Permit #: **28.0503-57-01**

Effective Date: **Draft**

SOUTH DAKOTA DEPARTMENT OF

ENVIRONMENT AND NATURAL RESOURCES

AIR QUALITY

CONSTRUCTION PERMIT

Steven M Pirner, Secretary
Department of Environment and Natural Resources

Under the South Dakota Air Pollution Control Regulations

Pursuant to Chapter 34A-1-21 of the South Dakota Codified Laws and the Air Pollution Control Regulations of the State of South Dakota and in reliance on statements made by the owner designated below, a permit to construct and operate is hereby issued by the Secretary of the Department of Environment and Natural Resources. This permit authorizes such owner to construct and operate the permitted unit(s) at the location designated below and under the listed conditions.

A. Owner

1. Company Name and Mailing Address

Redfield Energy, LLC
38650 171st Street
Redfield, South Dakota 57469

2. Actual Source Location if Different from Above

See Above

3. Construction Contact

Simon Appel – Director of Safety and Environmental Regulations
(605)475-3120

4. Facility Contact

Simon Appel – Director of Safety and Environmental Regulations
(605)475-3120

5. Responsible Official

Simon Appel – Director of Safety and Environmental Regulations
(605)475-3120

B. Permit Revisions

Not Applicable

C. Description of Construction Activity

Redfield Energy, LLC has proposed the construction of two new 1,000,000 gallon denatured ethanol storage tanks.

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1.0 Standard Conditions

1.1 Construction and operation of source

In accordance with Administrative Rules of South Dakota (ARSD) 74:36:20:15(9), the owner or operator shall construct and operate the units, controls, and processes as described in Table 1-1 in accordance with the statements, representations, and supporting data contained in the complete permit application received April 30, 2014, unless modified by the conditions of this permit. Except as otherwise provided herein, the control equipment in Table 1-1 shall be operated at all times in accordance with the manufacturer's specification and in a manner that achieves compliance with the conditions of this permit. The application consists of the application forms, supporting data, and supplementary correspondence. If the owner or operator becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in an application, such information shall be promptly submitted.

Table 1-1 – Description of Permitted Units, Operations, and Processes

Unit	Description	Maximum Operating Rate	Control Device
#19	Tank #6 – An above ground storage tank with an internal floating roof. The tank will store denatured ethanol	1,000,000 gallons	Not applicable
#20	Tank #7 – An above ground storage tank with an internal floating roof. The tank will store denatured ethanol	1,000,000 gallons	Not applicable

1.2 Duty to comply

In accordance with ARSD 74:36:20:15(12)(a) and (c), the owner or operator shall construct and operate in compliance with the conditions of this permit. An owner or operator who knowingly makes a false statement in any record or report or who falsifies, tampers with, or renders inaccurate, any monitoring device or method is in violation of this permit. A violation of any condition in this permit is grounds for enforcement, reopening this permit, permit termination, or denial of an application to operate. The owner or operator, in an enforcement action, cannot use the defense that it would have been necessary to cease or reduce the permitted activity to maintain compliance. The owner or operator shall provide any information requested by the Secretary to determine compliance or whether cause exists for reopening or terminating this permit.

1.3 Property rights or exclusive privileges

In accordance with ARSD 74:36:20:15(12)(b), the issuance of this permit, adoption of design criteria, and approval of plans and specifications does not convey any property rights of any sort, any exclusive privileges, any authorization to damage, injure or use any private property, any authority to invade personal rights, any authority to violate federal, state or local laws or regulations, or any taking, condemnation or use of eminent domain against any property owned

by third parties. The State does not warrant the owner's or operator's compliance with this permit, design criteria, approved plans and specifications, and operation under this permit, will not cause damage, injury or use of private property, an invasion of personal rights, or violation of federal, state or local laws or regulations. The owner or operator is solely and severally liable for all damage, injury or use of private property, invasion of personal rights, infringement of federal, state or local laws and regulations, or taking or condemnation of property owned by third parties, which may result from actions taken under the permit.

1.4 Penalty for violating a permit condition

In accordance with South Dakota Codified Laws (SDCL) 34A-1-39 and 34A-1-47, a violation of a permit condition may subject the owner or operator to civil or criminal prosecution, a state penalty of not more than $10,000 per day per violation, injunctive action, administrative permit action, and other remedies as provided by law.

1.5 Inspection and entry

In accordance with SDCL 34A-1-41, the owner or operator shall allow the Secretary to:

1. Enter the premises where a regulated activity is located or where pertinent records are stored;
2. Have access to and copy any records that are required under this permit;
3. Inspect the construction and operations regulated under this permit; and/or
4. Sample or monitor any substances or parameters for the purpose of assuring compliance.

1.6 Severability

In accordance with ARSD 74:36:20:15(11), any portion of this permit that is void or challenged shall not affect the validity of the remaining permit requirements.

1.7 Credible evidence

In accordance with ARSD 74:36:13:07, credible evidence may be used for the purpose of establishing whether the owner or operator has violated or is on violation of this permit. Credible evidence is as follows:

1. Information from the use of the following methods is presumptively credible evidence of whether a violation has occurred at the source:
   a. A monitoring method approved for the source pursuant to 40 CFR § 70.6(a)(3) and incorporated in this permit; or
   b. Compliance methods specified in an applicable plan;
2. The following testing, monitoring, or information gathering methods are presumptively credible testing, monitoring, or information-gathering methods:
   a. Any monitoring or testing methods approved in this permit, including those in 40 CFR Parts 51, 60, 61, and 75; or
   b. Other testing, monitoring, or information-gathering methods that produce information comparable to that produced by any method in section (1) or (2)(a).

2.0 Construction and Operating Permit Deadlines

2.1 Commence construction

In accordance with ARSD 74:36:20:21, this permit becomes invalid if the owner or operator has not commenced construction within 18 months of the effective date of this permit; discontinued construction for a period of 18 months or more; or construction is not completed within 10 years of the effective date of this permit.

2.2 Submit operating permit application

In accordance with ARSD 74:36:20:20, the owner or operator shall submit a complete permit application for an operating permit pursuant to ARSD 74:36:05. A complete permit application for a Title V air quality operating permit shall be submitted within 12 months after the initial startup of the two new tanks. For the purpose of this permit condition, initial startup means the first time denatured ethanol is stored in either tank.

3.0 Permit Revisions

3.1 Administrative permit amendment

In accordance with ARSD 74:36:20:16 and 74:36:20:17, the Secretary shall determine whether an administrative permit amendment is applicable to a proposed revision within 15 days from receiving a request for a permit revision. The Secretary shall issue an administrative permit amendment without the procedural requirements applicable to obtaining this construction permit. As provided in ASRD 74:36:01:03, the Secretary considers a proposed revision an administrative permit amendment if the proposed revision accomplishes one of the following:

1. Corrects typographical errors;
2. Changes the name, address, or phone number of any person identified in this permit or provides a similar minor administrative change at the source;
3. Requires more frequent monitoring or reporting by the source;
4. The ownership or operational control of a source changes and the Secretary determines that no other change in this permit is necessary. However, the new owner must submit a certification of applicant form and a written statement specifying the date for transfer of operating permit responsibility, coverage, and liability; or
5. Any other change that the Secretary determines to be similar to those requirements in this condition.

3.2 Reopening permit

In accordance with ARSD 74:36:20:18 and 74:36:20:19, the Secretary may reopen this permit for further review if the Secretary determines the permit contains a material mistake in establishing the emissions standard or limits or other requirements of the construction permit or

the Secretary determines the construction permit must be revised to ensure compliance with the applicable requirements of ARSD 74:36 and the federal Clean Air Act. The Secretary shall notify the owner or operator 30 days prior to reopening a construction permit or in a shorter time period in an emergency. The reopening of this construction permit shall follow the same procedural requirements to issue a construction permit and shall affect only those parts of the permit for which cause to reopen exist.

