

## Draft MSS Model Permit (Revised 04/04/11)

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### General

1. This permit authorizes emissions from those points listed in the attached table entitled “Emission Sources - Maximum Allowable Emission Rates” (MAERT) and the facilities covered by this permit are authorized to emit subject to the emission rate limits on the MAERT and other requirements specified in the special conditions.

(paragraph only necessary if MSS authorized for facilities in other permits) Planned startup and shutdown emissions due to the activities identified in Special Condition 2 are authorized from facilities and emission points identified in Attachment D in other construction permits at the site provided the facility and emissions are compliant with the respective MAERT and special conditions

### MSS Activities

2. This permit authorizes the emissions from the facilities identified in Attachment D for the planned maintenance, startup, and shutdown (MSS) activities summarized in the MSS Activity Summary (Attachment C) attached to this permit. This permit authorizes emissions from the following temporary facilities used to support planned MSS activities at permanent site facilities: (list only those applicable) frac tanks, containers, vacuum trucks, facilities used for painting or abrasive blasting, portable control devices identified in Special Condition #, and controlled recovery systems. Emissions from temporary facilities are authorized provided the

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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.

### Process Units and Facilities

3. Process units and facilities, with the exception of those identified in Special Conditions 6, 7, 9, and Attachment A shall be depressurized, emptied, degassed, and placed in service in accordance with the following requirements.

(A and B are not necessary if facilities are limited to atmospheric storage tanks and support facilities)

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- 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. (If the applicant's safety procedures do not require sampling for LEL prior to work, that requirement may be waived if they identify the work practices used to ensure minimal VOC concentration. Note that all VOC must be

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vented/purged to control except as allowed by 3.E and the basis for this waiver must be discussed in the tech review.)

- (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 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. 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 or 10 percent of the LEL. 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.

E. Gases and vapors with VOC partial pressure greater than 0.50 psi may be vented directly to atmosphere if all the following criteria are met:

- (1) It is not technically practicable to depressurize or degas, as applicable, into the process.
- (2) There is not an available connection to a plant control system (flare).
- (3) There is no more than 50 lb of air contaminant to be vented to atmosphere during shutdown or startup, as applicable.

All instances of venting directly to atmosphere per Special Condition 3.E must be documented when occurring as part of any MSS activity. The emissions associated with venting without control must be included in the work order or equivalent for those planned MSS activities identified in Attachment B.

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

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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. If the RF of the VOC (or mixture of VOCs) to be monitored is greater than 2.0, the VOC concentration shall be determined as follows and the calibration gas concentration be reduced accordingly.

VOC Concentration = Concentration as read from the instrument\*RF

- (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.

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

C. Lower explosive limit measured with a lower explosive limit detector.

[The LEL option, allowing for 10 percent of the LEL in addition to 10,000 ppmv, may only be used if emissions were determined based on 10,000 ppmv VOC. If they were based on 10 percent of the LEL, a lower threshold would apply and must be approved by the section manager]

- (1) The detector shall be calibrated monthly with an appropriate certified gas standard at 25% of the lower explosive limit (LEL) for the appropriate gas. Records of the calibration date/time and calibration result (pass/fail) shall be maintained.
- (2) A daily functionality test shall be performed on each detector using the same type of certified gas standard. The LEL monitor shall read no lower than 90% of the calibration gas certified value. Records, including the date/time and test results, shall be maintained.
- (3) A certified methane gas standard equivalent to 25% of the LEL for the appropriate gas may be used for calibration and functionality tests provided that the LEL response is within 95% of that for the appropriate gas.
- (4) Definitions
  - (a) An appropriate gas is one which when used calibration of the detector, ensures that the response factor (RF) of the VOC (or mixture of VOCs) to be monitored is less than 1.2.
  - (b) The same type of certified gas standard is a standard consisting of the same gas as used for calibration, certified to be 25 percent of the LEL for that gas.

Piping and Components Subject to Leak Detection and Repair

5. This condition applies only to piping and components subject to leak detection and repair monitoring requirements identified in this or other NSR permits. 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;

- A. a cap, blind flange, plug, or second valve must be installed on the line or valve; or

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- B. 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 by the end of the 72 hours 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.

