DEPARTMENT of ENVIRONMENT and NATURAL RESOURCES
PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

December 21, 2010

Jim Lane, Regulatory Compliance Manager
ABE South Dakota, LLC
38469 133rd Street
Aberdeen, South Dakota 57401

Dear Mr. Lane:

Enclosed is ABE South Dakota's Title V air quality permit for its operations in Aberdeen, South Dakota. To ensure compliance with the enclosed permit and state and federal regulations, the department will conduct periodic inspections.

In accordance with federal regulations, a person may petition EPA to object to the issuance of the Title V air quality permit within 60 days after the expiration of EPA's review period. EPA's review period ended December 18, 2010. The petition may be based only on objections that were raised during the public comment period, unless the petitioner demonstrates that it was impracticable to raise such objections within the public comment period or unless the grounds for the objection arose after the public comment period.

Please review the permit and contact us at 605-773-3151, if you have any questions. Thank you for your cooperation during the review process.

Sincerely,

Marc Macy

Marc Macy
Natural Resources Project Engineer
Air Quality Program

Permit #: 28.0505-03

Effective Date: December 20, 2010

Expiration Date: March 6, 2012

SOUTH DAKOTA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

TITLE V AIR QUALITY PERMIT

Steven M Pirner, Secretary
Department of Environment and Natural Resources

Under the South Dakota Air Pollution Control Regulations

Pursuant to Chapter 34A-1-21 of the South Dakota Codified Laws and the Air Pollution Control Regulations of the State of South Dakota and in reliance on statements made by the owner designated below, a permit to 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

ABE South Dakota, LLC
38469 133rd Street
Aberdeen, South Dakota 57401

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

Same as above

3. Permit Contact

Jim Lane, Regulatory Compliance Manager
(605) 226-9109

4. Facility Contact

Jerremy Wentz, ES&H Coordinator
(605) 226-9103

5. Responsible Official

Jim Freidt, Plant Manager
(605) 225-0520

B. Permit Revisions or Modifications

December 20, 2010 – Permit modification to increase the operational limit of a distillers grain dryer and to revise the major source threshold value in the permit from 95 tons per year to 238 tons per year based on EPA's final rule.

C. Type of Operation

Ethanol production facility capable of producing up to 61 million gallons of undenatured ethanol per year

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1.0 STANDARD CONDITIONS

1.1 Construction and operation of source. In accordance with Administrative Rules of South Dakota (ARSD) 74:36:05:16.01(8), the owner or operator shall operate the units, controls, and processes as described in Table 1-1 and construct and operate the units, controls and process as described in Table 1-2 in accordance with the statements, representations, and supporting data contained in the complete permit application received November 21, 2005, March 1, 2006, December 15, 2006, and May 21, 2010, unless modified by the conditions of this permit. Table 1-1 is no longer applicable on or after the initial startup of Unit #22 in Table 1-2. The application consists of the application forms, supporting data, and supplementary correspondence. If the owner or operator becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in an application, such information shall be promptly submitted.

Table 1-2 – Description of Permitted Units, Operations, and Processes

Unit	Description	Maximum Operating Rate	Control Device
#1	Elevator legs transport the grain from the adjacent elevator a hammer mill.	16 tons per hour.	Not Applicable
	A hammer mill grinds the grain into flour. A cyclone collects the flour	16 tons per hour.	
	The flour is transported to the fermentation process.	16 tons per hour.	
#2	A 1991 Cleaver Brooks boiler fired with natural gas and distillate oil.	750 horsepower (34 million Btus per hour heat input)	Not Applicable
#3	A 1992 Thompson Dehydration rotary drum dryer fired with natural gas. A cyclone collects the product.	4 tons per hour 25 million Btus per hour heat input	Not Applicable
#4	Fermentation process #1. Ethanol produced in four fermenters and the liquid beer is stored in a beer well.	12,000 gallons of mash per hour	Wet scrubber
	Distillation process #1. The distillation process distills the liquid beer. The distillation process consists of the beer column, rectifier column, condensers, molecular sieve, and evaporator.	12,000 gallons of mash per hour	
	Miscellaneous tanks – vacuum tank, slurry tank, CIP return tank, and two liquefaction tanks.		
#6	Dried distillers grain cooling drum and cyclone.	4 tons per hour	Not Applicable
#8	Industrial cooling tower #1.	600,000 gallons per hour.	Not applicable
#9	Ethanol truck load out	36,000 gallons per hour.	Not applicable
#10	Ethanol rail car load out	60,000 gallons per hour.	Not applicable
#16	Tank #T-804 – Above ground storage	76,000 gallons	Not Applicable