4.0 Recordkeeping and Reporting

4.1 Recordkeeping and reporting

In accordance with ARSD 74:36:20:15(10), the owner or operator shall maintain all monitoring data, records, reports, and pertinent information specified by this permit for five years from the date of sample, measurement, report, or application. The records shall be maintained on site for the first two years and may be maintained off site for the last three years. All records must be made available to the Secretary for inspection. All notifications and reports shall be submitted to the following address:

South Dakota Department of Environment and Natural Resources
PMB 2020, Air Quality Program
523 E. Capitol, Joe Foss Building
Pierre, SD 57501-3181

4.2 Construction date notification

In accordance with ARSD 74:36:07:01, as referenced to 40 CFR § 60.7(a)(1), the owner or operator shall notify the Secretary of the date construction commenced on the two new tanks. The notification shall be postmarked no later than 30 days after such date.

4.3 Initial startup notification

In accordance with ARSD 74:36:07:01, as referenced to 40 CFR § 60.7(a)(3), the owner or operator shall notify the Secretary of the actual date of initial startup of the two new tanks. The notification shall be postmarked no later than 15 days after such date. For the purpose of this permit condition, initial startup means the first time denatured ethanol is stored in either tank.

4.4 Monthly records

In accordance with ARSD 74:36:20:15(10), the owner or operator shall calculate and record the following amounts each month:

1. The amount of volatile organic compounds, in tons, emitted into the ambient air from the permitted units and fugitive operations during the month. A 12-month rolling total shall be calculated every month using that month's value and the previous 11 months' values. The volatile organic compound emissions shall be based on the following:
    a. The amount of volatile organic compounds emitted to the ambient air from permitted units shall be calculated using formulas, emission factors, and methods described in the

statement of basis. Once the required performance tests are conducted, the amount of volatile organic compound emissions shall be calculated using the results of the most recent performance test.

b. The fugitive emissions from leaking equipment such as valves, pumps, compressors, etc., shall be calculated by using the emission factors from Protocol for Equipment Leak Emissions Estimates, EPA-453/R-95-017 or another method approved by the Secretary. The amount of time a piece of equipment is considered leaking shall be the time between detecting the leak and the date the leak was fixed.

2. The amount of hazardous air pollutant, in tons, emitted into the ambient air from the permitted units during the month. A 12-month rolling total shall be calculated every month using that month's value and the previous 11 months' values. The amount of hazardous air pollutants emitted to the ambient air from permitted units shall be calculated using formulas, emission factors, and methods described in the statement of basis;

4.5 Quarterly reporting

In accordance with ARSD 74:36:20:15(10), the owner or operator shall submit a quarterly report to the Secretary by the end of each calendar quarter. The quarterly report shall contain the following information:

1. Name of facility, permit number, reference to this permit condition, identifying the submittal as a quarterly report, and calendar dates covered in the reporting period;
2. The quantity of volatile organic compounds and hazardous air pollutants emitted, in tons, in each month and the 12-month rolling total for each month in the reporting period and supporting documentation;
3. The number of gallons of undenatured ethanol produced during the month and during the 12-month rolling period for that month.

4.6 Certification statement

In accordance with ARSD 74:36:20:15(10), all documents required by this permit, including application forms, reports, and compliance certification, must be certified by a responsible official or a duly authorized representative. The certification shall include the following statement:

> "I certify that, based on information and belief formed after reasonable inquiry, the statements and information in this document and all attachments are true, accurate, and complete."

A responsible official for a corporation is a responsible corporate officer and for a partnership or sole proprietorship is a general partner or the proprietor, respectively. A person is a duly authorized representative only if:

1. The authorization is made in writing by a person described above and submitted to the Secretary; and

2. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters.

The duly authorized representative must be designated prior to or together with any reports or information to be signed by a duly authorized representative. The responsible official shall notify the Secretary if an authorization is no longer accurate.

4.7 Reporting permit violations

In accordance with ARSD 74:36:20:15(10), the owner or operator shall report all permit violations. A permit violation should be reported as soon as possible, but no later than the first business day following the day the violation was discovered. The permit violation may be reported by telephone to the South Dakota Department of Environment and Natural Resources at (605) 773-3151 or by FAX at (605) 773-5286.

A written report shall be submitted within five days of discovering the permit violation. Upon prior approval from the Secretary, the submittal deadline for the written report may be extended up to 30 days. The written report shall contain:

1. A description of the permit violation and its cause(s);
2. The duration of the permit violation, including exact dates and times; and
3. The steps taken or planned to reduce, eliminate, and prevent reoccurrence of the permit violation.

5.0 Control of Regulated Air Pollutants

5.1 Visibility limit

In accordance with ARSD 74:36:12:01, the owner or operator may not discharge into the ambient air an air contaminant of a density equal to or greater than that designated as 20 percent opacity from any permitted unit, operation, or process listed in Table 1-1, unless otherwise specified in this permit. This provision does not apply when the presence of uncombined water is the only reason for failure to meet the requirement.

5.2 Visibility exceedances

In accordance with ARSD 74:36:12:02, an exceedance of the opacity limit in permit condition 5.1 is not considered a violation during brief periods of soot blowing, start-up, shutdown, or malfunctions. A malfunction is described as any sudden and unavoidable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. A failure caused entirely or in part by poor maintenance, careless operation, preventable equipment breakdown, or any other cause within the control of the owner or operator of the source is not a malfunction and is considered a violation.

5.3 Circumvention not allowed

In accordance with ARSD 74:36:07:01, as referenced to 40 CFR § 60.12, the owner or operator may not install, use a device, or use a means that conceals or dilutes an air emission that would otherwise violate this permit. This includes operating a unit or control device that emits air pollutants from an opening other than the designed stack, vent, or equivalent opening.

5.4 Minimizing emissions

In accordance with ARSD 74:36:07:01, as referenced to 40 CFR § 60.11(d), the owner or operator shall at all times, when practicable, maintain and operate all permitted units in a manner that minimizes air pollution emissions

6.0 PSD and Case-by-Case MACT Exemption

6.1 Prevention of significant deterioration review exemption

In accordance with ARSD 74:36:20:15(8), the owner or operator is exempt from a prevention of significant deterioration review for volatile organic compounds. Any relaxation in this permit that increases applicable emissions equal to or greater than 95 tons per 12-month rolling period may require a full prevention of significant deterioration review as though construction had not commenced on the source.

6.2 Case-by-Case exemption

In accordance with ARSD 74:36:20:15(8), the owner or operator is exempt from a Case-by-Case determination for hazardous air pollutants. Any relaxation in this permit that increases hazardous air pollutant emissions equal to or greater than 9.5 tons per 12-month rolling period for a single hazardous air pollutant or 23.8 tons per 12-month rolling period for any combination of hazardous air pollutants may require a Case-by-Case MACT determination as though construction had not commenced on the source.

6.3 Plant wide volatile organic compound limit

In accordance with ARSD 74:36:20:15(9), the owner or operator shall not emit into the ambient air greater than or equal to 95 tons of volatile organic compounds per 12-month rolling period from the permitted units and fugitive sources identified in this permit, the Title V air quality operating permit #28.0503-57, and the Construction permit #28.0503-57-01C.

6.4 Plant wide hazardous air pollutant limit

In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall not emit greater than or equal to 9.5 tons of a single hazardous air pollutant or 23.8 tons of a combination of hazardous air pollutants per 12-month rolling period from the permitted units and fugitive sources identified in this permit, the Title V air quality operating permit #28.0503-57, and the Construction permit #28.0503-57-01C

7.0 Performance Tests

7.1 Performance test may be required

In accordance with ARSD 74:36:11:02, the Secretary may request a performance test. A performance test shall be conducted while operating the unit at or greater than 90 percent of its maximum design capacity, unless otherwise specified by the Secretary. A performance test that is conducted while operating at less than 90 percent of its maximum design capacity will result in the operation being limited to the percent achieved during the performance test. The Secretary has the discretion to extend the deadline for completion of the performance test required by the Secretary if circumstances reasonably warrant but will not extend the deadline past a federally required performance test deadline.

