Natural Gas Compressor Station

Equipment Forms

*These equipment forms are for natural gas compressor stations that are seeking a*

*Rule 13 permit and do not qualify for the general permit.*

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ATTACHMENT k – fugitive emissions summary sheet FOR O&g FACILITIES** | | | | | | | | | | |
| Sources of fugitive emissions may include loading operations, equipment leaks, blowdown emissions, etc.  Use extra pages for each associated source or equipment if necessary. | | | | | | | | | | |
| Source/Equipment: | | | | | | | | | | |
| Leak Detection Method Used | | | Audible, visual, and olfactory (AVO) inspections | | Infrared (FLIR) cameras | Other (please describe) | | | | None required |
| Is the facility subject to quarterly LDAR monitoring under 40CFR60 Subpart OOOOa?  Yes  No. If no, why? | | | | | | | | | | |
| Component Type | Closed Vent System | Count | | Source of Leak Factors  (EPA, other (specify)) | | | Stream type (gas, liquid, etc.) | Estimated Emissions (tpy) | | |
| VOC | HAP | GHG (CO2e) |
| Pumps | Yes  No |  | |  | | | Gas  Liquid  Both |  |  |  |
| Valves | Yes  No |  | |  | | | Gas  Liquid  Both |  |  |  |
| Safety Relief Valves | Yes  No |  | |  | | | Gas  Liquid  Both |  |  |  |
| Open Ended Lines | Yes  No |  | |  | | | Gas  Liquid  Both |  |  |  |
| Sampling Connections | Yes  No |  | |  | | | Gas  Liquid  Both |  |  |  |
| Connections (Not sampling) | Yes  No |  | |  | | | Gas  Liquid  Both |  |  |  |
| Compressors | Yes  No |  | |  | | | Gas  Liquid  Both |  |  |  |
| Flanges | Yes  No |  | |  | | | Gas  Liquid  Both |  |  |  |
| Other1 | Yes  No |  | |  | | | Gas  Liquid  Both |  |  |  |
| 1 Other equipment types may include compressor seals, relief valves, diaphragms, drains, meters, etc. | | | | | | | | | | |
| Please indicate if there are any closed vent bypasses (include component): | | | | | | | | | | |
| Specify all equipment used in the closed vent system (e.g. VRU, ERD, thief hatches, tanker truck loading, etc.) | | | | | | | | | | |

|  |
| --- |
| **ATTACHMENT l – STORAGE vessel data sheet FOR O&g fACILITIES** |
| Complete this data sheet if you are the owner or operator of a storage vessel that contains condensate and/or produced water. This form must be completed for ***each*** new or modified bulk liquid storage vessel(s) that contains condensate and/or produced water. (If you have more than one (1) identical tank (i.e. 4-400 bbl condensate tanks), then you can list all on one (1) data sheet). **Include gas sample analysis, flashing emissions, working and breathing losses, USEPA Tanks, simulation software (ProMax, E&P Tanks, HYSYS, etc.), and any other supporting documents where applicable.**  **The following information is REQUIRED:**  Composition of the representative sample used for the simulation  For each stream that contributes to flashing emissions:  Temperature and pressure (inlet and outlet from separator(s))  Simulation-predicted composition  Molecular weight  Flow rate  Resulting flash emission factor or flashing emissions from simulation  Working/breathing loss emissions from tanks and/or loading emissions if simulation is used to quantify those emissions  *Additional information may be requested if necessary.* |

**GENERAL INFORMATION**

|  |  |
| --- | --- |
| 1. Bulk Storage Area Name | 2. Tank Name |
| 3. Emission Unit ID number | 4. Emission Point ID number |
| 5. Date Installed , Modified or Relocated *(for existing tanks)*  Was the tank manufactured after August 23, 2011?  Yes  No | 6. Type of change:  New construction  New stored material  Other  Relocation |
| 7A. Description of Tank Modification *(if applicable)* | |
| 7B. Will more than one material be stored in this tank? *If so, a separate form must be completed for each material.*  Yes  No | |
| 7C. Was USEPA Tanks simulation software utilized?  Yes  No  ***If Yes, please provide the appropriate documentation and items 8-42 below are not required.*** | |

**TANK INFORMATION**

|  |  |  |  |
| --- | --- | --- | --- |
| 8. Design Capacity *(specify barrels or gallons).* Use the internal cross-sectional area multiplied by internal height. | | | |
| 9A. Tank Internal Diameter (ft.) | | 9B. Tank Internal Height (ft.) | |
| 10A. Maximum Liquid Height (ft.) | | 10B. Average Liquid Height (ft.) | |
| 11A. Maximum Vapor Space Height (ft.) | | 11B. Average Vapor Space Height (ft.) | |
| 12. Nominal Capacity *(specify barrels or gallons)*. This is also known as “working volume”. | | | |
| 13A. Maximum annual throughput (gal/yr) | | 13B. Maximum daily throughput (gal/day) | |
| 14. Number of tank turnovers per year | | 15. Maximum tank fill rate (gal/min) | |
| 16. Tank fill method  Submerged  Splash  Bottom Loading | | | |
| 17. Is the tank system a variable vapor space system?  Yes  No  If yes, (A) What is the volume expansion capacity of the system (gal)?  (B) What are the number of transfers into the system per year? | | | |
| 18. Type of tank (check all that apply):  Fixed Roof  vertical  horizontal  flat roof  cone roof  dome roof  other (describe)  External Floating Roof  pontoon roof  double deck roof  Domed External (or Covered) Floating Roof  Internal Floating Roof  vertical column support  self-supporting  Variable Vapor Space  lifter roof  diaphragm  Pressurized  spherical  cylindrical  Other (describe) | | | |
|  |  | |  |