Unit	Description	Maximum Operating Rate	Control Device
	tank with an internal floating roof.		
#21	Elevator legs transport the grain from the adjacent elevator a hammer mill.	100 tons per hour for each hammer mill	Baghouse
	A surge grain bin		
	Two hammer mills grind the grain into flour. A cyclone collects the flour		
	The flour is transported to the fermentation process.		
#22	Fermentation process #2. Ethanol produced in four fermenters and the liquid beer is stored in a beer well.	43,800 gallons of mash per hour	Wet Scrubber
#23	Distillers grain dryer system #2. The system consists of two dryers in series and fired with natural gas. A cyclone collects the product.	23 tons per hour 45 million Btus per hour heat input for each dryer	Thermal oxidizer / heat recovery boiler
	Distillation process #2. The distillation process distills the liquid beer. The distillation process consists of the beer column, rectifier column, condensers, molecular sieve, and evaporator.	43,800 gallons of mash per hour	
	Miscellaneous tanks; process tank, two slurry tanks, yeast tank, flash tank, and CIP screen		
	Five centrifuges		
	Thermal oxidizer / heat recovery boiler fired on the off-gases from the processes and natural gas.	99 million Btus per hour heat input	
#24	Dried distillers grain cooling drum and cyclone.	23 tons per hour.	Baghouse
#25	Dried distillers grain loadout	400 tons per hour	Baghouse
#26	Industrial cooling tower #2.	1,200,000 gallons per hour.	Not Applicable
#27	Ethanol truck load out	36,000 gallons per hour.	Flare
	Flare. The flare is fired with the off gasses from the process and natural gas.	12.4 million Btus per hour heat input	
#28	Ethanol rail car load out	60,000 gallons per hour.	Not applicable
#30	Biomethanator Flare. The flare is fired on the off gasses from the biomethanator system and natural gas.	6.4 million Btus per hour heat input	Not Applicable
#31	Tank #T-61 – Above ground storage tank with an internal floating roof.	500,000 gallons	Not applicable
#32	Tank #T-62 – Above ground storage tank with an internal floating roof.	500,000 gallons	Not applicable

Unit	Description	Maximum Operating Rate	Control Device
#33	Tank #T-63 – Above ground storage tank with an internal floating roof.	100,000 gallons	Not applicable
#34	Tank #T-64 – Above ground storage tank with an internal floating roof.	100,000 gallons	Not applicable
#35	Tank #T-65 – Above ground storage tank with an internal floating roof.	100,000 gallons	Not applicable

The units specified in Table 1-2 as parts of the "Existing and New Ethanol Plant" are shared by both the existing and new ethanol plant. The units specified in Table 1-2 as parts of the "Existing Ethanol Plant" are only specific to the existing ethanol plant. The units specified in Table 1-2 as parts of the "New Ethanol Plant" are only specific to the new ethanol plant.

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 that 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, a violation of a permit condition may subject the owner or operator to civil or criminal prosecution, a state penalty of not more than $10,000 per day per violation, injunctive action, administrative permit action, and other remedies as provided by law.

1.5 Inspection and entry. In accordance with SDCL 34A-1-41, the owner or operator shall allow the Secretary to:

1. Enter the premises where a regulated activity is located or where pertinent records are stored;
2. Have access to and copy any records that are required under this permit;
3. Inspect 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 that 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 violation of this permit. Credible evidence is as follows:

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

2.0 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 ARSD 74:37.

2.2 Annual operational report. In accordance with ARSD 74:37:01:06, 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 ARSD 74:37:01:08, 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 AMENDMENT AND MODIFICATION CONDITIONS

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, and the proposed changes to this permit.

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 can not be constructed until the Secretary takes final action on the proposed change. 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 that the proposed change is an administrative permit amendment. 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 at the source;
3. Requires more frequent monitoring or reporting by the source;
4. The ownership or operational control of a source change and the Secretary determines that no other change in this permit is necessary. However, the new owner must submit a certification of applicant form and a written statement specifying the date for transfer of operating permit responsibility, coverage, and liability; or
5. Any other changes that 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 that the proposed change is a

permit modification. 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 record keeping 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 any proposed change that meets the definition of a modification in ARSD 74:36:01:10 or is not an administrative amendment or a minor permit amendment. Modification is defined as a physical change or change in operation that increases the amount of air pollutant emitted by the source or results in the emission of an air pollutant not previously emitted. 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.