7.2 Test methods and procedures

In accordance with ARSD 74:36:11:01, the owner or operator shall conduct the performance test in accordance with 40 CFR Part 60, Appendix A, 40 CFR Part 63, Appendix A, and 40 CFR Part 51, Appendix M. The Secretary may approve an alternative method if a performance test specified in 40 CFR Part 60, Appendix A, 40 CFR Part 63, Appendix A, and 40 CFR Part 51, Appendix M is not applicable or required.

7.3 Representative performance test

In accordance with ARSD 74:36:07:01, as referenced to 40 CFR § 60.8(c), performance tests shall be conducted under such conditions as the Secretary shall specify to the owner or operator based on the representative performance of the unit being tested. The owner or operator shall make available to the Secretary such records as may be necessary to determine the conditions of the performance tests. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test nor shall emissions in excess of the level of the applicable emission limit during periods of startup, shutdown, and malfunction be considered a violation of the applicable emission limit unless otherwise specified in this permit.

7.4 Submittal of test plan

In accordance with ARSD 74:36:11:01, the owner or operator shall submit the proposed testing procedures to the Secretary at least 30 days prior to any performance test. The Secretary will notify the owner or operator if the proposed test procedures are approved or denied. If the proposed test procedures are denied, the Secretary will provide written notification that outlines what needs to be completed for approval.

7.5 Notification of test

In accordance with ARSD 74:36:07:01, as referenced to 40 CFR § 60.8(d), the owner or operator shall notify the Secretary at least 30 days prior to the start of a performance test to afford the Secretary the opportunity to have an observer present. If there is a delay in conducting the scheduled performance test, the owner or operator shall notify the Secretary as soon as possible

of any delay in the original test date, either by providing at least 7 days prior notice of the rescheduled date of the performance test, or by arranging a rescheduled date with the Secretary by mutual agreement.

7.6 Performance test report

In accordance with ARSD 74:36:20:15(10), the owner or operator shall submit a performance test report to the Secretary within 60 days after completing the performance test or by a date designated by the Secretary. The performance test report shall contain the following information:

1. Description of the process and the air pollution control system being tested;
2. Sampling location description(s);
3. A description of sampling and analytical procedures and any modifications to standard procedures;
4. Test results expressed in units consistent with the applicable emission limit;
5. Quality assurance procedures and results;
6. Records of unit's operating conditions during the test (e.g., operating rate, fuel type);
7. Raw data sheets for field sampling and field and laboratory analyses;
8. Documentation of calculations;
9. All data recorded and used to establish parameters for compliance monitoring; and
10. Any other information required by the test method.

8.0 Storage Tank Requirements

8.1 Internal floating roof specifications for tanks

In accordance with ARSD 74:36:07:14, as referenced to 40 CFR § 60.112b(a)(1), the owner or operator shall install and maintain a fixed roof with an internal floating roof on Unit #19 and #20. The internal floating roof shall meet the following specifications:

1. The internal floating roof shall rest or float on the liquid surface (but not necessarily in complete contact with it) inside the storage vessel. The internal floating roof shall be floating on the liquid surface at all times except during initial fill and when the tank is completely emptied and subsequently refilled. The process of emptying and refilling when the cover is resting on the leg supports shall be continuous and accomplished as rapidly as possible;
2. The internal floating roof shall be equipped with one of the following closure devices between the wall of the storage vessel and the edge of the internal floating roof:
   a. A liquid mounted seal. A liquid mounted seal means a foam or liquid filled seal mounted in contact with the liquid between the wall of the storage vessel and the floating roof continuously around the circumference of the tank;

b. A double-seal system. A double-seal system is two seals mounted one above the other so that each forms a continuous closure that completely covers the space between the wall of the storage vessel and the edge of the internal floating roof. The lower seal may be vapor mounted, but both seals must be continuous; or
c. A mechanical shoe seal. A mechanical shoe seal is a metal sheet held vertically against the wall of the storage vessel by springs or weighted levers and is connected by braces to the floating roof. A flexible coated fabric (envelope) spans the annular space between the metal sheet and the floating roof;

3. Each opening in a non-contact internal floating roof, except for automatic bleeder vents and the rim space vents, is to provide a projection below the liquid surface;
4. Each opening in the internal floating roof, except for leg sleeves, automatic bleeder vents, rim space vents, column wells, ladder wells, sample wells, and stub drains, is to be equipped with a cover or lid which is to be maintained in a closed position at all times (i.e., no visible gap) except when the device is in actual use. The cover or lid shall be equipped with a gasket. Covers on each access hatch and automatic gauge float well shall be bolted except when in use;
5. Automatic bleeder vents shall be equipped with a gasket and are to be closed at all times when the roof is floating except when the roof is being floated off or is being landed on the leg supports. Rim vents shall be equipped with a gasket and are to be set to open only when the internal floating roof is not floating or at the manufacturer's recommended setting;
6. Each penetration of the internal floating roof for the purpose of sampling shall be a sample well. The sample well shall have a slit fabric cover that covers at least 90 percent of the opening;
7. Each penetration of the internal floating roof that allows for passage of a column supporting the fixed roof shall have a flexible fabric sleeve seal or a gasketed sliding cover; and
8. Each penetration of the internal floating roof that allows for passage of a ladder shall have a gasketed sliding cover.

8.2 Tank dimension records

In accordance with ARSD 74:36:07:14, as referenced to 40 CFR § 60.116b(a) and (b), the owner or operator shall maintain records showing the dimension and an analysis showing the capacity of Unit #19 and #20. These records must be maintained for the life of the tank.

8.3 Record of products stored in tanks

In accordance with ARSD 74:36:07:14, as referenced to 40 CFR § 60.116b(a) and (c), the owner or operator shall maintain a record of the volatile organic liquid stored, the period of storage, and the maximum true vapor pressure of the liquid during the respective storage period for Unit #19 and #20. These records must be maintained for at least two years from the date of such record.

8.4 Initial tank report

In accordance with ARSD 74:36:07:14, as referenced to 40 CFR § 60.115b(a)(1), the owner or operator shall furnish the Secretary with a report that describes the internal floating roof and certifies the installed internal floating roof meets the specifications in permit condition 8.1. The report shall be attached to the initial startup notification in permit condition 4.3 and maintain a copy of the report for at least 2 years.

8.5 Tank inspection record

In accordance with ARSD 74:36:07:14, as referenced to 40 CFR § 60.115b(a)(2), the owner or operator shall maintain records of each inspection performed as required by permit condition 8.8 and 8.9. Each record shall identify the tank on which the inspection was performed and shall contain the date the tank was inspected, and the observed condition of the seals, internal floating roof, and fittings. Each record must be maintained for at least two years from the date of such record.

8.6 Notification of visual tank inspections

In accordance with ARSD 74:36:07:14, as referenced to 40 CFR § 60.113b(a)(5), the owner or operator shall notify the Secretary 30 days prior to conducting a visual inspection or periodic tank inspection of Unit #19 and #20 as required in permit condition 8.8 and 8.9(2). If the visual inspection was not planned and the owner or operator could not have known about the inspection 30 days in advance, the owner or operator shall notify the Secretary at least seven days prior to conducting the inspection. Notification shall be made by telephone immediately followed by written documentation demonstrating why the inspection was unplanned.