### Floating Roof Storage Tanks

- 6. This permit authorizes emissions from EPN ETKSATM and ETKSCTL for the storage tanks identified in the attached facility list 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. (next sentence does not apply to for-hire tank terminals) 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. (this sentence only applies to existing tanks at for-hire tank terminals) Convenience tank roof landings are only allowed if the vapor space under the floating roof is routed to control or a controlled recovery system at all times when the roof is landed and there is standing liquid present, or if uncontrolled convenience tank roof landing emissions from all tanks at this site are less than XX tpy. 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. (the following only applies to existing tanks at for-hire tank terminals) If the liquid level is maintained steady for greater than 2 hours, the roof landing shall be considered a convenience tank landing and the emissions tracked accordingly. Convenience tank landings shall not exceed 72 hours in duration and they are not subject to parts B, C, and D of this condition
  - 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

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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 10,000 ppmv or 10 percent of the LEL. 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 4.
  - (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 by (1) or (2) 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

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- (2) Minimize time and VOC partial pressure. (use only if requested and justified by applicant)
  - (a) The VOC partial pressure of the liquid remaining in the tank shall not exceed 0.044 (this may vary based on the application) psi as documented by the method specified in part D.(1) of this condition;
  - (b) Blowers may be used to move air through the tank without emission control at a rate not to exceed ##### cfm for no more than ## hours. All standing liquid shall be removed from the tank during this period. (the permit reviewer should ensure that the ventilation rate and time result in a reasonable uncontrolled emission rate); and
  - (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 4.

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- (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 XXXX bbl/hr. (these requirements are based on modeling/impacts review)
  - (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;

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- (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 Section 7.1.3.2 of AP-42 "Compilation of Air Pollution Emission Factors, Chapter 7 - Storage of Organic Liquids" dated November 2006 and the permit application.

### Fixed Roof Storage Tanks

7. Fixed roof storage tanks are subject to the requirements of Special Condition 6.C. and 6.D. If the ventilation of the vapor space is controlled, the emission control system shall meet the requirements of Special Condition 6.B.(1) through 6.B.(4). Records shall be maintained per Special Condition 6.F.(3)c through 6.F.(3)e, and 6.F.(4).

### Vacuum and Air Mover Truck Operations

8. 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

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transfer shall be recorded, measured using an instrument meeting the requirements of Special Condition 4.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 8.A through 8.D do not apply.

### Frac or Temporary Tanks and Vessels

- 9. 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 effective May 1, 2013. 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

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determined using: the TCEQ publication titled “Technical Guidance Package for Chemical Sources - Storage Tanks.”

- 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.

### Additional MSS Activities

- 10. Additional occurrences of MSS activities authorized by this permit (see Attachment A, B, and C if included with the permit, or SC# where the authorized activities are summarized) 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.

### Compliance with Current Permit Conditions

- 11. All permanent facilities must comply with all operating requirements, limits, and representations in this permit and the permits identified in Attachment D (if applicable) 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<sub>x</sub> and CO operating requirements identified in special conditions in other NSR permits 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) (List facilities that will not meet routine operating limits during these periods and identify alternate BACT and define startup and shutdown for the unit. For example, it is likely that the FCCU fit into this category)

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- 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.

Control Devices

- 12. 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 unless specified otherwise below. 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. The sampling frequency may be extended using either of the following methods:
  - (a) It may be extended to up to 30 percent of the minimum potential saturation time for a new can of carbon. The permit holder shall maintain records including the calculations performed to determine the minimum saturation time.
  - (b) The carbon sampling frequency may be extended to longer periods based on previous experience with carbon control of a MSS waste gas stream. The past experience must be with the same VOC, type of facility, and MSS activity. The basis for the sampling frequency shall be recorded. If the VOC concentration on the initial sample downstream of the first carbon canister following a new polishing canister being put in place is greater than 100 ppmv above background, it shall be assumed that breakthrough occurred while that canister functioned as the final polishing canister and a permit deviation shall be recorded.
- (3) The method of VOC sampling and analysis shall be by detector meeting the requirements of Special Condition 4.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

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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. Thermal Oxidizer.**

- (1) The thermal oxidizer firebox exit temperature shall be maintained at not less than 1400°F and waste gas flows shall be limited to assure at least a 0.5 second residence time in the fire box while waste gas is being fed into the oxidizer.
- (2) The thermal oxidizer exhaust temperature shall be continuously monitored and recorded when waste gas is directed to the oxidizer. The temperature measurements shall be made at intervals of six minutes or less and recorded at that frequency.

