



COMMONWEALTH of VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY

SOUTHWEST REGIONAL OFFICE

355-A Deadmore Street, Abingdon, Virginia 24210

(276) 676-4800 Fax: (276) 676-4899

www.deq.virginia.gov

Douglas W. Domenech
Secretary of Natural Resources

David K. Paylor
Director

Dallas R. Sizemore
Regional Director

August 2, 2012

Mr. Brian Potter
Operations Manager
MXI Environmental Services, LLC
26319 Old Trail Road
Abingdon, Virginia 24210

Location: Washington County
Registration No. 11447
County-Plant ID No. 51-191-00189

Dear Mr. Potter:

On March 16, 2012, we sent you a letter regarding a notice of intent to reopen your air quality permit of October 8, 2009 (amended October 29, 2009). Our records indicate you received this notice on March 19, 2012, so more than thirty days have passed since you were notified of our intent to reopen the permit. The purpose of today's letter is to inform you that in accordance with 9 VAC 5-80-1300 C, we have reopened and amended the above-referenced permit using the significant amendment procedures of 9 VAC 5-80 Article 6. Attached is the significant amendment to your minor new source review permit to modify and operate an ethanol recovery facility in accordance with the provisions of the Virginia State Air Pollution Control Board Regulations for the Control and Abatement of Air Pollution. The purpose of this significant amendment is to incorporate applicable federal requirements and add new requirements for control of odorous emissions. This permit document replaces your permit document dated October 8, 2009 (as amended October 29, 2009).

This permit contains legally enforceable conditions. Failure to comply may result in a Notice of Violation and/or civil charges. Please read all permit conditions carefully.

We solicited written public comments (as required by 9 VAC 5-80-1170 D.3. and 9 VAC 5-80-1290 C.) by placing a newspaper advertisement in the *Bristol Herald Courier* on May 3, 2012. The public comment period expired on June 20, 2012. Comments were received during the public comment period and at the public hearing that was conducted at Virginia Highlands Community College in Abingdon, Virginia on June 5, 2012.

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This significant permit amendment approval shall not relieve MXI Environmental Services, LLC of the responsibility to comply with all other local, state, and federal permit regulations.

The Board's Regulations as contained in Title 9 of the Virginia Administrative Code 5-170-200 provide that you may request a formal hearing from this case decision by filing a petition with the Board within 30 days after this case decision notice was mailed or delivered to you. 9 VAC 5-170-200 provides that you may request direct consideration of the decision by the Board if the Director of the DEQ made the decision. Please consult the relevant regulations for additional requirements for such requests.

As provided by Rule 2A:2 of the Supreme Court of Virginia, you have 30 days from the date you actually received this permit or the date on which it was mailed to you, whichever occurred first, within which to initiate an appeal of this decision by filing a Notice of Appeal with:

David K. Paylor, Director
Department of Environmental Quality
P. O. Box 1105
Richmond, VA 23218

If this permit was delivered to you by mail, three days are added to the thirty-day period in which to file an appeal. Please refer to Part Two A of the Rules of the Supreme Court of Virginia for information on the required content of the Notice of Appeal and for additional requirements governing appeals from decisions of administrative agencies.

A copy of the results of performance tests required by 40 CFR 60, Subparts VV, VVa, and NNN shall to be sent to:

Associate Director
Office of Air Enforcement and Compliance Assistance (3AP20)
U.S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029

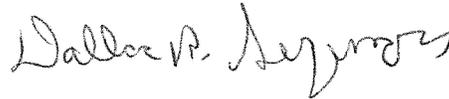
The natural gas/oil-fired boiler is an affected facility under 40 CFR 63, Maximum Achievable Control Technology, (MACT), Subpart JJJJJ, and is therefore subject to owner/operator requirements of the MACT. In summary, the unit is required to comply with certain federal emission standards and operating limitations over its useful life. The Department of Environmental Quality advises you to review MACT, Subpart JJJJJ to ensure compliance with applicable emission and operational limitations. The MACT, Subpart JJJJJ can be found on the internet at <http://www.epa.gov/ttn/atw/boiler/boilerpg.html>. As the owner/operator you

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are also responsible for monitoring, notification, reporting and recordkeeping requirements of the MACT standards. Notifications shall be sent to EPA, Region III.

If you have any questions concerning this permit, please contact the regional office at (276) 676-4800.

Sincerely,



Dallas R. Sizemore
Regional Director

DRS/ecm/P-11447-12.docx

Attachments: Permit
 Source Testing Report Format
 NSPS Subparts Dc, VV, VVa, NNN

cc: Manager, Data Analysis (electronic file submission)



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Director

Dallas R. Sizemore
Regional Director

**STATIONARY SOURCE PERMIT TO MODIFY AND OPERATE
This permit includes designated equipment subject to
New Source Performance Standards (NSPS).**

This permit supersedes your permit dated April 16, 2007.

In compliance with the Federal Clean Air Act and the Commonwealth of Virginia Regulations for the Control and Abatement of Air Pollution,

MXI Environmental Services, LLC
26319 Old Trail Road
Abingdon, Virginia 24210
Registration No. 11447
County-Plant ID No. 51-191-00189

is authorized to modify and operate

an ethanol recovery facility

located at

26319 Old Trail Road, Abingdon, Virginia

in accordance with the Conditions of this permit.

Approved on October 8, 2009 (as amended October 29, 2009 and August 2, 2012).

A handwritten signature in black ink that reads "Dallas R. Sizemore".

Dallas R. Sizemore
Regional Director

Permit consists of 79 pages.
Permit Conditions 1 to 84.

INTRODUCTION

This permit approval is based on the permit application letter dated April 27, 2009, and the permit applications dated July 24, 2009, and September 14, 2006, including amendment information received on July 27, 2009, January 18, 2007, February 28, 2007, March 7, 15 and 21, 2007, and April 13, 2007. Any changes in the permit application specifications or any existing facilities which alter the impact of the facility on air quality may require a permit. Failure to obtain such a permit prior to construction may result in enforcement action.

Words or terms used in this permit shall have meanings as provided in 9 VAC 5-10-20 of the State Air Pollution Control Board Regulations for the Control and Abatement of Air Pollution. The regulatory reference or authority for each condition is listed in parentheses () after each condition.

Annual requirements to fulfill legal obligations to maintain current stationary source emissions data will necessitate a prompt response by the permittee to requests by the DEQ or the Board for information to include, as appropriate: process and production data; changes in control equipment; and operating schedules. Such requests for information from the DEQ will either be in writing or by personal contact.

The availability of information submitted to the DEQ or the Board will be governed by applicable provisions of the Freedom of Information Act, §§ 2.2-3700 through 2.2-3714 of the Code of Virginia, § 10.1-1314 (addressing information provided to the Board) of the Code of Virginia, and 9 VAC 5-170-60 of the State Air Pollution Control Board Regulations. Information provided to federal officials is subject to appropriate federal law and regulations governing confidentiality of such information.

PROCESS REQUIREMENTS

- Equipment List** – Equipment at this facility consists of the following:

Equipment to be added as part of this significant permit amendment		
Equipment Description	Rated Capacity	Federal Requirements
One Stripper C-512 distillation column	250 gallons/hr	NSPS VVa, NSPS NNN
One molecular sieve receiver pot	500 gallons	NSPS VVa
One distillation column	180 gal/hr	NSPS VV, NSPS NNN
Equipment to be added as part of the October 8, 2009 facility modification		
One ENCON MVC-900 evaporator (Ref. No. 1)	900 gallons per hour feed rate	N/A
one Alfa Laval Thermal, Inc. spiral heat exchanger	750 gallons per hour	N/A
One oil/water separator	30 gallons per minute	N/A

Equipment Previously Permitted		
Equipment Description	Rated Capacity	Federal Requirements
One Hurst Wetback 500 Series boiler with a dual burner for oil and natural gas combustion, or equivalent	16.8 × 10 ⁶ Btu per hour	NSPS Subpart Dc, MACT JJJJJ

Specifications included in the permit under this Condition are for informational purposes only, and do not form enforceable terms or conditions of the permit.
 (9 VAC 80-1180 D 3)

2. **Emissions Testing** – The facility shall be constructed so as to allow for emissions testing upon reasonable notice at any time, using appropriate methods. Sampling ports shall be provided when requested at the appropriate locations and safe sampling platforms and access shall be provided.
 (9 VAC 5-50-30 F and 9 VAC 5-80-1180)

3. **Emission Controls** - Volatile organic compounds from the ethanol recovery facility shall be controlled by proper operation and maintenance of all process, storage, and transfer equipment. Such equipment includes, but is not limited to:
 - storage tanks, containers, and retention devices
 - feedstock and raw material recovery and concentration operations
 - distillation columns
 - molecular sieve separators
 - heat exchangers
 - piping, pumps, valves, and transfer systems
 - evaporators
 - oil-water separators
 - water treatment and filtration units
 (9 VAC 5-50-260)

4. **VOC Emissions** - At all times, processing and disposal of volatile organic compounds shall be accomplished by taking measures consistent with air pollution control practices for minimizing emissions. Volatile organic compounds shall not be intentionally spilled, discarded in sewers, stored in open containers, or handled in any other manner that would result in evaporation beyond that consistent with air pollution practices for minimizing emissions.
 (9 VAC 5-50-260)

5. **Emission Controls** - Particulate matter and PM10 emissions from the operation of the cooling towers shall be controlled by appropriately designed, constructed, and operated baffles, packing, and/or mist eliminators. Solids content of cooling tower water shall be minimized by operating the processes at the facility in such a manner as to remove or

mitigate dissolved and suspended solids from the water, to the extent practicable, consistent with best management practices of all process equipment. At minimum, semi-annual inspections of the oil/water separator and cooling towers shall be completed.
(9 VAC 5-50-260)

6. **Emission Controls** - At a minimum, equipment manufacturers' operating and best management practice recommendations for minimizing emissions and optimizing performance shall be followed. This includes, but is not limited to:
- following process design specifications and recommendations for distillation operating temperature profiles and feedstock characteristics/composition;
 - maintaining cooling tower packing, mist eliminators, and/or baffles to minimize entrained liquid and mist in cooling tower exhausts;
 - maintaining/cleaning heat exchangers, vapor condensers, compressors and evaporators in accordance with manufacturer's specifications, or more frequently, as necessary to optimize performance and minimize emissions ; and
 - retaining onsite copies of manufacturer's best management practice recommendations. This documentation shall be available for review upon request.
- (9 VAC 5-50-260)

OPERATING LIMITATIONS

7. **Fuel** – The approved fuels for the boiler are natural gas and used oil. A change in the fuels may require a permit to modify and operate.
(9 VAC 5-80-1180)
8. **Fuel Throughput** – The boiler shall consume no more than 144.28×10^6 cubic feet per year of natural gas, 120 gallons per hour of used oil and 1,051,200 gallons per year of used oil, calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.
(9 VAC 5-80-1180)
9. **Fuel Specifications** – Used oil combusted at the facility shall meet the following specifications:
- | | |
|---|--------|
| Maximum sulfur content (weight percent) | 0.5 %S |
|---|--------|
- Except as provided in Condition 16, these specifications shall be determined on a 30-day rolling average basis.
(9 VAC 5-80-1180, 9 VAC 5-50-260 and 9 VAC 5-50-410)

10. **Requirements by Reference** – Except where this permit is more restrictive than the applicable requirement, the NSPS equipment as described in Condition 1 of this permit shall be operated in compliance with the requirements of 40 CFR 60, Subparts Dc, VV, VVa, and NNN.
(9 VAC 5-80-1180, 9 VAC 5-50-400 and 9 VAC 5-50-410)

EMISSION LIMITS

11. **Process Emission Limits** – Volatile Organic Compounds emissions from the operation of the ethanol recovery facility, as exhausted from the condenser vent, shall not exceed the limits specified below:

Condenser Vent VOC (9 VAC 5-80-1180)	2.6 lbs/hr	11.4 tons/yr
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12. **Emission Limits** – Emissions from the operation of the Hurst Wetback 500 Series boiler shall not exceed the limits specified below:

Particulate Matter (PM)	7.68 lbs/hr	33.64 tons/yr
PM-10	6.12 lbs/hr	26.81 tons/yr
Sulfur Dioxide	8.82 lbs/hr	38.63 tons/yr
Nitrogen Oxides (as NO ₂)	2.28 lbs/hr	10.0 tons/yr
Carbon Monoxide	1.38 lbs/hr	6.06 tons/yr
Volatile Organic Compounds	0.12 lbs/hr	0.53 ton/yr

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits shall be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 8 and 9.

(9 VAC 5-80-1180 and 9 VAC 5-50-260)

13. **Visible Emission Limit** – Visible emissions from the boiler exhaust shall not exceed 10 percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed 20 percent opacity as determined by EPA Method 9 (reference 40 CFR 60, Appendix A). This condition applies at all times except during startup, shutdown, and malfunction.
(9 VAC 5-80-1180, 9 VAC 5-50-80 and 9 VAC 5-50-260)

CONTINUING COMPLIANCE DETERMINATION

14. **Fuel Sampling and Analysis** – The permittee shall sample and analyze the oil in the initial tank of oil to be fired in the boiler to demonstrate that the oil meets the specifications in Condition 74 of this permit. Thereafter, the permittee shall sample the oil in the fuel tank after each new shipment of oil is received, as follows:
- a. Oil samples shall be collected from each fuel tank supplying oil to the boiler immediately after the tank is filled and before any oil is combusted.
 - b. The permittee shall analyze the oil sample to determine the level of contaminants listed in Condition 74 of this permit.
 - c. If a partially empty tank is refilled, a new sample and analysis of the fuel in the tank shall be required upon filling.
 - d. Results of the fuel analysis taken after each new shipment of oil is received shall be used as the daily value when calculating the 30-day rolling average until the next shipment is received.
 - e. If the fuel analysis shows that the oil does not meet any specification required in Condition 74, the permittee shall ensure that the contaminant level of subsequent oil shipments is such as to cause the 30-day rolling average contaminant level to meet the specifications in Condition 74.
(9 VAC 5-80-1200, 9 VAC 5-50-30 and 9 VAC 5-50-410)
15. **Fuel Supplier Certification** – The fuel sampling and analysis requirements in Condition 14 of this permit shall not apply where the permittee demonstrates compliance with the used oil specifications based on fuel supplier certification. If fuel supplier certification is used to demonstrate compliance with the used oil specifications, the permittee shall obtain a certification from the used oil supplier representative of each shipment purchased that demonstrates compliance with the specifications in Condition 74 of this permit. Each used oil supplier certification shall include the following:
- a. the name of the fuel supplier,
 - b. the date on which the used oil was received,
 - c. the volume of used oil delivered in the shipment,
 - d. the sulfur content of the used oil,
 - e. the flash point of the used oil,

- f. documentation of the used oil analysis indicating the location of the used oil when the sample was drawn, specifically including whether the oil was sampled as delivered to the facility, or whether the sample was drawn from oil in storage at the oil supplier's or oil refiner's facility, or other location,
- g. the test methods used to determine the contaminant level in the used oil.
(9 VAC 5-80-1180 and 9 VAC 5-50-410)

RECORDS

16. **On Site Records** – The permittee shall maintain records of emission data and operating parameters as necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with the Director, Southwest Regional Office. These records shall include, but are not limited to:
- a. Shipping manifests, Material Safety Data Sheets, or other documentation that may be used to determine the character of the materials processed at the facility.
 - b. Annual amount of natural gas, in cubic feet, combusted in the boiler, calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.
 - c. Hourly, daily and annual amounts of used oil, in gallons, combusted in the boiler. Annual amounts shall be calculated monthly as the sum of each consecutive 12-month period. Hourly amounts shall be calculated by dividing the monthly throughput by the monthly hours of operation of the boiler. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.
 - d. All fuel sampling and analyses.
 - e. All fuel supplier certifications.
 - f. Scheduled and unscheduled maintenance and operator training.

These records shall be available for inspection by the DEQ and shall be current for the most recent five years.

(9 VAC 5-80-1180 and 9 VAC 5-50-50)

REPORTING

17. **Semi-Annual Reports** – The permittee shall submit fuel quality reports to the Director, Southwest Regional Office within 30 days after the end of each semi-annual period. If no shipments of used oil were received during the semi-annual period, the semi-annual report shall consist of the dates included in the semi-annual period and a statement that no oil was received during the semi-annual period. If used oil was received during the semi-annual period, the reports shall include:
- a. Calendar dates covered in the reporting period (January 1 to June 30 and July 1 to December 31),
 - b. Each 30-day average sulfur content (weight percent), calculated during the reporting period, ending with the last 30-day period; reasons for any noncompliance; and a description of corrective actions taken;
 - c. If fuel supplier certification is used to demonstrate compliance with the used oil specifications, copies of the fuel supplier certifications for all shipments of used oil received during the semi-annual period and a certified statement signed by the permittee that the records of fuel supplier certifications submitted represent all of the oil combusted during the reporting period. Each fuel supplier certification shall include the following information for each shipment of oil:
 - i. Name of the fuel supplier;
 - ii. The location of the oil when the sample was drawn for analysis to determine the sulfur content of the oil, specifically including whether the oil was sampled as delivered to the affected facility, or whether the sample was drawn from oil in storage at the oil supplier's or oil refiner's facility, or other location;
 - iii. The sulfur content of the oil from which the shipment came (or of the shipment itself); and
 - iv. The method used to determine the sulfur content of the oil.

One copy of the semi-annual report shall be submitted to the U.S. Environmental Protection Agency.

(9 VAC 5-170-160, 9 VAC 5-50-50 and 9 VAC 5-50-410)

NOTIFICATIONS

18. **Initial Notifications** – The permittee shall furnish written notification to the Director, Southwest Regional Office of the actual date on which process water was no longer used in the cooling circuit within 30 days after such date.
(9 VAC 5-50-50, 9 VAC 5-80-1180 and 9 VAC 5-50-410)

REQUIREMENTS OF NSPS SUBPART VV - Standards of Performance for Equipment Leaks of Volatile Organic Compounds (VOC) in the Synthetic Organic Chemical Manufacturing Industry (SOCMI)

19. **General** – The permittee shall comply with the requirements of 40 CFR 60.482-1 through 60.482-10 or 40 CFR 60.480(e) of NSPS Subpart VV for all applicable equipment.
(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)
20. **General** – Compliance with the applicable requirements of 40 CFR 60.482-1 to 60.482-10 shall be determined by review of records and reports, review of performance test results, and inspection using the methods and procedures specified in 40 CFR 60.485.
(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)
21. **General** – Equipment in vacuum service is excluded from the applicable requirements of 40 CFR 60.482-2 through 482-10 if it is identified as such, as required in 40 CFR 60.486(e)(5).
(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)
22. **General** - Equipment that an owner or operator designates as being in VOC service less than 300 hours (hr)/yr is excluded from the requirements of 40 CFR 60.482-2 through 60.482-10 if it is identified as required in 40 CFR 60.486(e)(6) and it meets any of the conditions specified in (a) through (c) of this condition.
- (a) The equipment is in VOC service only during startup and shutdown, excluding startup and shutdown between batches of the same campaign for a batch process.
- (b) The equipment is in VOC service only during process malfunctions or other emergencies.
- (c) The equipment is backup equipment that is in VOC service only when the primary equipment is out of service.
(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)
23. **General** – The permittee may request a determination of equivalence (of a means of emission limitation) to the requirements of 40 CFR 60.482-2, 482-3, 482-5, 482-6, 482-7, 482-8, and 482-10 as provided in 40 CFR 60.484.
(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)

24. **General** - If the storage vessel is shared with multiple process units, the process unit with the greatest annual amount of stored materials (predominant use) is the process unit the storage vessel is assigned to. If the storage vessel is shared equally among process units, and one of the process units has equipment subject to 40 CFR 60, Subpart VVa, the storage vessel is assigned to that process unit. If the storage vessel is shared equally among process units, none of which have equipment subject to 40 CFR 60, Subpart VVa, the storage vessel is assigned to any process unit subject to 40 CFR 60, Subpart VV. If the predominant use of the storage vessel varies from year to year, then the owner or operator must estimate the predominant use initially and reassess every 3 years. The owner or operator must keep records of the information and supporting calculations that show how predominant use is determined. All equipment on the storage vessel must be monitored when in VOC service. (9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)
25. **Light Liquid Service Pumps** – The permittee shall comply with requirements in 40 CFR 60.482-2 as follows:
- (a) (1) Pumps used in light liquid service shall be monitored monthly to detect leaks by the methods specified in 40 CFR 485(b), except as provided in 40 CFR 60.482-1(c) and (f) and paragraphs (d), (e), and (f) in 40 CFR 60.482-2. A pump that begins operation in light liquid service after the initial startup date for the process unit must be monitored for the first time within 30 days after the end of its startup period, except for a pump that replaces a leaking pump and except as provided in §60.482-1(c) and (f) and (d), (e), and (f) of this condition.
 - (2) Each pump in light liquid service shall be checked by visual inspection each calendar week for indications of liquids dripping from the pump seal.
 - (b) (1) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.
 - (2) If there are indications of liquids dripping from the pump seal, the owner or operator shall follow the procedure specified in either (i) or (ii) below. This requirement does not apply to a pump that was monitored after a previous weekly inspection if the instrument reading for that monitoring event was less than 10,000 ppm and the pump was not repaired since that monitoring event.
 - (i) Monitor the pump within 5 days as specified in §60.485(b). If an instrument reading of 10,000 ppm or greater is measured, a leak is detected. The leak shall be repaired using the procedures in paragraph (c) of this section.
 - (ii) Designate the visual indications of liquids dripping as a leak, and repair the leak within 15 days of detection by eliminating the visual indications of liquids dripping.
 - (c) (1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in 40 CFR 60.482-9.

