute (ANSI), American

Petroleum Institute (API), American Society of Mechanical Engineers (ASME), or equivalent codes.

C. New and reworked underground process pipelines shall contain no buried valves such that fugitive emission monitoring is rendered impractical. New and reworked buried connectors shall be welded.

D. To the extent that good engineering practice will permit, new and reworked valves and piping connections shall be so located to be reasonably accessible for leak-checking during plant operation. Difficult-to-monitor and unsafe-to-monitor valves, as defined by Title 30 Texas Administrative Code Chapter 115 (30 TAC Chapter 115), shall be identified in a list to be made readily available upon request. The difficult-to-monitor and unsafe-to-monitor valves may be identified by one or more of the methods described in Paragraph A above. If an unsafe to monitor component is not considered safe to monitor within a calendar year, then it shall be monitored as soon as possible during safe to monitor times. A difficult to monitor component for which quarterly monitoring is specified may instead be monitored annually.

E. New and reworked piping connections shall be welded or flanged. Screwed connections are permissible only on piping smaller than two-inch diameter. Gas or hydraulic testing of the new and reworked piping connections at no less than operating pressure shall be performed prior to returning the components to service or they shall be monitored for leaks using an approved gas analyzer within 15 days of the components being returned to service. Adjustments shall be made as necessary to obtain leak-free performance. Connectors shall be inspected by visual, audible, and/or olfactory means at least weekly by operating personnel walk-through.

Each open-ended valve or line shall be equipped with an appropriately sized cap, blind flange, plug, or a second valve to seal the line. Except during sampling, both valves shall be closed. If the isolation of equipment for hot work or the removal of a component for repair or replacement results in an open-ended line or valve, it is exempt from the requirement to install a cap, blind flange, plug, or second valve for 72 hours. If the repair or replacement is not completed within 72 hours, the permit holder must complete either of the following actions within that time period;

(1) a cap, blind flange, plug, or second valve must be installed on the line or valve;

or

(2) the open-ended valve or line shall be monitored once for leaks above background for a plant or unit turnaround lasting up to 45 days with an approved gas analyzer and the results recorded. For all other situations, the open-ended valve or line shall be monitored once within the 72-hour period following the creation of the open-ended line and monthly thereafter with an approved gas analyzer and the results recorded. For turnarounds and all other situations, leaks are indicated by readings of 500 ppmv and must be repaired within 24 hours or a cap, blind flange, plug, or second valve must be installed on the line or valve.

F. Accessible valves shall be monitored by leak-checking for fugitive emissions at least quarterly using an approved gas analyzer. Sealless/leakless valves (including, but not limited to, welded bonnet bellows and diaphragm valves) and relief valves equipped with a rupture disc upstream or venting to a control device are not required to be monitored. If a relief valve is equipped with rupture disc, a pressure-sensing device shall be installed between the relief valve and rupture disc to monitor disc integrity.

A check of the reading of the pressure-sensing device to verify disc integrity shall be performed at least quarterly and recorded in the unit log or equivalent. Pressure-sensing devices that are continuously monitored with alarms are exempt from recordkeeping requirements specified in this paragraph. All leaking discs shall be replaced at the earliest opportunity but no later than the next process shutdown.

The gas analyzer shall conform to requirements listed in Method 21 of 40 CFR part 60, appendix A. The gas analyzer shall be calibrated with methane. In addition, the response factor of the instrument for a specific VOC of interest shall be determined and meet the requirements of Section 8 of Method 21. If a mixture of VOCs is being monitored, the response factor shall be calculated for the average composition of the process fluid. A calculated average is not required when all of the compounds in the mixture have a response factor less than 10 using methane. If a response factor less than 10 cannot be achieved using methane, then the instrument may be calibrated with one of the VOC to be measured or any other VOC so long as the instrument has a response factor of less than 10 for each of the VOC to be measured.

Replacements for leaking components shall be re-monitored within 15 days of being placed back into VOC service.

G. Except as may be provided for in the special conditions of this permit, all pump, compressor, and agitator seals shall be monitored with an approved gas analyzer at least quarterly or be equipped with a shaft sealing system that prevents or detects emissions of VOC from the seal. Seal systems designed and operated to prevent emissions or seals equipped with automatic seal failure detection and alarm system need not be monitored. These seal systems may include (but are not limited to) dual pump seals with barrier fluid at higher pressure than process pressure, seals degassing to vent control systems kept in good working order, or seals equipped with an automatic seal failure detection and alarm system. Submerged pumps or sealless pumps (including, but not limited to, diaphragm, canned, or magnetic-driven pumps) may be used to satisfy the requirements of this condition and need not be monitored.

H. Damaged or leaking valves or connectors found to be emitting VOC in excess of 500 parts per million by volume (ppmv) or found by visual inspection to be leaking (e.g., dripping process fluids) shall be tagged and replaced or repaired. Damaged or leaking pump, compressor, and agitator seals found to be emitting VOC in excess of 2,000 ppmv or found by visual inspection to be leaking (e.g., dripping process fluids) shall be tagged and replaced or repaired. A first attempt to repair the leak must be made within 5 days and a record of the attempt shall be maintained.

I. A leaking component shall be repaired as soon as practicable, but no later than 15 days after the leak is found. If the repair of a component would require a unit shutdown that would create more emissions than the repair would eliminate, the repair may be delayed until the next scheduled shutdown. All leaking components which cannot be repaired until a scheduled shutdown shall be identified for such repair by tagging within 15 days of the detection of the leak. A listing of all components that qualify for delay of repair shall be maintained on a delay of repair list. The cumulative daily emissions from all components on the delay of repair list shall be estimated by multiplying by 24 the mass emission rate for each component calculated in accordance with the instructions in 30 TAC 115.782 (c)(1)(B)(i)(II). The calculations of the cumulative daily emissions from all components on the delay of repair list shall be updated within ten days of when the latest leaking component is added to the delay of repair list. When the cumulative daily emission rate of all components on the delay of repair list times the number of days until the next scheduled unit shutdown is equal to or exceeds the total emissions from a unit shut down as calculated in accordance with 30 TAC 115.782 (c)(1)(B)(i)(I) or 500 pounds, whichever is greater, the TCEQ Regional Manager and any local programs shall be notified and the TCEQ Executive Director may require early unit shut down or other appropriate action based on the number and severity of tagged leaks awaiting shutdown. This notification shall be made within 15 days of making this determination.

J. Records of repairs shall include date of repairs, repair results, justification for delay of repairs, and corrective actions taken for all components. Records of instrument monitoring shall indicate dates and times, test methods, and instrument readings. The instrument monitoring record shall include the time that monitoring took place for no less than 95% of the instrument

readings recorded. Records of physical inspections shall be noted in the operator's log or equivalent.

K. Alternative monitoring frequency schedules of 30 TAC 115.352 - 115.359 or National Emission Standards for Organic Hazardous Air Pollutants, 40 CFR Part 63, Subpart H, may be used in lieu of Items F and G of this condition.

L. Compliance with the requirements of this condition does not assure compliance with requirements of 30 TAC Chapter 115, an applicable New Source Performance Standard (NSPS), or an applicable National Emission Standard for Hazardous Air Pollutants (NESHAPS) and does not constitute approval of alternative standards for these regulations.

28CNTQ (Connectors Inspected Quarterly)

24. In addition to the weekly physical inspection required by Item E of Special Condition No. 24, all accessible connectors in gas/vapor and light liquid service shall be monitored quarterly with an approved gas analyzer in accordance with Items F thru J of Special Condition No. 24.

A. Allowance for reduced monitoring frequencies.

(1) The frequency of monitoring may be reduced from quarterly to semiannually if the percent of connectors leaking for two consecutive quarterly monitoring periods is less than 0.5 percent.

(2) The frequency of monitoring may be reduced from semiannually to annually if the percent of connectors leaking for two consecutive semiannual monitoring periods is less than 0.5 percent.

B. If the percent of connectors leaking for any semiannual or annual monitoring period is 0.5 percent or greater, the facility shall revert to quarterly monitoring until the facility again qualifies for the alternative monitoring schedules previously outlined in this paragraph. The percent of connectors leaking used in paragraph A shall be determined using the following formula:

$$(Cl + Cs) \times 100/Ct = Cp$$

Where:

Cl = the number of connectors found leaking by the end of the monitoring period, either by Method 21 or sight, sound, and smell.

Cs = the number of connectors for which repair has been delayed and are listed on the facility shutdown log.

Ct = the total number of connectors in the facility subject to the monitoring requirements, as of the last day of the monitoring period, not including nonaccessible and unsafe-to-monitor connectors.

Cp = the percentage of leaking connectors for the monitoring period.

**Cooling Tower**

25. The cooling tower (EPN CT-1) shall be operated and monitored in accordance with the following:

A. The cooling tower shall be non-contact design.

B. Each cooling tower shall be equipped with drift eliminators having manufacturer's design assurance of 0.001% drift or less. Drifts eliminators shall be maintained and inspected at least annually. The permit holder shall maintain records of all inspections and repairs.

C. Total dissolved solids (TDS) shall not exceed 1,000 parts per million by weight (ppmw). Dissolved solids in the cooling water drift are considered to be emitted as PM, $PM_{10}$, and $PM_{2.5}$ as represented in the permit application calculations.

D. Cooling water shall be sampled at least once per week for TDS.

E. A sample of cooling tower water shall be taken from the circulated water stream(s) entering the cooling tower. The analysis shall be conducted using the approved methods below:

(1) The analysis method for TDS shall be EPA Method 160.1, ASTM D5907, and SM 2540 C [SM - 19th edition of Standard Methods for Examination of Water]. Water samples should be capped upon collection, and transferred to a laboratory area for analysis.

(2) Alternate sampling and analysis methods may be used to comply with D(1) with written approval from the TCEQ Regional Director. If approved by the TCEQ Regional Director, the permit holder shall submit a permit application to incorporate the alternative sampling and analysis method into the permit within 2 months of the date of written approval.

(3) Records of all instrument calibrations and test results and process measurements used for the emission calculations shall be retained.

F. Emission rates of PM, $PM_{10}$ and $PM_{2.5}$ shall be calculated using the measured TDS, the design drift rate and the daily maximum and average actual cooling water circulation rate for the short term and annual average rates. Alternately, the design maximum circulation rate may be used for all calculations. Emission records shall be updated monthly.

26. The VOC associated with cooling tower (EPN CT-1) water shall be monitored monthly with an air stripping system meeting the requirements of the TCEQ Sampling Procedures Manual, Appendix P (dated January 2003 or a later edition) or an approved equivalent sampling method. The results of the monitoring, cooling water flow rate and maintenance activities on the cooling water system shall be recorded. The monitoring results and cooling water hourly mass flow rate shall be used to determine cooling tower hourly VOC emissions. The rolling 12-month cooling water emission rate shall be recorded on a monthly basis and be determined by summing the VOC emissions between VOC monitoring periods over the rolling 12-month period. The emissions between VOC monitoring periods shall be obtained by multiplying the total cooling water mass flow between cooling water monitoring periods by the higher of the 2 VOC monitored results.

**Wastewater Treatment Plant**

27. Process wastewater drains shall be equipped with water seals or equivalent; lift stations, manholes, junction boxes, any other wastewater collection system components, and conveyance to storage or biological treatment unit shall be equipped with a closed vent system that routes all organic vapor to a control device.

Water seals shall be checked by visual or physical inspection quarterly for indications of low water levels or other conditions that would reduce the effectiveness of water seal controls. Water seals shall be restored as necessary within 24 hours. Records shall be maintained of these inspections and corrective actions taken.

28. The daily wastewater flow into the wastewater treatment plant shall be monitored and recorded. The rolling 12-month wastewater flow shall be totaled on a monthly basis.

29. The minimum mixed liquor total suspended solids (MLSS) concentration in the aeration basins on a daily average basis shall not be less than 3,000 mg/L. The MLSS concentration is the arithmetic average of all samples collected during the 24-hour period. The MLSS concentrations shall be monitored and recorded daily using Method 160.2 (Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020 or Method 2540D (Standard Methods of the Examination of Water and Wastewater, 18th Edition, American Publ8ic Health Association).