The temperature measurement device shall be installed, calibrated, and maintained according to accepted practice and the manufacturer's specifications. The device shall have an accuracy of the greater of  $\pm 0.75$  percent of the temperature being measured expressed in degrees Celsius or  $\pm 2.5^\circ\text{C}$ .

**C. Internal Combustion Engine.**

- (1) The internal combustion engine shall have a VOC destruction efficiency of at least 99 percent.
- (2) The engine must have been stack tested with butane or propane to confirm the required destruction efficiency within the period specified in part iii below. VOC shall be measured in accordance with the applicable United States Environmental Protection Agency (EPA) Reference Method during the stack test and the exhaust flow rate may be determined from measured fuel flow rate and measured oxygen

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concentration. A copy of the stack test report shall be maintained with the engine. There shall also be documentation of acceptable VOC emissions following each occurrence of engine maintenance that may reasonably be expected to increase emissions including oxygen sensor replacement and catalyst cleaning or replacement. Stain tube indicators specifically designed to measure VOC concentration shall be acceptable for this documentation, provided a hot air probe or equivalent device is used to prevent error due to high stack temperature, and three sets of concentration measurements are made and averaged. Portable VOC analyzers meeting the requirements of Special Condition 4.A are also acceptable for this documentation.

(3) The engine shall be operated and monitored as specified below.

- (a) If the engine is operated with an oxygen sensor-based air-to-fuel ratio (AFR) controller, documentation for each AFR controller that the manufacturer's or supplier's recommended maintenance has been performed, including replacement of the oxygen sensor as necessary for oxygen sensor-based controllers shall be maintained with the engine. The oxygen sensor shall be replaced at least quarterly in the absence of a specific written recommendation. The engine must have been stack tested within the past 12 months in accordance with part ii of this condition.

The test period may be extended to 24 months if the engine exhaust is sampled once an hour when waste gas is directed to the engine using a detector meeting the requirements of Special Condition 4.A. 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 engine. The concentrations shall be recorded and the MSS activity shall be stopped as soon as possible if the VOC concentration exceeds 100 ppmv above background.

- (b) If an oxygen sensor-based AFR controller is not used, the engine exhaust to atmosphere shall be monitored continuously and the VOC concentration recorded at least once every 15 minutes when waste gas is directed to the engine. 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 engine. The method of VOC sampling and analysis shall be by detector meeting the requirements of Special Condition 4.A. An alarm shall be installed such that an operator is alerted when outlet VOC concentration exceeds 100 ppmv above background. The MSS activity shall be stopped as soon as possible if the VOC concentration exceeds 100 ppmv above background for more than one minute. The date and time of all alarms and the actions taken shall be recorded. The engine must have been stack tested within the past 24 months in accordance with part ii of this condition.

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D. The plant flare system

- (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.
- (3) [identify how waste gas flow and assist gas are monitored when degassing process units to ensure adequate Btu/scf at flare tip for unit shutdowns/startups]  
  
[examples of some less frequently used control devices follow]

E. A liquid scrubbing system may be used upstream of carbon adsorption. A single carbon can or a liquid scrubbing system may be used as the sole control device if the requirements below are satisfied.

- (1) The exhaust to atmosphere shall be monitored continuously and the VOC concentration recorded at least once every 15 minutes when waste gas is directed to the scrubber.
- (2) The method of VOC sampling and analysis shall be by detector meeting the requirements of Special Condition 4.A.
- (3) An alarm shall be installed such that an operator is alerted when outlet VOC concentration exceeds 100 ppmv above background. The MSS activity shall be stopped as soon as possible when the VOC concentration exceeds 100 ppmv above background for more than one minute. The date and time of all alarms and the actions taken shall be recorded.