- (2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected. First attempts at repair include, but are not limited to, the practices described below, where practicable:
 - (i) Tightening the packing gland nuts;
 - (ii) Ensuring that the seal flush is operating at design pressure and temperature.
- (d) Each pump equipped with a dual mechanical seal system that includes a barrier fluid system is exempt from the requirements of (a) of this condition, provided the following requirements are met:
 - (1) Each dual mechanical seal system is—
 - (i) Operated with the barrier fluid at a pressure that is at all times greater than the pump stuffing box pressure; or
 - (ii) Equipped with a barrier fluid degassing reservoir that is routed to a process or fuel gas system or connected by a closed vent system to a control device that complies with the requirements of 40 CFR 60.482–10; or
 - (iii) Equipped with a system that purges the barrier fluid into a process stream with zero VOC emissions to the atmosphere.
 - (2) The barrier fluid system is in heavy liquid service or is not in VOC service.
 - (3) Each barrier fluid system is equipped with a sensor that will detect failure of the seal system, the barrier fluid system, or both.
 - (4) (i) Each pump is checked by visual inspection, each calendar week, for indications of liquids dripping from the pump seals.
 - (ii) If there are indications of liquids dripping from the pump seal at the time of the weekly inspection, the owner or operator shall follow the procedure specified in either (A) or (B) below:
 - (A) Monitor the pump within 5 days as specified in §60.485(b) to determine if there is a leak of VOC in the barrier fluid. If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.
 - (B) Designate the visual indications of liquids dripping as a leak.
 - (5) (i) Each sensor as described in (3) is checked daily or is equipped with an audible alarm, and
 - (ii) The owner or operator determines, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.

- (iii) If the sensor indicates failure of the seal system, the barrier fluid system, or both based on the criterion determined in (5)(ii) of this condition, a leak is detected.
 - (6) (i) When a leak is detected pursuant to (d)(4)(ii)(A) of this condition, it shall be repaired as specified in (c) of this condition.
 - (ii) A leak detected pursuant to (d)(5)(iii) of this condition shall be repaired within 15 days of detection by eliminating the conditions that activated the sensor.
 - (iii) A designated leak pursuant to (d)(4)(ii)(B) of this condition shall be repaired within 15 days of detection by eliminating visual indications of liquids dripping.
 - (e) Any pump that is designated, as described in 40 CFR 60.486(e)(1) and (2), for no detectable emission, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of (a), (c), and (d) of this condition if the pump:
 - (1) Has no externally actuated shaft penetrating the pump housing,
 - (2) Is demonstrated to be operating with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background as measured by the methods specified in 40 CFR 60.485(c), and
 - (3) Is tested for compliance with (e)(2) of this condition initially upon designation, annually, and at other times requested by the Administrator.
 - (f) If any pump is equipped with a closed vent system capable of capturing and transporting any leakage from the seal or seals to a process or to a fuel gas system or to a control device that complies with the requirements of 40 CFR 60.482-10, it is exempt from (a) through (e) of this condition.
 - (g) Any pump that is designated, as described in 40 CFR 60.486(f)(1), as an unsafe-to-monitor pump is exempt from the monitoring and inspection requirements of (a) and (d)(4) through (6) of this condition if:
 - (1) The owner or operator of the pump demonstrates that the pump is unsafe-to-monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with (a) of this condition; and
 - (2) The owner or operator of the pump has a written plan that requires monitoring of the pump as frequently as practicable during safe-to-monitor times but not more frequently than the periodic monitoring schedule otherwise applicable, and repair of the equipment according to the procedures in (c) of this condition if a leak is detected.
 - (h) Any pump that is located within the boundary of an unmanned plant site is exempt from the weekly visual inspection requirement of (a)(2) and (d)(4) of this condition, and the daily requirements of (d)(5) of this condition, provided that each pump is visually inspected as often as practicable and at least monthly.
- (9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)

26. **Compressors** – The permittee shall comply with requirements in 40 CFR 60.482-3, as follows:
- (a) Each compressor shall be equipped with a seal system that includes a barrier fluid system and that prevents leakage of VOC to the atmosphere, except as provided in 40 CFR 60.482-1(c) and paragraph (h), (i), and (j) of 40 CFR 60.482-3.
 - (b) Each compressor seal system as required in (a) of this condition shall be:
 - (1) Operated with the barrier fluid at a pressure that is greater than the compressor stuffing box pressure; or
 - (2) Equipped with a barrier fluid system degassing reservoir that is routed to a process or fuel gas system or connected by a closed vent system to a control device that complies with the requirements of 40 CFR 60.482-10; or
 - (3) Equipped with a system that purges the barrier fluid into a process stream with zero VOC emissions to the atmosphere.
 - (c) The barrier fluid system shall be in heavy liquid service or shall not be in VOC service.
 - (d) Each barrier fluid system as described in (a) of this condition shall be equipped with a sensor that will detect failure of the seal system, barrier fluid system, or both.
 - (e)
 - (1) Each sensor as required in (d) of this condition shall be checked daily or shall be equipped with an audible alarm.
 - (2) The owner or operator shall determine, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.
 - (f) If the sensor indicates failure of the seal system, the barrier system, or both based on the criterion determined under (e)(2) of this condition, a leak is detected.
 - (g)
 - (1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in 40 CFR 60.482-9.
 - (2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.
 - (h) A compressor is exempt from the requirements of (a) and (b) of this condition, if it is equipped with a closed vent system to capture and transport leakage from the compressor drive shaft back to a process or fuel gas system or to a control device that complies with the requirements of 40 CFR 60.482-10, except as provided in (i) of this condition.
 - (i) Any compressor that is designated, as described in 40 CFR 60.486(e) (1) and (2), for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of (a)–(h) of this condition if the compressor:

- (1) Is demonstrated to be operating with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the methods specified in 40 CFR 60.485(c); and
 - (2) Is tested for compliance with (i)(1) of this condition initially upon designation, annually, and at other times requested by the Administrator.
- (j) Any existing reciprocating compressor in a process unit which becomes an affected facility under provisions of 40 CFR 60.14 or 40 CFR 60.15 is exempt from 40 CFR 60.482-3(a) through (e), and (h), provided the owner or operator demonstrates that recasting the distance piece or replacing the compressor are the only options available to bring the compressor into compliance with the provisions of (a) through (e) and (h).
- (9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)

27. **Pressure Relief Devices for Gas/Vapor Service** – The permittee shall comply with the VOC leak-detection and monitoring requirements in 40 CFR 60.482-4 as follows:

- (a) Except during pressure releases, each pressure relief device in gas/vapor service shall be operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as determined by the methods specified in 40 CFR 60.485(c).
- (b) (1) After each pressure release, the pressure relief device shall be returned to a condition of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as soon as practicable, but no later than 5 calendar days after the pressure release, except as provided in 40 CFR 60.482-9.
(2) No later than 5 calendar days after the pressure release, the pressure relief device shall be monitored to confirm the conditions of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, by the methods specified in 40 CFR 60.485(c).
- (c) Any pressure relief device that is routed to a process or fuel gas system or equipped with a closed vent system capable of capturing and transporting leakage through the pressure relief device to a control device as described in 40 CFR 60.482-10 is exempted from the requirements of (a) and (b) of this condition.
- (d) (1) Any pressure relief device that is equipped with a rupture disk upstream of the pressure relief device is exempt from the requirements of (a) and (b) of this condition, provided the owner or operator complies with the requirements in paragraph (d)(2) of 40 CFR 60.482-4.
(2) After each pressure release, a new rupture disk shall be installed upstream of the pressure relief device as soon as practicable, but no later than 5 calendar days after each pressure release, except as provided in 40 CFR 60.482-9.

(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)

28. **Sampling Connection Systems** - The permittee shall comply with the VOC leak-detection and monitoring requirements in 40 CFR 60.482-5 for sampling connection systems as follows:
- (a) Each sampling connection system shall be equipped with a closed-purged, closed-loop, or closed-vent system, except as provided in 40 CFR 60.482-1(c) and (c) of this condition.
 - (b) Each closed-purge, closed-loop, or closed-vent system as required in paragraph (a) of this condition shall comply with the requirements specified in (b)(1) through (4) of this condition:
 - (1) Gases displaced during filling of the sample container are not required to be collected or captured.
 - (2) Containers that are part of a closed-purge system must be covered or closed when not being filled or emptied.
 - (3) Gases remaining in the tubing or piping between the closed-purge system valve(s) and sample container valve(s) after the valves are closed and the sample container is disconnected are not required to be collected or captured.
 - (4) Each closed-purge, closed-loop, or closed-vent system shall be designed and operated to meet requirements in either (b)(4)(i), (ii), (iii), or (iv) of this condition.
 - (i) Return the purged process fluid directly to the process line.
 - (ii) Collect and recycle the purged process fluid to a process.
 - (iii) Capture and transport all the purged process fluid to a control device that complies with the requirements of 40 CFR 60.482-10.
 - (iv) Collect, store, and transport the purged process fluid to any of the following systems or facilities:
 - (A) A waste management unit as defined in 40 CFR 63.111, if the waste management unit is subject to, and operated in compliance with the provisions of 40 CFR Part 63, subpart G, applicable to Group 1 wastewater streams;
 - (B) A treatment, storage, or disposal facility subject to regulation under 40 CFR part 262, 264, 265, or 266;
 - (C) A facility permitted, licensed, or registered by a State to manage municipal or industrial solid waste, if the process fluids are not hazardous waste as defined in 40 CFR part 261;
 - (D) A waste management unit subject to and operated in compliance with the treatment requirements of §61.348(a), provided all waste management units that collect, store, or transport the purged process fluid to the treatment unit are subject to and operated in compliance with the management requirements of 40 CFR 61.343 through 61.347; or

- (E) A device used to burn off-specification used oil for energy recovery in accordance with 40 CFR part 279, subpart G, provided the purged process fluid is not hazardous waste as defined in 40 CFR part 261.
- (c) In-situ sampling systems and sampling systems without purges are exempt from the requirements of (a) and (b) of this condition.
- (9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)
29. **Open-Ended Valves/Lines** - The permittee shall comply with the VOC leak-detection and monitoring requirements in 40 CFR 60.482-6 for open-ended valves or lines, as follows:
- (a) (1) Each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve, except as provided in 40 CFR 60.482-1(c) and (d) and (e) of this condition.
- (2) The cap, blind flange, plug, or second valve shall seal the open end at all times except during operations requiring process fluid flow through the open-ended valve or line.
- (b) Each open-ended valve or line equipped with a second valve shall be operated in a manner such that the valve on the process fluid end is closed before the second valve is closed.
- (c) When a double block-and-bleed system is being used, the bleed valve or line may remain open during operations that require venting the line between the block valves but shall comply with (a) of this condition at all other times.
- (d) Open-ended valves or lines in an emergency shutdown system which are designed to open automatically in the event of a process upset are exempt from the requirements of (a), (b) and (c) of this condition.
- (e) Open-ended valves or lines containing materials which would autocatalytically polymerize or would present an explosion, serious overpressure, or other safety hazard if capped or equipped with a double block and bleed system as specified in (a) through (c) of this condition are exempt from the requirements of (a) through (c) of this condition.
- (9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)
30. **Valves** - The permittee shall comply with the VOC leak-detection and monitoring requirements in 40 CFR 60.482-7 for valves in gas/vapor service and light liquid service, as follows:
- (a) (1) Each valve shall be monitored monthly to detect leaks by the methods specified in 40 CFR 60.485(b) and shall comply with (b) through (e) of this condition, except as provided in (f), (g), and (h) of this condition, 40 CFR 60.482-1(c) and (f), 40 CFR 60.483-1 and 60.483-2.
- (2) A valve that begins operation in gas/vapor service or light liquid service after the initial startup date for the process unit must be monitored according to (a)(2)(i) or (ii),

except for a valve that replaces a leaking valve and except as provided in (f), (g), and (h) of this condition, 40 CFR 60.482-1(c), and 40 CFR 60.483-1 and 60.483-2.

- (i) Monitor the valve as in (a)(1) of this condition. The valve must be monitored for the first time within 30 days after the end of its startup period to ensure proper installation.
 - (ii) If the valves on the process unit are monitored in accordance with 40 CFR 60.483-1 or 60.483-2, count the new valve as leaking when calculating the percentage of valves leaking as described in 40 CFR 60.483-2(b)(5). If less than 2.0 percent of the valves are leaking for that process unit, the valve must be monitored for the first time during the next scheduled monitoring event for existing valves in the process unit or within 90 days, whichever comes first.
- (b) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.
- (c) (1)(i) Any valve for which a leak is not detected for 2 successive months may be monitored the first month of every quarter, beginning with the next quarter, until a leak is detected.
- (ii) As an alternative to monitoring all of the valves in the first month of a quarter, an owner or operator may elect to subdivide the process unit into 2 or 3 subgroups of valves and monitor each subgroup in a different month during the quarter, provided each subgroup is monitored every 3 months. The owner or operator must keep records of the valves assigned to each subgroup.
- (2) If a leak is detected, the valve shall be monitored monthly until a leak is not detected for 2 successive months.
- (d) (1) When a leak is detected, it shall be repaired as soon as practicable, but no later than 15 calendar days after the leak is detected, except as provided in 40 CFR 60.482-9.
- (2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.
- (e) First attempts at repair include, but are not limited to, the following best practices where practicable:
- (1) Tightening of bonnet bolts;
 - (2) Replacement of bonnet bolts;
 - (3) Tightening of packing gland nuts;
 - (4) Injection of lubricant into lubricated packing.
- (f) Any valve that is designated, as described in 40 CFR 60.486(e)(2), for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of (a) of this condition if the valve:
- (1) Has no external actuating mechanism in contact with the process fluid,

- (2) Is operated with emissions less than 500 ppm above background as determined by the method specified in 40 CFR 60.485(c), and
 - (3) Is tested for compliance with (f)(2) of this condition initially upon designation, annually, and at other times requested by the Administrator.
 - (g) Any valve that is designated, as described in 40 CFR 60.486(f)(1), as an unsafe-to-monitor valve is exempt from the requirements of (a) of this condition if:
 - (1) The owner or operator of the valve demonstrates that the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with (a) of this condition, and
 - (2) The owner or operator of the valve adheres to a written plan that requires monitoring of the valve as frequently as practicable during safe-to-monitor times.
 - (h) Any valve that is designated, as described in 40 CFR 60.486(f)(2), as a difficult-to-monitor valve is exempt from the requirements of (a) of this condition if:
 - (1) The owner or operator of the valve demonstrates that the valve cannot be monitored without elevating the monitoring personnel more than 2 meters above a support surface.
 - (2) The process unit within which the valve is located either becomes an affected facility through 40 CFR 60.14 or 40 CFR 60.15 or the owner or operator designates less than 3.0 percent of the total number of valves as difficult-to-monitor, and
 - (3) The owner or operator of the valve follows a written plan that requires monitoring of the valve at least once per calendar year.
- (9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)

31. **Light Liquid/Heavy Liquid Service** - The permittee shall comply with the VOC leak-detection and monitoring requirements in 40 CFR 60.482-8 for pumps and valves in heavy liquid service, pressure-relief devices in heavy liquid or light liquid service, and connectors, as follows:
- (a) If evidence of a potential leak is found by visual, audible, olfactory, or any other detection method at pumps and valves in heavy liquid service, pressure relief devices in light liquid or heavy liquid service, and connectors, the owner or operator shall follow either one of the following procedures:
 - (1) The owner or operator shall monitor the equipment within 5 days by the method specified in 40 CFR 60.485(b) and shall comply with the requirements of (b) through (d) of this condition.
 - (2) The owner or operator shall eliminate the visual, audible, olfactory, or other indication of a potential leak.

- (b) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.
 - (c) (1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in 40 CFR 60.482-9.
(2) The first attempt at repair shall be made no later than 5 calendar days after each leak is detected.
 - (d) First attempts at repair include, but are not limited to, the best practices described under 40 CFR 60.482-2(c)(2) and 40 CFR 60.482-7(e).
- (9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)

32. **Delay of Repair** - The permittee can elect to delay repair of VOC-leaking equipment in accordance with the requirements in 40 CFR 60.482-9, as follows:

- (a) Delay of repair of equipment for which leaks have been detected shall be allowed if repair within 15 days is technically infeasible without a process unit shutdown. Repair of this equipment shall occur before the end of the next process unit shutdown. Monitoring to verify repair must occur within 15 days after startup of the process unit.
- (b) Delay of repair of equipment shall be allowed for equipment which is isolated from the process and which does not remain in VOC service.
- (c) Delay of repair for valves shall be allowed if:
 - (1) The owner or operator demonstrates that emissions of purged material resulting from immediate repair are greater than the fugitive emissions likely to result from delay of repair, and
 - (2) When repair procedures are effected, the purged material is collected and destroyed or recovered in a control device complying with 40 CFR 60.482-10.
- (d) Delay of repair for pumps shall be allowed if:
 - (1) Repair requires the use of a dual mechanical seal system that includes a barrier fluid system, and
 - (2) Repair is completed as soon as practicable, but not later than 6 months after the leak was detected.
- (e) Delay of repair beyond a process unit shutdown shall be allowed for a valve, if valve assembly replacement is necessary during the process unit shutdown, valve assembly supplies have been depleted, and valve assembly supplies had been sufficiently stocked before the supplies were depleted. Delay of repair beyond the next process unit shutdown will not be allowed unless the next process unit shutdown occurs sooner than 6 months after the first process unit shutdown.
- (f) When delay of repair is allowed for a leaking pump or valve that remains in service, the pump or valve may be considered to be repaired and no longer subject to delay of repair

requirements if two consecutive monthly monitoring instrument readings are below the leak definition.