30. The permit holder may submit an alteration to reduce the frequency of sampling required by Special Condition 29 from daily to twice per week if the permit holder submits the MLSS concentration sampling data required by Special Condition 29 for four consecutive quarters after operation has commenced. The sampling frequency may be reduced only if the submitted data demonstrates compliance with the requirements of Special Condition 29 every day of the four consecutive quarter period.

31. Wastewater treatment plant emissions shall be estimated every month using the following procedure.

    A. The permit holder shall sample the wastewater prior to the corrugated plate interceptors CP-1 and CP-2monthly to determine the concentrations of all air contaminants. Sampling locations, sampling procedures, test methods and calculations shall be as specified in permit application, PI-1 dated January 5, 2023 (Project 342150). The influent wastewater flow rates shall be measured and recorded when a sample required by this condition is collected. Records of sampling results shall be maintained for all air contaminants.

    B. The permit holder shall calculate short term loading rate in terms of pounds per hour (lb/hr) and rolling 12 month loading rate in terms of tons per year (tpy) for each air contaminant. The measured concentrations of each speciated air contaminant shall be converted to an equivalent mass emission rate based upon the flow rates during the sample collection period using the calculation methods and assumptions in the permit application, PI-1 dated January 5, 2023 (Project 342150). The MLSS used in the emission calculation shall be either the minimum identified in Special Condition 29 or the measured concentration for the day the sampling required for this condition is completed. The short term emission rate calculations for such air contaminants shall be based on the concentrations and flow rates measured during sampling. The rolling 12-month emission rate calculation for each air contaminant shall be based on the rolling 12-month average contaminant concentration and the rolling 12-month wastewater flow. All other inputs into the calculation shall match those in the permit application for that averaging period (worst case). Total VOC mass emission rates shall be calculated as the sum of the individual speciated VOC mass emission rates.

    C. All air contaminants ascertained by the analytical methods shall be evaluated. For any tentatively identified air contaminant that can be confirmed as present and that would have a calculated air contaminant mass emission rate more than 0.04 pound per hour (lb/hr) above that represented in the permit application, PI-1 dated January 5, 2023 (Project 342150), the total emissions of that compound must satisfy the following:

        (1) The Effect Screening Level (ESL) for an air contaminant shall be obtained from the current TCEQ ESL list or by written request to the TCEQ Toxicology Section.

        (2) The information below shall be recorded for the air contaminant.

            (a) Chemical name(s), composition, and chemical abstract registry number if available.

            (b) True vapor pressure at maximum hourly and annual average temperature.

            (c) Molecular weight.

            (d) Material Safety Data Sheet or equivalent.

            (e) Concentration of air contaminant detected in the wastewater.

    D. Records of sampling location, sampling procedures, sample chain of custody forms, test methods, sampling results, calculated emission rates, and sample of calculations shall be maintained.

**Control Devices**

32. Flares shall be designed and operated in accordance with the following requirements:

A. The flare systems shall be designed such that the combined assist/purge plant fuel gas and waste stream to each flare meets the 40 CFR § 60.18 specifications of minimum heating value and maximum tip velocity at all times when emissions may be vented to them.

The heating value and velocity requirements shall be satisfied during operations authorized by this permit. Flare testing per 40 CFR § 60.18(f) may be requested by the appropriate regional office to demonstrate compliance with these requirements.

B. The flare shall be operated with a flame present at all times and/or have a constant pilot flame. The pilot flame shall be continuously monitored by a thermocouple, infrared monitor, or ultraviolet monitor. The time, date, and duration of any loss of pilot flame shall be recorded. Each monitoring device shall be accurate to, and shall be calibrated at a frequency in accordance with, the manufacturer's specifications.

C. The flare shall be operated with no visible emissions except periods not to exceed a total of five minutes during any two consecutive hours. This shall be ensured by the use of air assist to the flare.

D. The permit holder shall install a continuous flow monitor and calorimeter that provide a record of the vent stream flow and Btu content to the flare. The flow monitor sensor and analyzer sample points shall be installed in the vent stream as near as possible to the flare inlet such that the total vent stream to the flare is measured and analyzed. Readings shall be taken continuously and the average hourly values of the flow and Btu content shall be recorded each hour.

The monitors shall be calibrated or have a calibration check performed on an annual basis to meet the following accuracy specifications: the flow monitor shall be ±5.0%, temperature monitor shall be ±2.0% at absolute temperature, and pressure monitor shall be ±5.0 mm Hg.

The calorimeter shall be calibrated, installed, operated, and maintained, in accordance with manufacturer recommendations, to continuously measure and record the net heating value of the gas sent to the flare, in British thermal units/standard cubic foot of the gas.

The flow monitor and calorimeter shall operate as required by this section at least 95% of the time when the flare is operational, averaged over a rolling 12-month period. Flared gas net heating value and actual exit velocity determined in accordance with 40 CFR §§60.18(f)(3) and 60.18(f)(4) shall be recorded at least once every hour.

33. Vapor Combustors shall be designed and operated in accordance with the following requirements:

A. The vapor combustor unit (EPN VCU) shall achieve 99% control of the waste gas directed to it. This shall be ensured by maintaining the temperature in, or immediately downstream of, the combustion chamber above 1400 °F prior to the initial stack test performed in accordance with Special Condition 47. Following the completion of that stack test, the six minute average temperature shall be maintained above the minimum one hour average temperature maintained during the last satisfactory stack test

B. The temperature measurement device shall reduce the temperature readings to an averaging period of 6 minutes or less and record it at that frequency. The temperature monitor shall be installed, calibrated or have a calibration check performed at least annually, and maintained according to the manufacturer's specifications. The device shall have an accuracy of the greater of ±2 percent of the temperature being measured expressed in degrees Celsius or ±2.5ºC.

C. Quality assured (or valid) data must be generated when the VCU is operating except during the performance of a daily zero and span check. Loss of valid data due to periods of monitor break down, out-of-control operation (producing inaccurate data), repair, maintenance, or calibration may be exempted provided it does not exceed 5 percent of the time (in minutes) that the VCU operated over the previous rolling 12-month period. The measurements missed shall be estimated using engineering judgment and the methods used recorded.

The vapor combustor shall be operated with no visible emissions and have a constant pilot flame during all times waste gas could be directed to it. The pilot flame shall be continuously monitored by a thermocouple or an infrared monitor. The time, date, and duration of any loss of pilot flame shall be recorded. Each monitoring device shall be accurate to, and shall be calibrated or have a calibration check performed at a frequency in accordance with, the manufacturer's specifications.

**Loading**

34. Loading operations are limited to the liquids identified below at the rates indicated:

| Liquid | Gallons per Hour | Gallons per rolling 12 months |
|---|---|---|
| Slop Oil | 9,900 | 86,724,000 |
| Slop Methanol | 9,900 | 86,724,000 |

35. All lines and connectors shall be visually inspected for any defects prior to hookup. Lines and connectors that are visibly damaged shall be removed from service. Operations shall cease immediately upon detection of any liquid leaking from the lines or connections.

36. Each tank truck shall be leak checked and certified annually in accordance with Title 40 Code of Federal Regulations Part 60 (40 CFR 60), Subpart XX. The permit holder shall not allow a tank truck to be filled unless it has passed a leak-tight test within the past year as evidenced by a certificate which shows the date the tank truck last passed the leak-tight test required by this condition and the identification number of the tank truck.

**Planned Maintenance, Startup and Shutdown**

37. This permit authorizes the planned maintenance, startup, and shutdown (MSS) activities summarized in the MSS Activity Summary (Attachment C) attached to this permit.

Additionally, this permit authorizes emissions from the following temporary facilities used to support planned MSS activities at permanent site facilities: vacuum trucks and the portable control devices identified in Special Condition 40. Emissions from temporary facilities are authorized provided the temporary facility (a) does not remain on the plant site for more than 12 consecutive months, (b) is used solely to support planned MSS activities at the permanent site facilities listed in this Attachment, and (c) does not operate as a replacement for an existing authorized facility.

Attachment A identifies the inherently low emitting MSS activities that may be performed at the plant. Emissions from activities identified in Attachment A shall be considered to be equal to the potential to emit represented in the permit application. The estimated emissions from the activities listed in Attachment A must be revalidated annually. This revalidation shall consist of the estimated emissions for each type of activity and the basis for that emission estimate.

Routine maintenance activities, as identified in Attachment B may be tracked through the work orders or equivalent. Emissions from activities identified in Attachment B shall be calculated using the number of work orders or equivalent that month and the emissions associated with that activity identified in the permit application.

The performance of each planned MSS activity not identified in Attachments A or B and the emissions associated with it shall be recorded and include at least the following information:

A. the process unit at which emissions from the MSS activity occurred, including the emission point number and common name of the process unit;

B. the type of planned MSS activity and the reason for the planned activity;

C. the common name and the facility identification number, if applicable, of the facilities at which the MSS activity and emissions occurred;

D. the date and time of the MSS activity and its duration;

E. the estimated quantity of each air contaminant, or mixture of air contaminants, emitted with the data and methods used to determine it. The emissions shall be estimated using the methods identified in the permit application, consistent with good engineering practice.

All MSS emissions shall be summed monthly and the rolling 12-month emissions shall be updated on a monthly basis.

38. Process units and facilities, with the exception of those identified in Special Conditions 40, 41, and 43, and Attachment A, shall be depressurized, emptied, degassed, and placed in service in accordance with the following requirements.

A. The process equipment shall be depressurized to a control device or a controlled recovery system prior to venting to atmosphere, degassing, or draining liquid. Equipment that only contains material that is liquid with VOC partial pressure less than 0.50 psi at the normal process temperature and 95°F may be opened to atmosphere and drained in accordance with paragraph C of this special condition. The vapor pressure at 95°F may be used if the actual temperature of the liquid is verified to be less than 95°F and the temperature is recorded.

B. If mixed phase materials must be removed from process equipment, the cleared material shall be routed to a knockout drum or equivalent to allow for managed initial phase separation. If the VOC partial pressure is greater than 0.50 psi at either the normal process temperature or 95°F, any vents in the system must be routed to a control device or a controlled recovery system. The vapor pressure at 95°F may be used if the actual temperature of the liquid is verified to be less than 95°F and the temperature is recorded. Control must remain in place until degassing has been completed or the system is no longer vented to atmosphere.

C. All liquids from process equipment or storage vessels must be removed to the maximum extent practical prior to opening equipment to commence degassing and/or maintenance. Liquids must be drained into a closed vessel or closed liquid recovery system unless prevented by the physical configuration of the equipment. If it is necessary to drain liquid into an open pan or sump, the liquid must be covered or transferred to a covered vessel within one hour of being drained.

D. If the VOC partial pressure is greater than 0.50 psi at the normal process temperature or 95°F, facilities shall be degassed using good engineering practice to ensure air contaminants are removed from the system through the control device or controlled recovery system to the extent allowed by process equipment or storage vessel design. The vapor pressure at 95°F may be used if the actual temperature of the liquid is verified to be less than 95°F and the temperature is recorded. The facilities to be degassed shall not be vented directly to atmosphere, except as necessary to establish isolation of the work area or to monitor VOC concentration following controlled depressurization. The venting shall be minimized to the maximum extent practicable and actions taken recorded. The control device or recovery system utilized shall be recorded with the estimated emissions from controlled and uncontrolled degassing calculated using the methods that were used to determine allowable emissions for the permit application.

(1) For MSS activities identified in Attachment B, the following option may be used in lieu of (2) below. The facilities being prepared for maintenance shall not be vented directly

to atmosphere until the VOC concentration has been verified to be less than 10 percent of the lower explosive limit (LEL) per the site safety procedures.

