Permit #: **28.0502-26**

Effective Date: **August 14, 2013**

Expiration Date: **May 7, 2017**

SOUTH DAKOTA DEPARTMENT OF

ENVIRONMENT AND NATURAL RESOURCES

TITLE V AIR QUALITY OPERATING PERMIT

Steven M. Pirner, P.E., 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 operate is hereby issued by the Secretary of the Department of Environment and Natural Resources. This permit authorizes such owner to operate the unit(s) at the location designated below and under the listed conditions:

A. Owner

1. Company Name and Address

Aberdeen Energy, LLC
13435 370th Avenue
Mina, South Dakota 57451

2. Actual Source Location and Mailing Address if Different from Above

Same as above

3. Permit Contact

Peter Bullene, Environmental
605-882-8480

4. Facility Contact

Peter Bullene, Environmental
605-882-8480

5. Responsible Official

Jim Seurer, CEO
605-822-8480

B. Permit Revisions or Modifications

- August 14, 2013 – Minor amendment: change short-term nitrogen oxide short term limit from 48 to 36 pounds per hour and remove the aspiration of the loadout arm from the Unit #6 dried distiller grain and solubles silo and loadout

C. Type of Operation

Ethanol production facility

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1.0 Standard Conditions

1.1 Operation of source

In accordance with Administrative Rules of South Dakota (ARSD) 74:36:05:16.01(8), the owner or operator shall 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 July 27, 2011 and April 8, 2013, unless modified by the conditions of this permit. Except as otherwise provided herein, the control equipment 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 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
#1	Grain receiving. Trucks and railcars dump grain into two receiving pits located in a partially enclosed building. Elevator legs transport grain to storage bins.	420 tons of grain per hour	Baghouse
	Elevator legs transport grain to a day bin.	156 tons of grain per hour	
#2	Grain milling. Grain is milled in one of four hammer mills.	37 tons of grain per hour per hammer mill	Baghouse
#3	Fermentation system. The fermentation process occurs in seven fermenters and liquid beer is stored in a beer well.	96,802 gallons of mash per hour	Wet scrubber
#4	Distillation process. The distillation process distills the liquid beer. The distillation process consists of the beer stripper, rectifier, side stripper, molecular sieve, condensers, and evaporators.	15,000 gallons of ethanol produced per hour	Thermal oxidizer and heat recovery boiler system #1 and #2.
	DDGS dryers A and B. Each dryer has a multi cyclone to collect product and low NOx burners. The dryers are fired with natural gas.	45 million Btus per hour per dryer and 46 tons of dried distiller grain and solubles per hour	
	DDGS dryers C and D. Each dryer has a multi cyclone to collect product and low NOx burners. The dryers are fired with natural gas.	45 million Btus per hour per dryer and 46 tons of dried distiller grain and solubles per hour	
	The thin stillage and solids fractions of the wet distiller grain and solubles are separated by six centrifuges.	Not applicable	
	Slurry tank, process vent mixer, and yeast tank.	Not applicable	

Unit	Description	Maximum Operating Rate	Control Device
	Biomethanator associated with Unit #8.	Not applicable	
	Cooling drum.	See Unit #5	
	Thermal oxidizer and heat recovery boiler system #1 with low NOx burners. The thermal oxidizer is fired with natural gas.	150 million Btus per hour heat input	
	Thermal oxidizer and heat recovery boiler system #2 with low NOx burners. The thermal oxidizer is fired with natural gas.	150 million Btus per hour heat input	
#5	Cooling drum for dried distiller grain and solubles.	91 tons of dried distillers grain per hour	Baghouse. Exhaust gases may be routed to one of the two thermal oxidizers associated with Unit #4.
#6	Dried distiller grain and solubles silo and load out.	560 tons of dried distillers grain per hour	Baghouse
#7	Submerged truck loading rack.	36,000 gallons of denatured ethanol per hour	Flare
	Rail car loading rack.	120,000 gallons of denatured ethanol per hour	
	Flare fired with natural gas.	12.4 million Btus per hour heat input	
#8	Biomethanator.	Not applicable	Flare. Methane from the biomethanator process may be routed to Unit #4.
	Flare fired with natural gas.	3.2 million Btus per hour heat input	
#9	Fire pump fired with distillate oil.	300 horsepower heat output	Not applicable
#10	Industrial cooling tower	Not applicable	Not applicable
#11	Tank 001 – An aboveground storage tank with an internal floating roof. The tank will store ethanol.	200,000 gallons	Not applicable
#12	Tank 002 – An aboveground storage tank with an internal floating roof. The tank will store ethanol.	200,000 gallons	Not applicable
#13	Tank 003 – An aboveground storage tank with an internal floating roof. The tank will store gasoline.	200,000 gallons	Not applicable
#14	Tank 004 – An aboveground storage tank	1,500,000 gallons	Not applicable

Unit	Description	Maximum Operating Rate	Control Device
	with an internal floating roof. The tank will store denatured ethanol.		
#15	Tank 005 – An aboveground storage tank with an internal floating roof. The tank will store denatured ethanol.	1,500,000 gallons	Not applicable
#16	2009 Brock grain dryer, model #BCT6000, fired by natural gas.	68.2 million Btu per hour heat input and 226.6 tons of grain per hour	Not applicable
#17	Grain receiving. Trucks dump grain into receiving pits. Elevator legs transport grain to a storage bin.	560 tons of grain per hour	Not applicable
	Storage bin.	18,000,000 bushels per year	

1.2 Duty to comply

In accordance with ARSD 74:36:05:16.01(12), the owner or operator shall comply 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 a permit renewal application. 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 74:36:05:16.01(12), the State's 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, upon presentation of credentials, 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 required under this permit;
3. Inspect 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 74:36:05:16.01(11), any portion of this permit that is void or challenged shall not affect the validity of the remaining permit requirements.

1.7 Permit termination, modification, or revocation

In accordance with ARSD 74:36:05:46, the Secretary may recommend the Board of Minerals and Environment terminate, modify, or revoke this permit for violations of SDCL 34A-1 or the federal Clean Air Act or for nonpayment of any outstanding fee or enforcement penalty.

1.8 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 in violation of this permit. Credible evidence may consist of the following:

1. Information from the use of the following methods is presumptively credible evidence of whether a violation has occurred:
   a. A monitoring method approved 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 paragraph (1) or (2)(a).

2.0 Permit Fees

2.1 Annual air fee required

In accordance with ARSD 74:36:05:06.01, the owner or operator shall submit an annual administrative fee and an annual fee. The fee is based on actual emissions in accordance with SDCL 34A-1-58.1.

2.2 Annual operational report

In accordance with SDCL 34A-1-58.1, the Secretary will supply the owner or operator with an annual operational report in January of each year. The owner or operator shall complete and submit the operational report to the Secretary by March 1 of each year. The responsible official shall sign the operational report in the presence of a notary public.

2.3 Annual air fee

In accordance with SDCL 34A-1-58.1, the Secretary will notify the owner or operator of the required annual air emission fee and administrative fee by June 1 of each year. The fees shall accrue on July 1 and are payable to the Department of Revenue by July 31 of each year.

3.0 Permit Amendments and Modifications

3.1 Permit flexibility

In accordance with ARSD 74:36:05:30, the owner or operator shall have the flexibility to make changes to the source during the term of this permit. The owner or operator shall provide the Secretary written notice at least seven days in advance of the proposed change (NOTE: The Secretary will forward a copy of the written notice to EPA). The written notice shall include a brief description of the change, the date on which the change is to occur, any change in emissions, the proposed changes to the permit, and whether the requested revisions are for an administrative permit amendment, minor permit amendment, or permit modification.

The Secretary will notify the owner or operator whether the change is an administrative permit amendment, a minor permit amendment, or a permit modification. A proposed change that is considered an administrative permit amendment or a minor permit amendment can be completed immediately after the Secretary receives the written notification. The owner or operator must comply with both the applicable requirements governing the change and the proposed permit terms and conditions until the Secretary takes final action on the proposed change.

A proposed change that is considered a modification cannot be implemented until the Secretary takes final action on the proposed change or the owner or operator was issued an air quality construction permit. Permit modifications are subject to the same procedural requirements, including public comment, as the original permit issuance except that the required review shall cover only the proposed changes.

3.2 Administrative permit amendment

In accordance with ARSD 74:36:05:33, the Secretary has 60 days from receipt of a written notice to verify the proposed change is an administrative permit amendment. As provided in ARSD 74:36:01:03, the Secretary considers a proposed change an administrative permit amendment if the proposed change 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;
3. Requires more frequent monitoring or reporting;

4. The ownership or operational control changes and the Secretary determines 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 changes the Secretary and the administrator of EPA determines to be similar to those requirements in this condition.