(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)

33. **Closed Vent System and Control Devices** - The permittee shall meet the VOC leak-detection and monitoring requirements in 40 CFR 60.482-10 for VOC leaks in closed vent systems and control devices, as follows:
- (a) Owners or operators of closed vent systems and control devices used to comply with provisions of Subpart VV shall comply with the provisions of this condition.
 - (b) Vapor recovery systems (for example, condensers and absorbers) shall be designed and operated to recover the VOC emissions vented to them with an efficiency of 95 percent or greater, or to an exit concentration of 20 parts per million by volume, whichever is less stringent.
 - (c) Enclosed combustion devices shall be designed and operated to reduce the VOC emissions vented to them with an efficiency of 95 percent or greater, or to an exit concentration of 20 parts per million by volume, on a dry basis, corrected to 3 percent oxygen, whichever is less stringent or to provide a minimum residence time of 0.75 seconds at a minimum temperature of 816 °C.
 - (d) Flares used to comply with this subpart shall comply with the requirements of 40 CFR 60.18.
 - (e) Owners or operators of control devices used to comply with the provisions of Subpart VV shall monitor these control devices to ensure that they are operated and maintained in conformance with their designs.
 - (f) Except as provided in (i) through (k) of this condition, each closed vent system shall be inspected according to the procedures and schedule specified in (f)(1) and (f)(2) of this condition.
 - (1) If the vapor collection system or closed vent system is constructed of hard-piping, the owner or operator shall comply with the requirements specified in (f)(1)(i) and (f)(1)(ii) of this condition:
 - (i) Conduct an initial inspection according to the procedures in 40 CFR 60.485(b); and
 - (ii) Conduct annual visual inspections for visible, audible, or olfactory indications of leaks.
 - (2) If the vapor collection system or closed vent system is constructed of ductwork, the owner or operator shall:
 - (i) Conduct an initial inspection according to the procedures in 40 CFR 60.485(b); and

- (ii) Conduct annual inspections according to the procedures in 40 CFR 60.485(b).
- (g) Leaks, as indicated by an instrument reading greater than 500 parts per million by volume above background or by visual inspections, shall be repaired as soon as practicable except as provided in (h) of this condition.
 - (1) A first attempt at repair shall be made no later than 5 calendar days after the leak is detected.
 - (2) Repair shall be completed no later than 15 calendar days after the leak is detected.
- (h) Delay of repair of a closed vent system for which leaks have been detected shall be allowed if the repair is technically infeasible without a process unit shutdown or if the owner or operator determines that emissions resulting from immediate repair would be greater than the fugitive emissions likely to result from delay of repair. Repair of such equipment shall be complete by the end of the next process unit shutdown.
- (i) If a vapor collection system or closed vent system is operated under a vacuum, it is exempt from the inspection requirements of (f)(1)(i) and (f)(2) of this condition.
- (j) Any parts of the closed vent system that are designated, as described in (l)(1) of this condition, as unsafe to inspect are exempt from the inspection requirements of (f)(1)(i) and (f)(2) of this condition if they comply with the requirements specified in (j)(1) and (j)(2) of this condition:
 - (1) The owner or operator determines that the equipment is unsafe to inspect because inspecting personnel would be exposed to an imminent or potential danger as a consequence of complying with (f)(1)(i) or (f)(2) of this condition; and
 - (2) The owner or operator has a written plan that requires inspection of the equipment as frequently as practicable during safe-to-inspect times.
- (k) Any parts of the closed vent system that are designated, as described in (l)(2) of this condition, as difficult to inspect are exempt from the inspection requirements of (f)(1)(i) and (f)(2) of this condition if they comply with the requirements specified in (k)(1) through (k)(3) of this condition:
 - (1) The owner or operator determines that the equipment cannot be inspected without elevating the inspecting personnel more than 2 meters above a support surface; and
 - (2) The process unit within which the closed vent system is located becomes an affected facility through 40 CFR 60.14 or 60.15, or the owner or operator designates less than 3.0 percent of the total number of closed vent system equipment as difficult to inspect; and
 - (3) The owner or operator has a written plan that requires inspection of the equipment at least once every 5 years. A closed vent system is exempt from inspection if it is operated under a vacuum.

- (l) The owner or operator shall record the information specified in (l)(1) through (l)(5) of this condition.
 - (1) Identification of all parts of the closed vent system that are designated as unsafe to inspect, an explanation of why the equipment is unsafe to inspect, and the plan for inspecting the equipment.
 - (2) Identification of all parts of the closed vent system that are designated as difficult to inspect, an explanation of why the equipment is difficult to inspect, and the plan for inspecting the equipment.
 - (3) For each inspection during which a leak is detected, a record of the information specified in 40 CFR 60.486(c).
 - (4) For each inspection conducted in accordance with 40 CFR 60.485(b) during which no leaks are detected, a record that the inspection was performed, the date of the inspection, and a statement that no leaks were detected.
 - (5) For each visual inspection conducted in accordance with (f)(1)(ii) of this condition during which no leaks are detected, a record that the inspection was performed, the date of the inspection, and a statement that no leaks were detected.
- (m) Closed vent systems and control devices used to comply with provisions of Subpart VV shall be operated at all times when emissions may be vented to them.
(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)
- 34. **Alternative Standards for Valves** – The permittee shall meet the requirements of 40 CFR 483-1 if he elects the alternative standards for valves-allowable percentage of valves leaking, as follows:
 - (a) An owner or operator may elect to comply with an allowable percentage of valves leaking of equal to or less than 2.0 percent.
 - (b) The following requirements shall be met if an owner or operator wishes to comply with an allowable percentage of valves leaking:
 - (1) An owner or operator must notify the Administrator that the owner or operator has elected to comply with the allowable percentage of valves leaking before implementing this alternative standard, as specified in 40 CFR 60.487(d).
 - (2) A performance test as specified in (c) of this condition shall be conducted initially upon designation, annually, and at other times requested by the Administrator.
 - (3) If a valve leak is detected, it shall be repaired in accordance with 40 CFR 60.482–7(d) and (e).
 - (c) Performance tests shall be conducted in the following manner:
 - (1) All valves in gas/vapor and light liquid service within the affected facility shall be monitored within 1 week by the methods specified in 40 CFR 60.485(b).

- (2) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.
- (3) The leak percentage shall be determined by dividing the number of valves for which leaks are detected by the number of valves in gas/vapor and light liquid service within the affected facility.
- (d) Owners and operators who elect to comply with this alternative standard shall not have an affected facility with a leak percentage greater than 2.0 percent, determined as described in 40 CFR 60.485(h).

(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)

35. **Alternative Standards for Valves** – The permittee shall meet the requirements of 40 CFR 483-2 if he elects the alternative standards for valves-skip period leak detection and repair, as follows:

- (a) (1) An owner or operator may elect to comply with one of the alternative work practices specified in (b)(2) and (3) of this condition.
 - (2) An owner or operator must notify the Administrator before implementing one of the alternative work practices, as specified in 40 CFR 60.487(d).
- (b) (1) An owner or operator shall comply initially with the requirements for valves in gas/vapor service and valves in light liquid service, as described in 40 CFR 60.482–7.
 - (2) After 2 consecutive quarterly leak detection periods with the percent of valves leaking equal to or less than 2.0, an owner or operator may begin to skip 1 of the quarterly leak detection periods for the valves in gas/vapor and light liquid service.
 - (3) After 5 consecutive quarterly leak detection periods with the percent of valves leaking equal to or less than 2.0, an owner or operator may begin to skip 3 of the quarterly leak detection periods for the valves in gas/vapor and light liquid service.
 - (4) If the percent of valves leaking is greater than 2.0, the owner or operator shall comply with the requirements as described in 40 CFR 60.482–7 but can again elect to use this condition.
 - (5) The percent of valves leaking shall be determined as described in 40 CFR 60.485(h).
 - (6) An owner or operator must keep a record of the percent of valves found leaking during each leak detection period.
 - (7) A valve that begins operation in gas/vapor service or light liquid service after the initial startup date for a process unit following one of the alternative standards in this section must be monitored in accordance with §60.482–7(a)(2)(i) or (ii) before the provisions of this section can be applied to that valve.

(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)

36. **Test Methods and Procedures** - The permittee shall use the test methods and procedures indicated in 40 CFR 60.485 for performance testing and for compliance with standards in Subpart VV as follows:
- (a) In conducting the performance tests required in 40 CFR 60.8, the owner or operator shall use as reference methods and procedures the test methods in appendix A of this part or other methods and procedures as specified in this section, except as provided in 40 CFR 60.8(b).
 - (b) The owner or operator shall determine compliance with the standards in 40 CFR 60.482–1 through 60.482–10, 60.483, and 60.484 as follows:
 - (1) Method 21 shall be used to determine the presence of leaking sources. The instrument shall be calibrated before use each day of its use by the procedures specified in Method 21. The following calibration gases shall be used:
 - (i) Zero air (less than 10 ppm of hydrocarbon in air); and
 - (ii) A mixture of methane or n-hexane and air at a concentration of about, but less than, 10,000 ppm methane or n-hexane.
 - (c) The owner or operator shall determine compliance with the no detectable emission standards in 40 CFR 60.482–2(e), 60.482–3(i), 60.482–4, 60.482–7(f), and 60.482–10(e) as follows:
 - (1) The requirements of (b) of this condition shall apply.
 - (2) Method 21 shall be used to determine the background level. All potential leak interfaces shall be traversed as close to the interface as possible. The arithmetic difference between the maximum concentration indicated by the instrument and the background level is compared with 500 ppm for determining compliance.
 - (d) The owner or operator shall test each piece of equipment unless he demonstrates that a process unit is not in VOC service, i.e., that the VOC content would never be reasonably expected to exceed 10 percent by weight. For purposes of this demonstration, the following methods and procedures shall be used:
 - (1) Procedures that conform to the general methods in ASTM E260–73, 91, or 96, E168–67, 77, or 92, E169–63, 77, or 93 (incorporated by reference—see 40 CFR 60.17) shall be used to determine the percent VOC content in the process fluid that is contained in or contacts a piece of equipment.
 - (2) Organic compounds that are considered by the Administrator to have negligible photochemical reactivity may be excluded from the total quantity of organic compounds in determining the VOC content of the process fluid.
 - (3) Engineering judgment may be used to estimate the VOC content, if a piece of equipment had not been shown previously to be in service. If the Administrator disagrees with the judgment, (d) (1) and (2) of this condition shall be used to resolve the disagreement.

- (e) The owner or operator shall demonstrate that a piece of equipment is in light liquid service by showing that all the following conditions apply:
- (1) The vapor pressure of one or more of the organic components is greater than 0.3 kPa at 20 °C (1.2 in. H₂O at 68 °F). Standard reference texts or ASTM D2879–83, 96, or 97 (incorporated by reference—see 40 CFR 60.17) shall be used to determine the vapor pressures.
 - (2) The total concentration of the pure organic components having a vapor pressure greater than 0.3 kPa at 20 °C (1.2 in. H₂O at 68 °F) is equal to or greater than 20 percent by weight.
 - (3) The fluid is a liquid at operating conditions.
- (f) Samples used in conjunction with (d), (e), and (g) of this condition shall be representative of the process fluid that is contained in or contacts the equipment or the gas being combusted in the flare.
- (g) The owner or operator shall determine compliance with 40 CFR 60.483–1 or 40 CFR 60.483–2 as follows:
- (1) The percent of valves leaking shall be determined using the following equation:

$$\%V_L = (V_L/V_T) * 100$$

Where:

$\%V_L$ = Percent leaking valves

V_L = Number of valves found leaking

V_T = The sum of the total number of valves monitored

- (2) The total number of valves monitored shall include difficult-to-monitor and unsafe-to-monitor valves only during the monitoring period in which those valves are monitored.
 - (3) The number of valves leaking shall include valves for which repair has been delayed.
 - (4) Any new valve that is not monitored within 30 days of being placed in service shall be included in the number of valves leaking and the total number of valves monitored for the monitoring period in which the valve is placed in service.
 - (5) If the process unit has been subdivided in accordance with 40 CFR 60.482–7(c)(1)(ii), the sum of valves found leaking during a monitoring period includes all subgroups.
 - (6) The total number of valves monitored does not include a valve monitored to verify repair.
- (9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)

37. **Recordkeeping** – The permittee shall maintain records as indicated in 40 CFR 60.486 to assure compliance with NSPS Subpart VV, as follows:
- (a) (1) Each owner or operator subject to the provisions of this subpart shall comply with the recordkeeping requirements of 40 CFR 60.486.
 - (2) An owner or operator of more than one affected facility subject to the provisions of Subpart VV may comply with the recordkeeping requirements for these facilities in one recordkeeping system if the system identifies each record by each facility.
 - (b) When each leak is detected as specified in 40 CFR 60.482–2, 60.482–3, 60.482–7, 60.482–8, and 60.483–2, the following requirements apply:
 - (1) A weatherproof and readily visible identification, marked with the equipment identification number, shall be attached to the leaking equipment.
 - (2) The identification on a valve may be removed after it has been monitored for 2 successive months as specified in 40 CFR 60.482–7(c) and no leak has been detected during those 2 months.
 - (3) The identification on equipment except on a valve, may be removed after it has been repaired.
 - (c) When each leak is detected as specified in 40 CFR 60.482–2, 60.482–3, 60.482–7, 60.482–8, and 60.483–2, the following information shall be recorded in a log and shall be kept for 2 years in a readily accessible location:
 - (1) The instrument and operator identification numbers and the equipment identification number.
 - (2) The date the leak was detected and the dates of each attempt to repair the leak.
 - (3) Repair methods applied in each attempt to repair the leak.
 - (4) “Above 10,000” if the maximum instrument reading measured by the methods specified in 40 CFR 60.485(a) after each repair attempt is equal to or greater than 10,000 ppm.
 - (5) “Repair delayed” and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak.
 - (6) The signature of the owner or operator (or designate) whose decision it was that repair could not be effected without a process shutdown.
 - (7) The expected date of successful repair of the leak if a leak is not repaired within 15 days.
 - (8) Dates of process unit shutdowns that occur while the equipment is unrepaired.
 - (9) The date of successful repair of the leak.

- (d) The following information pertaining to the design requirements for closed vent systems and control devices described in 40 CFR 60.482-10 shall be recorded and kept in a readily accessible location:
- (1) Detailed schematics, design specifications, and piping and instrumentation diagrams.
 - (2) The dates and descriptions of any changes in the design specifications.
 - (3) A description of the parameter or parameters monitored, as required in 40 CFR 60.482-10(e), to ensure that control devices are operated and maintained in conformance with their design and an explanation of why that parameter (or parameters) was selected for the monitoring.
 - (4) Periods when the closed vent systems and control devices required in 40 CFR 60.482-2, 60.482-3, 60.482-4, and 60.482-5 are not operated as designed, including periods when a flare pilot light does not have a flame.
 - (5) Dates of startups and shutdowns of the closed vent systems and control devices required in 40 CFR 60.482-2, 60.482-3, 60.482-4, and 60.482-5.
- (e) The following information pertaining to all equipment subject to the requirements in 40 CFR 60.482-1 to 60.482-10 shall be recorded in a log that is kept in a readily accessible location:
- (1) A list of identification numbers for equipment subject to the requirements of this subpart.
 - (2) (i) A list of identification numbers for equipment that are designated for no detectable emissions under the provisions of 40 CFR 60.482-2(e), 60.482-3(i) and 60.482-7(f).
(ii) The designation of equipment as subject to the requirements of 40 CFR 60.482-2(e), 40 CFR 60.482-3(i), or 40 CFR 60.482-7(f) shall be signed by the owner or operator. Alternatively, the owner or operator may establish a mechanism with their permitting authority that satisfies this requirement.
 - (3) A list of equipment identification numbers for pressure relief devices required to comply with 40 CFR 60.482-4.
 - (4) (i) The dates of each compliance test as required in 40 CFR 60.482-2(e), 60.482-3(i), 60.482-4, and 60.482-7(f).
(ii) The background level measured during each compliance test.
(iii) The maximum instrument reading measured at the equipment during each compliance test.
 - (5) A list of identification numbers for equipment in vacuum service.
 - (6) A list of identification numbers for equipment that the owner or operator designates as operating in VOC service less than 300 hr/yr in accordance with §60.482-1(e), a

description of the conditions under which the equipment is in VOC service, and rationale supporting the designation that it is in VOC service less than 300 hr/yr.

- (f) The following information pertaining to all valves subject to the requirements of 40 CFR 60.482–7(g) and (h) and to all pumps subject to the requirements of 40 CFR 60.482–2(g) shall be recorded in a log that is kept in a readily accessible location:
 - (1) A list of identification numbers for valves and pumps that are designated as unsafe-to-monitor, an explanation for each valve or pump stating why the valve or pump is unsafe-to-monitor, and the plan for monitoring each valve or pump.
 - (2) A list of identification numbers for valves that are designated as difficult-to-monitor, an explanation for each valve stating why the valve is difficult-to-monitor, and the schedule for monitoring each valve.
 - (g) The following information shall be recorded for valves complying with 40 CFR 60.483–2:
 - (1) A schedule of monitoring.
 - (2) The percent of valves found leaking during each monitoring period.
 - (h) The following information shall be recorded in a log that is kept in a readily accessible location:
 - (1) Design criterion required in 40 CFR 60.482–2(d)(5) and 60.482–3(e)(2) and explanation of the design criterion; and
 - (2) Any changes to this criterion and the reasons for the changes.
 - (i) The following information shall be recorded in a log that is kept in a readily accessible location for use in determining exemptions as provided in 40 CFR 60.480(d):
 - (1) An analysis demonstrating the design capacity of the affected facility,
 - (2) A statement listing the feed or raw materials and products from the affected facilities and an analysis demonstrating whether these chemicals are heavy liquids or beverage alcohol, and
 - (3) An analysis demonstrating that equipment is not in VOC service.
 - (j) Information and data used to demonstrate that a piece of equipment is not in VOC service shall be recorded in a log that is kept in a readily accessible location.
 - (k) The provisions of 40 CFR 60.7 (b) and (d) do not apply to affected facilities subject to this subpart.
- (9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)

38. **Reporting Requirements** – The permittee shall comply with requirements in 40 CFR 60.487, as follows:

- (a) Each owner or operator subject to the provisions of this subpart shall submit semiannual reports to the Administrator beginning six months after the initial startup date.
- (b) The initial semiannual report to the Administrator shall include the following information:
 - (1) Process unit identification.
 - (2) Number of valves subject to the requirements of 40 CFR 60.482-7, excluding those valves designated for no detectable emissions under the provisions of 40 CFR 60.482-7(f).
 - (3) Number of pumps subject to the requirements of 40 CFR 60.482-2, excluding those pumps designated for no detectable emissions under the provisions of 40 CFR 60.482-2(e) and those pumps complying with 40 CFR 60.482-2(f).
 - (4) Number of compressors subject to the requirements of 40 CFR 60.482-3, excluding those compressors designated for no detectable emissions under the provisions of 40 CFR 60.482-3(i) and those compressors complying with 40 CFR 60.482-3(h).
- (c) All semiannual reports to the Administrator shall include the following information, summarized from the information in 40 CFR 60.486:
 - (1) Process unit identification.
 - (2) For each month during the semiannual reporting period,
 - (i) Number of valves for which leaks were detected as described in 40 CFR 60.482-7(b) or 40 CFR 60.483-2,
 - (ii) Number of valves for which leaks were not repaired as required in 40 CFR 60.482-7(d)(1),
 - (iii) Number of pumps for which leaks were detected as described in 40 CFR 60.482-2(b), (d)(4)(ii)(A) or (B), or (d)(5)(iii),
 - (iv) Number of pumps for which leaks were not repaired as required in 40 CFR 60.482-2(c)(1) and (d)(6),
 - (v) Number of compressors for which leaks were detected as described in 40 CFR 60.482-3(f),
 - (vi) Number of compressors for which leaks were not repaired as required in 40 CFR 60.482-3(g)(1), and
 - (vii) The facts that explain each delay of repair and, where appropriate, why a process unit shutdown was technically infeasible.
 - (3) Dates of process unit shutdowns which occurred within the semiannual reporting period.
 - (4) Revisions to items reported according to (b) of this condition if changes have occurred since the initial report or subsequent revisions to the initial report.