8.7 Tank defect report

In accordance with ARSD 74:36:07:14, as referenced to 40 CFR § 60.115b(a)(3) and (4), if any defects described in permit condition 8.8 and 8.9 are detected during an inspection, a report shall be submitted to the Secretary within 30-days of the inspection. Each report shall identify the storage vessel, the nature of each defect, the date the storage vessel was emptied (if applicable), the date each defect was repaired, and a list of each repair made. A copy of this report must be maintained for at least two years.

8.8 Visual inspection prior to filling

In accordance with ARSD 74:36:07:14, as referenced to 40 CFR § 60.113b(a)(1), the owner or operator shall visually inspect the internal floating roof, the primary seal, and the secondary seal (if one is in service) prior to filling Unit #19 and #20 with volatile organic liquid. If there are holes, tears, or other openings in the primary seal, the secondary seal, or the seal fabric or defects in the internal floating roof, or both, the owner or operator shall repair the items before filling the storage vessel.

8.9 Periodic tank inspections

In accordance with ARSD 74:36:07:14, as reference to 40 CFR § 60.113b(a)(2) through (4), the owner or operator shall visually inspect Unit #19 and #20 on a periodic basis as specified below:

1. If the storage vessel is equipped with a liquid mounted primary seal, mechanical shoe primary seal, or double seal system, visually inspect the internal floating roof and the primary seal or secondary seal (if one is in service) at least once every 12 months after the initial fill. The visual inspection may be conducted through manholes and roof hatches on the fixed roof. A failure occurs if the internal roof is not resting on the surface of the volatile organic liquid inside the storage vessel, there is liquid accumulated on the roof, the seal is detached, or there are holes or tears in the seal fabric. The owner or operator shall either repair the internal floating roof and/or the primary seal or secondary seal or empty or remove the storage vessel from service within 45 days of discovering a failure. The owner or operator may request a 30-day extension if the tank cannot be repaired or emptied within 45 days of discovering a failure. The written request for the 30-day extension shall be included with the report required in permit condition 8.7. The Secretary will grant a 30-day extension if the extension request documents that alternate storage capacity is unavailable and specifies a schedule of actions the owner or operator will take that will assure that the equipment will be repaired or the vessel will be emptied as soon as possible; and
2. The owner or operator shall visually inspect the internal floating roof, the primary seal, the secondary seal (if one is in service), gaskets, slotted membranes and sleeve seals (if any) each time the storage vessel is emptied and degassed. The owner or operator shall repair internal floating roof defects, holes, tears, or other openings in the primary or secondary seal or the seal fabric, gaskets that no longer close off the liquid surfaces from the atmosphere, or slotted membrane with more than 10 percent open area before refilling the storage vessel with volatile organic liquids. In no event shall the inspections be conducted at intervals greater than 10 years if annual visual inspections are conducted in accordance with 8.9(1) or at intervals greater than 5 years if annual visual inspections are not conducted.
3. If the storage vessel is equipped with a double-seal system, visually inspect the internal floating roof as specified in 8.9(2) at least every five years or visually inspect the floating roof as specified in 8.9(1).

9.0 Synthetic Organic Chemical Manufacturing Requirements

9.1 Addition or replacement of equipment

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.480(c), the addition or replacement of equipment subject to 40 CFR Part 60 Subpart VV for the purpose of process improvement which is accomplished without a capital expenditure shall not by itself be considered a modification.

A. Pumps in Light Liquid Service

9.2 Monitoring pumps in light liquid service

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-2(a), (b) and (c), each pump in light liquid service shall be monitored according to the following:

1. A visual inspection shall occur each calendar week for indications of liquids dripping from the pump seal. A leak is detected if there is an indication of liquids dripping from the pump seal. If there are indications of liquids dripping from the pump seal, the owner or operator shall meet the following requirements:
   a. Monitor the pump within five days as specified in permit condition 9.39. If an instrument reading of 10,000 parts per million or greater is measured, a leak is detected; and
   b. 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;

   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 parts per million and the pump was not repaired since that monitoring event.
2. An inspection shall occur monthly to detect leaks by the method specified in permit condition 9.39. A pump that begins operation in light liquid service after the issuance of this permit must be monitored for the first time within 30 days of operating in light liquid service, except for a pump that replaces a leaking pump**.** A leak is detected if an instrument reading of 10,000 parts per million or greater is measured.

"In light liquid service" means the piece of equipment contains a liquid that meets the specifications in permit condition 9.42.

When a leak is detected, the first attempt at repairing the leak shall be made no later than five calendar days after the leak is detected. First attempts at repair include, but are not limited to tightening the packing land nuts and ensuring the seal flush is operating at design pressure and temperature where practicable. A leak shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in permit condition 9.27.

The owner or operator shall comply with this permit condition, except as provided in permit condition 9.3, 9.4, 9.5, 9.6, and 9.34.

9.3 Exemption for pumps equipped with a dual mechanical seal system

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-2(d), each pump in light liquid service equipped with a dual mechanical seal system that includes a barrier fluid system is exempt from permit condition 9.2 provided the following requirements are met:

1. Each dual mechanical seal system is:

   a. Operated with the barrier fluid at a pressure that is at all times greater than the pump stuffing box pressure;
   b. Equipment with a barrier fluid degassing reservoir that is connected by a closed vent system to a control device that complies with the requirements of permit condition 9.28 through 9.33, inclusive; or
   c. Equipped with a system that purges the barrier fluid into a process stream with zero volatile organic compound emissions to the atmosphere;
2. The barrier fluid system is in heavy liquid service or is not in volatile organic compound 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. 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. Each sensor shall be checked daily or equipped with an audible alarm. A leak is detected if the sensor indicates failure of the seal system, the barrier fluid system or both based on the criterion established by the owner or operator; and
4. Each pump is checked by visual inspection, each calendar week, for indications of liquids dripping from the pump seals. If there are indications of liquids dripping from the pump seal at the time of the weekly inspection, the owner or operator shall perform the following procedures:
   a. Monitor the pump within five days as specified in permit condition 9.39 to determine if there is a leak of volatile organic compounds in the barrier fluid. If an instrument reading of 10,000 parts per million or greater is measured, a leak is detected; and
   b. Designate the visual indications of liquids dripping as a leak.

When a leak is detected, the first attempt at repairing the leak shall be made no later than five calendar days after the leak is detected. First attempts at repair include, but are not limited to tightening the packing land nuts and ensuring the seal flush is operating at design pressure and temperature where practicable. A leak shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in permit condition 9.27.

9.4 Exemptions for pumps with no detectable emissions

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-2(e), any pump that is designated by subsection (1) and (2) of permit condition 9.49 for no detectable emission is exempt from permit conditions 9.2 and 9.3 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 parts per million above background as measured by the methods specified in permit condition 9.40; and
3.
4. Is tested for compliance with subsection (2) of this permit condition initially upon designation, annually, and at other times requested by the Secretary.

9.5 Exemption for pumps with a closed vent system

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-2(f), any pump equipped with a closed vent system capable of capturing and transporting any leakage from the seal or seals to a process, fuel gas system, or control device that complies with the requirements in permit condition 9.28 through 9.33, inclusive is exempt from permit condition 9.2, 9.3, and 9.4.

9.6 Exemption for pumps designated unsafe-to-monitor

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-2(g), any pump that is designated, as described in subsection (1) of permit condition 9.50, as an unsafe-to-monitor pump is exempt from the monitoring and inspection requirements in permit condition 9.2 and 9.3 if:

1. The owner or operator of the pump demonstrates the pump is unsafe-to-monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with permit condition 9.2; 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. When a leak is detected, the first attempt at repairing the leak shall be made no later than five calendar days after the leak is detected. First attempts at repair include, but are not limited to tightening the packing land nuts and ensuring the seal flush is operating at design pressure and temperature where practicable. A leak shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in permit condition 9.27.