(2) The locations and/or identifiers where the purge gas or steam enters the process equipment or storage vessel and the exit points for the exhaust gases shall be recorded (process flow diagrams [PFDs] or piping and instrumentation diagrams [P&IDs] may be used to demonstrate compliance with the requirement). If the process equipment is purged with a gas, two system volumes of purge gas must have passed through the control device or controlled recovery system before the vent stream may be sampled to verify acceptable VOC concentration prior to uncontrolled venting. The VOC sampling and analysis shall be performed using an instrument meeting the requirements of Special Condition 39. The sampling point shall be upstream of the inlet to the control device or controlled recovery system. The sample ports and the collection system must be designed and operated such that there is no air leakage into the sample probe or the collection system downstream of the process equipment or vessel being purged. If there is not a connection (such as a sample, vent, or drain valve) available from which a representative sample may be obtained, a sample may be taken upon entry into the system after degassing has been completed. The sample shall be taken from inside the vessel so as to minimize any air or dilution from the entry point. The facilities shall be degassed to a control device or controlled recovery system until the VOC concentration is less than 10,000 ppmv. The LPG Sphere (EPN MSS-DEGASS) shall be degassed to a control device or controlled recovery system until the VOC concentration is less than 1,000 ppmv. Documented site procedures used to de-inventory equipment to a control device for safety purposes (i.e., hot work or vessel entry procedures) that achieve at least the same level of purging may be used in lieu of the above.

39. Air contaminant concentration shall be measured using an instrument/detector meeting one set of requirements specified below.

A. VOC concentration shall be measured using an instrument meeting all the requirements specified in EPA Method 21 (40 CFR 60, Appendix A) with the following exceptions:

(1) The instrument shall be calibrated within 24 hours of use with a calibration gas such that the response factor (RF) of the VOC (or mixture of VOCs) to be monitored shall be less than 2.0. The calibration gas and the gas to be measured, and its approximate (RF) shall be recorded.

(2) Sampling shall be performed as directed by this permit in lieu of section 8.3 of Method 21. During sampling, data recording shall not begin until after two times the instrument response time. The date and time shall be recorded, and VOC concentration shall be monitored for at least 5 minutes, recording VOC concentration each minute. As an alternative the VOC concentration may be monitored over a five-minute period with an instrument designed to continuously measure concentration and record the highest concentration read. The highest measured VOC concentration shall be recorded and shall not exceed the specified VOC concentration limit prior to uncontrolled venting.

B. Colorimetric gas detector tubes may be used to determine air contaminant concentrations if they are used in accordance with the following requirements.

(1) The air contaminant concentration measured as defined in (3) is less than 80 percent of the range of the tube and is at least 20 percent of the maximum range of the tube.

(2) The tube is used in accordance with the manufacturer's guidelines.

(3) At least 2 samples taken at least 5 minutes apart must satisfy the following prior to uncontrolled venting:

measured contaminant concentration (ppmv) < release concentration.

Where the release concentration is:

10,000*mole fraction of the total air contaminants present that can be detected by the tube.

The mole fraction may be estimated based on process knowledge. The release concentration and basis for its determination shall be recorded.

Records shall be maintained of the tube type, range, measured concentrations, and time the samples were taken.

40. This permit authorizes emissions from EPN MSS-VCU for the floating roof storage tanks identified in Special Condition No. 20 during planned floating roof landings. Tank roofs may only be landed for changes of tank service or tank inspection/maintenance as identified in the permit application. Emissions from change of service tank landings, for which the tank is not cleaned and degassed, shall not exceed 10 tons of VOC in any rolling 12-month period. Tank roof landings include all operations when the tank floating roof is on its supporting legs. These emissions are subject to the maximum allowable emission rates indicated on the MAERT. The following requirements apply to tank roof landings.

A. The tank liquid level shall be continuously lowered after the tank floating roof initially lands on its supporting legs until the tank has been drained to the maximum extent practicable without entering the tank. Liquid level may be maintained steady for a period of up to two hours if necessary to allow for valve lineups and pump changes necessary to drain the tank. This requirement does not apply where the vapor under a floating roof is routed to control or a controlled recovery system during this process.

B. If the VOC partial pressure of the liquid previously stored in the tank is greater than 0.50 psi at 95°F, tank refilling or degassing of the vapor space under the landed floating roof must begin within 24 hours after the tank has been drained unless the vapor under the floating roof is routed to control or a controlled recovery system during this period. The tank shall not be opened except as necessary to set up for degassing and cleaning. Floating roof tanks with liquid capacities less than 100,000 gallons may be degassed without control if the VOC partial pressure of the standing liquid in the tank has been reduced to less than 0.02 psia prior to ventilating the tank. Controlled degassing of the vapor space under landed roofs shall be completed as follows:

(1) Any gas or vapor removed from the vapor space under the floating roof must be routed to a control device or a controlled recovery system and controlled degassing must be maintained until the VOC concentration is less than 50 ppmv. The locations and identifiers of vents other than permanent roof fittings and seals, control device or controlled recovery system, and controlled exhaust stream shall be recorded. There shall be no other gas/vapor flow out of the vapor space under the floating roof when degassing to the control device or controlled recovery system.

(2) The vapor space under the floating roof shall be vented using good engineering practice to ensure air contaminants are flushed out of the tank through the control device or controlled recovery system to the extent allowed by the storage tank design.

(3) A volume of purge gas equivalent to twice the volume of the vapor space under the floating roof must have passed through the control device or into a controlled recovery system, before the vent stream may be sampled to verify acceptable VOC concentration. The measurement of purge gas volume shall not include any make-up air introduced into the control device or recovery system. The VOC sampling and analysis shall be performed as specified in Special Condition 39.

(4) The sampling point shall be upstream of the inlet to the control device or controlled recovery system. The sample ports and the collection system must be designed and operated such that there is no air leakage into the sample probe or the collection system downstream of the process equipment or vessel being purged.

(5) Degassing must be performed every 24 hours unless there is no standing liquid in the tank or the VOC partial pressure of the remaining liquid in the tank is less than 0.15 psia.

C. The tank shall not be opened or ventilated without control, except as allowed below until one of the criteria in part D of this condition is satisfied.

(1) Minimize air circulation in the tank vapor space.

(a) One manway may be opened to allow access to the tank to remove or de-volatilize the remaining liquid. Other manways or access points may be opened as necessary to remove or de-volatilize the remaining liquid. Wind barriers shall be installed at all open manways and access points to minimize air flow through the tank.

(b) Access points shall be closed when not in use

(c) Records shall be maintained of the blower circulation rate, the duration of uncontrolled ventilation, and the date and time all standing liquid was removed from the tank.

D. The tank may be opened without restriction and ventilated without control, after all standing liquid has been removed from the tank or the liquid remaining in the tank has a VOC partial pressure less than 0.02 psia. These criteria shall be demonstrated in any one of the following ways.

(1) Low VOC partial pressure liquid that is soluble with the liquid previously stored may be added to the tank to lower the VOC partial pressure of the liquid mixture remaining in the tank to less than 0.02 psia. This liquid shall be added during tank degassing if practicable. The estimated volume of liquid remaining in the drained tank and the volume and type of liquid added shall be recorded. The liquid VOC partial pressure may be estimated based on this information and engineering calculations.

(2) If water is added or sprayed into the tank to remove standing VOC, one of the following must be demonstrated:

(a) Take a representative sample of the liquid remaining in the tank and verify no visible sheen using the static sheen test from 40 CFR 435 Subpart A Appendix 1.

(b) Take a representative sample of the liquid remaining in the tank and verify hexane soluble VOC concentration is less than 1000 ppmw using EPA method 1664 (may also use 8260B or 5030 with 8015 from SW-846).

(c) Stop ventilation and close the tank for at least 24 hours. When the tank manway is opened after this period, verify VOC concentration is less than 1000 ppmv through the procedure in Special Condition 39.

(3) No standing liquid verified through visual inspection.

The permit holder shall maintain records to document the method used to release the tank.

E. Tanks shall be refilled as rapidly as practicable until the roof is off its legs with the following exceptions:

(1) Only one tank with a landed floating roof can be filled at any time at a rate not to exceed 630.26 bbl/hr.

(2) The vapor space below the tank roof is directed to a control device when the tank is refilled until the roof is floating on the liquid. The control device used and the method and locations used to connect the control device shall be recorded. All vents from the tank being filled must exit through the control device.

F. The occurrence of each roof landing and the associated emissions shall be recorded and the rolling 12-month tank roof landing emissions shall be updated on a monthly basis. These records shall include at least the following information:

(1) the identification of the tank and emission point number, and any control devices or recovery systems used to reduce emissions;

(2) the reason for the tank roof landing;

(3) for the purpose of estimating emissions, the date, time, and other information specified for each of the following events:

(a) the roof was initially landed,

(b) all liquid was pumped from the tank to the extent practical,

(c) start and completion of controlled degassing, and total volumetric flow,

(d) all standing liquid was removed from the tank or any transfers of low VOC partial pressure liquid to or from the tank including volumes and vapor pressures to reduce tank liquid VOC partial pressure to <0.02 psi,

(e) if there is liquid in the tank, VOC partial pressure of liquid, start and completion of uncontrolled degassing, and total volumetric flow,

(f) refilling commenced, liquid filling the tank, and the volume necessary to float the roof; and

(g) tank roof off supporting legs, floating on liquid;

(4) the estimated quantity of each air contaminant, or mixture of air contaminants, emitted between events c and g with the data and methods used to determine it. The emissions associated with roof landing activities shall be calculated using the methods described in Sections 7.1.3.3 and 7.1.3.4 of AP-42 "Compilation of Air Pollution Emission Factors, Chapter 7 – Liquid Storage Tanks" dated June 2020 (or later edition) and the permit application.

41. Fixed roof storage tanks are subject to the requirements of Special Condition 40.C. and 40.D. If the ventilation of the vapor space is controlled, the emission control system shall meet the requirements of Special Condition 40.B.(1) through 40.B.(4). Records shall be maintained per Special Condition 40.F.(3)c through 40.F.(3)e, and 40.F.(4).

42. The following requirements apply to vacuum and air mover truck operations to support planned MSS at this site:

A. Prior to initial use, identify any liquid in the truck. Record the liquid level and document the VOC partial pressure. After each liquid transfer, identify the liquid, the volume transferred, and its VOC partial pressure.

B. If vacuum pumps or blowers are operated when liquid is in or being transferred to the truck, the following requirements apply:

(1) If the VOC partial pressure of the liquid in or being transferred to the truck is greater than 0.50 psi at 95°F, the vacuum/blower exhaust shall be routed to a control device or a controlled recovery system.

(2) Equip fill line intake with a “duckbill” or equivalent attachment if the hose end cannot be submerged in the liquid being collected.

(3) A daily record containing the information identified below is required for each vacuum truck in operation at the site each day.

(a) For each liquid transfer made with the vacuum operating, record the duration of any periods when air may have been entrained with the liquid transfer. The reason for operating in this manner and whether a "duckbill" or equivalent was used shall be recorded. Short, incidental periods, such as those necessary to walk from the truck to the fill line intake, do not need to be documented.

(b) If the vacuum truck exhaust is controlled with a control device other than an engine or oxidizer, VOC exhaust concentration upon commencing each transfer, at the end of each transfer, and at least every hour during each transfer shall be recorded, measured using an instrument meeting the requirements of Special Condition 39.A or B.

C. Record the volume in the vacuum truck at the end of the day, or the volume unloaded, as applicable.

D. The permit holder shall determine the vacuum truck emissions each month using the daily vacuum truck records and the calculation methods utilized in the permit application. If records of the volume of liquid transferred for each pick-up are not maintained, the emissions shall be determined using the physical properties of the liquid vacuumed with the greatest potential emissions. Rolling 12-month vacuum truck emissions shall also be determined on a monthly basis.

E. If the VOC partial pressure of all the liquids vacuumed into the truck is less than 0.10 psi, this shall be recorded when the truck is unloaded or leaves the plant site and the emissions may be estimated as the maximum potential to emit for a truck in that service as documented in the permit application. The recordkeeping requirements in Special Condition 42.A through 42.D do not apply.

43. The following requirements apply to frac, or temporary, tanks and vessels used in support of MSS activities.

A. The exterior surfaces of these tanks/vessels that are exposed to the sun shall be white or aluminum. This requirement does not apply to tanks/vessels that only vent to atmosphere when being filled, sampled, gauged, or when removing material.