3.5 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.

3.6 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 but considered a minor permit amendment.

3.7 Changing boiler fuel. In accordance with ARSD 74:36:07:05, as referenced to 40 CFR § 60.40c, Unit #2 shall be fueled with natural gas or distillate oil and #23 shall be fired with natural gas. If Unit #2 or #23 is fueled with other fuels such as propane, coal, residual oil, or wood, additional standards and requirements in 40 CFR Part 60 Subpart Dc 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 Unit #2 or #23.

Distillate oil means fuel oil that complies with the specifications for fuel oil numbers 1 or 2. Residual oil means crude oil, fuel oil that does not comply with the specifications under the definition of distillate oil, and all fuel oil numbers 4, 5, and 6. Specifications for fuel oils are defined in the American Society for Testing and Materials in ASTM D396-78, "Standards Specifications for Fuel Oils".

3.8 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 that describes 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 that will result 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 that 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 REQUIREMENTS

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 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 RECORD KEEPING REQUIREMENTS

5.1 **Record keeping.** 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 **Daily records.** In accordance with ARSD 74:36:07:05, as referenced to 40 CFR §§ 60.48c(g) and (i), the owner or operator shall record and maintain records of the amount and type of each fuel combusted during each day in Unit #2 and #23. The owner or operator shall maintain these daily records for a period of at least two years following the date of such record.

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 air emissions from the existing and new ethanol plant that are mixed together from those permitted sources that are associated with both must be separated and allocated to either the existing ethanol plant or the new ethanol plant (see Table 1-2). The allocation process shall be determined as follows:
   a. The air emissions from Unit #27, and #28, and fugitive sources of particulate and volatile organic compound emissions are directly proportional to the amount of undenatured ethanol produced from the existing ethanol plant (Unit #4) and new ethanol plant (Units #22);
2. The amount of volatile organic compounds, in tons, emitted into the ambient air from the existing ethanol plant and new ethanol plant during the month and during the 12-month rolling period for that month. The volatile organic compound emissions shall be based on the following:
   a. The amount of volatile organic compounds emitted to the ambient air from permitted units shall be calculated using formulas, emission factors, and methods described in the statement of basis and subsection (1) of this permit condition. Once the required performance tests are conducted, the amount of volatile organic compound emissions shall be calculated using the results of the most recent performance test.
   b. The fugitive emissions from leaking equipment such as valves, pumps, compressors, etc., shall be calculated by using the emission factors from Protocol for Equipment Leak Emissions Estimates, EPA-453/R-95-017 or another method approved by the Secretary and subsection (1) of this permit condition. 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.
3. The amount of particulate matter less than or equal to 10 microns in diameter (PM10), in tons, emitted into the ambient air from the existing ethanol plant and new ethanol plant during the month and during the 12-month rolling period for that month. The amount of PM10 emitted to the ambient air from permitted units and fugitive sources shall be calculated

using formulas, emission factors, and methods described in the statement of basis and subsection (1) of this permit condition. Once the required performance tests are conducted, the amount of PM10 emissions shall be calculated using the results of the most recent performance test;

4. The amount of sulfur dioxide, in tons, emitted into the ambient air from the existing ethanol plant and new ethanol plant during the month and during the 12-month rolling period for that month. The amount of sulfur dioxide emitted to the ambient air from permitted units and fugitive sources shall be calculated using formulas, emission factors, and methods described in the statement of basis and subsection (1) of this permit condition. Once the required performance tests are conducted, the amount of sulfur dioxide shall be calculated using the results of the most recent performance test;
5. The amount of nitrogen oxide, in tons, emitted into the ambient air from the existing ethanol plant and new ethanol plant during the month and during the 12-month rolling period for that month. The amount of nitrogen oxide emitted to the ambient air from permitted units shall be calculated using formulas, emission factors, and methods described in the statement of basis and subsection (1) of this permit condition. Once the required performance tests are conducted, the amount of nitrogen oxide emissions shall be calculated using the results of the most recent performance test;
6. The amount of carbon monoxide, in tons, emitted into the ambient air from the existing ethanol plant and new ethanol plant during the month and during the 12-month rolling period for that month. The amount of carbon monoxide emitted to the ambient air from permitted units shall be calculated using formulas, emission factors, and methods described in the statement of basis and subsection (1) of this permit condition. Once the required performance tests are conducted, the amount of carbon monoxide emissions shall be calculated using the results of the most recent performance test;
7. The amount of hazardous air pollutants, in tons, emitted into the ambient air from the permitted units during the month and during the 12-month rolling period for that month. The amount of hazardous air pollutants emitted to the ambient air from permitted units shall be calculated using formulas, emission factors, and methods described in the statement of basis. Once the required performance tests are conducted, the amount of hazardous air pollutant emissions shall be calculated using the results of the most recent performance test;
8. The amount of undenatured ethanol produced through Unit #4 and #22, in gallons, during the month and during the 12-month rolling total for that month;
9. The amount of grain processed through Units #1 and #21, in tons, during the month and during the 12-month rolling total for that month;
10. The amount of dried distillers grain produced in Unit #3 and #23, in tons, during the month and during the 12-month rolling total for that month; and
11. The quantity of denatured ethanol loaded out by truck in Unit #9, in gallons, during the month and during the 12-month rolling total for that month.