**PRESSURE/VACUUM CONTROL DATA**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 19. Check as many as apply:  Does Not Apply  Rupture Disc (psig)  Inert Gas Blanket of \_\_\_\_\_\_\_\_\_\_\_\_\_  Carbon Adsorption1  Vent to Vapor Combustion Device1 (vapor combustors, flares, thermal oxidizers, enclosed combustors)  Conservation Vent (psig) Condenser1        Vacuum Setting       Pressure Setting  Emergency Relief Valve (psig)        Vacuum Setting       Pressure Setting  Thief Hatch Weighted  Yes  No  1 Complete appropriate Air Pollution Control Device Sheet | | | | | | | | | |
| 20. Expected Emission Rate (submit Test Data or Calculations here or elsewhere in the application). | | | | | | | | | |
| **Material Name** | **Flashing Loss** | | **Breathing Loss** | | **Working Loss** | | **Total Emissions Loss** | | **Estimation Method1** |
| **lb/hr** | **tpy** | **lb/hr** | **tpy** | **lb/hr** | **tpy** | **lb/hr** | **tpy** |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

1 EPA = EPA Emission Factor, MB = Material Balance, SS = Similar Source, ST = Similar Source Test, Throughput Data, O = Other (specify)

*Remember to attach emissions calculations, including TANKS Summary Sheets and other modeling summary sheets if applicable.*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **TANK CONSTRUCTION AND OPERATION INFORMATION** | | | | | | | |
| 21. Tank Shell Construction:  Riveted  Gunite lined  Epoxy-coated rivets  Other (describe) | | | | | | | |
| 21A. Shell Color: | | 21B. Roof Color: | | | 21C. Year Last Painted: | | |
| 22. Shell Condition (if metal and unlined):  No Rust  Light Rust  Dense Rust  Not applicable | | | | | | | |
| 22A. Is the tank heated?  Yes  No | | 22B. If yes, operating temperature: | | | 22C. If yes, how is heat provided to tank? | | |
| 23. Operating Pressure Range (psig):  **Must be listed for tanks using VRUs with closed vent system.** | | | | | | | |
| 24. Is the tank a **Vertical Fixed Roof Tank**?  Yes  No | | 24A. If yes, for dome roof provide radius (ft): | | | 24B. If yes, for cone roof, provide slop (ft/ft): | | |
| 25. Complete item 25 for **Floating Roof Tanks**  Does not apply | | | | | | | |
| 25A. Year Internal Floaters Installed: | | | | | | | |
| 25B. Primary Seal Type *(check one):*  Metallic (mechanical) shoe seal  Liquid mounted resilient seal  Vapor mounted resilient seal  Other (describe): | | | | | | | |
| 25C. Is the Floating Roof equipped with a secondary seal?  Yes  No | | | | | | | |
| 25D. If yes, how is the secondary seal mounted? *(check one)*  Shoe  Rim  Other (describe): | | | | | | | |
| 25E. Is the floating roof equipped with a weather shield?  Yes  No | | | | | | | |
| 25F. Describe deck fittings: | | | | | | | |
| 26. Complete the following section for **Internal Floating Roof Tanks**  Does not apply | | | | | | | |
| 26A. Deck Type:  Bolted  Welded | | | 26B. For bolted decks, provide deck construction: | | | | |
| 26C. Deck seam. Continuous sheet construction:  5 ft. wide  6 ft. wide  7 ft. wide  5 x 7.5 ft. wide  5 x 12 ft. wide  other (describe) | | | | | | | |
| 26D. Deck seam length (ft.): | 26E. Area of deck (ft2): | | 26F. For column supported tanks, # of columns: | | | 26G. For column supported tanks, diameter of column: | |
| 27. Closed Vent System with VRU?  Yes  No | | | | | | | |
| 28. Closed Vent System with Enclosed Combustor?  Yes  No | | | | | | | |
| **SITE INFORMATION** | | | | | | | |
| 29. Provide the city and state on which the data in this section are based: | | | | | | | |
| 30. Daily Avg. Ambient Temperature (°F): | | | 31. Annual Avg. Maximum Temperature (°F): | | | | |
| 32. Annual Avg. Minimum Temperature (°F): | | | 33. Avg. Wind Speed (mph): | | | | |
| 34. Annual Avg. Solar Insulation Factor (BTU/ft2-day): | | | 35. Atmospheric Pressure (psia): | | | | |
| **LIQUID INFORMATION** | | | | | | | |
| 36. Avg. daily temperature range of bulk liquid (°F): | | 36A. Minimum (°F): | | | 36B. Maximum (°F): | | |
| 37. Avg. operating pressure range of tank (psig): | | 37A. Minimum (psig): | | | 37B. Maximum (psig): | | |
| 38A. Minimum liquid surface temperature (°F): | | | 38B. Corresponding vapor pressure (psia): | | | | |
| 39A. Avg. liquid surface temperature (°F): | | | 39B. Corresponding vapor pressure (psia): | | | | |
| 40A. Maximum liquid surface temperature (°F): | | | 40B. Corresponding vapor pressure (psia): | | | | |
| 41. Provide the following for each liquid or gas to be stored in the tank. Add additional pages if necessary. | | | | | | | |
| 41A. Material name and composition: | |  | |  | | |  |
| 41B. CAS number: | |  | |  | | |  |
| 41C. Liquid density (lb/gal): | |  | |  | | |  |
| 41D. Liquid molecular weight (lb/lb-mole): | |  | |  | | |  |
| 41E. Vapor molecular weight (lb/lb-mole): | |  | |  | | |  |
| 41F. Maximum true vapor pressure (psia): | |  | |  | | |  |
| 41G. Maximum Reid vapor pressure (psia): | |  | |  | | |  |
| 41H. Months Storage per year.  From:       To: | |  | |  | | |  |
| 42. Final maximum gauge pressure and temperature prior to transfer into tank used as inputs into flashing emission calculations. | |  | |  | | |  |