B. These tanks/vessels must be covered and equipped with fill pipes that discharge within 6 inches of the tank/vessel bottom.

C. These requirements do not apply to vessels storing less than 450 gallons of liquid that are closed such that the vessel does not vent to atmosphere except when filling, sampling, gauging, or when removing material.

D. The permit holder shall maintain an emissions record which includes calculated emissions of VOC from all frac tanks during the previous calendar month and the past consecutive 12 month period. This record must be updated by the last day of the month following. The record shall include tank identification number, dates put into and removed from service, control method used, tank capacity and volume of liquid stored in gallons, name of the material stored, VOC molecular weight, and VOC partial pressure at the estimated monthly average material temperature in psia. Filling emissions for tanks shall be calculated using the TCEQ publication titled "Technical Guidance Package for Chemical Sources - Loading Operations" and standing emissions determined using: AP-42, Fifth Edition, Volume I Chapter 7: Liquid Storage Tanks (June 2020 version).

E. If the tank/vessel is used to store liquid with VOC partial pressure less than 0.10 psi at 95°F, records may be limited to the days the tank is in service and the liquid stored. Emissions may be estimated based upon the potential to emit as identified in the permit application.

44. Additional occurrences of MSS activities authorized by this permit may be authorized under permit by rule only if conducted in compliance with this permit's procedures, emission controls, monitoring, and recordkeeping requirements applicable to the activity.

45. All permanent facilities must comply with all operating requirements, limits, and representations during planned startup and shutdown unless alternate requirements and limits are identified in this permit. Alternate requirements for emissions from routine emission points are identified below.

    A. Combustion units, with the exception of flares, at this site are exempt from $NO_x$ and CO normal operating requirements identified in other special conditions during planned startup and shutdown if the following criteria are satisfied.

        (1) The maximum allowable emission rates in the permit authorizing the facility are not exceeded.

        (2) The startup period does not exceed 8 hours in duration and the firing rate does not exceed 75 percent of the design firing rate. The time it takes to complete the shutdown does not exceed 4 hours.

        (3) Control devices are started and operating properly when venting a waste gas stream.

    B. The limits identified below apply to the operations of the specified facilities during startup and shutdown.

        (1) EPNs F-501, F-801, F-902, F-901, F-951, F-590A, F-590B, F-1701A, and F-1701B shall not exceed 0.05 lb NOx/MMBtu on an hourly average basis. Startup emissions from these units shall not exceed the hourly emission rates in the MAERT. Startup and shutdown hours for these units are limited to 100 hours per year.

        (2) Cold startup duration for three vents (V 507 A/B Gasoline Loop Separator Purge Gas, V 902 Isomerization Effluent Separator Offgas, and V 952 Hydrocracker Effluent Separator) within the methanol and gasoline synthesis and fractionation process is limited to 12 hours per year. Cold startup emissions from these three vents will be routed to the flare (EPN FLARE).

    C. A record shall be maintained indicating that the start and end times of each of the activities identified above occur and documentation that the requirements for each have been satisfied

46. Control devices required by this permit for emissions from planned MSS activities are limited to those types identified in this condition. Control devices shall be operated with no visible emissions except periods not to exceed a total of five minutes during any two consecutive hours. Each device used must meet all the requirements identified for that type of control device.

    Controlled recovery systems identified in this permit shall be directed to an operating process or to a collection system that is vented through a control device meeting the requirements of this permit condition.

    A. Carbon Adsorption System (CAS).

        (1) The CAS shall consist of 2 carbon canisters in series with adequate carbon supply for the emission control operation.

        (2) The CAS shall be sampled downstream of the first can and the concentration recorded at least once every hour of CAS run time to determine breakthrough of the VOC.

        (3) The method of VOC sampling and analysis shall be by detector meeting the requirements of Special Condition 39.A or B.

        (4) Breakthrough is defined as the highest measured VOC concentration at or exceeding 100 ppmv above background. When the condition of breakthrough of VOC from the initial saturation canister occurs, the waste gas flow shall be switched to the second canister and a fresh canister shall be placed as the new final polishing canister within four hours. Sufficient new activated carbon canisters shall be maintained at the site to replace spent carbon canisters such that replacements can be done in the above specified time frame.

(5) Records of CAS monitoring shall include the following:

(a) Sample time and date.

(b) Monitoring results (ppmv).

(c) Canister replacement log.

(6) Single canister systems are allowed if the time the carbon canister is in service is limited to no more than 30 percent of the minimum potential saturation time. The permit holder shall maintain records for these systems, including the calculations performed to determine the saturation time. The time limit on carbon canister service shall be recorded and the expiration date attached to the carbon can.

B. The plant flare system (EPN FLARE)

(1) The heating value and velocity requirements in 40 CFR 60.18 shall be satisfied during operations authorized by this permit.

(2) The flare shall be operated with a flame present at all times and/or have a constant pilot flame. The pilot flame shall be continuously monitored by a thermocouple or an infrared monitor. The time, date, and duration of any loss of pilot flame shall be recorded. Each monitoring device shall be accurate to, and shall be calibrated at a frequency in accordance with, the manufacturer's specifications.

C. The vapor combustor unit (EPN VCU) and temporary vapor combustor unit (EPN MSS-VCU)

(1) The VCU will meet all requirements of Special Condition No. 33 when waste gases are directed to it during MSS activities.

**Initial Demonstration of Compliance**

47. The permit holder shall perform stack sampling and other testing as required to establish the actual pattern and quantities of air contaminants being emitted into the atmosphere from the boilers (EPNs F-1701A and F-1701B) and the vapor combustor unit (EPN VCU) to demonstrate compliance with the MAERT, the emissions standards in Special Condition No. 7, and the control efficiency requirement in Special Condition No. 33. The permit holder is responsible for providing sampling and testing facilities and conducting the sampling and testing operations at his expense. Sampling shall be conducted in accordance with the appropriate procedures of the Texas Commission on Environmental Quality (TCEQ) Sampling Procedures Manual and the U.S. Environmental Protection Agency (EPA) Reference Methods.

Requests to waive testing for any pollutant specified in this condition shall be submitted to the TCEQ Office of Air, Air Permits Division. Test waivers and alternate/equivalent procedure proposals for Title 40 Code of Federal Regulation Part 60 (40 CFR Part 60) testing which must have EPA approval shall be submitted to the TCEQ Regional Director.

A. The appropriate TCEQ Regional Office shall be notified not less than 45 days prior to sampling. The notice shall include:

(1) Proposed date for pretest meeting.

(2) Date sampling will occur.

(3) Name of firm conducting sampling.

(4) Type of sampling equipment to be used.

(5) Method or procedure to be used in sampling.

(6) Description of any proposed deviation from the sampling procedures specified in this permit or TCEQ/EPA sampling procedures.

(7) Procedure/parameters to be used to determine worst case emissions during the sampling period.

The purpose of the pretest meeting is to review the necessary sampling and testing procedures, to provide the proper data forms for recording pertinent data, and to review the format procedures for the test reports. The TCEQ Regional Director must approve any deviation from specified sampling procedures.

B. Air contaminants emitted from F-1701A and F-1701B to be tested for include (but are not limited to) NOx, CO, $NH_3$, and $O_2$.

C. Air contaminants emitted from VCU to be tested for include (but are not limited to) VOCs.

D. Sampling shall occur within 60 days after achieving the maximum operating rate, but no later than 180 days after initial start-up of the facilities (or increase in production, as appropriate) and at such other times (identify the need for any periodic sampling here) as may be required by the TCEQ Executive Director. Requests for additional time to perform sampling shall be submitted to the appropriate regional office.

E. The facility being sampled shall operate at the maximum firing rate and maximum hourly waste fuel flow rate during stack emission testing. These conditions/parameters and any other primary operating parameters that affect the emission rate shall be monitored and recorded during the stack test. Any additional parameters shall be determined at the pretest meeting and shall be stated in the sampling report. Permit conditions and parameter limits may be waived during stack testing performed under this condition if the proposed condition/parameter range is identified in the test notice specified in paragraph A and accepted by the TCEQ Regional Office. Permit allowable emissions and emission control requirements are not waived and still apply during stack testing periods.

During subsequent operations, if the maximum firing rate and maximum hourly waste fuel flow rate is greater than that recorded during the test period, stack sampling shall be performed at the new operating conditions within 120 days. This sampling may be waived by the TCEQ Air Section Manager for the region.

F. Copies of the final sampling report shall be forwarded to the offices below within 60 days after sampling is completed. Sampling reports shall comply with the attached provisions entitled “Chapter 14, Contents of Sampling Reports” of the TCEQ Sampling Procedures Manual. The reports shall be distributed as follows:

One copy to the appropriate TCEQ Regional Office.
One copy to each local air pollution control program.

G. Sampling ports and platform(s) shall be incorporated into the design of EPNs F-1701A, F-1701B, and VCU according to the specifications set forth in the attachment entitled “Chapter 2, Guidelines For Stack Sampling Facilities” of the Texas Commission on Environmental Quality (TCEQ) Sampling Procedures Manual. Alternate sampling facility designs must be submitted for approval to the TCEQ Regional Director.

**Recordkeeping**

48. The following records shall be kept at the plant for the life of the permit. All records required in this permit shall be made available at the request of personnel from the Texas Commission on Environmental Quality (TCEQ), EPA, or any local air pollution control agency with jurisdiction:

A. A copy of this permit.

B. Permit application received January 5, 2023 (Project 342150), and subsequent representations submitted to the TCEQ.

C. A copy of the manufacturer’s design and operation specifications and all emission-related maintenance requirements.

D. Records of the initial performance testing completed to demonstrate initial compliance.

E. Records of fuel delivery indicating date and quantity of fuel delivered. If the fuel is designated ULSD on the receipt, this is acceptable as showing compliance with sulfur limitations of this permit. Otherwise, keep records of the sulfur content of the fuel based on receipts or chemical analyses.

49. The following information shall be maintained by the holder of this permit in a form suitable for inspection for a period of five years after collection and shall be made available upon request to representatives of the TCEQ, EPA, or any local air pollution control program having jurisdiction:

A. Records of the hours of operation used for each engine, kept on a monthly and rolling 12-month basis.

B. Records of fuel delivery indicating date and quantity of fuel delivered and the sulfur content of the fuel based on receipts or chemical analyses.

C. Records of emission-related maintenance, including replacement of control system components, media and sensors, if present.

D. Record of visible emissions or opacity observations, including corrective actions taken, as required by this permit.

E. A record of sampling performed to evaluate emissions.

F. A record listing the dates of any sampling that showed emission rates to be in violation of the allowable emissions rates and the corrective action taken.