B. Compressors

9.7 Compressor seal system

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-3(a) through (g), inclusive, each compressor shall be equipped with a seal system that includes a barrier fluid system and prevents leakage of volatile organic compounds to the atmosphere. Each compressor seal system and barrier fluid system shall meet the following requirements:

1. Each compressor seal system shall be:
   a. Operated with the barrier fluid at a pressure that is greater than the compressor stuffing box pressure;
   b. Equipped with a barrier fluid system that is connected by a closed vent system to a control device that complies with the requirements in permit condition 9.28 through 9.33, inclusive; or
   c. Equipped with a system that purges the barrier fluid into a process stream with zero volatile organic compound emissions to the atmosphere;

2. The barrier fluid system shall be in heavy liquid service or shall not be in volatile organic compound service;
3. The barrier fluid system shall be equipped with a sensor that will detect failure of the seal system, barrier fluid system, or both;
4. Each sensor shall be checked daily or shall be equipped with an audible alarm;
5. 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; and
6. A leak is detected if the sensor indicates failure of the seal system, the barrier system, or both based on the criterion determined in subsection (5) of this permit condition.
7. When a leak is detected, a first attempt at repairing a leak shall be made no later than five calendar days after each leak is detected. A leak shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in permit condition 9.27.

The owner or operator shall comply with this permit condition, except as provided in permit condition 9.8, 9.9, and 9.34.

9.8 Exemption for compressors equipped with a closed vent system

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-3(h), a compressor equipped with a closed vent system capable of capturing and transporting leakage from the compressor drive shaft back to a process, fuel gas system, or control device that complies with the requirements in permit condition 9.28 through 9.33, inclusive, except as provided in permit condition 9.9, is exempt from permit condition 9.7.

9.9 Exemption for compressors with no detectable emissions

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-3(i), a compressor that is designated, as described by subsection (1) and (2) of permit condition 9.49 for no detectable emissions is exempt from permit condition 9.7 and 9.8 if the compressor:

1. Is demonstrated to be operating with no detectable emissions as indicated by an instrument reading of less than 500 parts per million above background as measured by the methods specified in permit condition 9.40; and
2. Is tested for compliance with subsection (1) of this permit condition initially upon designation, annually, and at other times requested by the Secretary.

C. Pressure Relief Device in Gas/Vapor Service

9.10 No detectable emissions from a pressure relief device in gas/vapor service

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-4(a) and (b), 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 parts per million above background, as determined by the methods specified in permit condition 9.40. "In

gas/vapor service" means that the piece of equipment contains process fluid that is in the gaseous state at operating conditions.

No later than five calendar days after each pressure release, except as provided in permit condition 9.27, the pressure relief device shall be returned to a condition of no detectable emissions and monitored to confirm the condition of no detectable emissions.

The owner or operator shall comply with this permit condition, except as provided in permit condition 9.11 and 9.12.

9.11 Exemption for pressure relief device equipped with closed vent system

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-4(c), any pressure relief device equipped with a closed vent system capable of capturing and transporting leakage through the pressure relief device to a control device is exempt from permit condition 9.10. The control device must comply with the requirements of permit condition 9.28 through 9.33, inclusive.

9.12 Exemption for pressure relief device equipped with rupture disk

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-4(d), any pressure relief device equipped with a rupture disk upstream of the pressure relief devise is exempt from permit condition 9.10 provided the owner or operator installs a new rupture disk after each pressure release as soon as practicable, but no later than five calendar days after each pressure release, except as provide in permit condition 9.27.

D. Sampling Connection Systems

9.13 Sampling connection system

In accordance with ARSD 74:36:07:22 as referenced to 40 CFR § 60.482-5(a) and (b), each sampling connection system shall be equipped with a closed purged, closed loop, or closed vent system. Each closed purged, closed loop, or closed vent system shall comply with the following requirements:

1. Gases displaced during the filling of the sample container are not required to be collected or captured;
2. Containers that are part of the 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 one of the following requirements:
5. Return the purged process fluid directly to the process line;
6. Collect and recycle the purged process fluid to a process;

7. Capture and transport all of the purged process fluid to a control device that complies with the requirements of permit condition 9.28 through 9.33, inclusive; or
8. 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 40 CFR § 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, inclusive; 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.

The owner or operator shall comply with this permit condition, except as provided in permit condition 9.14 and 9.34.

9.14 Exemption for in situ sampling systems and sampling systems without purges

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-5(c), in situ sampling systems and sampling systems without purges are exempt from permit condition 9.13. "In-situ sampling system" means non-extractive samplers or in-line samplers.

E. Open-Ended Valves or Lines

9.15 Open-ended valves or lines

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-6(a) and (b), each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve. The cap, blind flange, plugs, 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. 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.

The owner or operator shall comply with this permit condition, except as provided in permit condition 9.16, 9.17, 9.18, and 9.34.

9.16 Exemption for double block-and-bleed system

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-6(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 permit condition 9.15 at all other times.

9.17 Exemption for emergency shutdown

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-6(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 permit condition 9.15 and 9.16.

9.18 Exemption for safety hazards

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-6(e), open-ended valves or lines containing materials which would auto catalytically polymerize or would present an explosion, serious overpressure, or other safety hazard if capped or equipped with a double block and bleed system are exempt from permit condition 9.15 and 9.16.

F. Valves in Gas/Vapor Service and Light Liquid Service

9.19 Monthly monitoring valves in gas/vapor and light liquid service

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-7(a) through (e), inclusive, each valve shall be monitored monthly to detect leaks by the methods specified in permit condition 9.39. A valve that begins operation in gas/vapor service or light liquid service after the initial startup of the facility must be monitored for the first time within 30 days after the valve begins operation in gas/vapor service or light liquid service. If the valve is monitored in accordance with permit condition 9.23 or 9.24, count the new valve as leaking when calculating the percentage of valves leaking as described in permit condition 9.45. 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 or within 90 days, whichever comes first. A leak is detected if an instrument reading of 10,000 parts per million or greater is measured.

Any valve for which a leak is not detected for two successive months may be monitored the first month of every quarter, beginning with the next quarter, until a leak is detected. Once a leak is detected, the valve shall be monitored monthly again until a leak is not detected for two successive months. 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.

A first attempt at repairing a leak shall be made no later than five calendar days after the leak is detected. The leak shall be repaired as soon as practicable, but not later than 15 calendar days after

the leak is detected, except as provided in permit condition 9.27. 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; and
4. Injection of lubricant into lubricated packing.

The owner or operator shall comply with this permit condition, except as provided in permit condition 9.20, 9.21, 9.22, 9.23, 9.25, and 9.34.

9.20 Exemption for monitoring valves with no detectable emissions

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-7(f), any valve that is designated by subsection (2) of permit condition 9.49 for no detectable emissions is exempt from permit condition 9.19 if the valve:

1. Has no external actuating mechanism in contact with the process fluid;
2. Is operated with emissions less than 500 parts per million above background as measured by the methods specified in permit condition 9.40; and
3. Is tested for compliance with subsection (2) of this permit condition initially upon designation, annually, and at other times requested by the Secretary.

9.21 Exemption for unsafe-to-monitor valves

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-7(g), any valve that is designated by subsection (1) of permit condition 9.50 as an unsafe-to-monitor valve is exempt from permit condition 9.19 if:

1. The owner or operator of the valve demonstrates the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with permit condition 9.19; 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.

9.22 Exemption for difficult-to-monitor valves

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-7(h), any valve that is designated by subsection (2) of permit condition 9.50 as a difficult-to-monitor valve is exempt from permit condition 9.19 if:

1. The owner or operator of the valve demonstrates the valve cannot be monitored without elevating the monitoring personnel more than two meters above a support surface;
2. The process unit within which the valve is located either becomes an affected facility through a modification or reconstruction 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.