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

1. Maintenance schedule for the air pollution control equipment specified in Table 1-1 and Table 1-2. At a minimum, the maintenance schedule shall meet the manufacturer's

recommended schedule for maintenance. The following information should 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 should be recorded for each visible emission reading required in permit condition 19.3;
   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 water flow rate records for Unit #4 and #22 and the following information pertaining to water flow rates that fall below the desired flow rates for the appropriate packed bed wet scrubber on Unit #4 and #22;
   a. The date, time, and duration the flow rate fell below the desired flow rate;
   b. The reason the flow rate fell below the desired value; and
   c. The maintenance or procedures that were performed to bring the flow rate back above the desired value;
4. Documentation on the accuracy of the temperature monitoring device on the thermal oxidizer associated with Unit #23;
5. The temperature records required in permit condition 19.2;
6. Daily boiler records indicating which boilers were in operation or shutdown;
7. 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 that the permitted equipment was at the time being properly operated.

5.5 Tank dimensions. 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 Units #16, #31, #32, #33, #34, and #35. These records must be maintained for the life of the tank.

5.6 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 Units #16, #31, #32, #33, #34, and #35. These records must be maintained for at least two years from the date of such record.

5.7 Tank inspection record. In accordance with ARSD 74:36:07:14, as referenced to 40 CFR § 60.115b(a)(2), the owner or operator shall maintain records of each inspection performed as required by permit conditions 19.5. 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.

5.8 Equipment log. In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.486(e), the owner or operator shall maintain the following records for equipment subject to the requirements in chapters 8.0 through 16.0, inclusive, of this permit:

1. A list of identification numbers for equipment subject to the requirements in chapters 8.0 through 16.0, inclusive, of this permit;
2. A list of identification numbers for equipment that are designated for no detectable emissions under the provision of permit conditions 8.3, 9.3, and 13.2. 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 chapter 10.0 of this permit;
4. The dates of each compliance test as required in permit conditions 8.3, 9.3, and 13.2 and chapter 10.0 of this permit. 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 and maintained; and
5. A list of identification numbers for equipment in vacuum service.

5.9 Closed vents systems and control device records. 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 for closed vent systems and control devices:

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 5.13;
4. For each inspection conducted in accordance with permit condition 17.13 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 permit condition 16.1 during which no leaks are detected, a record that the inspection was performed, the date of the inspection, and a statement that no leaks were detected.

5.10 Exempt valve log. In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.486(f), the owner or operator shall maintain the following information pertaining to all valves subject to the requirements in permit conditions 13.3 and 13.4:

1. A list of identification numbers for valves that are designated as unsafe-to-monitor, an explanation for each valve stating why the valve is unsafe-to-monitor, and the plan for monitoring each valve; 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.

5.11 Design criterion for determining leaks. In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.486(h) and (j), the owner or operator shall maintain the following information in a log:

1. Design criterion required in permit conditions 8.2(5) and 9.1(5) and explanation of the design criterion;
2. Any changes to this criterion and the reasons for the changes; and
3. Information and data used to demonstrate that a piece of equipment is not in volatile organic compound service.

5.12 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 chapter 8.0, 9.0, 13.0, and 14.0 of this permit, 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 13.1, 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.

5.13 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 chapters 8.0, 9.0, 13.0, 14.0 of this permit, the owner or operator shall record the following information in a log.

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 after each repair attempt is equal to or greater than 10,000 part 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.