3.3 Minor permit amendment

In accordance with ARSD 74:36:05:38, the Secretary has 90 days from receipt of a written notice or 15 days after the end of EPA's 45-day review period, whichever is later, to take final action on a minor permit amendment. Final action consists of issuing or denying a minor permit amendment or determining the proposed change is a permit modification. As provided in ARSD 74:36:05:35, the Secretary considers a proposed change to be a minor permit amendment if the proposed change:

1. Does not violate any applicable requirements;
2. Does not involve significant changes to existing monitoring, reporting, or recordkeeping requirements;
3. Does not require or change a case-by-case determination of an emission limit or other standard, a source-specific determination for temporary sources of ambient impacts, or a visibility or increment analysis; or
4. Does not seek to establish or change a permit term or condition for which the source has assumed to avoid an applicable requirement, a federally enforceable emission cap, or an alternative emission limit. An alternative emission limit is approved pursuant to regulations promulgated under section 112(i)(5) of the federal Clean Air Act.

3.4 Permit modification

In accordance with ARSD 74:36:05:39, an owner or operator may apply for a permit modification. A permit modification is defined in ARSD 74:36:01:10 as a physical change in or change in the operation of a source that results in at least one of the following:

1. An increase in the amount of an air pollutant emitted by the source or results in the emission of an air pollutant not previously emitted;
2. A significant change to existing monitoring, reporting, or recordkeeping requirements in the permit;
3. The change requires or changes a case-by-case determination of an emission limit or other standard, a source-specific determination for temporary sources of ambient impacts, or a visibility or increment analysis; or
4. The change seeks to establish or change a permit term or condition for which there is a corresponding underlying applicable requirement that the source has assumed to avoid an applicable requirement, a federally enforceable emissions cap assumed to avoid classification as a modification under a provision of the Title I of the Clean Air Act, or an alternative emissions limit approved pursuant to regulations promulgated under section 112(i)(5) of the Clean Air Act.

Permit modifications are subject to the same procedural requirements, including public comment, as the original permit issuance except the required review shall cover only the proposed changes.

3.5 Permit revision

In accordance with ARSD 74:36:05:40, the Secretary may reopen and revise this permit to meet requirements of SDCL 34A-1 or the federal Clean Air Act. In accordance with ARSD 74:36:05:41, the Secretary shall notify the owner or operator at least 30 days before reopening this permit. The 30-day period may be less in the case of an emergency.

3.6 Testing new fuels or raw materials

In accordance with ARSD 74:36:11:04, an owner or operator may request permission to test a new fuel or raw material to determine if it is compatible with existing equipment before requesting a permit amendment or modification. A complete test proposal shall consist of the following:

1. A written proposal describing the new fuel or raw material, operating parameters, and parameters that will be monitored and any testing associated with air pollutant emissions during the test;
2. An estimate of the type and amount of regulated air pollutant emissions resulting from the proposed change; and
3. The proposed schedule for conducting the test. In most cases the owner or operator will be allowed to test for a maximum of one week. A request for a test period longer than one week will need additional justification. A test period shall not exceed 180 days.

The Secretary shall approve, conditionally approve, or deny in writing the test proposal within 45 days after receiving a complete proposal. Approval conditions may include changing the test schedule or pollutant sampling and analysis methods. Pollutant sampling and analysis methods may include, but are not limited to performance testing, visible emission evaluation, fuel analysis, dispersion modeling, and monitoring of raw material or fuel rates.

If the Secretary determines the proposed change will result in an increase in the emission of a regulated air pollutant or result in the emission of an additional regulated air pollutant, the Secretary shall give public notice of the proposed test for 30 days. The Secretary shall consider all comments received during the 30-day public comment period before making a final decision on the test.

The Secretary will not approve a test if the test would cause or contribute to a violation of a national ambient air quality standard.

4.0 Permit Renewal

4.1 Permit effective

In accordance with ARSD 74:36:05:07, this permit shall expire five years from date of issuance unless reopened or terminated for cause.

4.2 Permit renewal

In accordance with ARSD 74:36:05:08, the owner or operator shall submit an application for a permit renewal at least 180 days before the date of permit expiration if the owner or operator wishes to continue to operate an activity regulated by this permit. The current permit shall not expire and shall remain in effect until the Secretary takes final action on the timely permit renewal application.

4.3 Permit expiration

In accordance with ARSD 74:36:05:28, permit expiration terminates the owner's or operator's right to operate any unit covered by this permit.

5.0 General Recordkeeping

5.1 Recordkeeping

In accordance with ARSD 74:36:05:16.01(9), 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 unless otherwise specified in this permit. 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.

5.2 Monitoring log

In accordance with ARSD 74:36:05:16.01(9), the owner or operator shall maintain a monitoring log. The monitoring log shall contain the following information.

1. Maintenance schedule for each piece of control equipment listed in Table 1-1. At a minimum, the maintenance schedule shall meet the manufacturer's recommended schedule for maintenance. The following information shall be recorded for maintenance:
    a. Identify the unit;
    b. The date and time maintenance was performed;
    c. Description of the type of maintenance;
    d. Reason for performing maintenance; and
    e. Signature of person performing maintenance.
2. The following information shall be recorded for each visible emission reading required in permit condition 10.1:
    a. Identify the unit;
    b. The date and time the visible emission reading was performed;
    c. If visible emissions were observed;
    d. Description of maintenance performed to eliminate visible emissions;
    e. Visible emission evaluation if visible emissions are not eliminated; and
    f. Signature of person performing visible emission reading and/or visible emission evaluation.
3. The following information shall be recorded within two days of each emergency exceedance:
    a. The date of the emergency exceedance and the date the emergency exceedance was reported to the Secretary;
    b. The cause(s) of the emergency;

c. The reasonable steps taken to minimize the emissions during the emergency; and
d. A statement the permitted equipment was at the time being properly operated.

4. Documentation on the accuracy of the temperature monitoring device for the thermal oxidizer associated with Unit #4;
5. The temperature records for the thermal oxidizer associated with Unit #4 and the following information pertaining to temperatures that deviate from the desired temperatures in permit condition 10.3:
   a. The date, time and duration the temperature fell below the desired temperature;
   b. The reason the temperature fell below the desired value; and
   c. The maintenance or procedures that were performed to bring the temperature back above the desired value.
6. The water flow and chemical additives (e.g. sodium bisulfite) rates for the wet scrubber associated with Unit #3 and the following information pertaining to water flow and/or chemical additives (e.g. sodium bisulfite) rates that deviate from the desired water flow and/or chemical additives (e.g. sodium bisulfite) rates identified in permit condition 10.4:
   a. The date, time and duration the water flow and/or chemical additives (e.g. sodium bisulfite) rates fell below the desired water flow and/or chemical additives (e.g. sodium bisulfite) rates;
   b. The reason the water flow and/or chemical additives (e.g. sodium bisulfite) rates fell below the desired value; and
   c. The maintenance or procedures that were performed to bring the water flow and/or chemical additives (e.g. sodium bisulfite) rates back above the desired value.
7. Document each incidence when the storage tank alarm warns the owner or operator that the liquid surface drops below the height of the support legs. The documentation shall include the following information:
   a. The tank involved;
   b. The date and time that the storage tank alarm was activated; and
   c. The date and time it was deactivated.

   An activated storage tank alarm means that the liquid surface drops below the height of the support legs in the tank. A deactivated storage tank alarm means the internal floating roof is in contact with the product being stored in the tank.