**STORAGE TANK DATA TABLE**

**List all deminimis storage tanks (i.e. lube oil, glycol, diesel etc.)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Source**  **ID #1** | **Status2** | **Content3** | **Volume4** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

1. Enter the appropriate Source Identification Numbers (Source ID #) for each storage tank located at the compressor station. Tanks should be designated T01, T02, T03, etc.

2. Enter storage tank Status using the following:

EXIST Existing Equipment

NEW Installation of New Equipment

REM Equipment Removed

3. Enter storage tank content such as condensate, pipeline liquids, glycol (DEG or TEG), lube oil, diesel, mercaptan etc.

4. Enter the maximum design storage tank volume in gallons.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ATTACHMENT L – SMALL HEATERS AND REBOILERS NOT SUBJECT TO 40CFR60 SUBPART Dc**  **data sheet** | | | | | | |
| Complete this data sheet for each small heater and reboiler not subject to 40CFR60 Subpart Dc at the facility. ***The Maximum Design Heat Input (MDHI) must be less than 10 MMBTU/hr.*** | | | | | | |
| **Emission**  **Unit ID#1** | **Emission**  **Point ID#2** | **Emission Unit Description (manufacturer, model #)** | **Year Installed/**  **Modified** | **Type3 and Date of Change** | **Maximum Design Heat Input (MMBTU/hr)4** | **Fuel Heating Value (BTU/scf)5** |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

1 Enter the appropriate Emission Unit (or Source) identification number for each fuel burning unit located at the production pad. Gas Producing Unit Burners should be designated GPU-1, GPU-2, etc. Heater Treaters should be designated HT-1, HT-2, etc. Heaters or Line Heaters should be designated LH-1, LH-2, etc. For sources, use 1S, 2S, 3S…or other appropriate designation. Enter glycol dehydration unit Reboiler Vent data on the Glycol Dehydration Unit Data Sheet.

2 Enter the appropriate Emission Point identification numbers for each fuel burning unit located at the production pad. Gas Producing Unit Burners should be designated GPU-1, GPU-2, etc. Heater Treaters should be designated HT-1, HT-2, etc. Heaters or Line Heaters should be designated LH-1, LH-2, etc. For emission points, use 1E, 2E, 3E…or other appropriate designation.

3 New, modification, removal

4 Enter design heat input capacity in MMBtu/hr.

5  Enter the fuel heating value in BTU/standard cubic foot.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **ATTACHMENT l – internal combustion engine data sheet** | | | | | | | |
| Complete this data sheet for each internal combustion engine at the facility. Include manufacturer performance data sheet(s) or any other supporting document if applicable. Use extra pages if necessary. *Generator(s) and microturbine generator(s) shall also use this form.* | | | | | | | |
| Emission Unit ID#1 | |  | |  | |  | |
| Engine Manufacturer/Model | |  | |  | |  | |
| Manufacturers Rated bhp/rpm | |  | |  | |  | |
| Source Status2 | |  | |  | |  | |
| Date Installed/  Modified/Removed/Relocated3 | |  | |  | |  | |
| Engine Manufactured /Reconstruction Date4 | |  | |  | |  | |
| Check all applicable Federal Rules for the engine (include EPA Certificate of Conformity if applicable)5 | | 40CFR60 Subpart JJJJ  JJJJ Certified?  40CFR60 Subpart IIII  IIII Certified?  40CFR63 Subpart ZZZZ  NESHAP ZZZZ/ NSPS JJJJ Window  NESHAP ZZZZ Remote Sources | | 40CFR60 Subpart JJJJ  JJJJ Certified?  40CFR60 Subpart IIII  IIII Certified?  40CFR63 Subpart ZZZZ  NESHAP ZZZZ/ NSPS JJJJ Window  NESHAP ZZZZ Remote Sources | | 40CFR60 Subpart JJJJ  JJJJ Certified?  40CFR60 Subpart IIII  IIII Certified?  40CFR63 Subpart ZZZZ  NESHAP ZZZZ/ NSPS JJJJ Window  NESHAP ZZZZ Remote Sources | |
| Engine Type6 | |  | |  | |  | |
| APCD Type7 | |  | |  | |  | |
| Fuel Type8 | |  | |  | |  | |
| H2S (gr/100 scf) | |  | |  | |  | |
| Operating bhp/rpm | |  | |  | |  | |
| BSFC (BTU/bhp-hr) | |  | |  | |  | |
| Hourly Fuel Throughput | | ft3/hr        gal/hr | | ft3/hr        gal/hr | | ft3/hr        gal/hr | |
| Annual Fuel Throughput  (Must use 8,760 hrs/yr unless emergency generator) | | MMft3/yr        gal/yr | | MMft3/yr        gal/yr | | MMft3/yr        gal/yr | |
| Fuel Usage or Hours of Operation Metered | | Yes  No | | Yes  No | | Yes  No | |
| **Calculation Methodology9** | **Pollutant10** | **Hourly PTE**  **(lb/hr)11** | **Annual PTE**  **(tons/year) 11** | **Hourly PTE**  **(lb/hr) 11** | **Annual PTE**  **(tons/year) 11** | **Hourly PTE**  **(lb/hr) 11** | **Annual PTE**  **(tons/year) 11** |
|  | NOx |  |  |  |  |  |  |
|  | CO |  |  |  |  |  |  |
|  | VOC |  |  |  |  |  |  |
|  | SO2 |  |  |  |  |  |  |
|  | PM10 |  |  |  |  |  |  |
|  | Formaldehyde |  |  |  |  |  |  |
|  | Total HAPs |  |  |  |  |  |  |
|  | GHG (CO2e) |  |  |  |  |  |  |