9.23 Alternative standard for valves in gas/vapor and light liquid service

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.483-1(a), (b), and (d), the owner or operator may elect to comply with permit condition 9.19 with an allowable percentage of valves leaking of equal to or less than 2.0 percent. This can be accomplished by following the requirements listed below:

1. The owner or operator must notify the Secretary that the owner or operator has elected to comply with the allowable percentage of valves leaking before implementing this alternative standard, as specified in permit condition 9.56;
2. A performance test, as specified in permit condition 9.24, shall be conducted initially upon designation, annually, and at other times requested by the Secretary; and
3. If a valve leak is detected, it shall be repaired in accordance with the time frame specified in permit condition 9.19.

The owner or operator who elects to comply with this permit condition shall not have a leak percentage greater than 2.0 percent, determined as described in permit condition 9.45. If the leak percentage is greater than 2.0 percent, the owner or operator shall comply with the requirements described in permit condition 9.19.

9.24 Performance test for valves using alternative standard

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.483-1(c), if the owner or operator elects to use the alternative standard for valves in permit condition 9.23, a performance test shall be conducted in the following manner:

1. All valves in gas/vapor and light liquid service within the ethanol plant shall be monitored within one week by the methods specified in permit condition 9.39;
2. A leak is detected if an instrument reading of 10,000 parts per million or greater is measured; and
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 ethanol plant.

9.25 Additional option for valves in gas/vapor and light liquid service

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.483-2, after complying initially with permit condition 9.19, an owner or operator may elect to comply with one of the alternative work practices listed below after notifying the Secretary in accordance with permit condition 9.56:

1. After two 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 one of the quarterly leak detection periods for the valves in gas/vapor and light liquid service; or
2. After five 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 three of the quarterly leak detection periods for the valves in gas/vapor and light liquid service.

The percent of valves leaking shall be determined by permit condition 9.45. If the percent of valves leaking is greater than 2.0, the owner or operator shall comply with permit condition 9.19 but can again elect to use this permit condition. The owner or operator shall keep a record of the percent of valves found leaking during each leak detection period.

A valve that begins operation in gas/vapor service or light liquid service after the initial startup of this facility must be monitored in accordance with permit condition 9.19 before the provisions of this permit condition can be applied to that valve.

G. Other Pumps, Valves, Pressure Relief Devices, Flanges, and Connectors

9.26 Monitoring pumps, valves, pressure relief devices, flanges, and other connectors

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-8, 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 comply with one of the following procedures:

1. Monitor the equipment within five days by the method specified in permit condition 9.39. A leak is detected if a monitor reading of 10,000 parts per million or greater is measured. 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 permit condition 9.27. A first attempt at repairing a leak shall be made no later than five calendar days after each leak is detected. First attempts at repair include, but are not limited to the following best practices where practicable:
   a. Tightening of bonnet bolts;
   b. Replacement of bonnet bolts;
   c. Tightening of packing gland nuts; and
   d. Injection of lubricant into lubricated packing; or
2. Eliminate the visual, audible, olfactory, or other indications of potential leak within five calendar days of detection.

H. Delay of Repair

9.27 Repair delay

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-9, a delay of repair of equipment for which leaks have been detected will be allowed in the following circumstances:

1. Delay may occur if the 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;
2. Delay of repair of equipment will be allowed for equipment which is isolated from the process and which does not remain in volatile organic compound service;
3. Delay of repair for valves will be allowed if:
    a. 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
    b. When repair procedures are effected, the purged material is collected and destroyed or recovered using a control device complying with permit condition 9.28 through 9.33, inclusive;
4. Delay of repair for pumps will be allowed if:
    a. Repair requires the use of a dual mechanical seal system that includes a barrier fluid system; and
    b. Repair is completed as soon as practicable, but not later than six months after the leak was detected; and
5. Delay of repair beyond a process unit shutdown will be allowed for a valve, if valve assembly replacement is necessary during the process unit shut down, and valve assembly supplies had been sufficiently stocked and have been depleted. Delay of repair beyond the next process unit shutdown will not be allowed unless the next process unit shutdown occurs sooner than six months after the first process unit shutdown.

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

I. Closed Vent Systems and Control Devices

9.28 Standard for a closed vent system and control device

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-10(a), (b), (c), (d), (e), (f), (g), and (m), the owner or operator of a closed vent system and control device used to comply with chapter 9.0 of this permit shall comply with the following:

1. Vapor recovery systems such as a condenser or adsorber shall be designed and operated to recover the volatile organic compound 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;
2. An enclosed combustion device shall be designed and operated to reduce volatile organic compound 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 provide a minimum residence time of 0.75 seconds at a minimum temperature of 816 degrees Celsius (1,500 degrees Fahrenheit);

3. A flare shall comply with the requirements in 40 CFR § 60.18;
4. The control device shall be monitored to ensure that the control device is operated and maintained in conformance with its design; and
5. Except as provided in permit condition 9.30, 9.31, and 9.32, each closed vent system shall be inspected according to the following procedures:
    a. If the vapor collection system or closed vent system is constructed of hard piping, the owner or operator shall conduct an initial inspection according to permit condition 9.39 and conduct an annual visual inspections for visible, audible, or olfactory indications of leaks; and
    b. If the vapor collection system or closed vent system is constructed of ductwork, the owner or operator shall conduct an initial and annual inspection according to permit condition 9.39.

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 permit condition 9.29. A first attempt at repair shall be made no later than five calendar days after the leak is detected. Repair shall be completed no later than 15 calendar days after the leak is detected.

A closed vent system and control device used to comply with this permit condition shall be operated at all times when emissions may be vented to them.

9.29 Delay in repairing leaks

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-10(h), the owner or operator may delay the repair of a closed vent system for which leaks have been detected. The delay may occur 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. The leak shall be repaired by the end of the next process unit shutdown.

9.30 Exemption for vapor collection system or closed vent system under vacuum

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-10(i), the owner or operator of a vapor collection system or closed vent system that is operated under a vacuum is exempt from subsection (5) of permit condition 9.28.

9.31 Exemption for unsafe to inspect closed vent system

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-10(j), the owner or operator is exempt from subsection (3) of permit condition 9.28 for any part of the closed vent system that is designated, as described in permit condition 9.33, as unsafe to inspect if the owner or operator complies with the following:

1. The owner or operator determines the equipment is unsafe to inspect because inspection personnel would be exposed to an imminent or potential danger as a consequence of complying with subsection (5) of permit condition 9.28; 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.

9.32 Exemption for difficult to inspect closed vent system

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-10(k), the owner or operator is exempt from inspecting any part of the closed vent system that is designated, as described in permit condition 9.33, as difficult to inspect if the owner or operator complies with the following:

1. The owner or operator determines the equipment cannot be inspected without elevating the inspection personnel more than two meters above a support surface;
2. The process unit within which the closed vent system is located becomes an affected facility through modification or reconstruction 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 five years.

9.33 Identification of unsafe equipment

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-10(l), the owner or operator shall record the following information to identify equipment unsafe to inspect:

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 permit condition 9.47;
4. For each inspection conducted in accordance with permit condition 9.39 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; and
5. For each annual visual inspection required in subsection (5)(b) of permit condition 9.28 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.

J. Equivalent Limits and Exemptions

9.34 Emission limit equivalence

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR §§ 60.482-1(c) and 60.484(a) and (d), the owner or operator may apply to the Administrator of EPA through the Secretary for determination of emission limit equivalence. Emission limit equivalence means the owner or operator shall achieve a reduction in emissions of volatile organic compounds at least equivalent to the reduction in emissions of volatile organic compounds achieved by the controls required in permit condition 9.2 through 9.9, 9.13 through 9.26, and 9.28 through 9.33, inclusive. An owner or operator may offer a unique approach to demonstrate the equivalence of any equivalent means of emission limit. If the Administrator of EPA approves the determination of emission limit equivalence, the owner or operator shall comply with the requirements of that determination.