5.3 Monthly records

In accordance with ARSD 74:36:05:16.01(9), the owner or operator shall calculate and record the following amounts each month:

1. The amount of particulate matter less than or equal to 10 microns in diameter (PM10), 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 PM10 emitted to the ambient air from permitted units shall be calculated using the most recent performance test. If a performance test is not available, the amount of PM10 emitted to the ambient air from a permitted unit shall be based on the formulas, emission factors, and methods described in the statement of basis;
2. The amount of particulate matter less than or equal to 2.5 microns in diameter (PM2.5), 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 PM2.5 emitted to the ambient air from permitted units shall be calculated using the most recent performance test. If a performance test is not available, the amount of PM2.5 emitted to the ambient air from a permitted unit shall be based on the formulas, emission factors, and methods described in the statement of basis;

3. The amount of sulfur dioxide, 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 sulfur dioxide emitted to the ambient air from permitted units shall be calculated using the most recent performance test. If a performance test is not available, the amount of sulfur dioxide emitted to the ambient air from a permitted unit shall be based on the formulas, emission factors, and methods described in the statement of basis;
4. The amount of nitrogen oxide, 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 nitrogen oxide emitted to the ambient air from permitted units shall be calculated using the continuous emission monitoring system(s) or the most recent performance test. If a continuous emission monitoring system or performance test is not available, the amount of nitrogen oxide emitted to the ambient air from a permitted unit shall be based on the formulas, emission factors, and methods described in the statement of basis;
5. The amount of carbon monoxide, 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 carbon monoxide emitted to the ambient air from permitted units shall be calculated using the continuous emission monitoring system(s) or the most recent performance test. If a continuous emission monitoring system or performance test is not available, the amount of carbon monoxide emitted to the ambient air from a permitted unit shall be based on the formulas, emission factors, and methods described in the statement of basis;
6. 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 the most recent performance test. If a performance test is not available, the amount of volatile organic compounds emitted to the ambient air from a permitted unit shall be based on the formulas, emission factors, and methods described in the statement of basis; and
    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;
7. The amount of hazardous air pollutant, 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 amount of hazardous air pollutants emitted to the ambient air from permitted units

and fugitive operations shall be calculated using formulas, emission factors, and methods described in the statement of basis;

8. The number of gallons of undenatured ethanol produced during the month and during the 12-month rolling period for that month;
9. The amount of grain, in tons, processed through Unit #2, during the month and during the 12-month rolling period for that month;
10. The amount of grain, in tons, processed through Unit #17 during the month and during the 12-month rolling period for that month;
11. The amount of dried distiller grains and solubles produced by Unit #4 during the month and during the 12-month period for that month;
12. The amount of ethanol loaded by truck through Unit #7 during the month and during the 12-month period for that month;
13. The number of hours Unit #16 was operated during the month and during the 12-month rolling period for that month; and
14. The number of hours Unit #9 was operated during the month and during the 12-month rolling period for that month.

6.0 General Reporting

6.1 Reporting

In accordance with ARSD 74:36:05:16.01(9), the owner or operator shall submit all notifications and reports 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 57501-3182

6.2 Signatory requirements

In accordance with ARSD 74:36:05:12 and ARSD 74:36:05:16.01, all applications submitted to the Secretary shall be signed and certified by a responsible official. 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. All reports or other information submitted to the Secretary shall be signed and certified by a responsible official or a duly authorized representative. 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 responsible official shall notify the Secretary if an authorization is no longer accurate. The new duly authorized representative must be designated prior to or together with any reports or information to be signed by a duly authorized representative.

6.3 Certification statement

In accordance with ARSD 74:36:05:16.01(14)(a), 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."

6.4 Quarterly reporting

In accordance with ARSD 74:36:06:16.01(9), 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 particulate matter less than or equal to 10 microns in diameter, particulate matter 2.5 microns in diameter or less, sulfur dioxide, nitrogen oxide, volatile organic compounds, carbon monoxide, 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 in each month and the 12-month rolling total for each month in the reporting period and supporting documentation;
4. The amount of grain processed, in tons, through Unit #2 for each month and the 12-month rolling total for each month in the reporting period and supporting documentation;
5. The amount of grain processed, in tons, through Unit #17 for each month and the 12-month rolling total for each month in the reporting period and supporting documentation;
6. The amount of dried distiller grains and solubles produced, in tons, through Unit #4 for each month and the 12-month rolling total for each month in the reporting period and supporting documentation;
7. The number of hours Unit #9 was operated during each month and the 12-month rolling total for each month in the reporting period;
8. The number of hours Unit #16 was operated during each month and the 12-month rolling total for each month in the reporting period;
9. The amount of ethanol loaded by truck through Unit #7 during each month and the 12-month rolling total for each month and supporting documentation;
10. The following information pertaining to temperatures that deviate from the desired temperatures in permit condition 10.3:
    a. The date, time and duration the temperature fell below the desired temperature;
    b. The reason the temperature fell below the desired value; and
    c. The maintenance or procedures that were performed to bring the temperature back above the desired value.
11. The water flow and chemical additives (e.g. sodium bisulfite) rates for the wet scrubber associated with Unit #3 and the following information pertaining to water flow and/or

chemical additives (e.g. sodium bisulfite) rates that deviate from the desired water flow and/or chemical additives (e.g. sodium bisulfite) rate in permit condition 10.4:

a. The date, time and duration the water flow and/or chemical additives (e.g. sodium bisulfite) rate fell below the desired rate;
b. The reason the water flow and/or chemical additives (e.g. sodium bisulfite) rate fell below the desired value; and
c. The maintenance or procedures that were performed to bring the water flow and/or chemical additives (e.g. sodium bisulfite) rate back above the desired value.

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

6.5 Annual compliance certification

In accordance with ARSD 74:36:05:16.01(14), the owner or operator shall submit an annual compliance certification letter to the Secretary by March 1 of each year this permit is in effect (NOTE: The Secretary will forward a copy of the certification letter to EPA). The certification shall contain the following information:

1. Methods used to determine compliance, including: monitoring, recordkeeping, performance testing and reporting requirements;
2. The source is in compliance and will continue to demonstrate compliance with all applicable requirements;
3. In the event the source is in noncompliance, a compliance plan that indicates how the source has or will be brought into compliance; and
4. Certification statement required in permit condition 6.3.

6.6 Reporting permit violations

In accordance with ARSD 74:36:05:16.01(9), 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) 773-4068.

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.

7.0 Control of Regulated Air Pollutants

7.1 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. The visibility limit is not applicable to Unit #3 and #10 through #15, inclusive. This provision does not apply when the presence of uncombined water is the only reason for failure to meet the requirement.

7.2 Visibility exceedances

In accordance with ARSD 74:36:12:02, an exceedance of the opacity limit in permit condition 7.1 is not considered a violation during brief periods of soot blowing, start-up, shutdown, or malfunctions. Malfunction means 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 is not a malfunction and is considered a violation.

7.3 Total suspended particulate matter limits

In accordance with ARSD 74:36:06:03(1), the owner or operator shall not allow the emission of total suspended particulate matter in excess of the emission limit specified in Table 7-1 for the appropriate permitted unit, operation, and process.

Table 7-1 – Total Suspended Particulate Matter Emission Limit

Unit	Description	Emission Limit
#1	Grain receiving	67 pounds per hour
#2	Grain milling	55 pounds per hour
#4	Distillation, dried distiller grain and solubles dryers, and thermal oxidizers	50 pounds per hour
#5	Dried distiller grain and solubles cooling system	50 pounds per hour
#6	Dried distiller grain and solubles silo and load out	70 pounds per hour

7.4 Sulfur dioxide limits

In accordance with ARSD 74:36:06:03(2), the owner or operator shall not allow the emission of sulfur dioxide in excess of the emission limit specified in Table 7-2 for the appropriate permitted unit, operations, and process.

Table 7-2 – Sulfur Dioxide Emission Limit

Unit	Description	Emission Limit
#4	Distillation, dried distiller grain and solubles dryers, and thermal oxidizers	3.0 pounds per million Btu heat input

Compliance with the sulfur dioxide emission limit is based on a three-hour rolling average, which is the arithmetic average of three contiguous one-hour periods.

7.5 Air emission exceedances – emergency conditions

In accordance with ARSD 74:36:05:16.01(18), the Secretary will allow for an unavoidable emission exceedance of a technology-based emission limit if the exceedance is caused by an emergency condition and immediate action is taken by the owner or operator to restore the operations back to normal. An emergency condition is a situation arising from a sudden and reasonably unforeseeable event beyond the control of the owner or operator, including acts of God. An emergency shall not include an emission exceedance to the extent caused by improperly designed equipment, lack of preventive maintenance, careless or improper operation, or operator error. The owner or operator shall notify the Secretary within two working days of the incident and take all steps possible to eliminate the excess emissions. The notification must provide a description of the emergency, any steps taken to mitigate emissions, and corrective actions taken. If the notification is submitted orally, a written report summarizing the information required by the notification shall be submitted and postmarked within 30 days of the oral notification

7.6 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.

7.7 Minimizing emissions

In accordance with ARSD 74:36:08:03, as referenced to 40 CFR § 63.6(e)(1)(i), the owner or operator shall at all times, including periods of startup, shutdown, and malfunction, operate and maintain any permitted unit, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. During a period of startup, shutdown, or malfunction, this general duty to minimize emissions requires the owner or operator to reduce emissions from the permitted unit to the greatest extent which is consistent with safety and good air pollution control practices. The general duty to minimize emissions during a period of startup, shutdown, or malfunction does not require the owner or operator to achieve emission levels that would be required by the applicable standard at other times if this is not consistent with safety and good air pollution control practices, nor does it require the owner or operator to make any further efforts to reduce emissions if levels required by the applicable standard have been achieved. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Secretary which may include, but is not limited to, monitoring results, review of operation and maintenance procedures (including a startup, shutdown, and malfunction plan, if required), review of operation and maintenance records, and inspection of the operation.