- (d) An owner or operator electing to comply with the provisions of 40 CFR 60.483–1 or 60.483–2 shall notify the Administrator of the alternative standard selected 90 days before implementing either of the provisions.
 - (e) An owner or operator shall report the results of all performance tests in accordance with 40 CFR 60.8 of the General Provisions. The provisions of 40 CFR 60.8(d) do not apply to affected facilities subject to the provisions of this subpart except that an owner or operator must notify the Administrator of the schedule for the initial performance tests at least 30 days before the initial performance tests.
 - (f) The requirements of (a) through (c) of this condition remain in force until and unless EPA, in delegating enforcement authority to a State under section 111(c) of the Act, approves reporting requirements or an alternative means of compliance surveillance adopted by such State. In that event, affected sources within the State will be relieved of the obligation to comply with the requirements of paragraphs (a) through (c) of 40 CFR 60.487, provided that they comply with the requirements established by the State.
- (9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)

REQUIREMENTS OF NSPS SUBPART VVa - Standards of Performance for Equipment Leaks of Volatile Organic Compounds (VOC) in the Synthetic Organic Chemical Manufacturing Industry (SOCMI)

- 39. **General** – The permittee shall comply with the requirements of 40 CFR 60.482-1a through 60.482-10a or 40 CFR 60.480a(e) of NSPS Subpart VVa for all applicable equipment.
(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)
- 40. **General** – Compliance with the applicable requirements of 40 CFR 60.482-1a to 60.482-10a shall be determined by review of records and reports, review of performance test results, and inspection using the methods and procedures specified in 40 CFR 60.485a.
(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)
- 41. **General** – Equipment in vacuum service is excluded from the applicable requirements of 40 CFR 60.482-2a through 482-10a if it is identified as such, as required in 40 CFR 60.486a(e)(5).
(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)
- 42. **General** - Equipment that an owner or operator designates as being in VOC service less than 300 hours (hr)/yr is excluded from the requirements of 40 CFR 60.482–2a through 60.482–11a if it is identified as required in 40 CFR 60.486a(e)(6) and it meets any of the conditions specified in (a) through (c) of this condition.
 - (a) The equipment is in VOC service only during startup and shutdown, excluding startup and shutdown between batches of the same campaign for a batch process.

- (b) The equipment is in VOC service only during process malfunctions or other emergencies.
 - (c) The equipment is backup equipment that is in VOC service only when the primary equipment is out of service.
(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)
43. **General** – The permittee may request a determination of equivalence of a means of emission limitation to the requirements of 40 CFR 60.482-2a, 482-3a, 482-5a, 482-6a, 482-7a, 482-8a, and 482-10a as provided in 40 CFR 60.484a.
(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)
44. **General** - If the storage vessel is shared with multiple process units, the process unit with the greatest annual amount of stored materials (predominant use) is the process unit the storage vessel is assigned to. If the storage vessel is shared equally among process units, and one of the process units has equipment subject to 40 CFR 60, Subpart VVa, the storage vessel is assigned to that process unit. If the storage vessel is shared equally among process units, none of which have equipment subject to 40 CFR 60, VVa, the storage vessel is assigned to any process unit subject to 40 CFR 60, Subpart VV. If the predominant use of the storage vessel varies from year to year, then the owner or operator must estimate the predominant use initially and reassess every 3 years. The owner or operator must keep records of the information and supporting calculations that show how predominant use is determined. All equipment on the storage vessel must be monitored when in VOC service.
(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)
45. **Light Liquid Service Pumps** – The permittee shall comply with requirements in 40 CFR 60.482-2a as follows:
- (a) (1) Pumps used in light liquid service shall be monitored monthly to detect leaks by the methods specified in 40 CFR 485a(b), except as provided in 40 CFR 60.482-1a(c) and (f) and paragraphs (d), (e), and (f) in 40 CFR 60.482-2a. A pump that begins operation in light liquid service after the initial startup date for the process unit must be monitored for the first time within 30 days after the end of its startup period, except for a pump that replaces a leaking pump and except as provided in §60.482-1a(c) and (d), (e), and (f) of this condition.
 - (2) Each pump in light liquid service shall be checked by visual inspection each calendar week for indications of liquids dripping from the pump seal.
- (b) (1) (i) If an instrument reading of 5,000 ppm or greater is measured for pumps handling polymerizing monomers, a leak is detected.
 - (ii) If an instrument reading of 2,000 ppm or greater is measured for all other pumps, a leak is detected.

- (2) If there are indications of liquids dripping from the pump seal, the owner or operator shall follow the procedure specified in either (i) or (ii) below. This requirement does not apply to a pump that was monitored after a previous weekly inspection and the instrument reading was less than the concentration specified in (b)(1)(i) or (ii) of this condition, whichever is applicable.
 - (i) Monitor the pump within 5 days as specified in §60.485a(b). A leak is detected if the instrument reading measured during monitoring indicates a leak as specified in (b)(1)(i) or (ii) of this condition, whichever is applicable. The leak shall be repaired using the procedures in (c) of this condition.
 - (ii) Designate the visual indications of liquids dripping as a leak, and repair the leak using either the procedures in (c) of this condition or by eliminating the visual indications of liquids dripping.
- (c)
 - (1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in 40 CFR 60.482-9a.
 - (2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected. First attempts at repair include, but are not limited to, the practices described in (i) and (ii) below, where practicable:
 - (i) Tightening the packing gland nuts;
 - (ii) Ensuring that the seal flush is operating at design pressure and temperature.
- (d) Each pump equipped with a dual mechanical seal system that includes a barrier fluid system is exempt from the requirements of (a) of this condition, provided the following requirements are met:
 - (1) Each dual mechanical seal system is—
 - (i) Operated with the barrier fluid at a pressure that is at all times greater than the pump stuffing box pressure; or
 - (ii) Equipped with a barrier fluid degassing reservoir that is routed to a process or fuel gas system or connected by a closed vent system to a control device that complies with the requirements of 40 CFR 60.482-10a; or
 - (iii) Equipped with a system that purges the barrier fluid into a process stream with zero VOC emissions to the atmosphere.
 - (2) The barrier fluid system is in heavy liquid service or is not in VOC service.
 - (3) Each barrier fluid system is equipped with a sensor that will detect failure of the seal system, the barrier fluid system, or both.
 - (4)
 - (i) Each pump is checked by visual inspection, each calendar week, for indications of liquids dripping from the pump seals.

- (ii) If there are indications of liquids dripping from the pump seal at the time of the weekly inspection, the owner or operator shall follow the procedure specified in either (A) or (B) below prior to the next required inspection:
 - (A) Monitor the pump within 5 days as specified in §60.485a(b) to determine if there is a leak of VOC in the barrier fluid. If an instrument reading of 2,000 ppm or greater is measured, a leak is detected.
 - (B) Designate the visual indications of liquids dripping as a leak.
- (5) (i) Each sensor as described in (3) is checked daily or is equipped with an audible alarm, and
 - (ii) The owner or operator determines, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.
 - (iii) If the sensor indicates failure of the seal system, the barrier fluid system, or both based on the criterion determined in (5)(ii) of this condition, a leak is detected.
- (6) (i) When a leak is detected pursuant to (d)(4)(ii)(A) of this condition, it shall be repaired as specified in (c) of this condition.
 - (ii) A leak detected pursuant to (d)(5)(iii) of this condition shall be repaired within 15 days of detection by eliminating the conditions that activated the sensor.
 - (iii) A designated leak pursuant to (d)(4)(ii)(B) of this condition shall be repaired within 15 days of detection by eliminating visual indications of liquids dripping.
- (e) Any pump that is designated, as described in 40 CFR 60.486a(e)(1) and (2), for no detectable emission, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of (a), (c), and (d) of this condition if the pump:
 - (1) Has no externally actuated shaft penetrating the pump housing,
 - (2) Is demonstrated to be operating with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background as measured by the methods specified in 40 CFR 60.485a(c), and
 - (3) Is tested for compliance with (e)(2) of this condition initially upon designation, annually, and at other times requested by the Administrator.
- (f) If any pump is equipped with a closed vent system capable of capturing and transporting any leakage from the seal or seals to a process or to a fuel gas system or to a control device that complies with the requirements of 40 CFR 60.482-10a, it is exempt from (a) through (e) of this condition.

- (g) Any pump that is designated, as described in 40 CFR 60.486a(f)(1), as an unsafe-to-monitor pump is exempt from the monitoring and inspection requirements of (a) and (d)(4) through (6) of this condition if:
 - (1) The owner or operator of the pump demonstrates that the pump is unsafe-to-monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with (a) of this condition; and
 - (2) The owner or operator of the pump has a written plan that requires monitoring of the pump as frequently as practicable during safe-to-monitor times but not more frequently than the periodic monitoring schedule otherwise applicable, and repair of the equipment according to the procedures in (c) of this condition if a leak is detected.
 - (h) Any pump that is located within the boundary of an unmanned plant site is exempt from the weekly visual inspection requirement of (a)(2) and (d)(4) of this condition, and the daily requirements of (d)(5) of this condition, provided that each pump is visually inspected as often as practicable and at least monthly.
(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)
46. **Compressors** – The permittee shall comply with requirements in 40 CFR 60.482-3a, as follows:
- (a) Each compressor shall be equipped with a seal system that includes a barrier fluid system and that prevents leakage of VOC to the atmosphere, except as provided in 40 CFR 60.482-1a(c) and paragraph (h), (i), and (j) of 40 CFR 60.482-3a.
 - (b) Each compressor seal system as required in (a) of this condition shall be:
 - (1) Operated with the barrier fluid at a pressure that is greater than the compressor stuffing box pressure; or
 - (2) Equipped with a barrier fluid system degassing reservoir that is routed to a process or fuel gas system or connected by a closed vent system to a control device that complies with the requirements of 40 CFR 60.482-10a; or
 - (3) Equipped with a system that purges the barrier fluid into a process stream with zero VOC emissions to the atmosphere.
 - (c) The barrier fluid system shall be in heavy liquid service or shall not be in VOC service.
 - (d) Each barrier fluid system as described in (a) of this condition shall be equipped with a sensor that will detect failure of the seal system, barrier fluid system, or both.
 - (e) (1) Each sensor as required in (d) of this condition shall be checked daily or shall be equipped with an audible alarm.
 - (2) The owner or operator shall determine, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.

- (f) If the sensor indicates failure of the seal system, the barrier system, or both based on the criterion determined under (e)(2) of this condition, a leak is detected.
 - (g) (1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in 40 CFR 60.482-9a.
(2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.
 - (h) A compressor is exempt from the requirements of (a) and (b) of this condition, if it is equipped with a closed vent system to capture and transport leakage from the compressor drive shaft back to a process or fuel gas system or to a control device that complies with the requirements of 40 CFR 60.482-10a, except as provided in (i) of this condition.
 - (i) Any compressor that is designated, as described in 40 CFR 60.486a(e) (1) and (2), for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of (a)-(h) of this condition if the compressor:
 - (1) Is demonstrated to be operating with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the methods specified in 40 CFR 60.485a(c); and
 - (2) Is tested for compliance with (i)(1) of this condition initially upon designation, annually, and at other times requested by the Administrator.
 - (j) Any existing reciprocating compressor in a process unit which becomes an affected facility under provisions of 40 CFR 60.14 or 40 CFR 60.15 is exempt from 40 CFR 60.482-3a(a) through (e), and (h), provided the owner or operator demonstrates that recasting the distance piece or replacing the compressor are the only options available to bring the compressor into compliance with the provisions of (a) through (e) and (h).
- (9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)

47. Pressure Relief Devices for Gas/Vapor Service – The permittee shall comply with the VOC leak-detection and monitoring requirements in 40 CFR 60.482-4a as follows:

- (a) Except during pressure releases, each pressure relief device in gas/vapor service shall be operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as determined by the methods specified in 40 CFR 60.485a(c).
- (b) (1) After each pressure release, the pressure relief device shall be returned to a condition of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as soon as practicable, but no later than 5 calendar days after the pressure release, except as provided in 40 CFR 60.482-9a.
(2) No later than 5 calendar days after the pressure release, the pressure relief device shall be monitored to confirm the conditions of no detectable emissions, as indicated

by an instrument reading of less than 500 ppm above background, by the methods specified in 40 CFR 60.485a(c).

- (c) Any pressure relief device that is routed to a process or fuel gas system or equipped with a closed vent system capable of capturing and transporting leakage through the pressure relief device to a control device as described in 40 CFR 60.482-10a is exempted from the requirements of (a) and (b) of this condition.
- (d) (1) Any pressure relief device that is equipped with a rupture disk upstream of the pressure relief device is exempt from the requirements of (a) and (b) of this condition, provided the owner or operator complies with the requirements in paragraph (d)(2) of 40 CFR 60.482-4a.
 - (2) After each pressure release, a new rupture disk shall be installed upstream of the pressure relief device as soon as practicable, but no later than 5 calendar days after each pressure release, except as provided in 40 CFR 60.482-9a.

(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)

48. **Sampling Connection Systems** - The permittee shall comply with the VOC leak-detection and monitoring requirements in 40 CFR 60.482-5a for sampling connection systems as follows:

- (a) Each sampling connection system shall be equipped with a closed-purged, closed-loop, or closed-vent system, except as provided in 40 CFR 60.482-1a(c) and (c) of this condition.
- (b) Each closed-purge, closed-loop, or closed-vent system as required in (a) of this condition shall comply with the requirements specified in (b)(1) through (4) of this condition:
 - (1) Gases displaced during filling of the sample container are not required to be collected or captured.
 - (2) Containers that are part of a closed-purge system must be covered or closed when not being filled or emptied.
 - (3) Gases remaining in the tubing or piping between the closed-purge system valve(s) and sample container valve(s) after the valves are closed and the sample container is disconnected are not required to be collected or captured.
 - (4) Each closed-purge, closed-loop, or closed-vent system shall be designed and operated to meet requirements in either (b)(4)(i), (ii), (iii), or (iv) of this condition.
 - (i) Return the purged process fluid directly to the process line.
 - (ii) Collect and recycle the purged process fluid to a process.
 - (iii) Capture and transport all the purged process fluid to a control device that complies with the requirements of 40 CFR 60.482-10a.
 - (iv) Collect, store, and transport the purged process fluid to any of the following systems or facilities:

- (A) A waste management unit as defined in 40 CFR 63.111, if the waste management unit is subject to, and operated in compliance with the provisions of 40 CFR Part 63, subpart G, applicable to Group 1 wastewater streams;
- (B) A treatment, storage, or disposal facility subject to regulation under 40 CFR part 262, 264, 265, or 266;
- (C) A facility permitted, licensed, or registered by a State to manage municipal or industrial solid waste, if the process fluids are not hazardous waste as defined in 40 CFR part 261;
- (D) A waste management unit subject to and operated in compliance with the treatment requirements of §61.348(a), provided all waste management units that collect, store, or transport the purged process fluid to the treatment unit are subject to and operated in compliance with the management requirements of 40 CFR 61.343 through 61.347; or
- (E) A device used to burn off-specification used oil for energy recovery in accordance with 40 CFR part 279, subpart G, provided the purged process fluid is not hazardous waste as defined in 40 CFR part 261.

(c) In-situ sampling systems and sampling systems without purges are exempt from the requirements of (a) and (b) of this condition.

(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)

49. **Open-Ended Valves/Lines** - The permittee shall comply with the VOC leak-detection and monitoring requirements in 40 CFR 60.482-6a for open-ended valves or lines, as follows:

- (a) (1) Each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve, except as provided in 40 CFR 60.482-1a(c) and (d) and (e) of this condition.
 - (2) The cap, blind flange, plug, or second valve shall seal the open end at all times except during operations requiring process fluid flow through the open-ended valve or line.
- (b) Each open-ended valve or line equipped with a second valve shall be operated in a manner such that the valve on the process fluid end is closed before the second valve is closed.
- (c) When a double block-and-bleed system is being used, the bleed valve or line may remain open during operations that require venting the line between the block valves but shall comply with (a) of this condition at all other times.
- (d) Open-ended valves or lines in an emergency shutdown system which are designed to open automatically in the event of a process upset are exempt from the requirements of (a), (b) and (c) of this condition.

- (e) Open-ended valves or lines containing materials which would autocatalytically polymerize or would present an explosion, serious overpressure, or other safety hazard if capped or equipped with a double block and bleed system as specified in (a) through (c) of this condition are exempt from the requirements of (a) through (c) of this condition.

(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)

50. **Valves** - The permittee shall comply with the VOC leak-detection and monitoring requirements in 40 CFR 60.482-7a for valves in gas/vapor service and light liquid service, as follows:

- (a) (1) Each valve shall be monitored monthly to detect leaks by the methods specified in 40 CFR 60.485a(b) and shall comply with (b) through (e) of this condition, except as provided in (f), (g), and (h) of this condition, 40 CFR 60.482-1a(c) and (f), 40 CFR 60.483-1a and 60.483-2a.
- (2) A valve that begins operation in gas/vapor service or light liquid service after the initial startup date for the process unit must be monitored according to (a)(2)(i) or (ii), except for a valve that replaces a leaking valve and except as provided in (f), (g), and (h) of this condition, 40 CFR 60.482-1(c), and 40 CFR 60.483-1a and 60.483-2a.
 - (i) Monitor the valve as in (a)(1) of this condition. The valve must be monitored for the first time within 30 days after the end of its startup period to ensure proper installation.
 - (ii) If the existing valves on the process unit are monitored in accordance with 40 CFR 60.483-1a or 60.483-2a, count the new valve as leaking when calculating the percentage of valves leaking as described in 40 CFR 60.483-2a(b)(5). If less than 2.0 percent of the valves are leaking for that process unit, the valve must be monitored for the first time during the next scheduled monitoring event for existing valves in the process unit or within 90 days, whichever comes first.
- (b) If an instrument reading of 500 ppm or greater is measured, a leak is detected.
- (c) (1)(i) Any valve for which a leak is not detected for 2 successive months may be monitored the first month of every quarter, beginning with the next quarter, until a leak is detected.
 - (ii) As an alternative to monitoring all of the valves in the first month of a quarter, an owner or operator may elect to subdivide the process unit into 2 or 3 subgroups of valves and monitor each subgroup in a different month during the quarter, provided each subgroup is monitored every 3 months. The owner or operator must keep records of the valves assigned to each subgroup.
- (2) If a leak is detected, the valve shall be monitored monthly until a leak is not detected for 2 successive months.
- (d) (1) When a leak is detected, it shall be repaired as soon as practicable, but no later than 15 calendar days after the leak is detected, except as provided in 40 CFR 60.482-9a.

- (2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.
- (e) First attempts at repair include, but are not limited to, the following best practices where practicable:
 - (1) Tightening of bonnet bolts;
 - (2) Replacement of bonnet bolts;
 - (3) Tightening of packing gland nuts;
 - (4) Injection of lubricant into lubricated packing.
- (f) Any valve that is designated, as described in 40 CFR 60.486a(e)(2), for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of (a) of this condition if the valve:
 - (1) Has no external actuating mechanism in contact with the process fluid,
 - (2) Is operated with emissions less than 500 ppm above background as determined by the method specified in 40 CFR 60.485a(c), and
 - (3) Is tested for compliance with (f)(2) of this condition initially upon designation, annually, and at other times requested by the Administrator.
- (g) Any valve that is designated, as described in 40 CFR 60.486a(f)(1), as an unsafe-to-monitor valve is exempt from the requirements of (a) of this condition if:
 - (1) The owner or operator of the valve demonstrates that the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with (a) of this condition, and
 - (2) The owner or operator of the valve adheres to a written plan that requires monitoring of the valve as frequently as practicable during safe-to-monitor times.
- (h) Any valve that is designated, as described in 40 CFR 60.486a(f)(2), as a difficult-to-monitor valve is exempt from the requirements of (a) of this condition if:
 - (1) The owner or operator of the valve demonstrates that the valve cannot be monitored without elevating the monitoring personnel more than 2 meters above a support surface.
 - (2) The process unit within which the valve is located either:
 - (i) Becomes an affected facility through 40 CFR 60.14 or 40 CFR 60.15 and was constructed on or before January 5, 1981; or
 - (ii) Has less than 3.0 percent of the total number of valves as difficult-to-monitor by the owner or operator,

(3) The owner or operator of the valve follows a written plan that requires monitoring of the valve at least once per calendar year.

(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)

51. **Light Liquid/Heavy Liquid Service** - The permittee shall comply with the VOC leak-detection and monitoring requirements in 40 CFR 60.482-8a for pumps, valves, and connectors in heavy liquid service and pressure-relief devices in light liquid or heavy liquid service as follows:

(a) If evidence of a potential leak is found by visual, audible, olfactory, or any other detection method at pumps, valves and connectors in heavy liquid service and pressure relief devices in light liquid or heavy liquid service, the owner or operator shall follow either one of the following procedures:

(1) The owner or operator shall monitor the equipment within 5 days by the method specified in 40 CFR 60.485a(b) and shall comply with the requirements of (b) through (d) of this condition.