5.14 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 chapter 16.0:

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 16.1 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 chapters 8.0 through 11.0, inclusive, of this permit are not operated as designed; and
5. Dates of startups and shutdowns of the closed vent systems and control devices required in chapters 8.0 through 11.0, inclusive, of this permit.

5.15 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 13.6:

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

6.0 REPORTING REQUIREMENTS

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, 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 Initial startup notification. In accordance with ARSD 74:36:05:16.01(9), the owner or operator shall notify the Secretary of the actual date of initial startup of the new operations. Initial startup is the date when ethanol is first produced through Unit #22. The initial startup notification shall be postmarked within 15 days after such date and contain the following information:

1. Identify submittal as initial startup notification;
2. Name of facility, permit number, and reference to this permit condition; and
3. Actual date of initial startup.

6.5 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 conditions 13.5 and/or 13.6.

6.6 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, sulfur dioxide, nitrogen oxide, volatile organic compounds, hazardous air pollutants, and carbon monoxide emitted, in tons, associated with the existing ethanol plant each month and the 12-month rolling total for each month in the reporting period;
3. The quantity of particulate matter less than or equal to 10 microns in diameter, sulfur dioxide, nitrogen oxide, volatile organic compounds, hazardous air pollutants, and carbon monoxide emitted, in tons, associated with the new ethanol plant each month and the 12-month rolling total for each month in the reporting period;
4. The amount of undenatured ethanol produced, in gallons, from Unit #4 in each month and the 12-month rolling total for each month in the reporting period;

5. The amount of undenatured ethanol produced, in gallons, from Unit #22 in each month and the 12-month rolling total for each month in the reporting period;
6. The amount of grain processed, in pounds, through Unit #1 in each month and the 12-month rolling total for each month in the reporting period;
7. The amount of grain processed, in pounds, through Unit #21 in each month and the 12-month rolling total for each month in the reporting period;
8. The amount of dried distillers grain produced from Unit #2, in tons, in each month and the 12-month rolling total for each month in the reporting period;
9. The amount of dried distillers grain produced from Unit #23, in tons, in each month and the 12-month rolling total for each month in the reporting period;
10. The amount of denatured ethanol loaded out by truck in Unit #9, in gallons, in each month and the 12-month rolling total for each month in the reporting period; and
11. The supporting documentation.

The first quarterly report must be postmarked no later than 30 days after the end of the calendar quarter in which initial startup occurred. The remaining 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).

6.7 Semiannual reports. In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.487(a), (b), and (c), ARSD 74:36:07:04, as referenced to 40 CFR § 60.49b(h), (i), and (w), and ARSD 74:36:07:05 as referenced to 40 CFR 60.13(d), the owner or operator shall submit semiannual reports 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 subject to the requirements in permit condition 13.1, excluding those valves designated for no detectable emissions under the provisions of permit condition 13.2;
3. The number of pumps subject to the requirements in permit conditions 8.1 and 8.2, excluding those pumps designated for no detectable emissions under the provisions of permit condition 8.3 and those pumps complying with permit condition 8.4;
4. The number of compressors subject the requirements in permit condition 9.1, excluding those compressors designated for no detectable emissions under the provisions of permit condition 9.3 and those compressors complying with permit condition 9.2;
5. The number of valves for which leaks were detected as described in permit conditions 13.1 or 13.6 and the number of valves for which leaks were not repaired as required in permit condition 13.1;
6. The number of pumps for which leaks were detected as described in permit conditions 8.1 and 8.2 and the number of pumps for which leaks were not repaired as required in permit conditions 8.1 and 8.2;
7. The number of compressors for which leaks were detected as described in permit condition 9.1 and the number of compressors for which leaks were not repaired as required in permit condition 9.1;
8. The facts which explain each delay of repair and where appropriate, why an ethanol plant shutdown was technically infeasible;

9. Dates the ethanol plant was shut down during the semiannual reporting period;
10. Any changes which have occurred since the initial report or subsequent revisions to the initial semiannual report;
11. A summary of the date and time for each period during which the water flow rate for the wet scrubber associated with Units #4 and/or #22 falls below the desired flow rate as specified in chapter 19;
12. A summary of the date and time for each period during which the temperature for the thermal oxidizer or regenerative thermal oxidizer falls below the desired temperature as specified in chapter 19; and
13. A summary of the date and time of each period during which an hourly natural gas consumption rate for the thermal oxidizer / heat recover boiler was greater than 99 million Btus per hour heat input.