8.0 PSD AND Case-by-Case MACT Exemption

8.1 Plant wide particulate limits (PM10)

In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall not emit into the ambient air greater than or equal to 238 tons of particulate matter less than or equal to 10 microns in diameter (PM10) per 12-month rolling period. The short term limits in Table 8-1 are established to ensure the long term limit of 238 tons per 12-month rolling period is not exceeded.

Table 8-1 – PM10 Short Term Limits

Unit	Description	Short Term Limit
#1	Grain receiving	2.1 pounds per hour
#2	Grain milling	1.2 pounds per hour
#4	Distillation, dried distiller grain and solubles dryers, and thermal oxidizers	7.2 pounds per hour
#5	Dried distiller grain and solubles cooling system	0.5 pounds per hour
#6	Dried distiller grain and solubles silo and load out	0.4 pounds per hour

The PM10 emission limit is based on a three-hour rolling average, which is the arithmetic average of three contiguous one-hour periods. Compliance with the short term limit will be based on the stack testing requirements in chapter 9.0.

8.2 Plant wide particulate limits (PM2.5)

In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall not emit into the ambient air greater than or equal to 238 tons of particulate matter less than or equal to 2.5 microns in diameter (PM2.5) per 12-month rolling period. The short term limits in Table 8-2 are established to ensure the long term limit of 238 tons per 12-month rolling period is not exceeded.

Table 8-2 – PM2.5 Short Term Limits

Unit	Description	Short Term Limit
#1	Grain receiving	2.1 pounds per hour
#2	Grain milling	1.2 pounds per hour
#4	Distillation, dried distiller grain and solubles dryers, and thermal oxidizers	7.2 pounds per hour
#5	Dried distiller grain and solubles cooling system	0.5 pounds per hour
#6	Dried distiller grain and solubles silo and load out	0.4 pounds per hour

The PM2.5 emission limit is based on a three-hour rolling average, which is the arithmetic average of three contiguous one-hour periods. Compliance with the short term limit will be based on the stack testing requirements in chapter 9.0.

8.3 Plant wide sulfur dioxide limits

In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall not emit into the ambient air greater than or equal to 238 tons of sulfur dioxide per 12-month rolling period. The short term limits in Table 8-3 are established to ensure the long term limit of 238 tons per 12-month rolling period is not exceeded.

Table 8-3 – Sulfur Dioxide Short Term Limits

Unit	Description	Short Term Limit
#4	Distillation, dried distiller grain and solubles dryers, and thermal oxidizers	0.225 pounds per ton of dried distiller gains and solubles produced

The sulfur dioxide emission limit is based on a three-hour rolling average, which is the arithmetic average of three contiguous one-hour periods. Compliance with the short term limit will be based on the stack testing requirements in chapter 9.0.

8.4 Plant wide nitrogen oxide limits

In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall not emit into the ambient air greater than or equal to 238 tons of nitrogen oxide per 12-month rolling period. The short term limits in Table 8-4 are established to ensure the long term limit of 238 tons per 12-month rolling period is not exceeded.

Table 8-4 – Nitrogen Oxide Short Term Limits

Unit	Description	Short Term Limit
#4	Distillation, dried distiller grain and solubles dryers, and thermal oxidizers	36.0 pounds per hour

The nitrogen oxide emission limit is based on a three-hour rolling average, which is the arithmetic average of three contiguous one-hour periods. Compliance with the short term limit will be based on the stack testing requirements in chapter 9.0.

8.5 Plant wide carbon monoxide limits

In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall not emit into the ambient air greater than or equal to 238 tons of carbon monoxide per 12-month rolling period. The short term limits in Table 8-5 are established to ensure the long term limit of 238 tons per 12-month rolling period is not exceeded.

Table 8-5 – Carbon Monoxide Short Term Limits

Unit	Description	Short Term Limit
#4	Distillation, dried distiller grain and solubles dryers, and thermal oxidizers	38.8 pounds per hour

The carbon monoxide emission limit is based on a three-hour rolling average, which is the arithmetic average of three contiguous one-hour periods. Compliance with the short term limit will be based on the stack testing requirements in chapter 9.0.

8.6 Plant wide volatile organic compound limits

In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall not emit into the ambient air greater than or equal to 238 tons of volatile organic compounds per 12-month rolling period. The short term limits in Table 8-6 are established to ensure the long term limit of 238 tons per 12-month rolling period is not exceeded.

Table 8-6 – Volatile Organic Compound (VOC) Short Term Limits

Unit	Description	Short Term Limit
#3	Fermentation process	15.0 pounds per hour
#4	Distillation, dried distiller grain and solubles dryers, and thermal oxidizers	0.15 pounds per ton produced
#5	Dried distiller grain and solubles cooling system	4.0 pounds per hour

The volatile organic compound emission limit is based on a three-hour rolling average, which is the arithmetic average of three contiguous one-hour periods. Compliance with the short term limit will be based on the stack testing requirements in chapter 9.0.

8.7 Plant wide hazardous air pollutant limits

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 from permitted units and fugitive sources per 12-month rolling period.

8.8 Plant wide undenatured ethanol production limit

In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall not produce more than 130 million gallons of undenatured ethanol per 12-month rolling period.

8.9 Operational limit for fire pump engine

In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall not operate Unit #9 more than 500 hours per 12-month rolling period.

8.10 Operational limit on grain processed through Unit #2

In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall not process more than 1,360,000 tons of grain through Unit #2 per 12-month rolling period.

8.11 Operational limit on dried distiller grains and solubles produced through Unit #4

In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall not produce more than 806,000 tons of dried distiller grains and solubles from Unit #4 per 12-month rolling period.

8.12 Ethanol load out limit of Unit #7.

In accordance with ARSD 74:36:05:16.01, the owner or operator shall not load out by truck from Unit #7 more than 110 million gallons of denatured ethanol during any 12-month rolling period. The 12-month rolling total shall begin on the initial startup of the ethanol plant.

8.13 Unit #17 grain process limit.

In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall not process more than 504,000 tons of grain during any 12-month rolling period. The 12-month rolling total shall begin the first month in which this permit is issued.

8.14 Unit #16 operational limit.

In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall not operate Unit #16 more than 6,000 hours during any 12-month rolling period. The 12-month rolling total shall begin the first month in which this permit is issued.

8.15 Prevention of significant deterioration review exemption

The owner or operator is exempt from a prevention of significant deterioration review for particulate matter less than or equal to 10 microns in diameter, particulate matter less than or equal to 2.5 microns in diameter, volatile organic compounds, nitrogen oxide, sulfur dioxide, and carbon monoxide. Any relaxation in a permit condition that increases applicable emissions equal to or

greater than 238 tons per 12-month rolling period may require a full prevention of significant deterioration review as though construction had not commenced on the source.

8.16 Case-by-Case exemption

The owner or operator is exempt from a Case-by-Case determination for hazardous air pollutants. Any relaxation in a permit condition that increases the 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.

9.0 Performance Tests

9.1 Performance test may be required

In accordance with ARSD 74:36:11:02, the Secretary may request a performance test during the term of this permit. 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 conducted while operating 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 performance test required by the Secretary if circumstances reasonably warrant but will not extend the deadline past a federally required performance test deadline.

9.2 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 federally applicable or federally required.

9.3 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.

9.4 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 outlining what needs to be completed for approval.

9.5 Notification of test

In accordance with ARSD 74:36:11:03, the owner or operator shall notify the Secretary at least 10 days prior to the start of a performance test to arrange for an agreeable test date when the Secretary may observe the test. The Secretary may extend the deadline for the performance test in order to accommodate schedules in arranging an agreeable test date.

9.6 Performance test report

In accordance with ARSD 74:36:05:16.01(9), 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. A brief 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 represented in the same terminology as the permit limits;
5. Quality assurance procedures and results;
6. Records of operating conditions during the test necessary for demonstrating compliance with the permit limits, preparation of standards, and calibration procedures;
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.

9.7 Performance test methods for volatile organic compounds

In accordance with ARSD 74:36:07:01, the owner or operator shall conduct any performance tests required to determine volatile organic compound mass emission rates in accordance with 40 CFR Part 51, Appendix M; Method 207 and 40 CFR Part 60, Appendix A; Method 18 or an equivalent test method as outlined in permit condition 9.2 is approved by the Secretary. 2,3-Butanediol will be sampled through the chromatography column approximately 2.5 times faster than the maximum allowable sampling rate for the other volatile organic compounds in the sampling program (e.g., acetaldehyde, acrolein, and ethyl acetate). This requirement applies only if the Method 207 results indicate that 2,3-Butanediol should be sampled as part of the Method 18 testing. When summing analytes per Method 18, non-detect data will be included in the total volatile organic compound mass as one half of the compound method detection limit; except that, if all three performance test runs result in a non-detect measurement and the method detection limit is less than or equal to 1.0 part per million by volume on a dry basis, then all such non-detect data will be treated as zero mass.