(2) The owner or operator shall eliminate the visual, audible, olfactory, or other indication of a potential leak within 5 calendar days of detection.

(b) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(c) (1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in 40 CFR 60.482-9a.

(2) The first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(d) First attempts at repair include, but are not limited to, the best practices described under 40 CFR 60.482-2a(c)(2) and 40 CFR 60.482-7a(e).

(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)

52. **Delay of Repair** - The permittee can elect to delay repair of VOC-leaking equipment in accordance with the requirements in 40 CFR 60.482-9a, as follows:

(a) Delay of repair of equipment for which leaks have been detected shall be allowed if repair within 15 days is technically infeasible without a process unit shutdown. Repair of this equipment shall occur before the end of the next process unit shutdown. Monitoring to verify repair must occur within 15 days after startup of the process unit.

(b) Delay of repair of equipment shall be allowed for equipment which is isolated from the process and which does not remain in VOC service.

(c) Delay of repair for valves shall be allowed if:

- (1) The owner or operator demonstrates that emissions of purged material resulting from immediate repair are greater than the fugitive emissions likely to result from delay of repair, and
 - (2) When repair procedures are effected, the purged material is collected and destroyed or recovered in a control device complying with 40 CFR 60.482-10a.
- (d) Delay of repair for pumps shall be allowed if:
- (1) Repair requires the use of a dual mechanical seal system that includes a barrier fluid system, and
 - (2) Repair is completed as soon as practicable, but not later than 6 months after the leak was detected.
- (e) Delay of repair beyond a process unit shutdown shall be allowed for a valve, if valve assembly replacement is necessary during the process unit shutdown, valve assembly supplies have been depleted, and valve assembly supplies had been sufficiently stocked before the supplies were depleted. Delay of repair beyond the next process unit shutdown will not be allowed unless the next process unit shutdown occurs sooner than 6 months after the first process unit shutdown.
- (f) When delay of repair is allowed for a leaking pump, valve, or connector that remains in service, the pump, valve, or connector may be considered to be repaired and no longer subject to delay of repair requirements if two consecutive monthly monitoring instrument readings are below the leak definition.
- (9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)
53. **Closed Vent System and Control Devices** - The permittee shall meet the VOC leak-detection and monitoring requirements in 40 CFR 60.482-10a for VOC leaks in closed vent systems and control devices, as follows:
- (a) Owners or operators of closed vent systems and control devices used to comply with provisions of Subpart VVa shall comply with the provisions of this condition.
 - (b) Vapor recovery systems (for example, condensers and absorbers) shall be designed and operated to recover the VOC emissions vented to them with an efficiency of 95 percent or greater, or to an exit concentration of 20 parts per million by volume (ppmv), whichever is less stringent.
 - (c) Enclosed combustion devices shall be designed and operated to reduce the VOC emissions vented to them with an efficiency of 95 percent or greater, or to an exit concentration of 20 ppmv, on a dry basis, corrected to 3 percent oxygen, whichever is less stringent or to provide a minimum residence time of 0.75 seconds at a minimum temperature of 816 °C.
 - (d) Flares used to comply with this subpart shall comply with the requirements of 40 CFR 60.18.

- (e) Owners or operators of control devices used to comply with the provisions of Subpart VVa shall monitor these control devices to ensure that they are operated and maintained in conformance with their designs.
- (f) Except as provided in (i) through (k) of this condition, each closed vent system shall be inspected according to the procedures and schedule specified in (f)(1) and (f)(2) of this condition.
 - (1) If the vapor collection system or closed vent system is constructed of hard-piping, the owner or operator shall comply with the requirements specified in (f)(1)(i) and (f)(1)(ii) of this condition:
 - (i) Conduct an initial inspection according to the procedures in 40 CFR 60.485a(b); and
 - (ii) Conduct annual visual inspections for visible, audible, or olfactory indications of leaks.
 - (2) If the vapor collection system or closed vent system is constructed of ductwork, the owner or operator shall:
 - (i) Conduct an initial inspection according to the procedures in 40 CFR 60.485a(b); and
 - (ii) Conduct annual inspections according to the procedures in 40 CFR 60.485a(b).
- (g) Leaks, as indicated by an instrument reading greater than 500 ppmv above background or by visual inspections, shall be repaired as soon as practicable except as provided in (h) of this condition.
 - (1) A first attempt at repair shall be made no later than 5 calendar days after the leak is detected.
 - (2) Repair shall be completed no later than 15 calendar days after the leak is detected.
- (h) Delay of repair of a closed vent system for which leaks have been detected is allowed if the repair is technically infeasible without a process unit shutdown or if the owner or operator determines that emissions resulting from immediate repair would be greater than the fugitive emissions likely to result from delay of repair. Repair of such equipment shall be complete by the end of the next process unit shutdown.
- (i) If a vapor collection system or closed vent system is operated under a vacuum, it is exempt from the inspection requirements of (f)(1)(i) and (f)(2) of this condition.
- (j) Any parts of the closed vent system that are designated, as described in (l)(1) of this condition, as unsafe to inspect are exempt from the inspection requirements of (f)(1)(i) and (f)(2) of this condition if they comply with the requirements specified in (j)(1) and (j)(2) of this condition:

- (1) The owner or operator determines that the equipment is unsafe to inspect because inspecting personnel would be exposed to an imminent or potential danger as a consequence of complying with (f)(1)(i) or (f)(2) of this condition; and
 - (2) The owner or operator has a written plan that requires inspection of the equipment as frequently as practicable during safe-to-inspect times.
- (k) Any parts of the closed vent system that are designated, as described in (l)(2) of this condition, as difficult to inspect are exempt from the inspection requirements of (f)(1)(i) and (f)(2) of this condition if they comply with the requirements specified in (k)(1) through (k)(3) of this condition:
- (1) The owner or operator determines that the equipment cannot be inspected without elevating the inspecting personnel more than 2 meters above a support surface; and
 - (2) The process unit within which the closed vent system is located becomes an affected facility through 40 CFR 60.14 or 60.15, or the owner or operator designates less than 3.0 percent of the total number of closed vent system equipment as difficult to inspect; and
 - (3) The owner or operator has a written plan that requires inspection of the equipment at least once every 5 years. A closed vent system is exempt from inspection if it is operated under a vacuum.
- (l) The owner or operator shall record the information specified in (l)(1) through (l)(5) of this condition.
- (1) Identification of all parts of the closed vent system that are designated as unsafe to inspect, an explanation of why the equipment is unsafe to inspect, and the plan for inspecting the equipment.
 - (2) Identification of all parts of the closed vent system that are designated as difficult to inspect, an explanation of why the equipment is difficult to inspect, and the plan for inspecting the equipment.
 - (3) For each inspection during which a leak is detected, a record of the information specified in 40 CFR 60.486a(c).
 - (4) For each inspection conducted in accordance with 40 CFR 60.485a(b) during which no leaks are detected, a record that the inspection was performed, the date of the inspection, and a statement that no leaks were detected.
 - (5) For each visual inspection conducted in accordance with (f)(1)(ii) of this condition during which no leaks are detected, a record that the inspection was performed, the date of the inspection, and a statement that no leaks were detected.
- (m) Closed vent systems and control devices used to comply with provisions of Subpart VVa shall be operated at all times when emissions may be vented to them.
- (9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)

54. **Closed Vent System and Control Devices** - The permittee shall meet the VOC leak-detection and monitoring requirements in 40 CFR 60.482-11a for VOC leaks in connectors in gas/vapor service in light liquid service, as follows:
- (a) The owner or operator shall initially monitor all connectors in the process unit for leaks by the later of either 12 months after the compliance date or 12 months after initial startup. If all connectors in the process unit have been monitored for leaks prior to the compliance date, no initial monitoring is required provided either no process changes have been made since the monitoring or the owner or operator can determine that the results of the monitoring, with or without adjustments, reliably demonstrate compliance despite process changes. If required to monitor because of a process change, the owner or operator is required to monitor only those connectors involved in the process change.
 - (b) Except as allowed in 40 CFR 60.482-1a(c), 40 CFR 60.482-10a, or as specified in (e) of this condition, the owner or operator shall monitor all connectors in gas and vapor and light liquid service as specified in (a) and (b)(3) of this condition.
 - (1) The connectors shall be monitored to detect leaks by the method specified in 40 CFR 60.485a(b) and, as applicable, 40 CFR 60.485a(c).
 - (2) If an instrument reading greater than or equal to 500 ppm is measured, a leak is detected.
 - (3) The owner or operator shall perform monitoring, subsequent to the initial monitoring required in (a) of this condition, as specified in (b)(3)(i) through (iii) of this condition, and shall comply with the requirements of (b)(3)(iv) and (v) of this condition. The required period in which monitoring must be conducted shall be determined from (b)(3)(i) through (iii) of this condition using the monitoring results from the preceding monitoring period. The percent leaking connectors shall be calculated as specified in (c) of this condition.
 - (i) If the percent leaking connectors in the process unit was greater than or equal to 0.5 percent, then monitor within 12 months (1 year).
 - (ii) If the percent leaking connectors in the process unit was greater than or equal to 0.25 percent but less than 0.5 percent, then monitor within 4 years. An owner or operator may comply with the requirements of this paragraph by monitoring at least 40 percent of the connectors within 2 years of the start of the monitoring period, provided all connectors have been monitored by the end of the 4-year monitoring period.
 - (iii) If the percent leaking connectors in the process unit was less than 0.25 percent, then monitor as provided in (b)(3)(iii)(A) of this condition and either (b)(3)(iii)(B) or (b)(3)(iii)(C) of this condition, as appropriate.
 - (A) An owner or operator shall monitor at least 50 percent of the connectors within 4 years of the start of the monitoring period.

- (B) If the percent of leaking connectors calculated from the monitoring results in (b)(3)(iii)(A) of this condition is greater than or equal to 0.35 percent of the monitored connectors, the owner or operator shall monitor as soon as practical, but within the next 6 months, all connectors that have not yet been monitored during the monitoring period. At the conclusion of monitoring, a new monitoring period shall be started pursuant to (b)(3) of this condition, based on the percent of leaking connectors within the total monitored connectors.
- (C) If the percent of leaking connectors calculated from the monitoring results in (b)(3)(iii)(A) of this condition is less than 0.35 percent of the monitored connectors, the owner or operator shall monitor all connectors that have not yet been monitored within 8 years of the start of the monitoring period.
- (iv) If, during the monitoring conducted pursuant to (b)(3)(i) through (iii) of this condition, a connector is found to be leaking, it shall be re-monitored once within 90 days after repair to confirm that it is not leaking.
- (v) The owner or operator shall keep a record of the start date and end date of each monitoring period under this section for each process unit.
- (c) For use in determining the monitoring frequency, as specified in (a) and (b)(3) of this condition, the percent leaking connectors as used in (a) and (b)(3) of this condition shall be calculated by using the following equation:

$$\%CL = CL / C_t * 100$$

Where:

%CL= Percent of leaking connectors as determined through periodic monitoring required in (a) and (b)(3)(i) through (iii) of this condition.

CL= Number of connectors measured at 500 ppm or greater, by the method specified in 40 CFR 60.485a(b).

C_t= Total number of monitored connectors in the process unit or affected facility.

- (d) When a leak is detected pursuant to (a) and (b) of this condition, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in 40 CFR 60.482-9a. A first attempt at repair as defined in Subpart VVa shall be made no later than 5 calendar days after the leak is detected.
- (e) Any connector that is designated, as described in 40 CFR 60.486a(f)(1), as an unsafe-to-monitor connector is exempt from the requirements of (a) and (b) of this condition if:
- (1) The owner or operator of the connector demonstrates that the connector is unsafe-to-monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with (a) and (b) of this condition; and

- (2) The owner or operator of the connector has a written plan that requires monitoring of the connector as frequently as practicable during safe-to-monitor times but not more frequently than the periodic monitoring schedule otherwise applicable, and repair of the equipment according to the procedures in (d) of this condition if a leak is detected.
- (f) Inaccessible, ceramic, or ceramic-lined connectors:
- (1) Any connector that is inaccessible or that is ceramic or ceramic-lined (e.g., porcelain, glass, or glass-lined), is exempt from the monitoring requirements of (a) and (b) of this condition, from the leak repair requirements of (d) of this condition, and from the recordkeeping and reporting requirements of 40 CFR 63.1038 and 40 CFR 63.1039. An inaccessible connector is one that meets any of the provisions specified in (f)(1)(i) through (vi) of this condition, as applicable:
- (i) Buried;
 - (ii) Insulated in a manner that prevents access to the connector by a monitor probe;
 - (iii) Obstructed by equipment or piping that prevents access to the connector by a monitor probe;
 - (iv) Unable to be reached from a wheeled scissor-lift or hydraulic-type scaffold that would allow access to connectors up to 7.6 meters (25 feet) above the ground;
 - (v) Inaccessible because it would require elevating the monitoring personnel more than 2 meters (7 feet) above a permanent support surface or would require the erection of scaffold; or
 - (vi) Not able to be accessed at any time in a safe manner to perform monitoring. Unsafe access includes, but is not limited to, the use of a wheeled scissor-lift on unstable or uneven terrain, the use of a motorized man-lift basket in areas where an ignition potential exists, or access would require near proximity to hazards such as electrical lines, or would risk damage to equipment.
- (2) If any inaccessible, ceramic, or ceramic-lined connector is observed by visual, audible, olfactory, or other means to be leaking, the visual, audible, olfactory, or other indications of a leak to the atmosphere shall be eliminated as soon as practical.
- (g) Except for instrumentation systems and inaccessible, ceramic, or ceramic-lined connectors meeting the provisions of (f) of this condition, identify the connectors subject to the requirements of this subpart. Connectors need not be individually identified if all connectors in a designated area or length of pipe subject to the provisions of this subpart are identified as a group, and the number of connectors subject is indicated.
- (9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)

55. **Alternative Standards for Valves** – The permittee shall meet the requirements of 40 CFR 483-1a if he elects the alternative standards for valves-allowable percentage of valves leaking, as follows:

- (a) An owner or operator may elect to comply with an allowable percentage of valves leaking of equal to or less than 2.0 percent.
- (b) The following requirements shall be met if an owner or operator wishes to comply with an allowable percentage of valves leaking:
 - (1) An owner or operator must notify the Administrator that the owner or operator has elected to comply with the allowable percentage of valves leaking before implementing this alternative standard, as specified in 40 CFR 60.487a(d).
 - (2) A performance test as specified in (c) of this condition shall be conducted initially upon designation, annually, and at other times requested by the Administrator.
 - (3) If a valve leak is detected, it shall be repaired in accordance with 40 CFR 60.482–7a(d) and (e).
- (c) Performance tests shall be conducted in the following manner:
 - (1) All valves in gas/vapor and light liquid service within the affected facility shall be monitored within 1 week by the methods specified in 40 CFR 60.485a(b).
 - (2) If an instrument reading of 500 ppm or greater is measured, a leak is detected.
 - (3) The leak percentage shall be determined by dividing the number of valves for which leaks are detected by the number of valves in gas/vapor and light liquid service within the affected facility.
- (d) Owners and operators who elect to comply with this alternative standard shall not have an affected facility with a leak percentage greater than 2.0 percent, determined as described in 40 CFR 60.485a(h).

(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)

56. **Alternative Standards for Valves** – The permittee shall meet the requirements of 40 CFR 483-2a if he elects the alternative standards for valves-skip period leak detection and repair, as follows:

- (a) (1) An owner or operator may elect to comply with one of the alternative work practices specified in (b)(2) and (3) of this condition.
 - (2) An owner or operator must notify the Administrator before implementing one of the alternative work practices, as specified in 40 CFR 60.487a(d).
- (b) (1) An owner or operator shall comply initially with the requirements for valves in gas/vapor service and valves in light liquid service, as described in 40 CFR 60.482–7a.
 - (2) After 2 consecutive quarterly leak detection periods with the percent of valves leaking equal to or less than 2.0, an owner or operator may begin to skip 1 of the quarterly leak detection periods for the valves in gas/vapor and light liquid service.

- (3) After 5 consecutive quarterly leak detection periods with the percent of valves leaking equal to or less than 2.0, an owner or operator may begin to skip 3 of the quarterly leak detection periods for the valves in gas/vapor and light liquid service.
- (4) If the percent of valves leaking is greater than 2.0, the owner or operator shall comply with the requirements as described in 40 CFR 60.482-7a but can again elect to use this condition.
- (5) The percent of valves leaking shall be determined as described in 40 CFR 60.485a(h).
- (6) An owner or operator must keep a record of the percent of valves found leaking during each leak detection period.
- (7) A valve that begins operation in gas/vapor service or light liquid service after the initial startup date for a process unit following one of the alternative standards in this section must be monitored in accordance with 40 CFR 60.482-7(a)(2)(i) or (ii) before the provisions of this section can be applied to that valve.

(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)

57. **Test Methods and Procedures** - The permittee shall use the test methods and procedures indicated in 40 CFR 60.485a for performance testing and for compliance with standards in Subpart VVa as follows:

- (a) In conducting the performance tests required in 40 CFR 60.8, the owner or operator shall use as reference methods and procedures the test methods in appendix A of this part or other methods and procedures as specified in this section, except as provided in 40 CFR 60.8(b).
- (b) The owner or operator shall determine compliance with the standards in 40 CFR 60.482-1a through 60.482-11a, 60.483a, and 60.484a as follows:
 - (1) Method 21 shall be used to determine the presence of leaking sources. The instrument shall be calibrated before use each day of its use by the procedures specified in Method 21 of 40 CFR 60 appendix A-7. The following calibration gases shall be used:
 - (i) Zero air (less than 10 ppm of hydrocarbon in air); and
 - (ii) A mixture of methane or n-hexane and air at a concentration no more than 2,000 ppm greater than the leak definition concentration of the equipment monitored. If the monitoring instrument's design allows for multiple calibration scales, then the lower scale shall be calibrated with a calibration gas that is no higher than 2,000 ppm above the concentration specified as a leak, and the highest scale shall be calibrated with a calibration gas that is approximately equal to 10,000 ppm. If only one scale on an instrument will be used during monitoring, the owner or operator need not calibrate the scales that will not be used during that day's monitoring.

- (c) The owner or operator shall determine compliance with the no detectable emission standards in 40 CFR 60.482–2a(e), 60.482–3a(i), 60.482–4a, 60.482–7a(f), and 60.482–10a(e) as follows:
- (1) The requirements of (b) of this condition shall apply.
 - (2) Method 21 of 40 CFR 60 appendix A-7 shall be used to determine the background level. All potential leak interfaces shall be traversed as close to the interface as possible. The arithmetic difference between the maximum concentration indicated by the instrument and the background level is compared with 500 ppm for determining compliance.
- (d) The owner or operator shall test each piece of equipment unless he demonstrates that a process unit is not in VOC service, i.e., that the VOC content would never be reasonably expected to exceed 10 percent by weight. For purposes of this demonstration, the following methods and procedures shall be used:
- (1) Procedures that conform to the general methods in ASTM E260–73, 91, or 96, E168–67, 77, or 92, E169–63, 77, or 93 (incorporated by reference—see 40 CFR 60.17) shall be used to determine the percent VOC content in the process fluid that is contained in or contacts a piece of equipment.
 - (2) Organic compounds that are considered by the Administrator to have negligible photochemical reactivity may be excluded from the total quantity of organic compounds in determining the VOC content of the process fluid.
 - (3) Engineering judgment may be used to estimate the VOC content, if a piece of equipment had not been shown previously to be in service. If the Administrator disagrees with the judgment, (d) (1) and (2) of this condition shall be used to resolve the disagreement.
- (e) The owner or operator shall demonstrate that a piece of equipment is in light liquid service by showing that all the following conditions apply:
- (1) The vapor pressure of one or more of the organic components is greater than 0.3 kPa at 20 °C (1.2 in. H₂O at 68 °F). Standard reference texts or ASTM D2879–83, 96, or 97 (incorporated by reference—see 40 CFR 60.17) shall be used to determine the vapor pressures.
 - (2) The total concentration of the pure organic components having a vapor pressure greater than 0.3 kPa at 20 °C (1.2 in. H₂O at 68 °F) is equal to or greater than 20 percent by weight.
 - (3) The fluid is a liquid at operating conditions.
- (f) Samples used in conjunction with (d), (e), and (g) of this condition shall be representative of the process fluid that is contained in or contacts the equipment or the gas being combusted in the flare.