Date: 04/13/2023

**Permit 169075**

Attachment A

Inherently Low Emitting Activities

| Activity | Emissions | | | | |
|---|---|---|---|---|---|
| | VOC | $NO_x$ | CO | PM | $H_2S/SO_2$ |
| Calibration of analytical equipment | X | X | X | | X |
| Carbon can replacement | X | | | | |
| Instrumentation/analyzer maintenance | X | | | | |
| Replacement of analyzer filters and screens | X | | | | |
| Aerosol Cans | X | | | X | |
| Catalyst charging/handling | | | | X | |
| Soap and other aqueous based cleaners | X | | | | |
| Cleaning sight glasses | X | | | | |
| Maintenance on water treatment systems (cooling, boiler, potable) | X | | | | |

Date: 04/13/2023

**Permit 169075**
Attachment B

Routine Maintenance Activities

Pump repair/replacement

Fugitive component (valve, pipe, flange, instrument) repair/replacement

Compressor repair/replacement

Heat exchanger repair/replacement

Vessel repair/replacement

Vessel distillation repair/replacement

Tank inspection/repair

Flare repair/replacement

Pipeline Launcher/Receiver Repair/Operations

Heater repair/replacement

Electrolyzer repair/replacement

Catalysts replacement

Pressurized Vessel Filtration replacement

Date: 04/13/2023

**Permit 169075**
Attachment C

MSS Activity Summary

| Facilities | Description | Emissions Activity | EPN |
|---|---|---|---|
| Steam Boilers | Hydrogen Commissioning/Startup/ Shutdown | vent to atmosphere | F-1701A and F-1701B |
| Gasoline Synthesis Reactor | Catalyst Regeneration – Depressurization | vent to flare | FLARE |
| | Catalyst Regeneration – Catalyst Oxidization | vent to heaters | F-590A and F-590B |
| 3 Separators (V507 A/B Gas Loop, V902 Isomerization, and V952 Hydrocracker Effluent) | Flare Vents Startup | vent to flare | FLARE |
| Heaters and Reboilers | Startup/Shutdown | vent to atmosphere | F-501, F-590A, F-590B, F-801, F-902, F-901, F-951 |
| LPG Sphere, C5 Bullet, Isomerization Reactor, 1st and 2nd Hydrocracker Reactors, and Heat Exchanger/Cooler | Controlled Depressurize | vent to flare | FLARE |
| | Opening After Degassing | vent to atmosphere | MSS-DEGASS |
| Meter, Pipelines, Pumps, Valves, Level Gauges, and Level Measurement Devices | Instrumentation and Pipe Metering | vent to atmosphere | MSS-INST |
| all process units and tanks | Remove Liquids for MSS | vent to control | MSS-VAC |
| Storage Tanks | Controlled Degassing | vent to control (DSL-TNK to atmosphere) | MSS-VCU, FLARE, VCU, DSL-TNK |
| Storage Tanks | Tank Opening After Degassing | vent to atmosphere | MSS-TNKOPN |
| Emergency Engine and Firewater Pumps | Readiness Testing | vent to atmosphere | FPUMP1 through FPUMP55, EGEN1 |
| see Attachment A | miscellaneous low emitting activities | see Attachment A | |
| See Attachment B | Routine maintenance activities | See Attachment B | |

Date: 04/13/2023

# Construction Permit
# Source Analysis & Technical Review

| | | | |
|---|---|---|---|
| Company | **HIF USA LLC** | Permit Number | **169075** |
| City | **Bay City** | Project Number | **342150** |
| County | **Matagorda** | Regulated Entity Number | **RN111500245** |
| Project Type | **Initial** | Customer Reference Number | **CN606018331** |
| Project Reviewer | **Maryam Rasti** | Received Date | **May 13, 2022** |
| Site Name | **HIF Matagorda eFuels Plant** | | |

**Project Overview**

HIF USA LLC (HIF) proposes to construct a new green electrofuels (eFuels) plant at a greenfield site located southwest of Bay City in Matagorda County, Texas. The proposed plant will produce synthetic carbon-neutral fuels, including gasoline derived from renewable, non-petroleum based feedstocks. The project will utilize captured carbon dioxide ($CO_2$) and produced green $H_2$ (via electrolysis of water using renewable and low carbon energy sources) combined in a synthesis process to derive eFuels. The synthetic gasoline is produced using a proprietary Methanol to Gasoline (MTG) process, which uses methanol as an intermediate. Synthetic fuels produced include gasoline, liquefied petroleum gas (LPG) and C5 hydrocarbon that will be periodically blended into the produced gasoline to meet quality specifications.

**Emission Summary**

| Air Contaminant | Current Allowable Emission Rates (tpy) | Proposed Allowable Emission Rates (tpy) | Change in Allowable Emission Rates (tpy) |
|---|---|---|---|
| PM | 0 | 17.18 | +17.18 |
| $PM_{10}$ | 0 | 17.06 | +17.06 |
| $PM_{2.5}$ | 0 | 16.47 | +16.47 |
| VOC | 0 | 69.68 | +69.68 |
| $NO_X$ | 0 | 48.25 | +48.25 |
| CO | 0 | 79.71 | +79.71 |
| $SO_2$ | 0 | 16.29 | +16.29 |
| $H_2S$ | 0 | 0.04 | +0.04 |
| $NH_3$ | 0 | 8.12 | +8.12 |

**Compliance History Evaluation - 30 TAC Chapter 60 Rules**

| | |
|---|---|
| A compliance history report was reviewed on: | June 6, 2022 |
| Site rating & classification: | N/A |
| Company rating & classification: | N/A |
| Has the permit changed on the basis of the compliance history or rating? | No |
| Did the Regional Office have any comments? If so, explain. | No |

**Public Notice Information**

| Requirement | Date |
|---|---|
| Legislator letters mailed | 5/19/2022 |
| Date 1st notice published | 06/12/2022 |
| Publication Name: Bay City Tribune | |

| | |
|---|---|
| Pollutants: CO, HAPs, $H_2S$, $NO_X$, VOC, $NH_3$, PM including $PM_{10}$ and $PM_{2.5}$, and $SO_2$ | |
| Date 1st notice Alternate Language published | 06/12/2022 |
| Publication Name (Alternate Language): El Perico | |
| 1st public notice tearsheet(s) received | 06/16/2022 |
| 1st public notice affidavit(s) received | 06/16/2022 |
| 1st public notice certification of sign posting/application availability received | 07/14/2022 |
| SB709 Notification mailed | 11/04/2022 |
| Date 2nd notice published | 01/29/2023 |
| Publication Name: Bay City Tribune | |
| Pollutants: CO, HAPs, $H_2S$, $NO_X$, VOC, $NH_3$, PM including $PM_{10}$ and $PM_{2.5}$, and $SO_2$ | |
| Date 2nd notice published (Alternate Language) | 01/26/2023 |
| Publication Name (Alternate Language): El Perico | |
| 2nd public notice tearsheet(s) received | 02/06/2023 |
| 2nd public notice affidavit(s) received | 02/06/2023 |
| 2nd public notice certification of sign posting/application availability received | 03/06/2023 |

**Public Interest**

| | |
|---|---|
| Number of comments received | 1 |
| Number of meeting requests received | 0 |
| Number of hearing requests received | 0 |
| Date meeting held | n/a |
| Date response to comments filed with OCC | 04/13/2023 |
| Date of SOAH hearing | n/a |

**Federal Rules Applicability**

| **Requirement** | |
|---|---|
| Subject to NSPS? | **Yes** |
| Subparts **A** & **Db, Kb, VVa, NNN, RRR, IIII** | |
| Subject to NESHAP? | **No** |
| Subject to NESHAP (MACT) for source categories? | **Yes** |
| Subparts **A** & **ZZZZ, JJJJJJ** | |
| Nonattainment review applicability: The proposed facility will be in Matagorda County, which is designated as an attainment area for all criteria pollutants. Therefore, nonattainment review is not required. | |
| PSD review applicability: The proposed facility is considered a named source (i.e., chemical process plant) for PSD purposes. The total emissions from this facility for every pollutant is below the 100 tpy threshold for PSD named major sources. Therefore, PSD review is not required. | |

**Title V Applicability - 30 TAC Chapter 122 Rules**

**Requirement**

Title V applicability: This site will emit less than 100 tons per year for each contaminant, less than 10 tpy of any single hazardous air pollutant, and less than 25 tpy of total hazardous air pollutants. Therefore, it is not a Title V major source.

Periodic Monitoring (PM) applicability: The proposed facility will be subject to the following periodic monitoring requirements per the Special Conditions:

- Semi-annual sampling of plant fuel gas to determine total sulfur and net heating value
- Fuel flow meter and CEMS for in-stack concentration of $NO_X$, CO, and $O_2$ from the steam boilers
- Testing/calculations and monitoring of $NH_3$ in-stack concentration when SCR unit is operating
- AVO checks for $NH_3$ leaks within operating area every 8 hours for piping and valves in $NH_3$ service
- Non-resettable run time meter on each firewater pump and emergency engine
- Monthly and annual recordkeeping of storage tank throughputs
- 28VHP monitoring program for fugitive components and 28CNTW quarterly inspections for connectors
- Annual inspections of cooling tower drift eliminators, cooling water weekly sampling for total dissolved solids, and monthly VOC monitoring of cooling tower with air stripping system
- Quarterly visual or physical inspections of water seals part of wastewater treatment system
- Monitoring and recording of daily wastewater flow into the wastewater treatment plant, daily MLSS concentration, and monthly sampling of wastewater prior to corrugated plate interceptors
- Continuous monitoring of flare pilot flame, continuous flow monitoring and calorimeter readings
- Continuous monitoring of VCU pilot flame and continuous temperature monitoring of VCU combustion chamber
- Leak checks and annual certifications for tank trucks
- Monthly and annual recordkeeping of emissions associated with MSS activities
- Initial stack sampling for boilers ($NO_X$, CO, $NH_3$, $O_2$) and vapor combustor unit (VOCs)

Compliance Assurance Monitoring (CAM) applicability: Not subject to CAM because the site is not a Title V major source.

**Process Description**

The facility will produce methanol by combining $CO_2$ from a nearby supercritical $CO_2$ pipeline with $H_2$ gas generated from electrolysis of water generating a synthetic fuel gas similar to natural gas, which is then converted into methanol in a reactor. The produced methanol is then further refined into gasoline using a proprietary methanol-to-gasoline (MTG) reaction process, which generates light and heavy gasoline, LPG, and C5. The heavier gasoline fraction is then upgraded into a commercial product by undergoing hydrocracking and/or isomerization. The final product is then blended to meet seasonal Reid Vapor Pressure (RVP) fuel specification requirements, before being shipped offsite via pipeline. The proposed production rates are approximately 250 million gallons per year (gpy) of gasoline, 55.6 million gpy of LPG, and 5.9 million gpy of C5. The proposed facility will consume approximately 2,000,000 tons of $CO_2$ per year.

The HIF Matagorda eFuels Plant will operate one (1) methanol process with six (6) methanol reactors, one (1) methanol to gasoline (MTG) process with six gasoline reactors, and the following appurtenant equipment:

- One (1) cooling tower
- One (1) wastewater treatment plant (WWTP) to treat industrial wastewater
- One (1) intermediate methanol storage tank
- Four (4) gasoline storage and blending tanks
- Seven (7) process heaters fired using plant fuel gas generated by the production process.
- Two (2) steam boilers fired using plant fuel gas generated by the production process, and hydrogen gas during commissioning and cold startup activities.
- Six (6) process condensate, wastewater, slop oil/methanol, and oily sewer storage tanks associated with waste treatment
- One (1) vapor combustor unit (VCU) for control of wastewater treatment plant equipment and several storage tanks associated with the wastewater and waste handling and treatment
- Truck loading for slop oil and slop methanol
- One (1) diesel storage tank for emergency engine fuel

- One (1) emergency diesel engine
- Five (5) firewater pumps for emergency fire
- One (1) flare for control of emergency releases and maintenance, startup, and shutdown activities (MSS).
- Vacuum truck loading for MSS
- Temporary VCUs for MSS
- Piping components

The plant will not utilize any offsite natural gas; all process heaters and boilers will be fired using the synthetic fuel gas generated during the production processes. The boilers will be equipped with both fuel gas and hydrogen burners such that hydrogen gas may be used as a supplemental fuel. Hydrogen gas will be used for commissioning of the boilers and during certain startup activities.

**Project Scope**

This initial NSR construction permit project will authorize the equipment and operations described below.

Routine Operations

The facility will receive supercritical $CO_2$ via pipeline and raw water via well and/or local utilities. The water is treated to remove minerals. Hydrogen gas and oxygen gas will be generated using water electrolysis. The electroyzers used for this process produce significant low-grade heat, and the cooling water is processed using a cooling tower (**EPN CT-1**) and stored in cooling ponds. The facility will utilize a Wastewater Treatment Plant (**EPN WWTP**) to treat process wastewater for recycling and reuse, which will be filtered and reused as raw water feedstock for hydrogen production.

Hydrogen gas is combined with supercritical $CO_2$ in the isothermal methanol synthesis reactor to form crude methanol. Crude methanol is then degassed, with degassed vapors recycled to the methanol synthesis reactor. The crude methanol is distilled, with dewatered methanol sent to an intermediate methanol storage tank (**FIN TK-2001**). Water and condensate are sent to the wastewater treatment plant. Vapors from the intermediate methanol storage tank are routed through a scrubber and scrubbed materials are recycled into the distillation column. Remaining methanol vapors are routed to the plant fuel gas header. From the intermediate tank, methanol is superheated and injected into the adiabatic fixed bed methanol-to-gasoline (MTG) reactor.