1 Enter the appropriate Source Identification Number for each natural gas-fueled reciprocating internal combustion compressor/generator engine located at the compressor station. Multiple compressor engines should be designated CE-1, CE-2, CE-3 etc. Generator engines should be designated GE-1, GE-2, GE-3 etc. Microturbine generator engines should be designated MT-1, MT-2, MT-3 etc. If more than three (3) engines exist, please use additional sheets.

2 Enter the Source Status using the following codes:

NS Construction of New Source (installation) ES Existing Source

MS Modification of Existing Source RS Relocated Source

REM Removal of Source

3 Enter the date (or anticipated date) of the engine’s installation (construction of source), modification, relocation or removal.

4 Enter the date that the engine was manufactured, modified or reconstructed.

5 Is the engine a certified stationary spark ignition internal combustion engine according to 40CFR60 Subpart IIII/JJJJ? If so, the engine and control device must be operated and maintained in accordance with the manufacturer’s emission-related written instructions. You must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required. If the certified engine is not operated and maintained in accordance with the manufacturer’s emission-related written instructions, the engine will be considered a non-certified engine and you must demonstrate compliance as appropriate.

**Provide a manufacturer’s data sheet for all engines being permitted.**

6 Enter the Engine Type designation(s) using the following codes:

2SLB Two Stroke Lean Burn 4SRB Four Stroke Rich Burn

4SLB Four Stroke Lean Burn

7 Enter the Air Pollution Control Device (APCD) type designation(s) using the following codes:

A/F Air/Fuel Ratio IR Ignition Retard

HEIS High Energy Ignition System SIPC Screw-in Precombustion Chambers

PSC Prestratified Charge LEC Low Emission Combustion

NSCR Rich Burn & Non-Selective Catalytic Reduction OxCat Oxidation Catalyst

SCR Lean Burn & Selective Catalytic Reduction

8 Enter the Fuel Type using the following codes:

PQ Pipeline Quality Natural Gas RG Raw Natural Gas /Production Gas D Diesel

9 Enter the Potential Emissions Data Reference designation using the following codes. Attach all reference data used.

MD Manufacturer’s Data AP AP-42

GR GRI-HAPCalcTM OT Other       (please list)

10Enter each engine’s Potential to Emit (PTE) for the listed regulated pollutants in pounds per hour and tons per year. PTE shall be calculated at manufacturer’s rated brake horsepower and may reflect reduction efficiencies of listed Air Pollution Control Devices. Emergency generator engines may use 500 hours of operation when calculating PTE. PTE data from this data sheet shall be incorporated in the *Emissions Summary Sheet*.