(g) The owner or operator shall determine compliance with 40 CFR 60.483–1a or 40 CFR 60.483–2a as follows:

(1) The percent of valves leaking shall be determined using the following equation:

$$\%V_L = (V_L/V_T) * 100$$

Where:

$\%V_L$ = Percent leaking valves

V_L = Number of valves found leaking

V_T = The sum of the total number of valves monitored

- (2) The total number of valves monitored shall include difficult-to-monitor and unsafe-to-monitor valves only during the monitoring period in which those valves are monitored.
- (3) The number of valves leaking shall include valves for which repair has been delayed.
- (4) Any new valve that is not monitored within 30 days of being placed in service shall be included in the number of valves leaking and the total number of valves monitored for the monitoring period in which the valve is placed in service.
- (5) If the process unit has been subdivided in accordance with 40 CFR 60.482–7a(c)(1)(ii), the sum of valves found leaking during a monitoring period includes all subgroups.
- (6) The total number of valves monitored does not include a valve monitored to verify repair.

(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)

58. **Recordkeeping** – The permittee shall maintain records as indicated in 40 CFR 60.486a to assure compliance with NSPS Subpart VVa, as follows:

- (a) (1) Each owner or operator subject to the provisions of this subpart shall comply with the recordkeeping requirements of 40 CFR 60.486a.
- (2) An owner or operator of more than one affected facility subject to the provisions of Subpart VVa may comply with the recordkeeping requirements for these facilities in one recordkeeping system if the system identifies each record by each facility.
- (3) The owner or operator shall record the information specified in (a)(3)(i) through (v) of this condition for each monitoring event required by 40 CFR 60.482–2a, 60.482–3a, 60.482–7a, 60.482–8a, 60.482–11a, and 60.483–2a.
 - (i) Monitoring instrument identification.
 - (ii) Operator identification.

- (iii) Equipment identification.
 - (iv) Date of monitoring.
 - (v) Instrument reading.
- (b) When each leak is detected as specified in 40 CFR 60.482–2a, 60.482–3a, 60.482–7a, 60.482–8a, 60.482-11a, and 60.483–2a, the following requirements apply:
- (1) A weatherproof and readily visible identification, marked with the equipment identification number, shall be attached to the leaking equipment.
 - (2) The identification on a valve may be removed after it has been monitored for 2 successive months as specified in 40 CFR 60.482–7a(c) and no leak has been detected during those 2 months.
 - (3) The identification on a connector may be removed after it has been monitored as specified in §60.482–11a(b)(3)(iv) and no leak has been detected during that monitoring.
 - (4) The identification on equipment except on a valve, may be removed after it has been repaired.
- (c) When each leak is detected as specified in 40 CFR 60.482–2a, 60.482–3a, 60.482–7a, 60.482–8a, 60.482-11a, and 60.483–2a, the following information shall be recorded in a log and shall be kept for 2 years in a readily accessible location:
- (1) The instrument and operator identification numbers and the equipment identification number, except when indications of liquids dripping from a pump are designated as a leak.
 - (2) The date the leak was detected and the dates of each attempt to repair the leak.
 - (3) Repair methods applied in each attempt to repair the leak.
 - (4) Maximum instrument reading measured by Method 21 of 40 CFR 60 appendix A–7 of this part at the time the leak is successfully repaired or determined to be nonreparable, except when a pump is repaired by eliminating indications of liquids dripping.
 - (5) “Repair delayed” and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak.
 - (6) The signature of the owner or operator (or designate) whose decision it was that repair could not be effected without a process shutdown.
 - (7) The expected date of successful repair of the leak if a leak is not repaired within 15 days.
 - (8) Dates of process unit shutdowns that occur while the equipment is unrepaired.
 - (9) The date of successful repair of the leak.

- (d) The following information pertaining to the design requirements for closed vent systems and control devices described in 40 CFR 60.482-10a shall be recorded and kept in a readily accessible location:
- (1) Detailed schematics, design specifications, and piping and instrumentation diagrams.
 - (2) The dates and descriptions of any changes in the design specifications.
 - (3) A description of the parameter or parameters monitored, as required in 40 CFR 60.482-10a(e), to ensure that control devices are operated and maintained in conformance with their design and an explanation of why that parameter (or parameters) was selected for the monitoring.
 - (4) Periods when the closed vent systems and control devices required in 40 CFR 60.482-2a, 60.482-3a, 60.482-4a, and 60.482-5a are not operated as designed, including periods when a flare pilot light does not have a flame.
 - (5) Dates of startups and shutdowns of the closed vent systems and control devices required in 40 CFR 60.482-2a, 60.482-3a, 60.482-4a, and 60.482-5a.
- (e) The following information pertaining to all equipment subject to the requirements in 40 CFR 60.482-1a to 60.482-11a shall be recorded in a log that is kept in a readily accessible location:
- (1) A list of identification numbers for equipment subject to the requirements of this subpart.
 - (2) (i) A list of identification numbers for equipment that are designated for no detectable emissions under the provisions of 40 CFR 60.482-2a(e), 60.482-3a(i) and 60.482-7a(f).
(ii) The designation of equipment as subject to the requirements of 40 CFR 60.482-2a(e), 40 CFR 60.482-3a(i), or 40 CFR 60.482-7a(f) shall be signed by the owner or operator. Alternatively, the owner or operator may establish a mechanism with their permitting authority that satisfies this requirement.
 - (3) A list of equipment identification numbers for pressure relief devices required to comply with 40 CFR 60.482-4a.
 - (4) (i) The dates of each compliance test as required in 40 CFR 60.482-2a(e), 60.482-3a(i), 60.482-4a, and 60.482-7a(f).
(ii) The background level measured during each compliance test.
(iii) The maximum instrument reading measured at the equipment during each compliance test.
 - (5) A list of identification numbers for equipment in vacuum service.
 - (6) A list of identification numbers for equipment that the owner or operator designates as operating in VOC service less than 300 hr/yr in accordance with §60.482-1a(e), a

description of the conditions under which the equipment is in VOC service, and rationale supporting the designation that it is in VOC service less than 300 hr/yr.

- (7) The date and results of the weekly visual inspection for indications of liquids dripping from pumps in light liquid service.
- (8) Records of the information specified in (e)(8)(i) through (vi) of this condition for monitoring instrument calibrations conducted according to sections 8.1.2 and 10 of Method 21 of 40 CFR 60 appendix A-7 and 40 CFR 60.485a(b).
 - (i) Date of calibration and initials of operator performing the calibration.
 - (ii) Calibration gas cylinder identification, certification date, and certified concentration.
 - (iii) Instrument scale(s) used.
 - (iv) A description of any corrective action taken if the meter readout could not be adjusted to correspond to the calibration gas value in accordance with section 10.1 of Method 21 of 40 CFR 60 appendix A-7.
 - (v) Results of each calibration drift assessment required by §60.485a(b)(2) (i.e., instrument reading for calibration at end of monitoring day and the calculated percent difference from the initial calibration value).
 - (vi) If an owner or operator makes their own calibration gas, a description of the procedure used.
- (9) The connector monitoring schedule for each process unit as specified in §60.482-11a(b)(3)(v).
- (10) Records of each release from a pressure relief device subject to §60.482-4a.
- (f) The following information pertaining to all valves subject to the requirements of 40 CFR 60.482-7a(g) and (h) and to all pumps subject to the requirements of 40 CFR 60.482-2a(g), and all connectors subject to the requirements of 40 CFR 60.482-11a(e) shall be recorded in a log that is kept in a readily accessible location:
 - (1) A list of identification numbers for valves and pumps that are designated as unsafe-to-monitor, an explanation for each valve or pump stating why the valve or pump is unsafe-to-monitor, and the plan for monitoring each valve or pump.
 - (2) A list of identification numbers for valves that are designated as difficult-to-monitor, an explanation for each valve stating why the valve is difficult-to-monitor, and the schedule for monitoring each valve.
- (g) The following information shall be recorded for valves complying with 40 CFR 60.483-2a:
 - (1) A schedule of monitoring.
 - (2) The percent of valves found leaking during each monitoring period.

- (h) The following information shall be recorded in a log that is kept in a readily accessible location:
 - (1) Design criterion required in 40 CFR 60.482–2a(d)(5) and 60.482–3a(e)(2) and explanation of the design criterion; and
 - (2) Any changes to this criterion and the reasons for the changes.
 - (i) The following information shall be recorded in a log that is kept in a readily accessible location for use in determining exemptions as provided in 40 CFR 60.480a(d):
 - (1) An analysis demonstrating the design capacity of the affected facility,
 - (2) A statement listing the feed or raw materials and products from the affected facilities and an analysis demonstrating whether these chemicals are heavy liquids or beverage alcohol, and
 - (3) An analysis demonstrating that equipment is not in VOC service.
 - (j) Information and data used to demonstrate that a piece of equipment is not in VOC service shall be recorded in a log that is kept in a readily accessible location.
 - (k) The provisions of 40 CFR 60.7(b) and (d) do not apply to affected facilities subject to this subpart.
- (9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)

59. **Reporting Requirements** – The permittee shall comply with requirements in 40 CFR 60.487a, as follows:

- (a) Each owner or operator subject to the provisions of this subpart shall submit semiannual reports to the Administrator beginning six months after the initial startup date.
- (b) The initial semiannual report to the Administrator shall include the following information:
 - (1) Process unit identification.
 - (2) Number of valves subject to the requirements of 40 CFR 60.482–7a, excluding those valves designated for no detectable emissions under the provisions of 40 CFR 60.482–7a(f).
 - (3) Number of pumps subject to the requirements of 40 CFR 60.482–2a, excluding those pumps designated for no detectable emissions under the provisions of 40 CFR 60.482–2(e) and those pumps complying with 40 CFR 60.482–2a(f).
 - (4) Number of compressors subject to the requirements of 40 CFR 60.482–3a, excluding those compressors designated for no detectable emissions under the provisions of 40 CFR 60.482–3a(i) and those compressors complying with 40 CFR 60.482–3a(h).
 - (5) Number of connectors subject to the requirements of 40 CFR 60.482–11a.

- (c) All semiannual reports to the Administrator shall include the following information, summarized from the information in 40 CFR 60.486a:
- (1) Process unit identification.
 - (2) For each month during the semiannual reporting period,
 - (i) Number of valves for which leaks were detected as described in 40 CFR 60.482-7a(b) or 40 CFR 60.483-2a,
 - (ii) Number of valves for which leaks were not repaired as required in 40 CFR 60.482-7a(d)(1),
 - (iii) Number of pumps for which leaks were detected as described in 40 CFR 60.482-2a(b), (d)(4)(ii)(A) or (B), or (d)(5)(iii),
 - (iv) Number of pumps for which leaks were not repaired as required in 40 CFR 60.482-2a(c)(1) and (d)(6),
 - (v) Number of compressors for which leaks were detected as described in 40 CFR 60.482-3a(f),
 - (vi) Number of compressors for which leaks were not repaired as required in 40 CFR 60.482-3a(g)(1),
 - (vii) Number of connectors for which leaks were not repaired as required in 40 CFR 60.482-11a(b),
 - (viii) Number of connectors for which leaks were not repaired as required in 40 CFR 60.482-11a(d), and
 - (ix) The facts that explain each delay of repair and, where appropriate, why a process unit shutdown was technically infeasible.
 - (3) Dates of process unit shutdowns which occurred within the semiannual reporting period.
 - (4) Revisions to items reported according to (b) of this condition if changes have occurred since the initial report or subsequent revisions to the initial report.
- (d) An owner or operator electing to comply with the provisions of 40 CFR 60.483-1a or 60.483-2a shall notify the Administrator of the alternative standard selected 90 days before implementing either of the provisions.
- (e) An owner or operator shall report the results of all performance tests in accordance with 40 CFR 60.8 of the General Provisions. The provisions of 40 CFR 60.8(d) do not apply to affected facilities subject to the provisions of this subpart except that an owner or operator must notify the Administrator of the schedule for the initial performance tests at least 30 days before the initial performance tests.
- (f) The requirements of (a) through (c) of this condition remain in force until and unless EPA, in delegating enforcement authority to a State under section 111(c) of the Clean Air

Act, approves reporting requirements or an alternative means of compliance surveillance adopted by such State. In that event, affected sources within the State will be relieved of the obligation to comply with the requirements of paragraphs (a) through (c) of 40 CFR 60.487a, provided that they comply with the requirements established by the State.

(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)

REQUIREMENTS OF NSPS SUBPART NNN - Standards of Performance for Volatile Organic Compounds (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations

60. **General** – Each owner or operator of any affected facility shall comply with (a), (b), or (c) of this condition for each vent stream on and after the date on which the initial performance test required by 40 CFR 60.8 and 40 CFR 60.664 is completed. Each owner or operator shall either:

- (a) Reduce emissions of TOC (less methane and ethane) by 98 weight-percent, or to a TOC (less methane and ethane) concentration of 20 ppmv, on a dry basis corrected to 3 percent oxygen, whichever is less stringent. If a boiler or process heater is used to comply with this paragraph, then the vent stream shall be introduced into the flame zone of the boiler or process heater; or
- (b) Combust the emissions in a flare that meets the requirements of 40 CFR 60.18; or
- (c) Maintain a TRE index value greater than 1.0 without use of VOC emission control devices.

(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)

61. **Monitoring of Emissions and Operations** – The permittee shall comply with requirements in 40 CFR 60.663, as follows:

- (a) The owner or operator of an affected facility that uses an incinerator to seek to comply with the TOC emission limit specified under 40 CFR 60.662(a) shall install, calibrate, maintain, and operate according to manufacturer's specifications the following equipment:
 - (1) A temperature monitoring device equipped with a continuous recorder and having an accuracy of ± 1 percent of the temperature being monitored expressed in degrees Celsius or ± 0.5 °C, whichever is greater.
 - (i) Where an incinerator other than a catalytic incinerator is used, a temperature monitoring device shall be installed in the firebox.
 - (ii) Where a catalytic incinerator is used, temperature monitoring devices shall be installed in the gas stream immediately before and after the catalyst bed.
 - (2) A flow indicator that provides a record of vent stream flow to the incinerator at least once every hour for each affected facility. The flow indicator shall be installed in the

vent stream from each affected facility at a point closest to the inlet of each incinerator and before being joined with any other vent stream.

- (b) Monitoring of Emissions and Operations - The owner or operator of an affected facility that uses a flare to seek to comply with 40 CFR 60.662(b) shall install, calibrate, maintain and operate according to manufacturer's specifications the following equipment:
 - (1) A heat sensing device, such as an ultra-violet beam sensor or thermocouple, at the pilot light to indicate the continuous presence of a flame.
 - (2) A flow indicator that provides a record of vent stream flow to the flare at least once every hour for each affected facility. The flow indicator shall be installed in the vent stream from each affected facility at a point closest to the flare and before being joined with any other vent stream.
- (c) The owner or operator of an affected facility that uses a boiler or process heater to seek to comply with 40 CFR 60.662(a) shall install, calibrate, maintain and operate according to the manufacturer's specifications the following equipment:
 - (1) A flow indicator that provides a record of vent stream flow to the boiler or process heater at least once every hour for each affected facility. The flow indicator shall be installed in the vent stream from each distillation unit within an affected facility at a point closest to the inlet of each boiler or process heater and before being joined with any other vent stream.
 - (2) A temperature monitoring device in the firebox equipped with a continuous recorder and having an accuracy of ± 1 percent of the temperature being measured expressed in degrees Celsius or ± 0.5 °C, whichever is greater, for boilers or process heaters of less than 44 MW (150 million Btu/hr) heat input design capacity.
- (d) Monitor and record the periods of operation of the boiler or process heater if the design heat input capacity of the boiler or process heater is 44 MW (150 million Btu/hr) or greater. The records must be readily available for inspection.
- (e) The owner or operator of an affected facility that seeks to comply with the TRE index value limit specified under 40 CFR 60.662(c) shall install, calibrate, maintain, and operate according to manufacturer's specifications the following equipment, unless alternative monitoring procedures or requirements are approved for that facility by the Administrator:
 - (1) Where an absorber is the final recovery device in the recovery system:
 - (i) A scrubbing liquid temperature monitoring device having an accuracy of ± 1 percent of the temperature being monitored expressed in degrees Celsius or ± 0.5 °C, whichever is greater, and a specific gravity monitoring device having an accuracy of ± 0.02 specific gravity units, each equipped with a continuous recorder, or

- (ii) An organic monitoring device used to indicate the concentration level of organic compounds exiting the recovery device based on a detection principle such as infrared, photoionization, or thermal conductivity, each equipped with a continuous recorder.
- (2) Where a condenser is the final recovery device in the recovery system:
- (i) A condenser exit (product side) temperature monitoring device equipped with a continuous recorder and having an accuracy of ± 1 percent of the temperature being monitored expressed in degrees Celsius or ± 0.5 °C, whichever is greater, or
 - (ii) An organic monitoring device used to monitor organic compounds exiting the recovery device based on a detection principle such as infra-red, photoionization, or thermal conductivity, each equipped with a continuous recorder.
- (3) Where a carbon adsorber is the final recovery device unit in the recovery system:
- (i) An integrating steam flow monitoring device having an accuracy of ± 10 percent, and a carbon bed temperature monitoring device having an accuracy of ± 1 percent of the temperature being monitored expressed in degrees Celsius or ± 0.5 °C, whichever is greater, both equipped with a continuous recorder, or
 - (ii) An organic monitoring device used to indicate the concentration level of organic compounds exiting the recovery device based on a detection principle such as infra-red, photoionization, or thermal conductivity, each equipped with a continuous recorder.
- (f) An owner or operator of an affected facility seeking to demonstrate compliance with the standards specified under 40 CFR 60.662 with control devices other than incinerator, boiler, process heater, or flare; or recovery device other than an absorber, condenser, or carbon adsorber shall provide to the Administrator information describing the operation of the control device or recovery device and the process parameter(s) which would indicate proper operation and maintenance of the device. The Administrator may request further information and will specify appropriate monitoring procedures or requirements.
- (9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)
62. **Test Methods and Procedures** – The permittee shall comply with requirements in 40 CFR 60.664, as follows:
- (a) For the purpose of demonstrating compliance with 40 CFR 60.662, all affected facilities shall be run at full operating conditions and flow rates during any performance test.
 - (b) The following methods in appendix A to this part, except as provided under 40 CFR 60.8(b), shall be used as reference methods to determine compliance with the emission limit or percent reduction efficiency specified under 40 CFR 60.662(a).

- (1) Method 1 or 1A, as appropriate, for selection of the sampling sites. The control device inlet sampling site for determination of vent stream molar composition or TOC (less methane and ethane) reduction efficiency shall be prior to the inlet of the control device and after the recovery system.
- (2) Method 2, 2A, 2C, or 2D, as appropriate, for determination of the gas volumetric flow rates.
- (3) The emission rate correction factor, integrated sampling and analysis procedure of Method 3 shall be used to determine the oxygen concentration (%O_{2d}) for the purposes of determining compliance with the 20 ppmv limit. The sampling site shall be the same as that of the TOC samples, and the samples shall be taken during the same time that the TOC samples are taken.

The TOC concentration corrected to 3 percent O₂ (C_c) shall be computed using the following equation:

$$C_c = C_{TOC} \frac{17.9}{20.9 - \%O_{2d}}$$

where:

C_c=Concentration of TOC corrected to 3 percent O₂, dry basis, ppm by volume.

C_{TOC}=Concentration of TOC (minus methane and ethane), dry basis, ppm by volume.

%O_{2d}=Concentration of O₂, dry basis, percent by volume.