Raw gasoline from the MTG reactor is fractionated and processed as listed below:

- Fractionated components with higher volatility are stored in liquid petroleum gas (LPG) spheres or pentane (C5) bullet tanks. LPG or C5 may be blended with gasoline, shipped via pipeline, or loaded into pressurized tanker trucks for shipment offsite.
- Light gasolines are stored in on-spec gasoline tank (**EPN TK-2005**). From TK-2005, gasoline is sent to blend tanks (**EPNs TK-2007A** and **TK-2007B**) where it is blended with material from LPG sphere or C5 bullet tanks to meet commercial quality specifications. Blended gasolines are then shipped via pipelines.
- Heart cut gasolines are sent to the isomerization unit before being stored in on-spec gasoline tank TK-2005.
- Heavy gasolines are sent to the hydrocracking unit, before being stored in off-spec gasoline tank (**EPN TK-2006**). This material is then recycled back into the gasoline fractionation process.

Several process heaters (**EPNs F-501, F-590A, F-590B, F-801, F-901, F-902, and F-951**) are used throughout the methanol and gasoline synthesis and fractionation process described above. In addition, the site will also have the following production support operations:

- Steam boilers (**EPNS F-1701A** and **F-1701B**) are used to generate steam used throughout the process. These are equipped with both fuel gas and hydrogen burners such that hydrogen gas may be used as a supplemental fuel.
- A stripped process condensate tank (**FIN TK-2002**), slop oil tank (**FIN TK-2401**), and slop methanol tank (**FIN TK-2402**), wastewater tank (**FIN TK-1901**), offspec wastewater tank (**FIN TK-1902**), and an oily water sewer (**FIN OWS**) are all used as part of the wastewater and waste handling activities. All of these tanks are controlled by a VCU (**EPN VCU**) with 99% destruction efficiency.
- When the slop methanol and slop oil tanks reach capacity, the material will be loaded into a truck for offsite treatment (**EPN SLOP**). Emissions are vapor balanced back to the tanks, which are controlled via the VCU.

- Five firewater pumps (**EPNs FPUMP1**, **FPUMP2**, **FPUMP3**, **FPUMP4**, and **FPUMP5**) and one emergency engine (**EPN EGEN1**) are utilized to provide fire suppression and emergency power in the event of a power outage. A diesel storage tank (**EPN DSL-TNK**) provides storage for diesel utilized by the firewater pumps and emergency engine.

MSS Operations

The gasoline synthesis reactor requires regular maintenance, which occurs in several steps. The first step in the regeneration cycle is the reactor is pressurized and then depressurized using nitrogen. The emissions from the depressurization are sent to the flare (**EPN FLARE**) for control. After depressurization, the catalyst surface is heated up, and air is purged over the reactor surface. Any residual hydrocarbons are oxidized and evaporate. The resultant purge air contains excess oxygen, it cannot be sent to the flare and is instead routed into the firebox of heaters F-590A and F-590B for vapor control and destruction. Following the catalyst heating cycle, the reactor is purged with nitrogen and placed back into service.

During cold startups, several valves within the gasoline synthesis process will be routed to the flare until the plant reaches operational equilibrium. Emissions from this activity are limited to 12 hours annually in duration.

Large, pressurized equipment such as the LPG spheres, C5 Bullet Tanks, reactors, and heat exchangers, will require occasional maintenance. Before the vessels are opened, vapors within the vessels will be vented to the flare. After degassing, the vessels will be opened to the atmosphere for maintenance and repair (**EPN MSS-DEGASS**).

Storage tanks may require occasional maintenance. Before opening to the atmosphere, the storage tanks will be degassed to the applicable control device. Tanks TK-2005, TK-2006, TK-2007A, TK-2007B are degassed to a temporary control device (**EPN MSS-VCU**). Tanks TK-2002, TK-2401, TK-2402, TK-1901, TK-1902, and the OWS are routed to the site VCU. Intermediate methanol tank TK-2001 is degassed to the flare and DSL-TNK is degassed to atmosphere due to the low vapor pressure. After degassing, the tanks are opened to the atmosphere for service and repair (**EPN MSS-TNKOPN**).

Technicians will routinely perform meter calibration, pipeline pigging, temporary taps, pump deadlegs, as well as clearing of plugged instrumentation, pumps, valves, piping components, level gauges, and level measurement devices. During these periods, emissions will result from open piping (**EPN MSS-INST**).

Vacuum trucks are used to remove liquid from tanks, sumps, and other sources as needed for maintenance and repair purposes (**EPN MSS-VAC**). For compounds with high vapor pressures, emissions will be controlled using activated carbon or equivalent.

**Special Conditions:**

| SC Number | Description of Requirement |
|---|---|
| 1 and 2 | Special conditions for all permits limiting emission sources to those in MAERT |
| 3 and 4 | Federal applicability conditions specifying requirements to meet 40 CFR Part 60 Subparts A, Db, Kb, VVa, NNN, RRR, and IIII and 40 CFR Part 63 Subparts A, ZZZZ, and JJJJJJ |
| 5 | Sulfur content requirement for heaters and boilers firing plant fuel gas. Sulfur content is limited to 12.4 ppmv as represented in emission calculations. The two boilers may also fire hydrogen gas. |
| 6 | NOx and CO emission factor limits for the seven process heaters. NOx limit is higher than BACT for new heaters (0.01 lb/MMBtu). Applicant submitted tiered BACT analysis to justify 0.04 lb/MMBtu – see further discussion in BACT section below. |
| 7 | NOx and CO emission factor limits for two boilers, which meet Tier I BACT for new boilers. |
| 8 | Semi-annual sampling requirement for plant fuel gas |
| 9 | CEMS requirement for NOx, CO, and $O_2$ as specified in boilerplate language for boilers >100 MMBtu/hr |
| 10 | Ammonia concentration limit for boilers. Applicant represented 10 ppmv in emission calculations. |
| 11 | Testing/monitoring requirements for ammonia slip associated with the boiler SCR units |
| 12, 13, and 14 | Requirements for safe storage of ammonia, inspections/maintenance of piping and valves in ammonia service, and recordkeeping of inspections/maintenance performed |
| 15 and 16 | Operating hours limit for emergency engines and firewater pumps. Requirement to install non-resettable run time meter to show compliance with 100 hour limit. |
| 17 | Sulfur requirement of ULSD fuel for firewater pumps and emergency engines |
| 18 | Requirement to operate and maintain according to manufacturer's emission-related written instructions |
| 19 | Limit of 1 hour per event for startup and shutdowns of each engine where after-treatment control device isn't working. 1 hour limit is consistent with Applicant's modeling. |
| 20 | Storage tank hourly fill/withdrawal limits and annual throughput limits |
| 21 | Storage tank materials vapor pressure limit of 11.0 psia |
| 22 | Control requirements for storage tanks including floating roof tanks which are vented to VCU |
| 23 and 24 | Fugitive LDAR programs 28VHP and 28CNTQ for connectors |
| 25 and 26 | Cooling tower requirements. Applicant represented drift eliminators with 0.001% drift and total dissolved solids (TDS) concentration of 1,000 ppmw in emission calculations. |
| 27 and 28 | Requirements for wastewater treatment plants that include biological treatment units |
| 29 | Requirement for wastewater treatment plant that includes activates sludge biological treatment. Applicant represented 3,000 mg/L in emission calculations. |
| 30 | Applicant requested to sample on a monthly rather than daily basis. However, daily sampling is standard across industry and no justification was provided for this request. Permit reviewer researched recent permits to find examples of lower MLSS sampling frequencies and found that this request was granted in rare instances when applicants submitted sufficient data showing compliance with MLSS concentration over an extended period of operation. Therefore, this special condition provides the Applicant with the option to lower the MLSS sampling frequency in the future after submitting sampling data. The twice weekly frequency is based off Permit 19797, Project 253943. The Applicant confirmed their understanding that they will still be required to comply with the MLSS concentration minimum of 3,000 mg/L and the purpose of this condition is only to relax the sampling burden of showing compliance with the 3,000 mg/L concentration. |
| 31 | Requirement for wastewater treatment plant emission estimation procedure |
| 32 | Flare requirements. Applicant opted for calorimeter measuring BTU content to flare instead of composition analyzer. |
| 33 | VCU requirements. Applicant identified 1400°F as pre-construction minimum estimated chamber temperature. |
| 34 | Loading hourly and annual throughput limits for Slop Oil and Slop Methanol tank trucks |
| 35 and 36 | Tank truck requirements for leak checks and tests |
| 37 | MSS language referencing MSS activities identified in Attachments A, B, and C |

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| 38 | Depressurizing, emptying, and degassing requirements. Subpart D(2) specifies that the LPG Sphere must be controlled until the VOC concentration is less than 1,000 ppmv because the emission calculations represent emissions to atmosphere (MSS-DEGASS) starting with a vessel at 1,000 ppmv VOC concentration. |
| 39 | Language for VOC measuring instrument/detectors |
| 40 and 41 | Requirements for MSS activities on floating and fixed roof storage tanks |
| 42 | Requirements for vacuum trucks used for MSS activities |
| 43 | Requirements for frac/temporary tanks and vessels used for MSS activities |
| 44 | Language regarding PBRs obtained for MSS activities |
| 45 | Requirements for startup and shutdown of emission sources. Process units identified in subpart B are limited to the representations in emission calculations (i.e. 0.05 lb NOx/MMBtu for heaters and boilers for 100 hours/year of startup and shutdown and 12 hours per year for three vents routed to flare) |
| 46 | Requirements for the three types of control devices represented in permit application (i.e. CAS, flare, VCU, and temporary VCU) |
| 47 | Stack sampling requirement for boilers (>100 MMBtu/hr) and VCU |
| 48 and 49 | Comprehensive permit recordkeeping requirements |

| **Source Name** | **EPN** | **Best Available Control Technology Description** |
|---|---|---|
| Heaters<br>F-501 Gasoline Loop Super Heater (34.48 MMBtu/hr)<br><br>F-801 Gasoline Splitter Reboiler (24.50 MMBtu/hr)<br><br>F-902 Isomerization Effluent Stabilizer Reboiler (2.99 MMBtu/hr)<br><br>F-901 Isomerization Heater (2.90 MMBtu/hr)<br><br>F-951 Hydrocracker Heater (2.40 MMBtu/hr) | F-501<br><br>F-801<br><br>F-902<br><br>F-901<br><br>F-951 | VOC: plant fuel gas generated during production will be used and good combustion practices utilized; as a conservative measure, the uncombusted pass-through VOC from fuel gas was added to the VOC combustion emissions factor from AP-42 Chapter 1.4.<br>CO: emission factors 50 ppmv limit corrected to 3% oxygen<br>$NO_x$: Low NOx burners will be used to meet 0.04 lb/MMBtu during normal operation on an hourly and annual basis Heaters are fired using plant fuel gas during production. One objective for this facility is to avoid the use of third-party petroleum products. Due to the differences in fuel content between typical pipeline-quality natural gas and the synthetically generated fuel from the facility (i.e. ~20% mol fraction hydrogen gas and higher percentage of heavy hydrocarbons), NOx emission factor is higher than 0.01 lb/MMBtu. Applicant provided Tier I BACT analysis showing that the NOx emission factor of 0.04 is equivalent or lower than recently permitted projects for similar facilities.<br>PM: emission factor 0.0075 lb/MMBtu and maximum opacity 5%<br>$SO_2$: plant fuel gas has a maximum sulfur content of 12.4 ppmv based on engineering calculations<br>$H_2S$: estimated 99.99% control and calcs assume all $H_2S$ in fuel is oxidized to $SO_2$<br>MSS: During startup and shutdown, NOx emission factor is anticipated to be 0.05 lb/MMBtu due to combustion inefficiency. Startup/shutdown hours are limited to 100 hours/year. |
| Heaters<br>F-590A and F-590B Gasoline Loop Regeneration Heaters (9.02 MMBtu/hr each) | F-590A & F-590B | VOC: plant fuel gas generated during production will be used and good combustion practices utilized. As a conservative measure, the uncombusted pass-through VOC from fuel gas was added to the VOC combustion emissions factor from AP- |