11 PTE for engines shall be calculated from manufacturer’s data unless unavailable.

|  |  |
| --- | --- |
| **Engine Air Pollution Control Device**  **(Emission Unit ID#**      **, use extra pages as necessary)** | |
| Air Pollution Control Device Manufacturer’s Data Sheet included?  Yes  No | |
| NSCR  SCR  Oxidation Catalyst | |
| Provide details of process control used for proper mixing/control of reducing agent with gas stream: | |
| Manufacturer: | Model #: |
| Design Operating Temperature:       oF | Design gas volume:       scfm |
| Service life of catalyst: | Provide manufacturer data? Yes  No |
| Volume of gas handled:       acfm at       oF | Operating temperature range for NSCR/Ox Cat:  From       oF to       oF |
| Reducing agent used, if any: | Ammonia slip (ppm): |
| Pressure drop against catalyst bed (delta P):       inches of H2O | |
| Provide description of warning/alarm system that protects unit when operation is not meeting design conditions: | |
| Is temperature and pressure drop of catalyst required to be monitored per 40CFR63 Subpart ZZZZ?  Yes  No | |
| How often is catalyst recommended or required to be replaced (hours of operation)? | |
| How often is performance test required?  Initial  Annual  Every 8,760 hours of operation  Field Testing Required  No performance test required. If so, why (please list any maintenance required and the applicable sections in NSPS/GACT, | |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ATTACHMENT l – tanker truck loading data sheet** | | | | | | | | | | |
| Complete this data sheet for each new or modified bulk liquid transfer area or loading rack at the facility. This is to be used for bulk liquid transfer operations to tanker trucks. Use extra pages if necessary.  ***Truck Loadout Collection Efficiencies***  The following applicable capture efficiencies of a truck loadout are allowed:   * For tanker trucks passing the MACT level annual leak test – 99.2% * For tanker trucks passing the NSPS level annual leak test – 98.7% * For tanker trucks not passing one of the annual leak tests listed above – 70%   Compliance with this requirement shall be demonstrated by keeping records of the applicable MACT or NSPS Annual Leak Test certification for ***every*** truck and railcar loaded/unloaded. This requirement can be satisfied if the trucking company provided certification that its entire fleet was compliant. This certification must be submitted in writing to the Director of the DAQ. | | | | | | | | | | |
| Emission Unit ID#: | | | | Emission Point ID#: | | | | Year Installed/Modified: | | |
| Emission Unit Description: | | | | | | | | | | |
| **Loading Area Data** | | | | | | | | | | |
| Number of Pumps: | | | | Number of Liquids Loaded: | | | | Max number of trucks loading at one (1) time: | | |
| Are tanker trucks pressure tested for leaks at this or any other location?  Yes  No  Not Required  If Yes, Please describe: | | | | | | | | | | |
| Provide description of closed vent system and any bypasses. | | | | | | | | | | |
| Are any of the following truck loadout systems utilized?  Closed System to tanker truck passing a MACT level annual leak test?  Closed System to tanker truck passing a NSPS level annual leak test?  Closed System to tanker truck not passing an annual leak test and has vapor return? | | | | | | | | | | |
| **Projected Maximum Operating Schedule (for rack or transfer point as a whole)** | | | | | | | | | | |
| Time | | Jan – Mar | | | Apr - Jun | | Jul – Sept | | | Oct - Dec |
| Hours/day | |  | | |  | |  | | |  |
| Days/week | |  | | |  | |  | | |  |
| **Bulk Liquid Data (use extra pages as necessary)** | | | | | | | | | | |
| Liquid Name | | |  | | |  | | |  | |
| Max. Daily Throughput (1000 gal/day) | | |  | | |  | | |  | |
| Max. Annual Throughput  (1000 gal/yr) | | |  | | |  | | |  | |
| Loading Method1 | | |  | | |  | | |  | |
| Max. Fill Rate (gal/min) | | |  | | |  | | |  | |
| Average Fill Time (min/loading) | | |  | | |  | | |  | |
| Max. Bulk Liquid Temperature (oF) | | |  | | |  | | |  | |
| True Vapor Pressure2 | | |  | | |  | | |  | |
| Cargo Vessel Condition3 | | |  | | |  | | |  | |
| Control Equipment or Method4 | | |  | | |  | | |  | |
| Max. Collection Efficiency (%) | | |  | | |  | | |  | |
| Max. Control Efficiency (%) | | |  | | |  | | |  | |
| Max.VOC Emission Rate | Loading (lb/hr) | |  | | |  | | |  | |
| Annual  (ton/yr) | |  | | |  | | |  | |
| Max.HAP Emission Rate | Loading (lb/hr) | |  | | |  | | |  | |
| Annual  (ton/yr) | |  | | |  | | |  | |
| Estimation Method5 | | |  | | |  | | |  | |

1 BF Bottom Fill SP Splash Fill SUB Submerged Fill

2 At maximum bulk liquid temperature

3 B Ballasted Vessel C Cleaned U Uncleaned (dedicated service)

O Other (describe)

4 List as many as apply (complete and submit appropriate Air Pollution Control Device Sheets)

CA Carbon Adsorption VB Dedicated Vapor Balance (closed system)