9.8 Performance test to verify compliance

In accordance with ARSD 74:36:11:02, the owner or operator shall conduct a stack performance test on Unit #4 and #5 for particulate matter and Unit #3, #4, and #5 for volatile organic compounds and hazardous air pollutants. The stack performance tests shall be conducted within 360 days of the issuance of this permit.

10.0 Monitoring

10.1 Periodic monitoring for opacity limits

In accordance with ARSD 74:36:05:16.01(9), the owner or operator shall demonstrate compliance with the opacity limits in chapter 7.0 on a periodic basis. Periodic monitoring shall be based on the amount of visible emissions from each unit and evaluated according to the following steps:

Step 1: If there are no visible emissions from a unit subject to an opacity limit, periodic monitoring shall consist of a visible emission reading. A visible emission reading shall consist of a visual survey of each unit over a two-minute period to identify if there are visible emissions. The visible emission reading must be conducted while the unit is in operation; but not during periods of startup, shutdown, or malfunctions. Visible emission readings on each unit subject to an opacity limit in chapter 7.0 shall be based on the following frequency:

a. The owner or operator shall conduct a visible emission reading once per calendar month;
b. If no visible emissions are observed from a unit in six consecutive monthly visible emission readings, the owner or operator may decrease the frequency of readings from monthly to semiannually for that unit; or
c. If no visible emissions are observed from a unit in two consecutive semiannual visible emission readings, the owner or operator may decrease the frequency of testing of readings from semiannually to annually for that unit.

Step 2: If visible emissions are observed from a unit subject to an opacity limit at any time other than periods of startup, shutdown, or malfunction, the owner or operator shall conduct a visible emission test on that unit to determine if the unit is in compliance with the opacity limit specified in chapter 7.0. The emission test shall be for six minutes and conducted in accordance with 40 CFR Part 60, Appendix A, Method 9. The visible emission test must be conducted while the unit is in operation; but not during periods of startup, shutdown, or malfunctions. Visible emission tests shall be based on the following frequency:

a. The visible emission test must be conducted within one hour of witnessing a visible emission from a unit during a visible emission reading;
b. If the visible emission test required in Step 2(a) results in an opacity value less than or equal to 50 percent of the opacity limit for the unit, the owner or operator shall perform a visible emission test once per month;
c. If the opacity value of a visible emission test is less than five percent for six straight monthly tests, the owner or operator may revert back to monthly visible emission readings as required in Step 1;
d. If the visible emission test required in Step 2(a) or 2(b) results in an opacity value greater than 50 percent of the opacity limit but less than the opacity limit, the owner or operator shall perform a visible emission test once per week; or
e. If the visible emission test in Step 2(d) results in an opacity value less than or equal to 50 percent of the opacity limit for six straight weekly readings, the owner or operator may revert back to a monthly visible emission test as required in Step 2(b).

The person conducting the visible emission test must be certified in accordance with 40 CFR Part 60, Appendix A, Method 9. If a visible emission test is required before a person is certified in accordance with permit condition 8.2, the owner or operator shall notify the Secretary within 24 hours of observing the visible emissions to schedule a visible emission test performed by a state inspector.

10.2 Certified personnel – visible emission tests

In accordance with ARSD 74:36:13:07, within 180 days after permit issuance the owner or operator shall retain a person that is certified to perform a visible emission test in accordance with 40 CFR Part 60, Appendix A, Method 9. The owner or operator shall retain a certified person throughout the remaining term of this permit.

10.3 Monitoring temperature for Unit #4

In accordance with ARSD 74:36:05:16.01(9), the owner or operator shall install, calibrate, maintain, and operate a monitoring device which continuously measures and records the temperature of the exhaust gases exiting the thermal oxidizer's combustion chamber and dryer system on Unit #4. The monitors shall record the temperature at a minimum of one-minute increments. The monitoring devices shall have an accuracy greater of plus or minus 0.75 percent of the temperature being measured expressed in degrees Celsius or plus or minus 2.5 degrees Celsius. If the temperature falls below the desired temperature for the regenerative thermal oxidizer, the owner or operator must record the incident in the monitoring log required in permit condition 5.2.

The owner or operator shall maintain the temperature of the exhaust gases exiting the thermal oxidizer combustion chamber as follows:

1. The exhaust gas temperature exiting the thermal oxidizer combustion chamber shall be maintained equal to or greater than the average temperature achieved during the most recent performance test that demonstrated compliance with the appropriate emission limits; and
2. If the temperature of the exhaust gases exiting the thermal oxidizer combustion chamber falls below the desired temperature by more than 25 degrees Fahrenheit for more than one hour, the owner or operator shall perform the following steps:
    a. The owner or operator will only operate Unit #4 with the thermal oxidizer at or above the average temperature achieved during the most recent performance test that demonstrated compliance with the appropriate emission limits; and
    b. Conduct a performance test on the gases exiting the thermal oxidizer combustion chamber to determine compliance with the appropriate emission limits at the lower temperature. The performance test shall be conducted within 60 days after the date the temperature dropped below the desired temperature by more than 25 degrees Fahrenheit for more than one hour.

If the performance test demonstrates compliance at the lower temperature, the temperature of the thermal oxidizer combustion chamber exhaust gases shall be maintained equal to or greater than the average temperature achieved during the performance test.

10.4 Monitoring water flow and chemical additive rates for Unit #3

In accordance with ARSD 74:36:05:16.01(9), the owner or operator shall continuously monitor and record the water flow and chemical additives (e.g. sodium bisulfite) rates for the wet scrubber associated with Unit #3. The monitor shall record the water flow and chemical additives (e.g. sodium bisulfite) rates at a minimum of 15-minute increments. If the water flow and/or chemical additives (e.g. sodium bisulfite) rates fall below the desired flow rate for the wet scrubber, the owner or operator must record the incident in the monitoring log required in permit condition 5.2.

The owner or operator shall maintain the water flow and/or chemical additives (e.g. sodium bisulfite) rates of the wet scrubbers associated with Unit #3 as follows:

1. The water flow and/or chemical additives (e.g. sodium bisulfite) rates shall be maintained equal to or greater than the average water flow and/or chemical additives (e.g. sodium bisulfite) rates achieved during the most recent performance test that demonstrated compliance with the appropriate emission limits; and
2. If the average water flow and/or chemical additives (e.g. sodium bisulfite) rates falls below the desired flow rate by more than 20 percent in any three consecutive one hour periods, the owner or operator shall perform the following steps:
    a. The owner or operator will only operate the wet scrubber at or above the average water flow and/or chemical additives (e.g. sodium bisulfite) rates achieved during the most recent performance test that demonstrated compliance with the appropriate emission limits; and
    b. Conduct a performance test on the wet scrubber to determine compliance with the appropriate emission limits at the lower water flow and/or chemical additives (e.g. sodium bisulfite) rates. The performance test shall be conducted within 60 days after the date the flow rate dropped below the desired flow rate by more than 20 percent in any three consecutive one hour periods.

If the performance test demonstrates compliance at the lower water flow and/or chemical additives (e.g. sodium bisulfite) rates, the water flow and/or chemical additives (e.g. sodium bisulfite) rates shall be maintained equal to or greater than the average water flow and/or chemical additives (e.g. sodium bisulfite) rates achieved during that performance test.

11.0 Synthetic Organic Chemical Manufacturing Requirements

11.1 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

11.2 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 11.39. 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 11.39. 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 11.42.

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 11.27.

The owner or operator shall comply with this permit condition, except as provided in permit condition 11.3, 11.4, 11.5, 11.6, and 11.34.

11.3 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 11.2 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 11.28 through 11.33, 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 11.39 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 11.27.

11.4 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 11.49 for no detectable emission is exempt from permit conditions 11.2 and 11.3 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 11.40; 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.

11.5 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 11.28 through 11.33, inclusive is exempt from permit condition 11.2, 11.3, and 11.4.

11.6 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 11.50, as an unsafe-to-monitor pump is exempt from the monitoring and inspection requirements in permit condition 11.2 and 11.3 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 11.2; 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 11.27.

B. Compressors

11.7 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 11.28 through 11.33, 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 11.27.

The owner or operator shall comply with this permit condition, except as provided in permit condition 11.8, 11.9, and 11.34.