The first semiannual report must be postmarked no later than 30 days after the end of the calendar half in which initial startup occurred. The remaining reports must be postmarked no later than 30 days after the end of the reporting period (i.e., July 30th and January 30th).

6.8 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 of Units #16, #31, #32, #33, #34, and #35 as required in permit conditions 17.19 and 19.5. 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.

6.9 Tank defect report. In accordance with ARSD 74:36:07:14, as referenced to 40 CFR § 60.115b(a)(3) and (4), if any defects described in permit conditions 17.19 and 19.5 are detected during a periodic visual inspection, a report shall be submitted to the Secretary within 30-days of the visual 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.

6.10 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 this 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, record keeping, 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 6.2.

6.11 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) 773-5286.

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

1. Description of the permit violation and its cause(s);
2. Duration of the permit violation, including exact dates and times; and
3. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the permit violation.

7.0 STATE EMISSION LIMITS

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 and 1-2. This provision does not apply when the presence of uncombined water is the only reason for failure to meet the requirement. The visibility limit is no longer applicable to Table 1-1 on or after the initial startup of Unit #29 in Table 1-2.

7.2 Visibility exceedances. In accordance with ARSD 74:36:12:02, an exceedance of the operating 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 of the source is not a malfunction and is considered a violation.

7.3 Unit #2 - Visibility limit when fueled with distillate oil. In accordance with ARSD 74:36:07:05, as referenced to 40 CFR § 60.43c(c), the owner or operator shall not discharge into the atmosphere from Unit #2 or #23 any gases that exhibit greater than 20 percent opacity (6-minute average), except for one 6-minute period per hour of not more than 27 percent opacity while combusting distillate oil. This provision does not apply when the presence of uncombined water is the only reason for failure to meet the requirement.

7.4 Total suspended particulate matter limits. In accordance with ARSD 74:36:06:02(1) and/or 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, operations, and process.

Table 7-1 – Total Suspended Particulate Matter Emission Limit

Unit	Description	Emission Limit
#1	Hammer milling #1	26.3 pounds / hour
#2	Boiler	0.6 pounds / MMBtu
#3	Distillers grain dryer	10.4 pounds / hour
#6	Cooling drum	10.4 pounds / hour
#21	Hammer milling #2	51.3 pounds / hour
#23	Distillers grain dryer	33.5 pounds / hour
#24	Cooling drum	33.5 pounds / hour
#25	DDGS shipping	66.3 pounds / hour

7.5 **Sulfur dioxide limit.** In accordance with ARSD 74:36:06:02(2), the owner or operator shall not allow the emission of sulfur dioxide in excess of the emission limit specified in Table 7-3 for the appropriate permitted unit, operations, and process.

Table 7-3 – Sulfur Dioxide Emission Limit

Unit	Description	Emission Limit
#2	Boiler	3.0 pounds per million Btu heat input
#3	Distillers grain dryer	3.0 pounds per million Btu heat input
#23	Distillers grain dryer	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.

7.6 **Unit #2 sulfur dioxide limit.** *In* accordance with ARSD 74:36:07:05, as referenced to 40 CFR § 60.42c(d), (g), and (h), the owner or operator shall comply with one of the following standards for sulfur dioxide while combusting distillate oil in Unit #2:

1. The owner or operator shall not discharge into the atmosphere any gases that contain sulfur dioxide in excess of 0.50 pounds per million Btu heat input based on a 30-day rolling average. The owner or operator shall analyze the sulfur content and heat content of the distillate oil on a daily basis in accordance with 40 CFR, Appendix A, Method 19;
2. The owner or operator shall not combust distillate oil that contains greater than 0.5 weight percent sulfur based on a 30-day rolling average. The owner or operator shall collect a distillate oil sample after the fuel tank is filled and before the distillate oil is combusted to determine the sulfur content; or
3. The owner or operator shall not receive distillate oil that contains greater than 0.5 weight percent sulfur as determined by the fuel supplier's certification. The certification shall contain the following information:
   a. The name of the oil supplier;
   b. A statement from the oil supplier that the oil complies with the specifications under the definition of distillate oil; and
   c. A statement that the sulfur content of the oil does not exceed 0.5 weight percent sulfur.

The sulfur dioxide emission limits and fuel oil sulfur limits shall apply at all times, including periods of start-up, shutdown, and malfunction.

7.7 Restriction on water treatment chemicals for industrial process cooling towers. 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.