ECD Enclosed Combustion Device F Flare

TO Thermal Oxidization or Incineration

5 EPA EPA Emission Factor in AP-42 MB Material Balance

TM Test Measurement based upon test data submittal O Other (describe)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **ATTACHMENT l – glycol dehydration unit**  **data sheet** | | | | | |
| Complete this data sheet for each Glycol Dehydration Unit, Reboiler, Flash Tank and/or Regenerator at the facility. Include gas sample analysis and GRI- GLYCalcTM input and aggregate report. Use extra pages if necessary. | | | | | |
| Manufacturer: | | | Model: | | |
| Max. Dry Gas Flow Rate:       mmscf/day | | | Reboiler Design Heat Input:       MMBTU/hr | | |
| Design Type:  TEG  DEG  EG | | | Source Status1: | | |
| Date Installed/Modified/Removed2: | | | Regenerator Still Vent APCD/ERD3: | | |
| Control Device/ERD ID#3: | | | Fuel HV (BTU/scf): | | |
| H2S Content (gr/100 scf): | | | Operation (hours/year): | | |
| Pump Rate (scfm): | | | | | |
| Water Content (wt %) in: Wet Gas:       Dry Gas: | | | | | |
| Is the glycol dehydration unit exempt from 40CFR63 Section 764(d)? ☐ Yes ☐ No: If Yes, answer the following:  The actual annual average flowrate of natural gas to the glycol dehydration unit is less than 85 thousand standard cubic meters per day, as determined by the procedures specified in §63.772(b)(1) of this subpart. ☐ Yes ☐ No  The actual average emissions of benzene from the glycol dehydration unit process vent to the atmosphere are less than 0.90 megagram per year (1 ton per year), as determined by the procedures specified in §63.772(b)(2) of this subpart. ☐ Yes ☐ No | | | | | |
| Is the glycol dehydration unit located within an Urbanized Area (UA) or Urban Cluster (UC)? ☐ Yes ☐ No | | | | | |
| Is a lean glycol pump optimization plan being utilized? ☐ Yes ☐ No | | | | | |
| Recycling the glycol dehydration unit back to the flame zone of the reboiler.  Yes  No  If yes:  Is the reboiler configured to accept flash drum vapors (straight from the glycol dehydrator)?  Yes  No  Is the reboiler configured to accept still vent vapors (after a condenser)?  Yes  No  Is the reboiler configured to accept both in the same operation?  Yes  No  Recycling the glycol dehydration unit back to the flame zone of the reboiler and mixed with fuel.  Yes  No | | | | | |
| What happens when temperature controller shuts off fuel to the reboiler?  Still vent emissions to the atmosphere.  Still vent emissions stopped with valve.  Still vent emissions to glow plug. | | | | | |
| Please indicate if the following equipment is present.  Flash Tank  Burner management system that continuously burns condenser or flash tank vapors | | | | | |
| **Control Device Technical Data** | | | | | |
| Pollutants Controlled | | | Manufacturer’s Guaranteed Control Efficiency (%) | | |
|  | | |  | | |
|  | | |  | | |
|  | | |  | | |
|  | | |  | | |
| Emissions Data | | | | | |
| **Emission Unit ID / Emission Point ID4** | **Description** | **Calculation Methodology5** | **PTE6** | **Controlled**  **Maximum Hourly Emissions (lb/hr)** | **Controlled**  **Maximum Annual Emissions (tpy)** |
|  | Reboiler Vent |  | NOx |  |  |
|  | CO |  |  |
|  | VOC |  |  |
|  | SO2 |  |  |
|  | PM10 |  |  |
|  | GHG (CO2e) |  |  |
|  | Glycol Regenerator  Still Vent | GRI-GlyCalcTM | VOC |  |  |
| GRI-GlyCalcTM | Benzene |  |  |
| GRI-GlyCalcTM | Toluene |  |  |
| GRI-GlyCalcTM | Ethylbenzene |  |  |
| GRI-GlyCalcTM | Xylenes |  |  |
| GRI-GlyCalcTM | n-Hexane |  |  |
|  | Glycol Flash Tank | GRI-GlyCalcTM | VOC |  |  |
| GRI-GlyCalcTM | Benzene |  |  |
| GRI-GlyCalcTM | Toluene |  |  |
| GRI-GlyCalcTM | Ethylbenzene |  |  |
| GRI-GlyCalcTM | Xylenes |  |  |
| GRI-GlyCalcTM | n-Hexane |  |  |

1 Enter the Source Status using the following codes:

NS Construction of New Source ES Existing Source

MS Modification of Existing Source

2 Enter the date (or anticipated date) of the glycol dehydration unit’s installation (construction of source), modification or removal.

3 Enter the Air Pollution Control Device (APCD)/Emission Reduction Device (ERD) type designation using the following codes and the device ID number:

NA None CD Condenser FL Flare CC Condenser/Combustion Combination TO Thermal Oxidizer O Other       (please list)

4 Enter the appropriate Emission Unit ID Numbers and Emission Point ID Numbers for the glycol dehydration unit reboiler vent and glycol regenerator still vent. The glycol dehydration unit reboiler vent and glycol regenerator still vent should be designated RBV-1 and RSV-1, respectively. If the compressor station incorporates multiple glycol dehydration units, a Glycol Dehydration Emission Unit Data Sheet shall be completed for each, using Source Identification RBV-2 and RSV-2, RBV-3 and RSV-3, etc.

5 Enter the Potential Emissions Data Reference designation using the following codes:

MD Manufacturer’s Data AP AP-42

GR GRI-GLYCalcTM OT Other       (please list)

6 Enter the Reboiler Vent and Glycol Regenerator Still Vent Potential to Emit (PTE) for the listed regulated pollutants in lbs per hour and tons per year. The Glycol Regenerator Still Vent potential emissions may be determined using the most recent version of the thermodynamic software model GRI-GLYCalcTM (Radian International LLC & Gas Research Institute). **Attach all referenced Potential Emissions Data (or calculations) and the GRI-GLYCalcTM Aggregate Calculations Report (shall include emissions reports, equipment reports, and stream reports) to this Glycol Dehydration Emission Unit Data Sheet(s). Backup pumps do not have to be considered as operating for purposes of PTE.** This PTE data shall be incorporated in the Emissions Summary Sheet.