11.8 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 11.28 through 11.33, inclusive, except as provided in permit condition 11.9, is exempt from permit condition 11.7.

11.9 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 11.49 for no detectable emissions is exempt from permit condition 11.7 and 11.8 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 11.40; 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

11.10 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 11.40. "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 11.27, 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 11.11 and 11.12.

11.11 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 11.10. The control device must comply with the requirements of permit condition 11.28 through 11.33, inclusive.

11.12 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 11.10 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 11.27.

D. Sampling Connection Systems

11.13 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 11.28 through 11.33, 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 11.14 and 11.34.

11.14 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 11.13. "In-situ sampling system" means non-extractive samplers or in-line samplers.

E. Open-Ended Valves or Lines

11.15 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 11.16, 11.17, 11.18, and 11.34.

11.16 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 11.15 at all other times.

11.17 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 11.15 and 11.16.

11.18 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 11.15 and 11.16.

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

11.19 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 11.39. 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 11.23 or 11.24, count the new valve as leaking when calculating the percentage of valves leaking as described in permit condition 11.45. 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 11.27. 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 11.20, 11.21, 11.22, 11.23, 11.25, and 11.34.

11.20 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 11.49 for no detectable emissions is exempt from permit condition 11.19 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 11.40; 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.

11.21 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 11.50 as an unsafe-to-monitor valve is exempt from permit condition 11.19 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 11.19; 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.

11.22 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 11.50 as a difficult-to-monitor valve is exempt from permit condition 11.19 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.

11.23 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 11.19 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 11.56;
2. A performance test, as specified in permit condition 11.24, 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 11.19.

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 11.45. If the leak percentage is greater than 2.0 percent, the owner or operator shall comply with the requirements described in permit condition 11.19.

11.24 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 11.23, 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 11.39;
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.

11.25 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 11.19, 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 11.56:

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 11.45. If the percent of valves leaking is greater than 2.0, the owner or operator shall comply with permit condition 11.19 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 11.19 before the provisions of this permit condition can be applied to that valve.

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

11.26 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 11.39. 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 11.27. 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

11.27 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 11.28 through 11.33, 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 shutdown, 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

11.28 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 11.0 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 11.30, 11.31, and 11.32, 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 11.39 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 11.39.

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 11.29. 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.

11.29 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.

11.30 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 11.28.

11.31 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 11.28 for any part of the closed vent system that is designated, as described in permit condition 11.33, 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 11.28; 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.

11.32 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 11.33, 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.

11.33 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 11.47;
4. For each inspection conducted in accordance with permit condition 11.39 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 11.28 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

11.34 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 11.2 through 11.9, 11.13 through 11.26, and 11.28 through 11.33, 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.

11.35 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.

11.36 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.

11.37 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 11.2 through 11.33, inclusive, if the equipment is identified in accordance subsection (5) of permit condition 11.49. "In vacuum service" means equipment is operating at an internal pressure which is at least five kilo Pascal below ambient pressure.

11.38 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 11.2 through 11.33, inclusive, if it is identified as required in subsection (6) of permit condition 11.49 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

11.39 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 11.2 through 11.33, 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.

11.40 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 11.4, 11.9, 11.10, 11.20, and 11.28 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.

11.41 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.

11.42 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.

11.43 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 11.41, 11.42, and 11.44 shall be representative of the process fluid that is contained in or contacts the equipment or the gas being combusted in a flare.

11.44 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 11-1;
4. The net heat value (H_T) of the gas being combusted in a flare shall be computed using Equation 11-2;
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 11-1 – Maximum permitted velocity for air assisted flares

$$V\mathrm{max} = \mathrm{K1} + \mathrm{K2} \times \mathrm{HT}$$

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 11-2 – 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.

11.45 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 11.23 and 11.25 as follows:

1. The percent of valves leaking shall be determined using Equation 11-3;
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 11.19 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 11-3 – 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

11.46 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 11.2 through 11.9 and 11.19 through 11.26, 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 11.19, 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.

11.47 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 11.2 through 11.9 and 11.19 through 11.26, 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.

11.48 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 11.28 through 11.33, 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 11.28 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 11.2 through 11.14, 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 11.2 through 11.14, inclusive.

11.49 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 11.2 through 11.33, 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 11.2 through 11.33, inclusive;
2. A list of identification numbers for equipment that are designated for no detectable emissions under the provisions of permit condition 11.4, 11.9, and 11.20. 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 11.10 through 11.12, inclusive;
4. The date of each compliance test as required in permit condition 11.4, 11.9, and 11.20. 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 11.38, 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.

11.50 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 11.21 and 11.22 and all pumps subject to the requirements of permit condition 11.6:

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.

11.51 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 11.25:

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

11.52 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 11.3 and subsection (5) of permit condition 11.7 and explanation of the design criterion; and
2. Any changes to this criterion and the reasons for the changes.

11.53 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

11.54 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 11.19 through 11.22, inclusive, excluding those valves designated for no detectable emissions under permit condition 11.20;
3. The number of pumps subject to the requirements of permit condition 11.2 through 11.6, inclusive, excluding those pumps designated for no detectable emissions under permit condition 11.4 and those pumps complying with permit condition 11.5; and
4. The number of compressors subject to the requirements of permit condition 11.7 through 11.9, inclusive, excluding those compressors designated for no detectable emission under permit condition 11.9 and those compressors complying with permit condition 11.8.

11.55 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 11.25 and the number of valves for which leaks were not repaired as required in permit condition 11.19;
3. The number of pumps for which leaks were detected as described in permit condition 11.2 and 11.3 and the number of pumps for which leaks were not repaired as required in permit condition 11.2 and 11.3;
4. The number of compressors for which leaks were detected as described in permit condition 11.7 and the number of compressors for which leaks were not repaired as required in permit condition 11.7;
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).

11.56 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 11.23 and/or 11.25.

12.0 STORAGE TANK REQUIREMENTS

12.1 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 Tank 001 through 005. 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.

12.2 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 Tank 001 through 005. These records must be maintained for the life of the tank.

12.3 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 Tank 001 through 005. These records must be maintained for at least two years from the date of such record.

12.4 Tank inspection record

In accordance with ARSD 74:36:07:14, as referenced to 40 CFR §§ 60.115b(a)(2) and 60.116b(a), the owner or operator shall maintain records of each inspection performed as required by permit condition 12.7 and 12.8. 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.

12.5 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 Tank 001 through 005 as required in permit condition 12.7 and 12.8. 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.

12.6 Tank defect report

In accordance with ARSD 74:36:07:14, as referenced to 40 CFR §§ 60.115b(a)(3) and (4) and 60.116b(a), if any defects described in permit condition 12.7 and 12.8 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.

12.7 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 Tank 001 through 005 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.

12.8 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 Tank 001 through 005 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 12.6. 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. If a double seal system is installed, this type of visual inspection shall occur at intervals no greater than five years. A visual inspection of other seal systems shall occur at intervals no greater than 10 years. 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.

12.9 Storage tank alarm

In accordance with ARSD 74:36:05:16.01(9), the owner or operator shall install, operate, and maintain an alarm system on Tank 001 through 005 that warns the owner or operator when the liquid surface drops below the height of the support legs.

13.0 NSPS REQUIREMENTS FOR BOILERS

13.1 Nitrogen oxide limit

In accordance with ARSD 74:36:07:04, as referenced to 40 CFR § 60.44b(a), (h), (i), and (l)(2), the owner or operator shall not discharge gases that contain nitrogen oxide (expressed as nitrogen dioxide) to the ambient air from Unit #4 in excess of 0.10 pounds per million Btus. Compliance with the nitrogen oxide emission limit is based on a 30-day rolling average. The nitrogen oxide emission limit applies at all times including periods of startup, shutdown, and malfunction.

13.2 Changing fuel for boilers

In accordance with ARSD 74:36:07:04, as referenced to 40 CFR § 60.40b(a), Unit #4 shall be fueled only with natural gas. If Unit #4 is fueled with other fuels such as propane, coal, oil, or wood, additional standards and requirements in 40 CFR Part 60 Subpart Db may apply. The owner or operator shall apply for and obtain approval from the Secretary before other fuels can be used as a fuel in the boilers.