F. A closed loop refrigerated vapor recovery system

- (1) The vapor recovery system shall be installed on the facility to be degassed using good engineering practice to ensure air contaminants are flushed from the facility through the refrigerated vapor condensers and back to the facility being degassed. The vapor recovery system and facility being degassed shall be enclosed except as necessary to insure structural integrity (such as roof vents on a floating roof tank).
- (2) VOC concentration in vapor being circulated by the system shall be sampled and recorded at least once every 4 hours at the inlet of the condenser unit with an instrument meeting the requirements of Special Condition 4.

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- (3) The quantity of liquid recovered from the tank vapors and the tank pressure shall be monitored and recorded each hour. The liquid recovered must increase with each reading and the tank pressure shall not exceed one inch water pressure while the system is operating.

Plant Flare Systems

13. The following requirements apply to capture systems for the plant flare system. (condition only necessary if CAM applies)

- A. (this language does not have to be added for a VOC capture system where the applicant has clarified how each component [including connectors] is monitored under the permit's LDAR special condition) Either conduct a once a month visual, audible, and/or olfactory inspection of the capture system to verify there are no leaking components in the capture system; or verify the capture system is leak-free by inspecting in accordance with 40 CFR Part 60, Appendix A, Test Method 21 once a year. Leaks shall be indicated by an instrument reading greater than or equal to 500 ppmv above background.
- B. The control device shall not have a bypass.

or

If there is a bypass for the control device, comply with either of the following requirements:

- (1) Install a flow indicator that records and verifies zero flow at least once every fifteen minutes immediately downstream of each valve that if opened would allow a vent stream to bypass the control device and be emitted, either directly or indirectly, to the atmosphere; or
- (2) Once a month, inspect the valves, verifying that the position of the valves and the condition of the car seals that prevent flow out the bypass.

A bypass does not include authorized analyzer vents, highpoint bleeder vents, low point drains, or rupture discs upstream of pressure relief valves if the pressure between the disc and relief valve is monitored and recorded at least weekly. A deviation shall be reported if the monitoring or inspections indicate bypass of the control device when it is required to be in service per this permit.

- C. The date and results of each inspection performed shall be recorded. If the results of any inspection are not satisfactory, the deficiencies shall be recorded and the permit holder shall promptly take necessary corrective action, recording each action with the date completed.

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Surface Coating

14. If spray guns are used to apply paint, they shall be airless, high volume low pressure (HVLV), or have the same or higher transfer efficiency as airless or HVLV spray guns.
15. Emissions from all painting activities, except for minor painting identified in Attachment A to this permit, at this site must satisfy the criteria below. New compounds may also be added through the use of the procedure below.
  - A. Short-term (pounds per hour [lb/hr]) and annual (TPY) emissions shall be determined for each chemical in the paint as documented in the permit application. The calculated emission rate shall not exceed the maximum allowable emissions rate at any emission point.
  - B. The Effect Screening Level (ESL) for the material shall be obtained from the current TCEQ ESL list or by written request to the TCEQ Toxicology Section.
  - C. The total painting emissions of any compound must satisfy one of the following conditions:
    - (1) The total emission rate is less than 0.1 lb/hr and the ESL greater than or equal to 2 µg/m<sup>3</sup>; or
    - (2) Compare the short-term off-property impact to the short-term ESL for the air contaminant as shown below to determine if it is less than or equal to the ESL.  
$$GLCMAX < ESLSHORT$$
  - D. The permit holder shall maintain records of the information below and the demonstrations in steps A through C above. The following documentation is required for each compound:
    - (1) Chemical name(s), composition, and chemical abstract registry number if available.
    - (2) Material Safety Data Sheet.
    - (3) Maximum concentration of the chemical in weight percent
    - (4) Paint usage and the associated emissions shall be recorded each month and the rolling 12 month total emissions updated.
16. No visible emissions shall leave the property due to painting or abrasive blasting.

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### Abrasive Blasting

17. Black Beauty and Garnet Sand may be used for abrasive blasting. The permit holder may also use blast media that meet the criteria below:
  - A. The media shall not contain asbestos or greater than 1.0 weight percent crystalline silica.
  - B. The weight fraction of any metal in the blast media with a short term effects screening level (ESL) less than 50 micrograms per cubic meter as identified in the most recently published TCEQ ESL list shall not exceed the  $ESL_{metal}/1000$ .
  - C. The MSDS for each media used shall be maintained on site.