|  |
| --- |
| **Attachment l – Pneumatic Controllers**  **data sheet** |
| **Are there any continuous bleed natural gas driven pneumatic controllers at this facility that commenced construction, modification or reconstruction after August 23, 2011, and on or before September 18, 2015?**  Yes  No  Please list approximate number.  **Are there any continuous bleed natural gas driven pneumatic controllers at this facility that commenced construction, modification or reconstruction after September 18, 2015?**  Yes  No  Please list approximate number. |
| **Are there any continuous bleed natural gas driven pneumatic controllers at this facility with a bleed rate greater than 6 standard cubic feet per hour that are required based on functional needs, including but not limited to response time, safety and positive actuation that commenced construction, modification or reconstruction after August 23, 2011, and on or before September 18, 2015?**  Yes  No  Please list approximate number.  **Are there any continuous bleed natural gas driven pneumatic controllers at this facility with a bleed rate greater than 6 standard cubic feet per hour that are required based on functional needs, including but not limited to response time, safety and positive actuation that commenced construction, modification or reconstruction after September 18, 2015?**  Yes  No  Please list approximate number. |

|  |
| --- |
| **Attachment l – CENTRIFUGAL COMPRESSOR**  **data sheet** |
| **Are there any centrifugal compressors at this facility that commenced construction, modification or reconstruction after August 23, 2011, and on or before September 18, 2015?**  Yes  No  Please list:   |  |  | | --- | --- | | Emission Unit ID# | Compressor Description | |  |  | |  |  | |  |  | |  |  | |  |  |   **Are there any centrifugal compressors at this facility that commenced construction, modification or reconstruction after September 18, 2015?**  Yes  No  Please list:   |  |  | | --- | --- | | Emission Unit ID# | Compressor Description | |  |  | |  |  | |  |  | |  |  | |  |  | |

|  |
| --- |
| **Attachment l – RECIPROCATING COMPRESSOR**  **data sheet** |
| **Are there any reciprocating compressors at this facility that commenced construction, modification or reconstruction after August 23, 2011, and on or before September 18, 2015?**  Yes  No  Please list:   |  |  | | --- | --- | | Emission Unit ID# | Compressor Description | |  |  | |  |  | |  |  | |  |  | |  |  |   **Are there any reciprocating compressors at this facility that commenced construction, modification or reconstruction after September 18, 2015?**  Yes  No  Please list:   |  |  | | --- | --- | | Emission Unit ID# | Compressor Description | |  |  | |  |  | |  |  | |  |  | |  |  | |

|  |
| --- |
| **Attachment l – BLOWDOWN AND PIGGING OPERATIONS**  **data sheet** |
| **Will there be any blowdown and pigging operations that occur at this facility?**  Yes  No  Please list:   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | **Type of Event** | **# of Events (event/yr)** | **Amount Vented per event (scf/event)** | **MW of vented gas (lb/lb-mol)** | **Total Emissions (ton/yr)** | **VOC weight fraction** | **VOC emissions (ton/yr)** | | Compressor Blowdown |  |  |  |  |  |  | | Compressor Startup |  |  |  |  |  |  | | Plant Shutdown |  |  |  |  |  |  | | Low Pressure Pig Venting |  |  |  |  |  |  | | High Pressure Pig Venting |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | **Type of Event** | **# of Events (event/yr)** | **Amount Vented per event (scf/event)** | **MW of vented gas (lb/lb-mol)** | **Total Emissions (ton/yr)** | **HAP weight fraction** | **HAP emissions (ton/yr)** | | Compressor Blowdown |  |  |  |  |  |  | | Compressor Startup |  |  |  |  |  |  | | Plant Shutdown |  |  |  |  |  |  | | Low Pressure Pig Venting |  |  |  |  |  |  | | High Pressure Pig Venting |  |  |  |  |  |  | |