7.8 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 a fixed roof with an internal floating roof on Tanks #1, #2, #3, #4, and #6. 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.

7.9 **Plant wide particulate limit.** 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 from the ethanol plant. The 12-month rolling total for the ethanol plant shall be calculated every month using that month's value and the previous 11 months' values. The 12-month rolling period for the ethanol plant shall continue from the previous permit.

A short term limit (pounds per hour) is established in Table 7-4 to ensure that the long term limit of 238 tons per 12-month rolling period is not exceeded.

Table 7-4 – PM10 Short Term Limit

Unit	Description	PM10 Short Term Limit [1]
#1	Hammer milling #1	0.1 pounds per ton
#2	Boiler	0.008 pounds per million Btus
#3	Distillers grain dryer	2.0 pounds per ton
#6	Cooling drum	0.4 pounds per ton
#21	Hammer milling #2	0.8 pounds per hour
#23	Distillers grain dryer	1.9 pounds per hour
#24	Cooling drum	0.9 pounds per hour
#25	Dried distillers grain shipping	0.2 pounds per hour

[1] – Compliance with the particulate short term limit is based on the average of three test runs based on the stack testing requirements in Chapter 17.0;

7.10 **Plant wide sulfur dioxide limit.** 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 from the ethanol plant. The 12-month rolling total for the ethanol plant shall be calculated every month using that month's value and the previous 11 months' values. The 12-month rolling period for the ethanol plant shall continue from the previous permit.

A short term limit (pounds per hour) and long term limit is established in Table 7-5 to ensure that the long term limit of 238 tons per 12-month rolling period is not exceeded

Table 7-5 – Sulfur Dioxide Short Term Limit

Unit	Description	SO^2 Short Term Limit [1]
#3	Distillers grain dryer	0.5 pounds per ton
#23	Distillers grain dryer	8.5 pounds per hour

[1] – Compliance with the sulfur dioxide short term limit is based on the average of three test runs based on the stack testing requirements in Chapter 17.0; and

7.11 Plant wide volatile organic compound limit. 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 from the ethanol plant. The 12-month rolling total for the ethanol plant shall be calculated every month using that month's value and the previous 11 months' values. The 12-month rolling period for the ethanol plant shall continue from the previous permit.

A short term limit (pounds per hour) is established in Table 7-6 to ensure that the long term limit of 238 tons per 12-month rolling period is not exceeded.

Table #7-6 – VOC Short Term Limit

Unit	Description	VOC Short Term Limit [1]
#2	Boiler	0.006 pounds per million Btus heat input
#3	Distillers grain dryer	10.0 pounds per ton
#4	Fermentation/distillation	3900 pounds per million gallons[3]
#6	Cooling drum	0.1 pounds per ton
#22	Fermentation	1600 pounds per million gallons
#23	Distillers grain dryer	3.7 pounds per hour
#24	Cooling drum	0.1 pounds per ton

[1] – Compliance with the volatile organic compound short term limit is based on the average of three test runs based on the stack testing requirements in Chapter 17.0;

7.12 Plant wide nitrogen oxide limit. 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 from the ethanol plant. The 12-month rolling total for the ethanol plant shall be calculated every month using that month's value and the previous 11 months' values. The 12-month rolling period for the ethanol plant shall continue from the previous permit.

A short term limit (pounds per hour) and long term limit is established in Table 7-7 to ensure that the long term limit of 238 tons per 12-month rolling period is not exceeded.

Table 7-7 – NOx Short Term Limit

Unit	Description	NOx Short Term Limit [1]
#2	Boiler	0.1 pounds per million Btus heat input
#3	Distillers grain dryer	0.1 pounds per million Btus heat input
#23	Distillers grain dryer	18.9 pounds per hour

[1] – Compliance with the nitrogen oxide short term limit is based on the average of three test runs based on the stack testing requirements in Chapter 17.0; and

7.13 Plant wide carbon monoxide limit. 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 from the ethanol plant. The 12-month rolling total for the ethanol plant shall be calculated every month using that month's value and the previous 11 months' values. The 12-month rolling period for the ethanol plant shall continue from the previous permit.

A short term limit (pounds per hour) and long term limit is established in Table 7-8 to ensure that the long term limit of 238 tons per 12-month rolling period is not exceeded.