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| | | 42 Chapter 1.4.<br>CO: emission factors 50 ppmv limit<br>$NO_x$: Low NOx burners will be used to meet 0.04 lb/MMBtu during normal operation on an hourly and annual basis and 0.05 lb/MMBtu during startup-shutdown. Heaters are fired using plant fuel gas during production. One objective for this facility is to avoid the use of third-party petroleum products. Due to the differences in fuel content between typical pipeline-quality natural gas and the synthetically generated fuel from the facility (i.e. ~20% mol fraction hydrogen gas and higher percentage of heavy hydrocarbons), NOx emission factor is higher than 0.01 lb/MMBtu. Applicant provided Tier I BACT analysis showing that the NOx emission factor of 0.04 is equivalent or lower than recently permitted projects for similar facilities.<br>PM: maximum opacity 5%.<br>$SO_2$ and H2S: plant fuel gas has a maximum sulfur content of 12.4 ppmv based on engineering calculations<br>$H_2S$: estimated 99.99% control and calcs assume all $H_2S$ in fuel is oxidized to $SO_2$<br>MSS: During gasoline synthesis catalyst regeneration, hydrocarbons generated during catalyst burnoff are routed into the firebox of the F-590A and F-590B. As a conservative measure, the uncombusted pass-through VOC from catalyst regeneration were added to the VOC combustion emission factor from AP-42 Chapter 1.4. |
| Steam Boilers<br>(206 MMBtu/hr each) | F-1701A and F-1701B | VOC: Good combustion practices will be utilized. Boilers are fired using plant fuel gas generated during production. As a conservative measure, the uncombusted pass-through VOC from fuel gas was added to the VOC combustion emissions factor from AP-42 Chapter 1.4.<br>CO: emission factors 50 ppmv limit on hourly basis and 40 ppmv on annual basis (engineering vendor estimate).<br>NOx: Selective catalytic reduction and low NOx burners will be used to meet emissions factors 0.015 lb/MMBtu NOx during normal operation<br>PM: maximum opacity 5%<br>$SO_2$ and $H_2S$: plant fuel gas has a maximum sulfur content of 12.4 ppmv (0.0078 grains/scf) based on engineering calculations and calcs assume all $H_2S$ in stream is oxidized to $SO_2$<br>$NH_3$: Injection system will be controlled to meet the $NH_3$ slip BACT of 10 ppmvd at 3% $O_2$<br>MSS: During commissioning, boilers may be fired using hydrogen gas if sufficient fuel gas not available. Hydrogen burns at a higher temperature than fuel gas, generating additional thermal NOx emissions. Additionally, the SCR temperature during startup/shutdown may be too low for efficient NOx reduction. Thus, emission factors are 0.05 lb/MMBtu NOx during startup/shutdown, which is estimated at 100 hours per year. |
| Cooling Tower | CT-1 | VOC: Non-contact design. Monitored monthly. Identified leaks will be repaired as a soon as possible, and as required by the shutdown threshold of 0.08 ppm.<br>PM: Drift <0.001% achieved by drift eliminators |
| Wastewater Treatment Plant | WWTP | VOC: Emissions from CPI and DAF pretreatment units captured |

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| | | Wastewater treatment will attain at least 90% efficiency.<br>MSS: Same as normal operation. |
| <u>Internal Floating Roof Tanks</u><br>TK-2005 On-Spec Gasoline<br>TK-2006 Off-Spec Gasoline<br>TK-2007A Blended Gasoline<br>TK-2007B Blended Gasoline | <br>TK-2005<br>TK-2006<br>TK-2007A<br>TK-2007B | VOC: All surfaces exposed to sun will be white or aluminum. Drain dry design. Primary liquid mounted seal.<br>MSS: Tank roof landing and degassing emissions are routed to control device. Since repair work may involve welding or other hot work, tanks will not be opened until the LEL is 0%, conservatively represented as 50 ppm. Under-roof degassing will commence within 24 hours of landing. Degas every 24 hours unless no standing liquid in tank or vapor pressure of liquid in tank has a VOC partial pressure <0.02 psi. |
| <u>Vertical Fixed Roof Tanks</u><br>TK-2002 Stripped Process Condensate<br>TK-2401 Slop Oil<br>TK-2402 Slop Methanol<br>TK-1901 Wastewater<br>TK-1902 Off Spec Wastewater | VCU (FINs TK-2002, TK-2401, TK-2402, TK-1901, TK-1902) | VOC: All surfaces exposed to sun will be white or aluminum. Submerged fill. Vented to Vapor Combustor Unit with 99% control efficiency.<br>MSS: Drained liquids will be sent to a covered vessel. If standing liquid within the tank, and tank is opened to atmosphere or ventilated, the vapor stream will be controlled with 99% control efficiency until there is no standing liquid or the VOC vapor pressure is less than 0.02 psia. |
| <u>Horizontal Fixed Roof Tanks</u><br>Oil Water Separator<br>Diesel Tank | <br>VCU (FIN OWS)<br>DSL-TNK | VOC: All surfaces exposed to sun will be white or aluminum. Submerged fill. OWS will be vented to Vapor Combustor Unit with 99% control efficiency. DSL-TNK will be uncontrolled because vapor pressure is <0.02 at 95°F.<br>MSS: Drained liquids will be sent to a covered vessel. If standing liquid within the tank, and tank is opened to atmosphere or ventilated, the vapor stream will be controlled with 99% control efficiency until there is no standing liquid or the VOC vapor pressure is less than 0.02 psia. |
| Flare | FLARE | VOC: Will meet requirements of 40 CFR 60.18. DRE of 99% for compounds up to 3 carbons, 98% for 3+ carbons. No flaring of halogenated compounds. Flow monitor required. Composition or Btu analyzer is required.<br>CO: Flow monitor and composition or Btu analyzer required<br>NOx: Same as CO<br>$SO_2$: Same as CO. Assume all $H_2S$ oxidized to $SO_2$.<br>$H_2S$: Same as CO and 98% DRE.<br>MSS: Same as normal operations. |
| Vapor Combustor Unit | VCU | VOC: 99% DRE. Temperature monitoring and initial stack test required.<br>CO: Emission factor of 100 ppmv per TCEQ guidance without vendor guarantee<br>NOx: Emission factor of 0.1 lb NOx per MMBtu per TCEQ guidance without vendor guarantee<br>$SO_2$: Assume 100% sulfur will be oxidized to $SO_2$<br>$H_2S$: 98% DRE.<br>MSS: Same as normal operations. |
| Fugitive Piping and Components | FUG | VOC: 28VHP LDAR program (uncontrolled emissions >25 tpy) and 28CNTQ will be implemented for connectors. SOCMI without ethylene emission factors are used for emission calculations. |
| Slop Oil/Methanol Truck Loading | SLOP | VOC: Dedicated vapor balance service routed to VCU for control. 98.7% collection efficiency |
| Temporary VCU for MSS | MSS-VCU | VOC: 99% DRE. Temperature monitoring and initial stack test |

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|---|---|---|
| | | vendor guarantee<br>NOx: Emission factor of 0.1 lb NOx per MMBtu per TCEQ guidance without vendor guarantee<br>$SO_2$: Fuel grain content of 15 grains per 100 scf<br>MSS: Same as normal operations. |
| Vacuum Trucks for MSS | MSS-VAC | VOC: Submerged fill. Activated carbon or similar control with 90% control efficiency used vapor pressures >0.5 psia. |
| Tank Opening for MSS | MSS-TKOPN | VOC: Tanks are degassed to control device (except for DSL-TNK) and opened to the atmosphere when below 50 ppmv concentration. Only 1 tank opening event per tank per year is represented. |
| Equipment Degassing for MSS (LPG sphere, reactors, heat exchangers) | MSS-DEGASS | VOC: Depressurizing/degassing vapors will be routed to flare with 99% DRE for compounds up to 3 carbons, 98% for 3+ carbons. Degassing is controlled until concentration is 10,000 ppmv for all equipment except LPG Sphere (1,000 ppmv) |
| Instrumentation and Metering for MSS | MSS-INST | VOC: Pipe openings for instrumentation and metering will be minimized in number to those required for safe plant operation. |
| Emergency Diesel Engine | EGEN1 | VOC: Engine will meet 40 CFR Part 60 Subpart IIII. Limited to 100 hours per year of non-emergency operation. Has a non-resettable runtime meter.<br>CO: Same as VOC<br>NOx: Same as VOC<br>$SO_2$: Ultra-low sulfur diesel fuel with no more than 15 ppm sulfur by weight<br>PM: Same as VOC. No visible emissions shall leave the property. No visible emissions exceeding 30 seconds in duration in any six-minute period as determined using EPA TM 22 or equivalent.<br>MSS: Limited to 100 hours per year |
| Firewater Pumps 1 through 5 | FPUMP1, FPUMP2, FPUMP3, FPUMP4, and FPUMP5 | VOC: Engine will meet 40 CFR Part 60 Subpart IIII. Limited to 100 hours per year of non-emergency operation. Has a non-resettable runtime meter.<br>CO: Same as VOC<br>NOx: Same as VOC<br>SO2: Ultra-low sulfur diesel fuel with no more than 15 ppm sulfur by weight<br>PM: Same as VOC. No visible emissions shall leave the property. No visible emissions exceeding 30 seconds in duration in any six-minute period as determined using EPA TM 22 or equivalent.<br>MSS: Limited to 100 hours per year |

**Impacts Evaluation**

Was modeling conducted? **Yes** Type of Modeling: **AERMOD (Version 22112)**

Is the site within 3,000 feet of any school? **No**

Additional site/land use information: **Rural; next to STP Nuclear Power Station**

The applicant conducted site-wide modeling for all pollutants using AERMOD in refined screening mode. A State Property Line (SPL) analysis was conducted for $SO_2$ and $H_2S$. A NAAQS analysis was conducted for $SO_2$, $PM_{10}$, $PM_{2.5}$, $NO_2$, and CO. For all remaining pollutants, the applicant provided a health effects review as specified in the TCEQ's March 2018 Modeling and Effects Review Applicability (MERA) guidance for project emission increases of non-criteria pollutants. For more information, please refer to the Air Quality Analysis Audit memo (WCC Content ID: 6321013). A summary of the reviews for the pollutants with allowable emission increases is included in the tables below.

**Table 1. Site-wide Modeling Results for State Property Line**

| Pollutant | Averaging Time | GLCmax (µg/m$^3$) | Standard (µg/m$^3$) |
|---|---|---|---|
| $SO_2$ | 1-hr | 123 | 1021 |
| $H_2S$ | 1-hr | 0.3 | 108 |

**Table 2. Modeling Results for Minor NSR De Minimis**

| Pollutant | Averaging Time | GLCmax (µg/m$^3$) | De Minimis (µg/m$^3$) |
|---|---|---|---|
| $SO_2$ | 1-hr | 16.3 | 7.8 |
| $SO_2$ | 3-hr | 92 | 25 |
| $PM_{10}$ | 24-hr | 7.4 | 5 |
| $PM_{2.5}$ | 24-hr | 7.3 | 1.2 |
| $PM_{2.5}$ | Annual | 0.3 | 0.2 |
| $NO_2$ | 1-hr | 89 | 7.5 |
| $NO_2$ | Annual | 0.7 | 1 |
| CO | 1-hr | 400 | 2000 |
| CO | 8-hr | 225 | 500 |

A full impacts analysis was required for all the pollutants in the table above which exceeded the De Minimis concentration levels. The impacts associated with all criteria pollutants are acceptable as summarized in the table below.