|  |  |
| --- | --- |
| **ATTACHMENT m – AIR POLLUTION CONTROL DEVICE /**  **EMISSION REDUCTION DEVICE SHEETS** | |
| Complete the applicable air pollution control device sheets for each flare, vapor combustor, thermal oxidizer, condenser, adsorption system, vapor recovery unit, BTEX Eliminator, Reboiler with and without Glow Plug, etc. at the facility. Use extra pages if necessary.  Emissions calculations must be performed using the most conservative control device efficiency. | |
| *The following five (5) rows are only to be completed if registering an alternative air pollution control device.* | |
| Emission Unit ID: | Make/Model: |
| Primary Control Device ID: | Make/Model: |
| Control Efficiency (%): | APCD/ERD Data Sheet Completed: ☐ Yes ☐ No |
| Secondary Control Device ID: | Make/Model: |
| Control Efficiency (%): | APCD/ERD Data Sheet Completed: ☐ Yes ☐ No |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **VAPOR COMBUSTION**  **(Including Enclosed Combustors)** | | | | | | | | |
| **General Information** | | | | | | | | |
| Control Device ID#: | | | | | Installation Date:  New  Modified  Relocated | | | |
| Maximum Rated Total Flow Capacity        scfh       scfd | | | | | Maximum Design Heat Input (from mfg. spec sheet)        MMBTU/hr | | Design Heat Content        BTU/scf | |
| **Control Device Information** | | | | | | | | |
| Type of Vapor Combustion Control?  Enclosed Combustion Device  Elevated Flare  Ground Flare  Thermal Oxidizer | | | | | | | | |
| Manufacturer:  Model: | | | | | Hours of operation per year? | | | |
| List the emission units whose emissions are controlled by this vapor control device (Emission Point ID#      ) | | | | | | | | |
| Emission Unit ID# | Emission Source Description | | | | Emission Unit ID# | Emission Source Description | | |
|  |  | | | |  |  | | |
|  |  | | | |  |  | | |
|  |  | | | |  |  | | |
| *If this vapor combustor controls emissions from more than six (6) emission units, please attach additional pages.* | | | | | | | | |
| Assist Type (Flares only) | | | Flare Height | | Tip Diameter | | | Was the design per §60.18? |
| Steam  Air  Pressure  Non | | | feet | | feet | | | Yes  No  Provide determination. |
| **Waste Gas Information** | | | | | | | | |
| Maximum Waste Gas Flow Rate       (scfm) | | | | Heat Value of Waste Gas Stream       BTU/ft3 | | | Exit Velocity of the Emissions Stream       (ft/s) | |
| *Provide an attachment with the characteristics of the waste gas stream to be burned.* | | | | | | | | |
| **Pilot Gas Information** | | | | | | | | |
| Number of Pilot Lights | | Fuel Flow Rate to Pilot Flame per Pilot        scfh | | | Heat Input per Pilot        BTU/hr | | | Will automatic re-ignition be used?  Yes  No |
| If automatic re-ignition is used, please describe the method. | | | | | | | | |
| Is pilot flame equipped with a monitor to detect the presence of the flame?  Yes  No | | | | | If Yes, what type?  Thermocouple  Infrared  Ultraviolet  Camera  Other: | | | |
| Describe all operating ranges and maintenance procedures required by the manufacturer to maintain the warranty. *(If unavailable, please indicate).* | | | | | | | | |
| Additional information attached?  Yes  No  Please attach copies of manufacturer’s data sheets, drawings, flame demonstration per §60.18 or §63.11(b) and performance testing. | | | | | | | | |

|  |  |  |
| --- | --- | --- |
| **CONDENSER** | | |
| **General Information** | | |
| Control Device ID#: | Installation Date:  New  Modified  Relocated | |
| Manufacturer: | Model: | Control Device Name: |
| Control Efficiency (%): | | |
| Manufacturer’s required temperature range for control efficiency.       oF | | |
| Describe the warning and/or alarm system that protects against operation when unit is not meeting the design requirements: | | |
| Describe all operating ranges and maintenance procedures required by the manufacturer to maintain the warranty. | | |
| Additional information attached?  Yes  No  Please attach copies of manufacturer’s data sheets. | | |
| Is condenser routed to a secondary APCD or ERD?  Yes  No | | |

|  |  |  |
| --- | --- | --- |
| **ADSORPTION SYSTEM** | | |
| **General Information** | | |
| Control Device ID#: | Installation Date:  New  Modified  Relocated | |
| Manufacturer: | Model: | Control Device Name: |
| Design Inlet Volume:       scfm | Adsorbent charge per adsorber vessel and number of adsorber vessels: | |
| Length of Mass Transfer Zone supplied by the manufacturer: | Adsorber diameter:       ft  Adsorber area:       ft2 | |
| Adsorbent type and physical properties: | Overall Control Efficiency (%): | |
| Working Capacity of Adsorbent (%): | | |
| **Operating Parameters** | | |
| Inlet volume:       scfm @       oF | | |
| Adsorption time per adsorption bed (life expectancy): | Breakthrough Capacity (lbs of VOC/100 lbs of adsorbent): | |
| Temperature range of carbon bed adsorber.  oF -       oF | | |
| **Control Device Technical Data** | | |
| Pollutants Controlled | Manufacturer’s Guaranteed Control Efficiency (%) | |
|  |  | |
|  |  | |
|  |  | |
|  |  | |
| Describe the warning and/or alarm system that protects against operation when unit is not meeting the design requirements: | | |
| Has the control device been tested by the manufacturer and certified? | | |
| Describe all operating ranges and maintenance procedures required by the manufacturer to maintain the warranty. | | |
| Additional information attached?  Yes  No  Please attach copies of manufacturer’s data sheets, drawings, and performance testing. | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **VAPOR RECOVERY UNIT** | | | |
| **General Information** | | | |
| Emission Unit ID#: | | Installation Date:  New  Modified  Relocated | |
| **Device Information** | | | |
| Manufacturer:  Model: | | | |
| List the emission units whose emissions are controlled by this vapor recovery unit (Emission Point ID#      ) | | | |
| Emission Unit ID# | Emission Source Description | Emission Unit ID# | Emission Source Description |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| *If this vapor recovery unit controls emissions from more than six (6) emission units, please attach additional pages.* | | | |
| Additional information attached?  Yes  No  Please attach copies of manufacturer’s data sheets, drawings, and performance testing.  The permittee may claim a capture and control efficiency of 95 % (which accounts for 5% downtime) for the vapor recovery unit.  The permittee may claim a capture and control efficiency of 98% if the VRU has a backup flare.  The permittee may claim a capture and control efficiency of 98% if the VRU has a backup VRU. | | | |