Blasting media usage and the associated emissions shall be recorded each month and the rolling 12 month total emissions updated.

### Effective Dates

18. With the exception of the MAERT emission limits, these permit conditions become effective 180 days after this permit has been issued. During this period, monitoring and recordkeeping shall satisfy the requirements of Special Condition 2.A through 2.D. Emissions shall be estimated using good engineering practice and methods to provide reasonably accurate representations for emissions. The basis used for determining the quantity of air contaminants to be emitted shall be recorded. The permit holder may maintain abbreviated records of emissions from Attachment A and B activities as allowed in Special Condition 2 rather than documenting all the information required by Special Condition 2 parts A through D.

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Attachment A

Inherently Low Emitting Activities

Activity	Emissions				
	VOC	NOx	CO	PM	H2S/SO2
<a href="#">(List activities from application such as those below)</a>					
Management of sludge from pits, ponds, sumps, and water conveyances	x				
Aerosol Cans	x				
Calibration of analytical equipment	x	x	x		x
Carbon can replacement	x				
Catalyst charging/handling				x	
Instrumentation/analyzer maintenance	x				
Meter proving	x				
Replacement of analyzer filters and screens	x				
Maintenance on water treatment systems (cooling, boiler, potable)	x				
Soap and other aqueous based cleaners	x				
Cleaning sight glasses	x				

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**Attachment B**

**Routine Maintenance Activities**

**(List activities from application such as those below. These have low emissions but records are already kept by site [such as work orders]. Volume purged is typically <50 cubic feet.)**

**Pump repair/replacement**

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

**Compressor repair/replacement**

**Heat exchanger repair/replacement**

**Vessel repair/replacement**

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Attachment C

MSS Activity Summary

Facilities	Description	Emissions Activity	EPN
<p>List ALL MSS emissions to be authorized by permit as identified in application. Table below is just an example and may not cover your application.</p>			
all process units	process unit shutdown/depressurize/drain	vent to flare	ETAFLR
all process units	process unit purge/degas/drain	vent to atmosphere	ETAATM
all process units	process unit startup	vent to flare	ETAFLR
all process units and tanks	preparation for facility/component repair/replacement	vent to flare	EFLR
all process units and tanks	preparation for facility/component repair/replacement	vent to atmosphere	EATM
all process units and tanks	recovery from facility/component repair/replacement	vent to flare	EFLR
all process units and tanks	recovery from facility/component repair/replacement	vent to atmosphere	EATM
all process units and tanks	preparation for unit turnaround or facility/component repair/replacement	remove liquid	EFRACK EFLR EATM EVACTRK
all production-related	all production related facilities	painting	EPAIN
all floating roof tanks	tank roof landing	operation with landed roof	ETKSATM
all floating roof tanks	degas of tank with landed roof	controlled degassing	ETKSCTL
all tanks	tank cleaning	cleaning activity and solvents	ETKSATM
see Attachment A	miscellaneous low emitting activities	see Attachment A	EATM
all production-related	abrasive blasting	PM from blasting media	EATM

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Attachment D

Facility List

This permit authorizes MSS emissions from the permanent site facilities identified below. The headings for each group of facilities (Process Units, Tanks, etc) are used in the MSS Activity Summary to identify all facilities in the respective group.

An attachment may not be necessary if all facilities that MSS are to be authorized for are authorized by this permit (i.e. a current permit is being amended).

Process Units

Description	FIN	Permit
Crude Unit	CU	xxxx
FCCU	FCCU	
SRU	SRU	
Reformer	REF	
Etc.		

Tanks

Description	FIN	Permit
1	TK1	xxxx
2	TK2	
3	TK3	
Etc.		

Flares

Description	EPN	Permit
A	FLRA	yyyy
B	FLRB	
Etc.		

## Document Change Record

<b>Version</b>	<b>Date</b>	<b>Author</b>	<b>Change Details</b>	<b>Change Rationale</b>
01	08/10/12	K. Kind	Added document control; formatted for accessability.	Updating template in preparation for Misc MSS call-in (01/05/13)