**Table 3. Total Concentrations for Minor NSR NAAQS (Concentrations > De Minimis)**

| Pollutant | Averaging Time | GLCmax (µg/m$^3$) | Background (µg/m$^3$) | Total Conc. = [Background + GLCmax] (µg/m$^3$) | Standard (µg/m$^3$) |
|---|---|---|---|---|---|
| $SO_2$ | 1-hr | 16 | 62 | 78 | 196 |
| $SO_2$ | 3-hr | 92 | 181 | 273 | 1300 |
| $PM_{10}$ | 24-hr | 7 | 87 | 94 | 150 |
| $PM_{2.5}$ | 24-hr | 7 | 21 | 28 | 35 |
| $PM_{2.5}$ | Annual | 0.3 | 9.5 | 9.8 | 12 |
| $NO_2$ | 1-hr | 89 | 34 | 123 | 188 |

The applicant conducted a MERA evaluation for all remaining pollutants as summarized in the table below.

**Table 4. Health Effects Review - Minor NSR Project-Related Modeling Results**

| **Pollutant & CAS#** | **Averaging Time** | **GLCmax (µg/m$^3$)** | **ESL (µg/m$^3$)** | **Modeling and Effects Review Applicability (MERA) Step in Which Pollutant Screened Out** |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| 2- and 3- pentanone (107-87-9) | 1-hr | N/A | 5300 | Step 2 – long-term ESL ≥ 10% of short-term ESL, short-term ESL is greater than 3,500 µg/m$^3$ and production emissions increase ≤ 0.4 lb/hr |
| | Annual | N/A | 530 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| 2- and 3-Methylnaphthalene (91-57-6) | 1-hr | N/A | 200 | Step 2 – long-term ESL ≥ 10% of short-term ESL, short-term ESL is less than 500 µg/m3 and production emissions increase ≤ 0.04 lb/hr |
| | Annual | N/A | 20 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| 3-methyl-2-butanone (563-80-4) | 1-hr | N/A | 7050 | Step 2 – long-term ESL ≥ 10% of short-term ESL, short-term ESL is greater than 3,500 µg/m3 and production emissions increase ≤ 0.4 lb/hr |
| | Annual | N/A | 705 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| 7,12-dimethylbenz[a]anthracene (57-97-6) | 1-hr | 0.00002 | 0.5 | Step 7 – sitewide modeling deemed acceptable by ADMT |
| | Annual | N/A | 0.05 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| Acenaphthalene (83-32-9) | 1-hr | N/A | 100 | Step 2 – long-term ESL ≥ 10% of short-term ESL, short-term ESL is less than 500 µg/m3 and production emissions increase ≤ 0.04 lb/hr |
| | Annual | N/A | 10 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| Acenaphthylene (208-96-8) | 1-hr | N/A | 100 | Step 2 – long-term ESL ≥ 10% of short-term ESL, short-term ESL is less than 500 µg/m3 and production emissions increase ≤ 0.04 lb/hr |
| | Annual | N/A | 10 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| acetic acid (64-19-7) | 1-hr | N/A | 250 | Step 2 – long-term ESL ≥ 10% of short-term ESL, short-term ESL is less than 500 µg/m3 and production emissions increase ≤ 0.04 lb/hr |
| | Annual | N/A | 25 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| ammonia (7664-41-7) | 1-hr | 4 | 180 | Step 7 – sitewide modeling deemed acceptable by ADMT |
| | Annual | N/A | 92 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| anthracene (120-12-7) | 1-hr | <0.00001 | 1 | Step 7 – sitewide modeling deemed acceptable by ADMT |
| | Annual | N/A | 0.1 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| argon (7440-37-1) | - | - | - | Step 0 – simple asphyxiate |
| benzo[a]anthracene (56-55-3) | 1-hr | <0.00001 | 0.5 | Step 7 – sitewide modeling deemed acceptable by ADMT |
| | Annual | N/A | 0.05 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| benzene (71-43-2) | 1-hr | 0.002 | 170 | Step 7 – sitewide modeling deemed acceptable by ADMT |
| | Annual | 0.00007 | 4.5 | |
| benzo[a]pyrene (50-32-8) | - | - | - | Step 0 – no short-term ESL |
| | Annual | <0.00001 | 0.017 | Step 7 – sitewide modeling deemed acceptable by ADMT |

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|---|---|---|---|---|
| benzo[b]fluoranthene (205-99-2) | 1-hr | <0.00001 | 0.5 | Step 7 – sitewide modeling deemed acceptable by ADMT |
| | Annual | N/A | 0.05 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| benzo[g,h,i]perylene (191-24-2) | 1-hr | <0.00001 | 0.5 | Step 7 – sitewide modeling deemed acceptable by ADMT |
| | Annual | N/A | 0.05 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| benzo[k]fluoranthene (207-08-9) | 1-hr | <0.00001 | 0.5 | Step 7 – sitewide modeling deemed acceptable by ADMT |
| | Annual | N/A | 0.05 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| n-butane (106-97-8) | 1-hr | 2869 | 66000 | Step 7 – sitewide modeling deemed acceptable by ADMT |
| | Annual | N/A | 7100 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| butyric acid (107-92-6) | 1-hr | N/A | 900 | Step 2 – long-term ESL ≥ 10% of short-term ESL, short-term ESL is between 500 and 3500 µg/m3 and production emissions increase ≤ 0.1 lb/hr |
| | Annual | N/A | 90 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| chrysene (218-01-9) | 1-hr | <0.00001 | 0.5 | Step 7 – sitewide modeling deemed acceptable by ADMT |
| | Annual | N/A | 0.05 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| cyclopentene (142-29-0) | 1-hr | N/A | 3700 | Step 2 – long-term ESL ≥ 10% of short-term ESL, short-term ESL is greater than 3,500 µg/m3 and production emissions increase ≤ 0.4 lb/hr |
| | Annual | N/A | 370 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| dibenz[a,h]anthracene (53-70-3) | 1-hr | <0.00001 | 0.5 | Step 7 – sitewide modeling deemed acceptable by ADMT |
| | Annual | N/A | 0.05 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| dichlorobenzene (25321-22-6) | 1-hr | N/A | 900 | Step 2 – long-term ESL ≥ 10% of short-term ESL, short-term ESL is between 500 and 3500 µg/m3 and production emissions increase ≤ 0.1 lb/hr |
| | Annual | N/A | 160 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| dimethyl disulfide (624-92-0) | 1-hr | N/A | 20 | Step 2 – long-term ESL ≥ 10% of short-term ESL, short-term ESL is less than 500 µg/m3 and production emissions increase ≤ 0.04 lb/hr |
| | Annual | N/A | 2 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| ethane (74-84-0) | - | - | - | Step 0 – simple asphyxiant |
| ethanol (64-17-5) | 1-hr | 44 | 18800 | Step 7 – sitewide modeling deemed acceptable by ADMT |
| | Annual | N/A | 1880 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| fuel oil No. 2 (68476-30-2) | 1-hr | 43 | 1000 | Step 7 – sitewide modeling deemed acceptable by ADMT |
| | Annual | N/A | 100 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| fluorene (86-73-7) | 1-hr | N/A | 10 | Step 2 – long-term ESL ≥ 10% of short-term ESL, short-term ESL is less than 500 µg/m3 and production emissions increase ≤ 0.04 lb/hr |
| | Annual | N/A | 1 | Step 0 – long-term ESL ≥ 10% of short-term ESL |

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| fluoranthene (206-44-0) | 1-hr | <0.00001 | 0.5 | Step 7 – sitewide modeling deemed acceptable by ADMT |
| | Annual | N/A | 0.05 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| formic acid (64-18-6) | 1-hr | N/A | 90 | Step 2 – long-term ESL ≥ 10% of short-term ESL, short-term ESL is less than 500 µg/m3 and production emissions increase ≤ 0.04 lb/hr |
| | Annual | N/A | 9 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| formaldehyde (50-00-0) | 1-hr | 0.07 | 15 | Step 7 – sitewide modeling deemed acceptable by ADMT |
| | Annual | N/A | 3.3 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| gasoline (8006-61-9) | 1-hr | 4367 | 3500 | Step 7 – sitewide modeling deemed acceptable by ADMT; for short-term impact, Appendix D Tier II conditions are met, because GLCmax ≤ 2x ESL and GLCni < ESL |
| | Annual | 4 | 350 | Step 7 – sitewide modeling deemed acceptable by ADMT |
| n-hexane (110-54-3) | 1-hr | 2 | 5600 | Step 7 – sitewide modeling deemed acceptable by ADMT |
| | Annual | 0.06 | 200 | |
| helium (7440-59-7) | - | - | - | Step 0 – simple asphyxiant |
| higher alcohols | 1-hr | N/A | 2 | Step 2 – long-term ESL ≥ 10% of short-term ESL, short-term ESL is less than 500 µg/m3 and production emissions increase ≤ 0.04 lb/hr |
| | Annual | N/A | 0.2 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| hydrogen (1333-74-0) | - | - | - | Step 0 – simple asphyxiant |
| indeno[1,2,3-cd]pyrene (193-39-5) | 1-hr | <0.00001 | 0.5 | Step 7 – sitewide modeling deemed acceptable by ADMT |
| | Annual | N/A | 0.05 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| methanol (67-56-1) | 1-hr | 397 | 3900 | Step 7 – sitewide modeling deemed acceptable by ADMT |
| | Annual | N/A | 2100 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| isobutyric acid (79-31-2) | 1-hr | N/A | 900 | Step 2 – long-term ESL ≥ 10% of short-term ESL, short-term ESL is between 500 and 3500 µg/m3 and production emissions increase ≤ 0.1 lb/hr |
| | Annual | N/A | 90 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| isovaleric acid (503-74-2) | 1-hr | N/A | 420 | Step 2 – long-term ESL ≥ 10% of short-term ESL, short-term ESL is less than 500 µg/m3 and production emissions increase ≤ 0.04 lb/hr |
| | Annual | N/A | 42 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| methane (74-82-8) | - | - | - | Step 0 – simple asphyxiant |
| n-pentane (109-66-0) | 1-hr | 6857 | 59000 | Step 7 – sitewide modeling deemed acceptable by ADMT |
| | Annual | N/A | 7100 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| pyrene (129-00-0) | 1-hr | <0.00001 | 0.5 | Step 7 – sitewide modeling deemed acceptable by ADMT |

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| | Annual | N/A | 0.05 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| methyl ethyl ketone (78-93-3) | 1-hr | N/A | 18000 | Step 2 – long-term ESL ≥ 10% of short-term ESL, short-term ESL is greater than 3,500 µg/m3 and production emissions increase ≤ 0.4 lb/hr |
| | Annual | N/A | 2600 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| napthalene (91-20-3) | 1-hr | N/A | 500 | Step 2 – long-term ESL ≥ 10% of short-term ESL, short-term ESL is equal to 500 µg/m3 and production emissions increase ≤ 0.1 lb/hr |
| | Annual | N/A | 50 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| Oxygenates | 1-hr | N/A | 2 | Step 2 – long-term ESL ≥ 10% of short-term ESL, short-term ESL is equal to 2 µg/m3 and production emissions increase ≤ 0.04 lb/hr |
| | Annual | N/A | 0.2 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| phenanathrene (85-01-8) | 1-hr | N/A | 8 | Step 2 – long-term ESL ≥ 10% of short-term ESL, short-term ESL is less than 500 µg/m3 and production emissions increase ≤ 0.04 lb/hr |
| | Annual | N/A | 0.8 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| propane (74-98-6) | - | - | - | Step 0 – simple asphyxiant |
| propanoic acid (79-09-4) | 1-hr | N/A | 300 | Step 2 – long-term ESL ≥ 10% of short-term ESL, short-term ESL is less than 500 µg/m3 and production emissions increase ≤ 0.04 lb/hr |
| | Annual | N/A | 30 | Step 0 – long-term ESL ≥ 10% of short-term ESL |
| toluene (108-88-3) | 1-hr | N/A | 4500 | Step 2 – long-term ESL ≥ 10% of short-term ESL, short-term ESL is greater than 3,500 µg/m3 and production emissions increase ≤ 0.4 lb/hr |
| | Annual | N/A | 1200 | Step 0 – long-term ESL ≥ 10% of short-term ESL |

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| Project Reviewer<br>Maryam Rasti | 03/30/2023<br>Date | Team Leader<br>Matthew Ray | 3/31/2023<br>Date |