- (4) Method 18 to determine the concentration of TOC in the control device outlet and the concentration of TOC in the inlet when the reduction efficiency of the control device is to be determined.
 - (i) The sampling time for each run shall be 1 hour in which either an integrated sample or four grab samples shall be taken. If grab sampling is used then the samples shall be taken at 15-minute intervals.
 - (ii) The emission reduction (R) of TOC (minus methane and ethane) shall be determined using the following equation:

$$R = \frac{E_i - E_o}{E_i} \times 100$$

where:

R=Emission reduction, percent by weight.

E_i =Mass rate of TOC entering the control device, kg/hr (lb/hr).

E_o =Mass rate of TOC discharged to the atmosphere, kg/hr (lb/hr).

- (iii) The mass rates of TOC (E_i , E_o) shall be computed using the following equations:

$$E_i = K_2 \left(\sum_{j=1}^n C_{ij} M_{ij} \right) Q_i$$

$$E_o = K_2 \left(\sum_{j=1}^n C_{oj} M_{oj} \right) Q_o$$

where:

C_{ij} , C_{oj} =Concentration of sample component "j" of the gas stream at the inlet and outlet of the control device, respectively, dry basis, ppm by volume.

M_{ij} , M_{oj} =Molecular weight of sample component "j" of the gas stream at the inlet and outlet of the control device, respectively, g/g-mole (lb/lb-mole).

Q_i , Q_o =Flow rate of gas stream at the inlet and outlet of the control device, respectively, dscm/min (dscf/min).

$K_2 = 2.494 \times 10^{-6}$ (1/ppm)(g-mole/scm) (kg/g) (min/hr) (metric units), where standard temperature for (g-mole/scm) is 20 °C.

$K_2 = 1.557 \times 10^{-7}$ (1/ppm) (lb-mole/scf) (min/hr) (English units), where standard temperature for (lb-mole/scf) is 68 °F.

- (iv) The TOC concentration (C_{TOC}) is the sum of the individual components and shall be computed for each run using the following equation:

$$C_{TOC} = \sum_{j=1}^n C_j$$

where:

C_{TOC} =Concentration of TOC (minus methane and ethane), dry basis, ppm by volume.

C_j =Concentration of sample components “j”, dry basis, ppm by volume.

n=Number of components in the sample.

- (c) When a boiler or process heater with a design heat input capacity of 44 MW (150 million Btu/hour) or greater is used to seek to comply with 40 CFR 60.662(a), the requirement for an initial performance test is waived, in accordance with 40 CFR 60.8(b). However, the Administrator reserves the option to require testing at such other times as may be required, as provided for in section 114 of the Act.
- (d) When a flare is used to seek to comply with 40 CFR 60.662(b), the flare shall comply with the requirements of 40 CFR 60.18.
- (e) The following test methods in appendix A to this part, except as provided under 40 CFR 60.8(b), shall be used for determining the net heating value of the gas combusted to determine compliance under 40 CFR 60.662(b) and for determining the process vent stream TRE index value to determine compliance under 40 CFR 60.662(c).
 - (1) (i) Method 1 or 1A, as appropriate, for selection of the sampling site. The sampling site for the vent stream flow rate and molar composition determination prescribed in 40 CFR 60.664(e)(2) and (3) shall be, except for the situations outlined in paragraph (e)(1)(ii) of this section, prior to the inlet of any control device, prior to any post-distillation dilution of the stream with air, and prior to any post-distillation introduction of halogenated compounds into the process vent stream. No transverse site selection method is needed for vents smaller than 10 centimeters (4 inches) in diameter.
 - (ii) If any gas stream other than the distillation vent stream from the affected facility is normally conducted through the final recovery device.
 - (A) The sampling site for vent stream flow rate and molar composition shall be prior to the final recovery device and prior to the point at which the nondistillation stream is introduced.
 - (B) The efficiency of the final recovery device is determined by measuring the TOC concentration using Method 18 at the inlet to the final recovery device after the introduction of any nondistillation vent stream and at the outlet of the final recovery device.
 - (C) This efficiency is applied to the TOC concentration measured prior to the final recovery device and prior to the introduction of the nondistillation stream to determine the concentration of TOC in the distillation vent stream from the final recovery device. This concentration of TOC is then used to perform the calculations outlined in 40 CFR 60.664(e)(4) and (5).
- (2) The molar composition of the process vent stream shall be determined as follows:

- (i) Method 18 to measure the concentration of TOC including those containing halogens.
 - (ii) ASTM D1946–77 or 90 (Reapproved 1994) (incorporation by reference as specified in 40 CFR 60.17 of this part) to measure the concentration of carbon monoxide and hydrogen.
 - (iii) Method 4 to measure the content of water vapor.
- (3) The volumetric flow rate shall be determined using Method 2, 2A, 2C, or 2D, as appropriate.
- (4) The net heating value of the vent stream shall be calculated using the following equation:

$$H_T = K_1 \left(\sum_{j=1}^n C_j H_j \right)$$

where:

H_T = Net heating value of the sample, MJ/scm (Btu/scf), where the net enthalpy per mole of vent stream is based on combustion at 25 °C and 760 mm Hg (77 °F and 30 in. Hg), but the standard temperature for determining the volume corresponding to one mole is 20 °C (68 °F).

K_1 = 1.74×10^{-7} (1/ppm) (g-mole/scm) (MJ/kcal) (metric units), where standard temperature for (g-mole/scm) is 20 °C.

K_1 = 1.03×10^{-11} (1/ppm) (lb-mole/scf) (Btu/kcal) (English units) where standard temperature for (lb-mole/scf) is 68 °F.

C_j = Concentration on a wet basis of compound j in ppm, as measured for organics by Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946–77 or 90 (Reapproved 1994) (incorporation by reference as specified in §60.17 of this part) as indicated in §60.664(e)(2).

H_j = Net heat of combustion of compound j, kcal/(g-mole) [kcal/(lb-mole)], based on combustion at 25 °C and 760 mm Hg (77 °F and 30 in. Hg).

The heats of combustion of vent stream components would be required to be determined using ASTM D2382–76 (incorporation by reference as specified in 40 CFR 60.17 of this part) if published values are not available or cannot be calculated.

- (5) The emission rate of TOC in the vent stream shall be calculated using the following equation:

$$E_{TOC} = K_2 \left(\sum_{j=1}^n C_j M_j \right) Q_s$$

where:

E_{TOC} = Measured emission rate of TOC, kg/hr (lb/hr).

$K_2 = 2.494 \times 10^{-6}$ (1/ppm) (g-mole/scm) (kg/g) (min/hr) (metric units), where standard temperature for (g-mole/scm) is 20 °C.

$K_2 = 1.557 \times 10^{-7}$ (1/ppm) (lb-mole/scf) (min/hr) (English units), where standard temperature for (lb-mole/scf) is 68 °F.

C_j = Concentration on a wet basis of compound j in ppm, as measured by Method 18 as indicated in §60.664(e)(2).

M_j = Molecular weight of sample j, g/g-mole (lb/lb-mole).

Q_s = Vent stream flow rate, scm/min (scf/min), at a temperature of 20 °C (68 °F).

- (6) The total process vent stream concentration (by volume) of compounds containing halogens (ppmv, by compound) shall be summed from the individual concentrations of compounds containing halogens which were measured by Method 18.
- (f) For purposes of complying with 40 CFR 60.662(c) the owner or operator of a facility affected by this subpart shall calculate the TRE index value of the vent stream using the equation for incineration in paragraph (f)(1) of this condition for halogenated vent streams. The owner or operator of an affected facility with a nonhalogenated vent stream shall determine the TRE index value by calculating values using both the incinerator equation in (f)(1) and the flare equation in (f)(2) of this condition and selecting the lower of the two values.

- (1) The equation for calculating the TRE index value of a vent stream controlled by an incinerator is as follows:

$$TRE = \frac{1}{E_{TOC}} [a + b(Q_s) + c(Q_s)^{0.88} + d(Q_s)(H_T) + e(Q_s)^{0.88}(H_T)^{0.88} + f(Y_s)^{0.5}]$$

- (i) Where for a vent stream flow rate that is greater than or equal to 14.2 scm/min (501 scf/min) at a standard temperature of 20 °C (68 °F):

TRE = TRE index value.

Q_s = Vent stream flow rate, scm/min (scf/min), at a temperature of 20 °C (68 °F).

H_T = Vent stream net heating value, MJ/scm (Btu/scf), where the net enthalpy per mole of vent stream is based on combustion at 25 °C and 760 mm Hg (68 °F and 30 in. Hg), but the standard temperature for determining the volume corresponding to one mole is 20 °C (68 °F) as in the definition of Q_s .

$Y_s = Q_s$ for all vent stream categories listed in table 1 except for Category E vent streams where $Y_s = Q_s H_T / 3.6$.

E_{TOC} = Hourly emissions of TOC, kg/hr (lb/hr).

a, b, c, d, e, and f are coefficients.

The set of coefficients that apply to a vent stream can be obtained from 40 CFR 60.664 table 1.

- (ii) Where for a vent stream flow rate that is less than 14.2 scm/min (501 scf/min) at a standard temperature of 20 °C (68 °F):

TRE = TRE index value.

$Q_s = 14.2$ scm/min (501 scf/min).

$H_T = (\text{FLOW}) (\text{HVAL}) / Q_s$.

Where the following inputs are used:

FLOW = Vent stream flow rate, scm/min (scf/min), at a temperature of 20 °C (68 °F).

HVAL = Vent stream net heating value, MJ/scm (Btu/scf), where the net enthalpy per mole of vent stream is based on combustion at 25 °C and 760 mm Hg (68 °F and 30 in. Hg), but the standard temperature for determining the volume corresponding to one mole is 20 °C (68 °F) as in the definition of Q_s .

$Y_s = Q_s$ for all vent stream categories listed in table 1 except for Category E vent streams where $Y_s = Q_s H_T / 3.6$.

E_{TOC} = Hourly emissions of TOC, kg/hr (lb/hr).

a, b, c, d, e, and f are coefficients

The set of coefficients that apply to a vent stream can be obtained from 40 CFR 60.664 table 1.

- (2) The equation for calculating the TRE index value of a vent stream controlled by a flare is as follows:

$$TRE = \frac{1}{E_{TOC}}[a(Q_s) + b(Q_s)^{0.8} + c(Q_s)(H_T) + d(E_{TOC}) + e]$$

where:

TRE = TRE index value.

E_{TOC} = Hourly emissions of TOC, kg/hr (lb/hr).

Q_s = Vent stream flow rate, scm/min (scf/min), at a standard temperature of 20 °C (68 °F).

H_T = Vent stream net heating value, MJ/scm (Btu/scf), where the net enthalpy per mole of vent stream is based on combustion at 25 °C and 760 mm Hg (68 °F and 30 in. Hg), but the standard temperature for determining the volume corresponding to one mole is 20 °C (68 °F) as in the definition of Q_s .

a, b, c, d, and e are coefficients.

The set of coefficients that apply to a vent stream shall be obtained from 40 CFR 60.664 table 2.

- (g) Each owner or operator of an affected facility seeking to comply with §60.660(c)(4) or §60.662(c) shall recalculate the TRE index value for that affected facility whenever process changes are made. Examples of process changes include changes in production capacity, feedstock type, or catalyst type, or whenever there is replacement, removal, or addition of recovery equipment. The TRE index value shall be recalculated based on test data, or on best engineering estimates of the effects of the change to the recovery system.
- (1) Where the recalculated TRE index value is less than or equal to 1.0, the owner or operator shall notify the Administrator within 1 week of the recalculation and shall conduct a performance test according to the methods and procedures required by 40 CFR 60.664 in order to determine compliance with 40 CFR 60.662(a). Performance tests must be conducted as soon as possible after the process change but no later than 180 days from the time of the process change.
- (2) Where the initial TRE index value is greater than 8.0 and the recalculated TRE index value is less than or equal to 8.0 but greater than 1.0, the owner or operator shall conduct a performance test in accordance with 40 CFR 60.8 and 40 CFR 60.664 and

shall comply with 40 CFR 60.663, 60.664 and 60.665. Performance tests must be conducted as soon as possible after the process change but no later than 180 days from the time of the process change.

- (h) Any owner or operator subject to the provisions of this subpart seeking to demonstrate compliance with 40 CFR 60.660(c)(6) shall use Method 2, 2A, 2C, or 2D as appropriate, for determination of volumetric flow rate.

(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)

63. Reporting and Recordkeeping Requirements – The permittee shall comply with requirements in 40 CFR 60.665, as follows:

- (a) Each owner or operator subject to 40 CFR 60.662 shall notify the Administrator of the specific provisions of 40 CFR 60.662 (40 CFR 60.662 (a), (b), or (c)) with which the owner or operator has elected to comply. Notification shall be submitted with the notification of initial start-up required by 40 CFR 60.7(a)(3). If an owner or operator elects at a later date to use an alternative provision of 40 CFR 60.662 with which he or she will comply, then the Administrator shall be notified by the owner or operator 90 days before implementing a change and, upon implementing the change, a performance test shall be performed as specified by 40 CFR 60.664 within 180 days.
- (b) Each owner or operator subject to the provisions of this subpart shall keep an up-to-date, readily accessible record of the following data measured during each performance test, and also include the following data in the report of the initial performance test required under 40 CFR 60.8. Where a boiler or process heater with a design heat input capacity of 44 MW (150 million Btu/hour) or greater is used to comply with 40 CFR 60.662(a), a report containing performance test data need not be submitted, but a report containing the information in 40 CFR 60.665(b)(2)(i) is required. The same data specified in this section shall be submitted in the reports of all subsequently required performance tests where either the emission control efficiency of a control device, outlet concentration of TOC, or the TRE index value of a vent stream from a recovery system is determined.
 - (1) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with 40 CFR 60.662(a) through use of either a thermal or catalytic incinerator:
 - (i) The average firebox temperature of the incinerator (or the average temperature upstream and downstream of the catalyst bed for a catalytic incinerator), measured at least every 15 minutes and averaged over the same time period of the performance testing, and
 - (ii) The percent reduction of TOC determined as specified in 40 CFR 60.664(b) achieved by the incinerator, or the concentration of TOC (ppmv, by compound) determined as specified in 40 CFR 60.664(b) at the outlet of the control device on a dry basis corrected to 3 percent oxygen.

- (2) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with 40 CFR 60.662(a) through use of a boiler or process heater:
 - (i) A description of the location at which the vent stream is introduced into the boiler or process heater, and
 - (ii) The average combustion temperature of the boiler or process heater with a design heat input capacity of less than 44 MW (150 million Btu/hr) measured at least every 15 minutes and averaged over the same time period of the performance testing.
- (3) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with 40 CFR 60.662(b) through use of a smokeless flare, flare design (i.e., steam-assisted, air-assisted or nonassisted), all visible emission readings, heat content determinations, flow rate measurements, and exit velocity determinations made during the performance test, continuous records of the flare pilot flame monitoring, and records of all periods of operations during which the pilot flame is absent.
- (4) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with 40 CFR 60.662(c):
 - (i) Where an absorber is the final recovery device in the recovery system, the exit specific gravity (or alternative parameter which is a measure of the degree of absorbing liquid saturation, if approved by the Administrator), and average exit temperature, of the absorbing liquid measured at least every 15 minutes and averaged over the same time period of the performance testing (both measured while the vent stream is normally routed and constituted), or
 - (ii) Where a condenser is the final recovery device in the recovery system, the average exit (product side) temperature measured at least every 15 minutes and averaged over the same time period of the performance testing while the vent stream is routed and constituted normally, or
 - (iii) Where a carbon adsorber is the final recovery device in the recovery system, the total steam mass flow measured at least every 15 minutes and averaged over the same time period of the performance test (full carbon bed cycle), temperature of the carbon bed after regeneration (and within 15 minutes of completion of any cooling cycle(s)), and duration of the carbon bed steaming cycle (all measured while the vent stream is routed and constituted normally), or
 - (iv) As an alternative to 40 CFR 60.665(b)(4) ((i), (ii) or (iii)), the concentration level or reading indicated by the organics monitoring device at the outlet of the absorber, condenser, or carbon adsorber, measured at least every 15 minutes and averaged over the same time period of the performance testing while the vent stream is normally routed and constituted.

- (v) All measurements and calculations performed to determine the TRE index value of the vent stream.
- (c) Each owner or operator subject to the provisions of this subpart shall keep up-to-date, readily accessible continuous records of the equipment operating parameters specified to be monitored under 40 CFR 60.663 (a) and (c) as well as up-to-date, readily accessible records of periods of operation during which the parameter boundaries established during the most recent performance test are exceeded. The Administrator may at any time require a report of these data. Where a combustion device is used to comply with 40 CFR 60.662(a), periods of operation during which the parameter boundaries established during the most recent performance tests are exceeded are defined as follows:
 - (1) For thermal incinerators, all 3-hour periods of operation during which the average combustion temperature was more than 28 °C (50 °F) below the average combustion temperature during the most recent performance test at which compliance with 40 CFR 60.662(a) was determined.
 - (2) For catalytic incinerators, all 3-hour periods of operation during which the average temperature of the vent stream immediately before the catalyst bed is more than 28 °C (50 °F) below the average temperature of the vent stream during the most recent performance test at which compliance with 40 CFR 60.662(a) was determined. The owner or operator also shall record all 3-hour periods of operation during which the average temperature difference across the catalyst bed is less than 80 percent of the average temperature difference of the device during the most recent performance test at which compliance with 40 CFR 60.662(a) was determined.
 - (3) All 3-hour periods of operation during which the average combustion temperature was more than 28 °C (50 °F) below the average combustion temperature during the most recent performance test at which compliance with 40 CFR 60.662(a) was determined for boilers or process heaters with a design heat input capacity of less than 44 MW (150 million Btu/hr).
 - (4) For boilers or process heaters, whenever there is a change in the location at which the vent stream is introduced into the flame zone as required under 40 CFR 60.662(a).
- (d) Each owner or operator subject to the provisions of this subpart shall keep up to date, readily accessible continuous records of the flow indication specified under 40 CFR 60.663(a)(2), 60.663(b)(2) and 60.663(c)(1), as well as up-to-date, readily accessible records of all periods when the vent stream is diverted from the control device or has no flow rate.
- (e) Each owner or operator subject to the provisions of this subpart who uses a boiler or process heater with a design heat input capacity of 44 MW (150 million Btu/hour) or greater to comply with 40 CFR 60.662(a) shall keep an up-to-date, readily accessible record of all periods of operation of the boiler or process heater. (Examples of such records could include records of steam use, fuel use, or monitoring data collected pursuant to other State or Federal regulatory requirements.)

- (f) Each owner or operator subject to the provisions of this subpart shall keep up-to-date, readily accessible continuous records of the flare pilot flame monitoring specified under 40 CFR 60.663(b), as well as up-to-date, readily accessible records of all periods of operations in which the pilot flame is absent.
- (g) Each owner or operator subject to the provisions of this subpart shall keep up-to-date, readily accessible continuous records of the equipment operating parameters specified to be monitored under 40 CFR 60.663(e), as well as up-to-date, readily accessible records of periods of operation during which the parameter boundaries established during the most recent performance test are exceeded. The Administrator may at any time require a report of these data. Where an owner or operator seeks to comply with 40 CFR 60.662(c), periods of operation during which the parameter boundaries established during the most recent performance tests are exceeded are defined as follows:
- (1) Where an absorber is the final recovery device in a recovery system, and where an organic compound monitoring device is not used:
 - (i) All 3-hour periods of operation during which the average absorbing liquid temperature was more than 11 °C (20 °F) above the average absorbing liquid temperature during the most recent performance test, or
 - (ii) All 3-hour periods of operation during which the average absorbing liquid specific gravity was more than 0.1 unit above, or more than 0.1 unit below, the average absorbing liquid specific gravity during the most recent performance test (unless monitoring of an alternative parameter, which is a measure of the degree of absorbing liquid saturation, is approved by the Administrator, in which case he will define appropriate parameter boundaries and periods of operation during which they are exceeded).
 - (2) Where a condenser is the final recovery device in a system, and where an organic compound monitoring device is not used, all 3-hour periods of operation during which the average exit (product side) condenser operating temperature was more than 6 °C (11 °F) above the average exit (product side) operating temperature during the most recent performance test.
 - (3) Where a carbon adsorber is the final recovery device in a system, and where an organic compound monitoring device is not used:
 - (i) All carbon bed regeneration cycles during which the total mass steam flow was more than 10 percent below the total mass steam flow during the most recent performance test, or
 - (ii) All carbon bed regeneration cycles during which the temperature of the carbon bed after regeneration (and after completion of any cooling cycle(s)) was more than 10 percent greater than the carbon bed temperature (in degrees Celsius) during the most recent performance test.