13.3 Demonstrating compliance with nitrogen oxide limit

In accordance with ARSD 74:36:07:04, as referenced to 40 CFR § 60.46b(c) and (e)(4), the owner or operator shall at the request of the Secretary determine compliance with the nitrogen oxide limit through the use of a 30-day performance test. The 30-day performance test shall consist of monitoring the nitrogen oxide emission rates using the continuous system for monitoring nitrogen oxides under permit condition 13.4 for 30 successive steam generating days and calculating a 30-day average emission rate. The 30-day average emission rate is calculated as the average of all hourly emissions data recorded by the monitoring system during the 30-day test period. During periods when a 30-day performance test is not required by the Secretary, the nitrogen oxide emissions data collected pursuant to permit condition 13.5 shall be used to calculate a 30-day rolling average emission rate on a daily basis and prepare excess emission reports. The nitrogen oxide emissions data collected pursuant to permit condition 13.5 will be used to assist the Secretary in determining if a 30-day performance test is required but will not be used to determine compliance with the nitrogen oxide emissions limit. A new 30-day rolling average emission rate is calculated each operating day as the average of all of the hourly nitrogen oxide emission data for the preceding 30 operating days. An operating day means a 24-hour period between 12:00 midnight and the following midnight during which any fuel is combusted at any time in the thermal oxidizers. It is not necessary for fuel to be combusted continuously for the entire 24-hour period.

13.4 Monitoring nitrogen oxide emissions

In accordance with ARSD 74:36:07:04, as referenced to 40 CFR § 60.48b(b)(1) and (g), the owner or operator shall monitor the nitrogen oxide emission rate from Unit #4 by one of the following options:

1. The owner or operator shall install, calibrate, maintain, and operate a continuous emission monitoring system for measuring nitrogen oxide and oxygen or carbon dioxide emissions discharged to the atmosphere and record the output for the system; or
2. The owner or operator shall monitor operating conditions and predict nitrogen oxide emission rates as specified in the nitrogen oxide monitoring plan.

13.5 Nitrogen oxide continuous emission monitoring system

In accordance with ARSD 74:36:07:04, as referenced to 40 CFR § 60.48b(c), (d), (e)(2), and (f), and ARSD 74:36:07:01, and 40 CFR §§ 60.13(a), (b), (d)(1), (e)(2), and (f), the continuous emission monitoring system required in Option 1 of permit condition 13.4 shall meet the following provisions:

1. The continuous emission monitoring system shall be operated and data recorded during all periods of operation except during continuous emission monitoring system breakdowns and repairs. Data shall be recorded during calibration checks, and zero and span adjustments;
2. The 1-hour average nitrogen oxide emission rates measured by the continuous nitrogen oxides monitor shall be expressed in pounds per million Btus heat input and shall be used to calculate the average emission rates. The continuous emission monitoring system shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period. At least two data points must be used to calculate each 1-hour period;
3. The continuous emission monitoring system shall meet 40 CFR Part 60, Appendix B - Performance Specification 2 and 3 and the quality assurance measures in 40 CFR Part 60, Appendix F;
4. The owner or operator shall check the zero (or low-level value between 0 and 100 parts per million) and span calibration drifts at least once daily. The span value shall be 500 parts per million. The zero and span shall, as a minimum, be adjusted whenever the 24-hour zero drift or 24-hour span drift exceeds 25 parts per million;
5. When the continuous emission monitoring system is not obtaining emission data due to continuous emission monitoring breakdowns, repairs, calibration checks, and zero and span adjustments, the owner or operator shall provide emission data for a minimum of 75 percent of the operating hours per day, in at least 22 out of 30 successive operating days. The owner or operator shall supplement the continuous emission monitoring data by using standby monitoring systems; Method 7 or 7A of 40 CFR Part 60, Appendix A; or other approved reference methods to meet this requirement.

13.6 Nitrogen oxide monitoring plan

In accordance with ARSD 74:36:07:04, as referenced to 40 CFR § 60.49b(c), the nitrogen oxide monitoring plan required in Option 2 of permit condition 13.4 shall be submitted to the Secretary for approval within 360 days of the initial startup of the ethanol plant. However, the nitrogen oxide monitoring plan must be approved by the Secretary prior to conducting the initial performance test. The submittal shall contain the following information:

1. Identify the specific operating conditions to be monitored and the relationship between these operating conditions and the nitrogen oxide emission rates. Operating conditions

include, but are not limited to the degree of staged combustion (i.e., the ratio of primary air to secondary and/or tertiary air) and the level of excess air (i.e., flue gas oxygen level);
2. Include the data and information that the owner or operator used to identify the relationship between nitrogen oxide emission rates and these operating conditions; and
3. Identify how these operating conditions, including steam generating unit load, will be monitored on an hourly basis, the quality assurance procedures or practices that will be employed to ensure the data generated by monitoring these operating conditions will be representative and accurate; and the format of the records of these operating conditions.

13.7 Daily monitoring records

In accordance with ARSD 74:36:07:04, as referenced to 40 CFR § 60.49b(d)(1), (g) and (o), the owner or operator shall maintain records of the following information for each operating day for Unit #4. The records must be maintained for a minimum of two years from the date of such record.

1. Calendar date;
2. Record the amount of natural gas combusted during each day and calculate the annual capacity factor for natural gas for the reporting period. The annual capacity factor is determined on a 12-month rolling average basis with a new annual capacity factor calculated at the end of each calendar month;
3. The average hourly nitrogen oxide emission rates (expressed as nitrogen dioxide) measured or predicted. The emission rates shall be expressed as pounds per million Btu heat input;
4. The 30-day average nitrogen oxide emission rates calculated at the end of each operating day from the measured or predicted hourly nitrogen oxide emission rates for the preceding 30 operating days;
5. Identification of each operating day when the calculated 30-day average nitrogen oxide emission rate is in excess of the nitrogen oxide emissions limit, the reasons for such excess emissions, and a description of corrective actions taken;
6. Identification of each operating day for which pollutant data was not obtained, reasons for not obtaining sufficient data, and a description of corrective actions taken;
7. Identification of the times when emission data have been excluded from the calculation of average emission rates and the reasons for excluding data;
8. Identification of “F” factor used for calculations, method of determination, and type of fuel combusted;
9. Identification of the times when the pollutant concentration exceeded full span of the continuous emission monitoring system;
10. Description of any modifications to the continuous emission monitoring system that could affect the ability of the continuous emission monitoring system to comply with 40 CFR Part 60, Appendix B, Performance Specification 2 or 3; and
11. Results of daily continuous emission monitoring system drift tests and quarterly accuracy assessments as required by 40 CFR Part 60, Appendix F, Procedure 1.

13.8 Semiannual excess emission report

In accordance with ARSD 74:36:07:04, as referenced to 40 CFR § 60.49b(h), (i), (o), and (w), the owner or operator shall submit a semiannual excess emission report to the Secretary containing a summary of the information recorded in permit condition 13.7. Excess emissions are defined as any calculated 30-day rolling average nitrogen dioxide emission rate as determined by permit condition 13.3 that exceeds the nitrogen oxide emission limit in permit condition 13.1. 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).

14.0 Fire Pump Requirements

14.1 Fire pump engine emission limits

In accordance with ARSD 74:36:07:88, as referenced to 40 CFR §§ 60.4205(c) and 60.4206, the owner or operator shall operate and maintain the fire pump engine that achieves the emission limits in Table 14-1 over the entire life of the fire pump engine.

Table 14-1 – Emission Limits for Fire Pumps

NMHC+NOx [1]	Carbon Monoxide	Particulate Matter	Units
10.5	3.5	0.54	grams/kilowatt-hour
7.8	2.6	0.40	grams/horsepower-hour

[1] – NMHC + NOx means non methane hydrocarbon plus nitrogen oxide.

14.2 Fuel requirements for fire pump engine

In accordance with ARSD 74:36:07:88, as referenced to 40 CFR § 60.4207(b), the owner or operator shall only combust diesel fuel in the fire pump engine that meets the following per gallon standards:

1. Maximum sulfur content of 15 parts per million; and
2. Minimum cetane index of 40; or
3. Maximum aromatic content of 35 volume percent.

14.3 Operating requirements for fire pump engine

In accordance with ARSD 74:36:07:88, as referenced to 40 CFR §§ 60.4211(a), the owner or operator shall comply with the following, except as specified in permit condition 14.4:

1. Operate and maintain the fire pump engine according to the manufacturer's emission-related written instructions;
2. Change only those emission-related settings that are permitted by the manufacturer; and
3. Meet the applicable requirements in 40 CFR Part 89, 94, and/or 1068.

14.4 Exemption from operating requirements for fire pump engine

In accordance with ARSD 74:36:07:88, as referenced to 40 CFR §§ 60.4211(g)(3), if the owner or operator does not install, configure, operate, and maintain the fire pump engine according to the manufacturer's emission-related written instructions or changes the emission-related settings in a way that is not permitted by the manufacturer, the owner or operator must demonstrate compliance as follows:

1. Maintain a maintenance plan and records of conducted maintenance;
2. To the extent practicable, maintain and operate the fire pump engine in a manner consistent with good air pollution control practice for minimizing emissions; and
3. Conduct an initial performance test to demonstrate compliance with the emission limits in permit condition 14.1 within 1 year of startup, within 1 year after the fire pump engine is no longer installed, configured, operated, and maintained in accordance with the manufacturer's emission-related written instructions, or within 1 year after the owner or operator changes emission-related settings in a way that is not permitted by the manufacturer.