9.35 Determination of equivalence to equipment design and operation requirements

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.484(b), determination of equivalence to the equipment design and operations requirements will be evaluated by the following guidelines:

1. Each owner or operator applying for an equivalence determination shall be responsible for collecting and verifying test data to demonstrate equivalence of means of emission limitation;
2. The Administrator of EPA will compare test data for the means of emission limitation to test data for the equipment, design, and operational requirements; and
3. The Administrator of EPA may condition the approval of equivalence on requirements that may be necessary to assure operation and maintenance to achieve the same emission reduction as the equipment, design, and operational requirements.

9.36 Determination of equivalence to work practices

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.484(c), determination of equivalence to the required work practices will be evaluated by the following guidelines:

1. Each owner or operator applying for an equivalence determination shall be responsible for collecting and verifying test data to demonstrate equivalence of means of emission limitation;
2. The emission reduction achieved by the required work practice shall be demonstrated;
3. The emission reduction achieved by the equivalent means of emission limitation shall be demonstrated;
4. The owner or operator shall commit in writing to work practices that provide for emission reductions equal to or greater than the emission reductions achieved by the required work practice;
5. The Administrator of EPA will compare the demonstrated emission reduction for the equivalent means of emission limitation to the demonstrated emission reduction for the required work practices and will consider the commitment by the owner or operator; and

6. The Administrator of EPA may condition the approval of equivalence on requirement that may be necessary to assure operation and maintenance to achieve the same emission reduction as the required work practice.

9.37 In vacuum service equipment exemption

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR §§ 60.482-1(d), equipment in vacuum service is exempt from the requirements in of permit condition 9.2 through 9.33, inclusive, if the equipment is identified in accordance subsection (5) of permit condition 9.49. "In vacuum service" means equipment is operating at an internal pressure which is at least five kilo Pascal below ambient pressure.

9.38 Temporarily in VOC service exemption

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-1(e), equipment an owner or operator designates as being in volatile organic compound service less than 300 hours per year is excluded from the requirements of permit condition 9.2 through 9.33, inclusive, if it is identified as required in subsection (6) of permit condition 9.49 and it meets any of the following specifications:

1. The equipment is in volatile organic compound service only during startup and shutdown, excluding startup and shutdown between batches of the same campaign for a batch process;
2. The equipment is in volatile organic compound service only during process malfunctions or other emergencies; or
3. The equipment is backup equipment that is in volatile organic compound service only when the primary equipment is out of service.

K. Test Methods and Procedures for 40 CFR Part 60, Subpart VV

9.39 Compliance with pumps, compressors, pressure relief devices, and valves

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.485(b), the owner or operator shall demonstrate compliance with permit condition 9.2 through 9.33, inclusive, by using 40 CFR Part 60, Appendix A, Method 21. Method 21 shall be used to determine the presence of leaking equipment. The instrument shall be calibrated by the procedures specified in Method 21 prior to each day's use. The following calibration gases shall be used:

1. Zero air (less than 10 parts per million of hydrocarbon in air); and
2. A mixture of methane or n-hexane and air at a concentration of about, but less than, 10,000 parts per million methane or n-hexane.

9.40 Compliance with no detectable emission standards

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.485(c), the owner or operator shall demonstrate compliance with no detectable emission standard in permit condition 9.4, 9.9, 9.10, 9.20, and 9.28 using 40 CFR Part 60, Appendix A, Method 21. Method 21 shall be used to determine the background level and the presence of leaking equipment. The instrument shall be

calibrated by the procedures specified in Method 21 prior to each day's use. The following calibration gases shall be used:

1. Zero air (less than 10 parts per million of hydrocarbon in air); and
2. A mixture of methane or n-hexane and air at a concentration of about, but less than, 10,000 parts per million methane or n-hexane.

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 parts per million for determining compliance.

9.41 Demonstrating a process unit is not in volatile organic compound service
In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.485(d), the owner or operator shall test each piece of equipment unless it is demonstrated that a process unit is not in volatile organic compound service. "Not in volatile organic compound service" would occur if the volatile organic compound content would never be reasonably expected to exceed 10 percent by weight. The following methods shall be followed to demonstrate a process unit is not in volatile organic compound service:

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 shall be used to determine the percent volatile organic compound content in the process fluid that is contained in or contacts a piece of equipment;
2. Organic compounds that are considered to have negligible photochemical reactivity may be excluded from the total quantity of organic compounds in determining the volatile organic compound content of the process fluid; or
3. Engineering judgment may be used to estimate the volatile organic compound content, if a piece of equipment had not been shown previously to be in service. If the Secretary disagrees with the judgment, subsections (1) and (2) of this permit condition shall be used to resolve the disagreement.

9.42 Demonstrating equipment is light liquid service. In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.485(e), the owner or operator shall demonstrate equipment is in light liquid service by showing that all of the following conditions apply:

1. The vapor pressure of one or more of the components is greater than 0.3 kilo Pascal at 20 degrees Celsius (1.2 inches of water at 68 degrees Fahrenheit). Standard reference texts or ASTM D-2879-83, 96, or 97 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 kilo Pascal at 20 degrees Celsius (1.2 inches of water at 68 degrees Fahrenheit) is equal to or greater than 20 percent by weight; and
3. The fluid is a liquid at operating conditions.

9.43 Testing representative samples

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.485(f), the samples used in conjunction with permit condition 9.41, 9.42, and 9.44 shall be representative of the process fluid that is contained in or contacts the equipment or the gas being combusted in a flare.

9.44 Determining compliance with standards for flares

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.485(g), the owner or operator shall determine compliance with the standards of flares as follows:

1. 40 CFR Part 60, Appendix A, Method 22 shall be used to determine visible emissions;
2. A thermocouple or any other equivalent device shall be used to monitor the presence of a pilot flame in the flare;
3. The maximum permitted velocity for air assisted flares shall be computed using Equation V-1;
4. The net heat value (H_T) of the gas being combusted in a flare shall be computed using Equation V-2;
5. 40 CFR Part 60, Appendix A, Method 18 or ASTM D6420–99 (2004) (where the target compound(s) are those listed in Section 1.1 of ASTM D6420–99, and the target concentration is between 150 parts per billion by volume and 100 parts per million by volume) and ASTM D2504–67, 77 or 88 (Reapproved 1993) shall be used to determine the concentration of sample component "i";
6. ASTM D2382–76 or 88 or D4809 shall be used to determine the net heat of combustion of component "i" if published values are not available or cannot be calculated; and
7. 40 CFR Part 60, Appendix A, Method 2, 2A, 2C, or 2D, as appropriate, shall be used to determine the actual exit velocity of a flare. If needed, the unobstructed (free) cross-section area of the flare tip shall be used

Equation 9-1 – Maximum permitted velocity for air assisted flares

$$V_{max} = K1 + K2 \times HT$$

Where:

- V_{max} = Maximum permitted velocity, meters per second (feet per second);
- H_T = Net heating value of the gas being combusted, mega Joules per standard cubic meter (Btus per standard cubic foot);
- K_1 = 8.706 meters per second (28.56 feet per second); and
- K_2 = 0.7084 m^4/ mega Joules-seconds (0.087 ft^4 per Btus-second).

Equation 9-2 – Net heating value of gas combusted in flare

$$HT = K \sum_{i=1}^{n} CiHi$$

Where:

- H_T = Net heating value of the gas being combusted, mega Joules per standard cubic meter (Btus per standard cubic foot);

- K = Conversion constant, 1.740 x 10-7 (gram-mole)(mega Joules)/parts per million-standard cubic meter-kcal) (4.674 x 10-6 (gram-mole)(Btu)/parts per million-standard cubic feet-kcal)); and
- Ci = Concentration of sample component "i", parts per million; and
- Hi = Net heat of combustion of sample component "I" at 25 degrees Celsius and 760 millimeters Mercury (77 degrees Fahrenheit and 14.7 pounds per square inch), kcal/gram-mole.