- (4) Where an absorber, condenser, or carbon adsorber is the final recovery device in the recovery system and where an organic compound monitoring device is used, all 3-hour periods of operation during which the average organic compound concentration level or reading of organic compounds in the exhaust gases is more than 20 percent greater than the exhaust gas organic compound concentration level or reading measured by the monitoring device during the most recent performance test.
- (h) Each owner or operator of an affected facility subject to the provisions of this subpart and seeking to demonstrate compliance with 40 CFR 60.662(c) shall keep up-to-date, readily accessible records of:
 - (1) Any changes in production capacity, feedstock type, or catalyst type, or of any replacement, removal or addition of recovery equipment or a distillation unit;
 - (2) Any recalculation of the TRE index value performed pursuant to 40 CFR 60.664(f); and
 - (3) The results of any performance test performed pursuant to the methods and procedures required by 40 CFR 60.664(d).
- (i) Each owner or operator of an affected facility that seeks to comply with the requirements of this subpart by complying with the flow rate cutoff in 40 CFR 60.660(c)(6) shall keep up-to-date, readily accessible records to indicate that the vent stream flow rate is less than 0.008 scm/min (0.3 scf/min) and of any change in equipment or process operation that increases the operating vent stream flow rate, including a measurement of the new vent stream flow rate.
- (j) Each owner or operator of an affected facility that seeks to comply with the requirements of this subpart by complying with the design production capacity provision in 40 CFR 60.660(c)(5) shall keep up-to-date, readily accessible records of any change in equipment or process operation that increases the design production capacity of the process unit in which the affected facility is located.
- (k) Each owner and operator subject to the provisions of this subpart is exempt from the quarterly reporting requirements contained in 40 CFR 60.7(c) of the General Provisions.
- (l) Each owner or operator that seeks to comply with the requirements of this subpart by complying with the requirements of 40 CFR 60.660 (c)(4), (c)(5), or (c)(6) or 40 CFR 60.662 shall submit to the Administrator semiannual reports of the following recorded information. The initial report shall be submitted within 6 months after the initial start-up date.
 - (1) Exceedances of monitored parameters recorded under 40 CFR 60.665 (c) and (g).
 - (2) All periods recorded under 40 CFR 60.665(d) when the vent stream is diverted from the control device or has no flow rate.
 - (3) All periods recorded under 40 CFR 60.665(e) when the boiler or process heater was not operating.

- (4) All periods recorded under 40 CFR 60.665(f) in which the pilot flame of the flare was absent.
- (5) Any change in equipment or process operation that increases the operating vent stream flow rate above the low flow exemption level in 40 CFR 60.660(c)(6), including a measurement of the new vent stream flow rate, as recorded under 40 CFR 60.665(i). These must be reported as soon as possible after the change and no later than 180 days after the change. These reports may be submitted either in conjunction with semiannual reports or as a single separate report. A performance test must be completed with the same time period to verify the recalculated flow value and to obtain the vent stream characteristics of heating value and ETOC. The performance test is subject to the requirements of 40 CFR 60.8 of the General Provisions. Unless the facility qualifies for an exemption under the low capacity exemption status in 40 CFR 60.660(c)(5), the facility must begin compliance with the requirements set forth in 40 CFR 60.662.
- (6) Any change in equipment or process operation, as recorded under paragraph (j) of this section, that increases the design production capacity above the low capacity exemption level in 40 CFR 60.660(c)(5) and the new capacity resulting from the change for the distillation process unit containing the affected facility. These must be reported as soon as possible after the change and no later than 180 days after the change. These reports may be submitted either in conjunction with semiannual reports or as a single separate report. A performance test must be completed within the same time period to obtain the vent stream flow rate, heating value, and ETOC. The performance test is subject to the requirements of 40 CFR 60.8. The facility must begin compliance with the requirements set forth in 40 CFR 60.660(d) or 40 CFR 60.662. If the facility chooses to comply with 40 CFR 60.662, the facility may qualify for an exemption in 40 CFR 60.660(c)(4) or (6).
- (7) Any recalculation of the TRE index value, as recorded under 40 CFR 60.665(h).
- (m) The requirements of 40 CFR 60.665(l) remain in force until and unless EPA, in delegating enforcement authority to a State under section 111(c) of the Act, approves reporting requirements or an alternative means of compliance surveillance adopted by such State. In that event, affected sources within the State will be relieved of the obligation to comply with 40 CFR 60.665(l), provided that they comply with the requirements established by the State.
- (n) Each owner or operator that seeks to demonstrate compliance with 40 CFR 60.660(c)(5) must submit to the Administrator an initial report detailing the design production capacity of the process unit.
- (o) Each owner or operator that seeks to demonstrate compliance with 40 CFR 60.660(c)(6) must submit to the Administrator an initial report including a flow rate measurement using the test methods specified in 40 CFR 60.664.

- (p) The Administrator will specify appropriate reporting and recordkeeping requirements where the owner or operator of an affected facility complies with the standards specified under §60.662 other than as provided under 40 CFR 60.663(a), (b), (c) and (d).

(9 VAC 5-50-400, 9 VAC 5-50-405, and 9 VAC 5-80-1180)

GENERAL CONDITIONS

64. **Permit Suspension/Revocation** – This permit may be suspended or revoked if the permittee:
- a. Knowingly makes material misstatements in the permit application or any amendments to it;
 - b. Fails to comply with the conditions of this permit;
 - c. Fails to comply with any emission standards applicable to a permitted emissions unit;
 - d. Causes emissions from the stationary source which result in violations of, or interfere with the attainment and maintenance of, any ambient air quality standard; or
 - e. Fails to operate in conformance with any applicable control strategy, including any emission standards or emission limitations, in the State Implementation Plan in effect at the time an application for this permit is submitted.
- (9 VAC 5-80-1210 F)
65. **Right of Entry** – The permittee shall allow authorized local, state, and federal representatives, upon the presentation of credentials:
- a. To enter upon the permittee's premises on which the facility is located or in which any records are required to be kept under the terms and conditions of this permit;
 - b. To have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit or the State Air Pollution Control Board Regulations;
 - c. To inspect at reasonable times any facility, equipment, or process subject to the terms and conditions of this permit or the State Air Pollution Control Board Regulations; and
 - d. To sample or test at reasonable times.

For purposes of this condition, the time for inspection shall be deemed reasonable during regular business hours or whenever the facility is in operation. Nothing contained herein shall make an inspection time unreasonable during an emergency.

(9 VAC 5-170-130 and 9 VAC 5-80-1180)

66. **Maintenance/Operating Procedures** – The permittee shall take the following measures in order to minimize the duration and frequency of excess emissions, with respect to process equipment which affect such emissions:
- a. Develop a maintenance schedule and maintain records of all scheduled and non-scheduled maintenance.
 - b. Maintain an inventory of spare parts.
 - c. Have available written operating procedures for equipment. These procedures shall be based on the manufacturer's recommendations, at a minimum.
 - d. Train operators in the proper operation of all such equipment and familiarize the operators with the written operating procedures, prior to their first operation of such equipment. The permittee shall maintain records of the training provided including the names of trainees, the date of training and the nature of the training.

Records of maintenance and training shall be maintained on site for a period of five years and shall be made available to DEQ personnel upon request.
(9 VAC 5-50-20 E and 9 VAC 5-80-1180 D)

67. **Record of Malfunctions** – The permittee shall maintain records of the occurrence and duration of any bypass, malfunction, shutdown or failure of the facility or its associated air pollution control equipment that results in excess emissions for more than one hour. Records shall include the date, time, duration, description (emission unit, pollutant affected, cause), corrective action, preventive measures taken and name of person generating the record.
(9VAC 5-20-180 J and 9 VAC 5-80-1180 D)
68. **Notification for Facility or Control Equipment Malfunction** – The permittee shall furnish notification to the Director, Southwest Regional Office of malfunctions of the affected facility or related air pollution control equipment that may cause excess emissions for more than one hour, by facsimile transmission, telephone or telegraph. Such notification shall be made as soon as practicable but no later than four daytime business hours after the malfunction is discovered. The permittee shall provide a written statement giving all pertinent facts, including the estimated duration of the breakdown, within two weeks of discovery of the malfunction. When the condition causing the failure or malfunction has been corrected and the equipment is again in operation, the permittee shall notify the Director, Southwest Regional Office.
(9 VAC 5-20-180 C and 9 VAC 5-80-1180)

69. **Violation of Ambient Air Quality Standard** – The permittee shall, upon request of the DEQ, reduce the level of operation or shut down a facility, as necessary to avoid violating any primary ambient air quality standard and shall not return to normal operation until such time as the ambient air quality standard will not be violated.
(9 VAC 5-20-180 I and 9 VAC 5-80-1180)
70. **Change of Ownership** – In the case of a transfer of ownership of a stationary source, the new owner shall abide by any current permit issued to the previous owner. The new owner shall notify the Director, Southwest Regional Office of the change of ownership within 30 days of the transfer.
(9 VAC 5-80-1240)
71. **Permit Copy** – The permittee shall keep a copy of this permit on the premises of the facility to which it applies.
(9 VAC 5-80-1180)

STATE-ONLY ENFORCEABLE REQUIREMENTS

The following terms and conditions (numbers 72 through 84) are included in this permit to implement the requirements of 9 VAC 5-40-130 et seq., 9 VAC 5-50-130 et seq., 9 VAC 5-60-200 et seq. and/or 9 VAC 5-60-300 et seq. and are enforceable only by the Virginia Air Pollution Control Board. Neither their inclusion in this permit nor any resulting public comment period make these terms federally enforceable.

72. **Processing** – No later than thirty days after the date this permit is issued, distillate and/or other process water shall not be utilized as a source of cooling water, boiler feed water, as makeup water to the cooling circuit serving operations, or in any other process water uses at the facility. Use of process water in such a manner may require a permit to modify and operate. No later than thirty days after the date of this permit, the permittee shall implement a vapor balancing system (vapor return line) when transferring liquids from tanker trucks and storage tanks as required by Condition 77.
(9 VAC 5-80-1180 and 9 VAC 5-50-140)
73. **Emission Limits** – Toxic air pollutant emissions from the operation of the boiler shall not exceed the limits specified below:

Hydrogen Chloride	0.9 lbs/hr	3.9 tons/yr
Polychlorinated Biphenyls	0.044 lb/hr	0.1906 ton/yr
Chromium VI	0.0089 lb/hr	0.0389 ton/yr
Cadmium	0.0018 lb/hr	0.00778 ton/yr

These emissions are derived from the estimated emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 8 and 74.
(9 VAC 5-80-1120 F and 9 VAC 5-60-320)

74. **Fuel Specifications** – Used oil combusted at the facility shall meet the following specifications:

maximum halogen (as chlorine) content (parts per million)	1000 ppm
PCB (parts per million)	49 ppm
Chromium (parts per million)	10 ppm
Lead (parts per million)	100 ppm
Arsenic (parts per million)	5 ppm
Cadmium (parts per million)	2 ppm
Flash point (minimum)	100 °F

Except as provided in Condition 15, these specifications shall be determined on a 30-day rolling average basis.
(9 VAC 5-80-1180, 9 VAC 5-50-260 and 9 VAC 5-50-410)

75. **Fuel Supplier Certification** – The fuel sampling and analysis requirements in Condition 14 of this permit shall not apply where the permittee demonstrates compliance with the used oil specifications based on fuel supplier certification. If fuel supplier certification is used to demonstrate compliance with the used oil specifications, the permittee shall obtain a certification from the used oil supplier representative of each shipment purchased that demonstrates compliance with the specifications in Condition 74 of this permit. Each used oil supplier certification shall include the following:

- a. the name of the fuel supplier,
- b. the date on which the used oil was received,
- c. the volume of used oil delivered in the shipment,
- d. the content of arsenic, cadmium, chromium, lead, PCBs, and halogens with the used oil in ppm, by weight,
- e. the flash point of the used oil,
- f. documentation of the used oil analysis indicating the location of the used oil when the sample was drawn, specifically including whether the oil was sampled as delivered to the

facility, or whether the sample was drawn from oil in storage at the oil supplier's or oil refiner's facility, or other location,

- g. the test methods used to determine the contaminant level in the used oil.
(9 VAC 5-80-1180 and 9 VAC 5-50-410)

76. **Semi-Annual Reports** – The permittee shall submit fuel quality reports to the Director, Southwest Regional Office within 30 days after the end of each semi-annual period. If no shipments of used oil were received during the semi-annual period, the semi-annual report shall consist of the dates included in the semi-annual period and a statement that no oil was received during the semi-annual period. If used oil was received during the semi-annual period, the reports shall include:

- a. Calendar dates covered in the reporting period (January 1 to June 30 and July 1 to December 31),
- b. Each 30-day average content of halogens (as chlorine), PCB, chromium, lead, arsenic and cadmium in parts per million (ppm), and flash point in degrees Fahrenheit, calculated during the reporting period, ending with the last 30-day period; reasons for any noncompliance; and a description of corrective actions taken;
- c. If fuel supplier certification is used to demonstrate compliance with the used oil specifications, copies of the fuel supplier certifications for all shipments of used oil received during the semi-annual period and a certified statement signed by the permittee that the records of fuel supplier certifications submitted represent all of the oil combusted during the reporting period. Each fuel supplier certification shall include the following information for each shipment of oil:
 - i. Name of the fuel supplier;
 - ii. The location of the oil when the sample was drawn for analysis to determine the contaminant level of the oil, specifically including whether the oil was sampled as delivered to the affected facility, or whether the sample was drawn from oil in storage at the oil supplier's or oil refiner's facility, or other location;
 - iii. The content of halogens (as chlorine), PCB, chromium, lead, arsenic and cadmium in parts per million (ppm), and flash point in degrees Fahrenheit, of the oil from which the shipment came (or of the shipment itself); and
 - iv. The test methods used to determine the contaminant level of the used oil.
(9 VAC 5-170-160 and 9 VAC 5-60-50)

77. **Emission Controls** – Odorous emissions from the ethanol recovery operation shall be controlled by elimination of distillate and/or other process water from the cooling system (as required by Condition 72 of this permit) and the use of a vapor balancing system (vapor return line) when transferring liquids between transport vehicles and storage tanks. The vapor balancing system must be designed and operated to route vapors displaced from loading of the storage tanks to the transport vehicle from which the storage tank is filled, and to route vapors displaced from the loading of liquids into transport vehicles to the storage tank from which the liquid being loaded originated or to another storage tank connected to a common header. The vapor balancing systems shall be provided with adequate access for inspection and shall be in operation when material is being loaded into or removed from transport tanks and vehicles.

(9 VAC 5-80-1180 and 9 VAC 5-50-140)

78. **Operations and Maintenance Plan** - The permittee shall develop and implement an Operations and Maintenance (O&M) Plan for the oil/water separator and evaporator. The O&M Plan shall include an emergency action plan outlining procedures to mitigate and control odor episodes which might result from the oil/water separator and/or evaporator operation. The permittee shall review the O&M plan semi-annually and revise the plan, as necessary, to reflect any process changes impacting the oil/water separator and/or evaporator operations. The permittee shall keep a record of the dates of the O&M plan review and dates of maintenance of the oil/water separator and evaporator.

(9 VAC 5-80-1180 and 9 VAC 5-50-140)

79. **Odor Control Plan/Best Management Practices** - The permittee shall develop and implement an Odor Control Plan to mitigate odor released from the facility. The permittee shall review the Odor Control Plan semi-annually and revise the plan, as necessary. Odorous emissions from the following operations and processes at the facility shall be controlled by equipment manufacturers' operating and best management practice recommendations for minimizing emissions and optimizing performance:

- storage tanks, containers, and retention devices;
- feedstock and raw material recovery and concentration operations;
- distillation columns;
- molecular sieve separators;
- heat exchangers;
- piping, pumps, valves, and transfer systems;
- evaporators;
- oil-water separators; and
- water treatment and filtration units.

(9 VAC 5-80-1180 and 9 VAC 5-50-140)

80. **Odor Minimization/Best Management Practices** - At all times, processing and disposal of odorous emission-producing materials shall be accomplished by taking measures, consistent with air pollution control practices, for minimizing emissions. Odorous emissions-producing materials shall not be intentionally spilled, discarded in sewers, stored in open containers, or handled in any other manner that would result in evaporation beyond that consistent with air pollution practices for minimizing emissions. All bottle crushing and shredding operations shall be conducted as quickly as possible. All crushed glass, shredded cans, or other discarded vessels shall be forwarded to a covered container and recycling/disposal facility as soon as possible. The container for crushed glass, shredded cans, and discarded vessels shall remain covered at all times, except when discarded materials are being actively added. All drums of alcohol products shall remain covered unless they are being actively pumped. All systems related to crushing and shredding operations shall be designed to effectively mitigate odors around such operations.

(9 VAC 5-80-1180 and 9 VAC 5-50-140)

81. **Additional Odor BACT/Permit Reopening** - Failure to reasonably control odorous emissions from the facility may necessitate emissions testing and additional Best Available Control Technology review by the permittee, upon the request of the Director, Southwest Regional Office. This permit may be reopened to include additional equipment and control measures, as appropriate.

(9 VAC 5-80-1180, 9 VAC 5-80-1300 and 9 VAC 5-50-140)

82. **On Site Records** – The permittee shall maintain records of emission data and operating parameters as necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with the Director, Southwest Regional Office. These records shall include, but are not limited to:

- a. The dates of review of the O&M plan as required in Condition 78 of this permit.
- b. Results of all inspections and maintenance data logs.
- c. All fuel sampling analyses.
- d. All fuel supplier certifications.

These records shall be available for inspection by the DEQ and shall be current for the most recent five years.

(9 VAC 5-50-1180, 9 VAC 5-50-50, and 9 VAC 5-50-140)

83. **Odor Masking Agents** – Odor masking agents shall not be used by the permittee in the ethanol recovery facility, without prior approval from the Director, Southwest Regional Office.

(9 VAC 5-170-160)

84. **Feedstock Processing** – The permittee shall not process in the ethanol recovery facility any consumer, industrial, or other product, that may contain, or be reasonably expected to contain methanol. Such products may include, but are not limited to fuel additives, fuel anti-freeze, windshield de-icers, etc.
(9 VAC 5-170-160)

SOURCE TESTING REPORT FORMAT

Report Cover

1. Plant name and location
2. Units tested at source (indicate Ref. No. used by source in permit or registration)
3. Test Dates.
4. Tester; name, address and report date

Certification

1. Signed by team leader/certified observer (include certification date)
2. Signed by responsible company official
3. *Signed by reviewer

Copy of approved test protocol

Summary

1. Reason for testing
2. Test dates
3. Identification of unit tested & the maximum rated capacity
4. *For each emission unit, a table showing:
 - a. Operating rate
 - b. Test Methods
 - c. Pollutants tested
 - d. Test results for each run and the run average
 - e. Pollutant standard or limit
5. Summarized process and control equipment data for each run and the average, as required by the test protocol
6. A statement that test was conducted in accordance with the test protocol or identification & discussion of deviations, including the likely impact on results
7. Any other important information

Source Operation

1. Description of process and control devices
2. Process and control equipment flow diagram
3. Sampling port location and dimensioned cross section Attached protocol includes: sketch of stack (elevation view) showing sampling port locations, upstream and downstream flow disturbances and their distances from ports; and a sketch of stack (plan view) showing sampling ports, ducts entering the stack and stack diameter or dimensions

Test Results

1. Detailed test results for each run
2. *Sample calculations
3. *Description of collected samples, to include audits when applicable

Appendix

1. *Raw production data
2. *Raw field data
3. *Laboratory reports
4. *Chain of custody records for lab samples
5. *Calibration procedures and results
6. Project participants and titles
7. Observers' names (industry and agency)
8. Related correspondence
9. Standard procedures

* Not applicable to visible emission evaluations