14.5 Operational restrictions for fire pump engine

In accordance with ARSD 74:36:07:88, as referenced to 40 CFR § 60.4211(f), the owner or operator may operate the fire pump engine for the purpose of maintenance checks and readiness testing, provided the tests are recommended by federal, state or local government, the manufacturer, the vendor, or the insurance company associated with the fire pump engine. Maintenance checks and readiness testing of fire pump engine is limited to 100 hours per year. There is no time limit on the use of fire pump engine in emergency situations. The owner or operator may operate the fire pump engine up to 50 hours per year in non-emergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing.

14.6 Performance test requirements for fire pump engine

In accordance with ARSD 74:36:07:88, as referenced to 40 CFR §§ 60.4212(a) and (d), if the owner or operator conducts a performance test to demonstrate compliance with permit condition 14.1, the following procedures shall be followed:

1. The performance test must be conducted according to the in-use testing procedures in 40 CFR Part 1039, Subpart F; and
2. Exhaust emissions from the nonemergency generator must not exceed the “NTE” numerical requirements, rounded to the same number of decimal places as the applicable emission limit in permit condition 14.1 and determined by Equation 14-1.

Equation 14-1 – NTE formula

$$NTE = 1.25 \times STD$$

Where:

- NTE = Numerical requirement for each pollutant identified in Table 14-1; and
- STD = Emission limit for each pollutant identified in Table 14-1

14.7 Non-resettable clock requirements

In accordance with ARSD 74:36:07:88, as referenced to 40 CFR §§ 60.4209(a), the owner or operator shall install and maintain a non-resettable hour meter on the fire pump engine prior to startup of the fire pump engine.

15.0 INDUSTRIAL PROCESS COOLING TOWER REQUIREMENTS

15.1 Industrial process cooling tower water treatment restriction

In accordance with ARSD 74:36:08:11, as referenced to 40 CFR §§ 63.402 and 63.404(b), no owner or operator shall use chromium based water treatment chemicals in an industrial process cooling tower. A cooling water sample residual hexavalent chromium concentration in excess of 0.5 parts per million by weight shall be considered a violation.

16.0 ADDITIONAL BOILER REQUIREMENTS

16.1 Changing boiler fuel

In accordance with 40 CFR § 63.11195(e), Unit #4 shall be fueled only with natural gas. If Unit #4 is fueled with other fuels such as propane, coal, oil, or wood, additional standards and requirements in 40 CFR Part 63 Subpart JJJJJJ may apply. The owner or operator shall apply for and obtain approval from the Secretary before other fuels can be used as a fuel in the boilers.

17.0 FLARE OPERATIONAL REQUIREMENTS

17.1 Flare operational limits

In accordance with ARSD 74:36:07:01, as reference to 40 CFR §§ 60.18(c) and 60.18(e), the owner or operator shall maintain and operate the flares associated with Unit #7 and #8 in accordance with the following:

1. Operate with no visible emissions as determine by permit condition 17.2, except for periods not to exceed 5 minutes during any 2 consecutive hours;
2. Operate with a flame present at all times as determined by permit condition 17.3 when air emissions may be vented to the flare;
3. For a non-assisted flare, the flare shall have a diameter of 3 inches or greater, have a hydrogen content of 8.0 percent (by volume) or greater, and are designed with an actual exit velocity less than 37.2 meters per second (122 feet per second) and less than the maximum permitted velocity as determined by Equation 17-1. The actual exit velocity is determined by permit condition 17.5;

Equation 17-1 – Calculating maximum permitted velocity for a non-assisted flare

$$V_{max} = (X_{H2} - K_1) \times K_2$$

Where:

- V_{max} = Maximum permitted velocity, in meters per second;
- K_1 = Constant, 6.0 volume-percent hydrogen;
- K_2 = Constant, 3.9 (meters per second)/volume-percent hydrogen; and
- X_{H2} = The volume-percent of hydrogen, on a wet basis, as calculated by using the American Society for Testing and Materials (ASTM) Method D1946-77.

4. For a non-assisted flare, the net heating value of the gas being combusted shall be 7.45 mega joules per standard cubic meter (200 Btus per standard cubic foot) or greater. The net heating value shall be determined by permit condition 17.4;

5. For a steam-assisted or air-assisted flare, the net heating value of the gas being combusted shall be 11.2 mega joules per standard cubic meter (300 Btus per standard cubic foot) or greater;
6. For a non-assisted or steam-assisted flare, operate with an actual exit velocity of less than18.3 meters per second (60 feet per second) with the following two exceptions:
    a. Flares designed for and operated with an actual exit velocity equal to or greater than 18.3 meters per second (60 feet per second) but less than 122 meters per second (400 feet per second) are allowed if the net heating value of the gas being combusted is greater than 37.3 mega joules per standard cubic meter (1,000 Btus per standard cubic foot); or
    b. Flares designed for and operated with an actual exit velocity less than the maximum permitted velocity, as determined by Equation 17-2, and less than 150
    c. meters per second are allowed.

Equation 17-2 – Calculating maximum permitted velocity for exception

$$Log_{10}(V_{max}) = (H_T + 28.8) \div 31.7$$

Where:

- V_{max} = Maximum permitted velocity, meters per second;
- 28.8 = Constant;
- 31.7 = Constant; and
- H_T = Net heating value of gas.

7. For an air-assisted flare, operate with an actual exit velocity less than the maximum permitted velocity as determined by permit condition 17.6.

17.2 Monitoring visible emissions from a flare

In accordance with ARSD 74:36:07:01, as reference to 40 CFR § 60.18(f)(1), the owner or operator shall monitor the visible emissions from a flare in accordance with 40 CFR Part 60, Appendix A, Method 22. The observation period shall be 2 hours.

17.3 Monitoring presence of a pilot flame

In accordance with ARSD 74:36:07:01, as reference to 40 CFR § 60.18(f)(2), the owner or operator shall monitor the presence of a pilot flame using a thermocouple or any other equivalent device to detect the presence of a flame.

17.4 Calculating net heating value of gas

In accordance with ARSD 74:36:07:01, as reference to 40 CFR § 60.18(f)(3), the owner or operator shall calculate the net heating value of the gas being combusted in a flare using Equation 17-3.

Equation 17-3 – Calculating net heating value of gas

$$H_T = K \sum_{i=1}^{n} C_i H_i$$

Where:

- H_T = Net heating value of the sample, in mega joules per standard cubic meter, where the net enthalpy per mole of off gas is based on combustion at 25 degrees Celsius and 760 millimeters of mercury, but the standard temperature for determining the volume corresponding to one mole is 20 degrees Celsius;
- K = Constant, 1.74×10^{-7} gram mole-mega joules per part per million-standard cubic meters-kilocalorie, where the standard temperature for gram mole per standard cubic meter is 20 degrees Celsius;
- C_i = Concentration of sample component "i" in parts per million on a wet basis, as measured for organics by 40 CFR Part 60, Appendix A, Reference Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946-77 or 90 (Reapproved 1994); and
- H_i = Net heat of combustion of sample component "i" in kilocalories per gram mole at 25 degrees Celsius and 760 millimeters of mercury. The heat of combustion may be determined using ASTM D2382-76 or 88 or D4809-95 if published values are not available or cannot be calculated.

17.5 Calculating actual exit velocity of a flare

In accordance with ARSD 74:36:07:01, as reference to 40 CFR § 60.18(f)(4), the owner or operator shall calculate the actual exit velocity by dividing the volumetric flow rate (in units of standard temperature and pressure), as determined by 40 CFR Part 60, Appendix A, Reference Methods 2, 2A, 2C or 2D, as appropriate, by the unobstructed (free) cross sectional area of the flare tip.

17.6 Calculating maximum permitted velocity for an air-assisted flare

In accordance with ARSD 74:36:07:01, as reference to 40 CFR § 60.18(f)(6), the owner or operator shall calculate the maximum permitted velocity for an air-assisted flare using Equation 17-4.

Equation 17-4 – Calculating maximum permit velocity for an air-assisted flare

$$V_{\max} = 8.706 + (0.7084 \times H_T)$$

Where:

- V_{max} = Maximum permitted velocity, meters per second;
- 8.706 = Constant;
- 0.7084 = Constant; and
- H_T = Net heating value of gas.