9.45 Demonstrating compliance with alternative standards for valves

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.485(h), the owner or operator shall determine compliance with permit condition 9.23 and 9.25 as follows:

1. The percent of valves leaking shall be determined using Equation V-3;
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 permit condition 9.19 related to alternative valve monitoring on a quarterly basis, the sum of valves found leaking during a monitoring period includes all subgroups; and
6. The total number of valves monitored does not include a valve monitored to verify repair.

Equation 9-3 – Percent of valves leaking

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

Where:

- $\%V_L$ = Percent leaking valves;
- V_L = Number of valves found leaking; and
- V_T = The sum of the total number of valves monitored.

L. Recordkeeping for 40 CFR Part 60, Subpart VV

9.46 Labeling leaky equipment

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.486(b), if a leak is detected as specified in permit condition 9.2 through 9.9 and 9.19 through 9.26, inclusive, the owner or operator shall attach a weatherproof and readily visible identification tag on the leaking equipment. The identification tag shall be marked with the equipment identification number. The identification tag for a valve may be removed after the valve has been monitored for two successive months, as specified in permit condition 9.19, and no leak has been detected during those two months. The identification tag for equipment other than valves may be removed after the equipment has been repaired.

9.47 Maintaining a log of equipment leaks

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.486(c), if a leak is detected as specified in permit condition 9.2 through 9.9 and 9.19 through 9.26, inclusive, the owner or operator shall record the following information in a log and shall be kept for two 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. The repair methods applied in each attempt to repair the leak;
4. Record "Above 10,000", if the maximum instrument reading, measured by 40 CFR Part 60, Appendix A, Method 21, after each repair attempt is equal to or greater than 10,000 parts per million;
5. Record "Repair delayed" and the reason for the delay if the leak is not repaired within 15 calendar days after discovery of the leak;
6. The signature of the person whose decision it was that repair could not be completed without a process shutdown;
7. The expected date of successful repair of the leak if the leak is not repaired within 15 calendar days;
8. The dates of process unit shutdown that occur while the equipment is unrepaired; and
9. The date of successful repair of the leak.

9.48 Records for closed vents and control devices

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.486(d), the owner or operator shall maintain the following information pertaining to the design requirements for closed vent systems and control devices described in permit condition 9.28 through 9.33, inclusive. The records shall be kept in a readily accessible location:

1. Detailed schematics, design specifications, and piping and instrumentation diagrams;
2. The dates and descriptions of any change in the design specifications;
3. A description of the parameter or parameters monitored, as required in permit condition 9.28 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 permit condition 9.2 through 9.14, inclusive, are not operated as designed, including periods when a flare pilot light does not have a flame; and
5. Dates of startups and shutdowns of the closed vent systems and control devices required in permit condition 9.2 through 9.14, inclusive.

9.49 Equipment log

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.486(e), the owner or operator shall record the following information for equipment subject to the requirements in permit condition 9.2 through 9.33, inclusive. The records shall be kept in a readily accessible location:

1. A list of identification numbers for equipment subject to the requirements in permit condition 9.2 through 9.33, inclusive;
2. A list of identification numbers for equipment that are designated for no detectable emissions under the provisions of permit condition 9.4, 9.9, and 9.20. The designation of equipment for no detectable emissions shall be signed by the responsible official;
3. A list of equipment identification numbers for pressure relief devices required to comply with permit condition 9.10 through 9.12, inclusive;
4. The date of each compliance test as required in permit condition 9.4, 9.9, and 9.20. The background level measured during each compliance test and the maximum instrument reading measured at the equipment during the compliance test shall also be recorded;
5. A list of identification numbers for equipment in vacuum service; and
6. A list of identification numbers for equipment the owner or operator designates as operating in volatile organic compound service less than 300 hours per year in accordance with permit condition 9.38, a description of the conditions under which the equipment is in volatile organic compound service, and rationale supporting the designation that it is in volatile organic compound service less than 300 hours per year.

9.50 Exempt valve and pump log

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.486(f), the owner or operator shall maintain a log readily accessible of the following information pertaining to all valves subject to the requirements in permit condition 9.21 and 9.22 and all pumps subject to the requirements of permit condition 9.6:

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; and
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 plan for monitoring each valve.

9.51 Valve log - alternative standards

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.486(g), the owner or operator shall maintain the following information for valves complying with permit condition 9.25:

1. A schedule of monitoring; and
2. The percent of valves found leaking during each monitoring period.

9.52 Design criterion for determining leaks

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.486(h), the owner or operator shall maintain the following information in a log:

1. Design criterion required in subsection (5) of permit condition 9.3 and subsection (5) of permit condition 9.7 and explanation of the design criterion; and
2. Any changes to this criterion and the reasons for the changes.

9.53 Log for equipment in VOC service

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.486(j), the owner or operator shall maintain the information and data used to demonstrate that a piece of equipment is not in volatile organic compound service in a log.

M. Reporting for Pumps, Valves, and Compressors

9.54 Initial report for pumps, valves, and compressors

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.487(a) and (b), the owner or operator shall submit an initial report to the Secretary within 180 days of the initial startup of the facility. The initial report shall include a summary of the following information:

1. Name of facility, permit number, reference to this permit condition, and identifying the submittal as the initial report;
2. The number of valves subject to the requirements of permit condition 9.19 through 9.22, inclusive, excluding those valves designated for no detectable emissions under permit condition 9.20;
3. The number of pumps subject to the requirements of permit condition 9.2 through 9.6, inclusive, excluding those pumps designated for no detectable emissions under permit condition 9.4 and those pumps complying with permit condition 9.5; and
4. The number of compressors subject to the requirements of permit condition 9.7 through 9.9, inclusive, excluding those compressors designated for no detectable emission under permit condition 9.9 and those compressors complying with permit condition 9.8.

9.55 Semiannual report for pumps, valves, and compressors

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.487(a) and (c), the owner or operator shall submit a semiannual report to the Secretary. The semiannual reports shall include a summary of the following information:

1. Name of facility, permit number, reference to this permit condition, identifying the submittal as a semiannual report, and calendar dates covered in the reporting period;
2. The number of valves for which leaks were detected as described in permit condition V19 or 9.25 and the number of valves for which leaks were not repaired as required in permit condition 9.19;

3. The number of pumps for which leaks were detected as described in permit condition 9.2 and 9.3 and the number of pumps for which leaks were not repaired as required in permit condition 9.2 and 9.3;
4. The number of compressors for which leaks were detected as described in permit condition 9.7 and the number of compressors for which leaks were not repaired as required in permit condition 9.7;
5. The facts which explain each delay of repair and where appropriate, why the fermenter shutdown was technically infeasible;
6. Dates the fermenter was shut down during the semiannual reporting period; and
7. Any changes which have occurred since the initial report or subsequent revisions to the initial report;

The semiannual reports must be postmarked no later than 30 days after the end of the reporting period (e.g., July 30th and January 30th).

9.56 Notification of alternative standards for valves

In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.487(d), the owner or operator shall notify the Secretary 90 days in advance of electing to implement permit condition 9.23 and/or 9.25.

10.0 Recommendation

A review of this facility indicates it can construct and operate in compliance with South Dakota's Air Pollution Control rules and the federal Clean Air Act. The Secretary, therefore, recommends the Board of Minerals and Environment issue this air quality construction permit with conditions to ensure compliance with SDCL 34A-1 and the federal Clean Air Act. Any questions pertaining to the Secretary's recommendation should be directed to John Conklin, Engineer I, at (605)773-5062.