Table 7-8 – CO Short Term Limit

Unit	Description	CO Short Term Limit [1]
#2	Boiler	0.084 pounds per million Btus heat input
#3	Distillers grain dryer	7.3 pounds per ton
#23	Distillers grain dryer	20.4 pounds per hour

[1] – Compliance with the carbon monoxide short term limit is based on the average of three test runs based on the stack testing requirements in Chapter 17.0; and

7.14 **Plant wide hazardous air pollutant emission limit.** In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall not emit greater than or equal to 9.5 tons of a single hazardous air pollutant or 23.8 tons of a combination of hazardous air pollutants from the permitted units and fugitive sources per 12-month rolling period. The 12-month rolling period shall continue from the previous permit.

7.15 **Ethanol production limit for Unit #4.** In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall not produce more than 11 million gallons of undenatured ethanol from the fermentation and distillation process associated with Unit #4 during any 12-month rolling period. The 12-month rolling total shall continue from the previous permit.

7.16 **Ethanol production limit for Unit #29.** In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall not produce more than 50 million gallons of undenatured ethanol from the fermentation processes associated with Unit #22 during any 12-month rolling period. The initial startup of the new ethanol plant shall be the first month of the 12-month rolling period.

7.17 **Grain process limit for Unit #1.** In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall not process more than 116,780 tons of grain during any 12-month rolling period through Unit #12, #13 #14, and #15. The 12-month rolling total shall continue from the previous permit.

7.18 **Grain process limit for Units #21.** In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall not process more than 500,000 tons of grain during any 12-month rolling period through Unit #21. The 12-month rolling total shall continue from the previous permit.

7.19 **Dried distiller grain and solubles process limit for Unit #3.** In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall not produce more than 12,000 tons of dried distiller grain and solubles through Unit #3 during any 12-month rolling period. The 12-month rolling total shall continue from the previous permit.

7.20 **Dried distiller grain and solubles process limit for Unit #23.** In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall not produce more than 162,218 tons of dried distiller grain and solubles through Unit #23 during any 12-month rolling period. The 12-month rolling total shall continue from the previous permit.

7.21 Unit #9 – Denatured ethanol truck load out limit. In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall not load out by truck more than 6,000,000 gallons of denatured ethanol during any 12-month rolling period. The 12-month rolling total shall continue from the previous permit. This limit no longer applies once the flare is operational on Unit #27 as required under Table 1-2 of permit condition 1.1.

7.22 Paved roads and parking lots. In accordance with ARSD 74:36:05:16.01(8), the owner or operator shall pave all haul roads and parking lots associated with the new ethanol plant at Heartland Grain Fuels' new ethanol production facility.

7.23 Compliance with stationary compression ignition internal combustion engines standards. In accordance with ARSD 74:36:05:16.01(8), as referenced to 40 CFR Part 60, Subpart IIII, the owner or operator shall comply with the emission standards; fuel requirements; monitoring requirements; compliance requirements; testing requirements, notification, record keeping and reporting requirements; and other requirements in 40 CFR §§ 60.4200 through 60.4219, inclusive, if the owner or operator installs an fire pump (Unit #29) manufactured after April 1, 2006.

7.24 Compliance with benzene waste operations. In accordance with ARSD 74:36:05:16.01(8), as referenced to 40 CFR Part 61, Subpart FF, the owner or operator shall comply with the emission standards; fuel requirements; monitoring requirements; compliance requirements; testing requirements, notification, record keeping and reporting requirements; and other requirements in 40 CFR §§ 61.340 through 61.359, inclusive, if the owner or operator has a waste stream that contains benzene.

7.25 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 source, 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.

7.26 Circumvention not allowed. In accordance with ARSD 74:36:05:47.01, 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.

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

8.0 PUMPS IN LIGHT LIQUID SERVICE

8.1 **Weekly and monthly monitoring of 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 checked by visual inspection each calendar week for indications of liquids dripping from the pump seal. "In light liquid service" means that the piece of equipment contains a liquid that meets the conditions specified in permit condition 17.16. A leak is detected if there is an indication of liquids dripping from the pump seal.

Each pump in light liquid service shall be monitored monthly to detect leaks by the method specified in permit condition 17.13. A leak is detected if an instrument reading of 10,000 parts per million or greater is measured.

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 15.1.

The owner or operator shall comply with this permit condition, except as provided in permit conditions 8.2, 8.3, 8.4, and 18.1.

8.2 **Pumps in light liquid service equipped with a dual mechanical seal system exempt from weekly and monthly monitoring.** In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-2(d), each pump equipped with a dual mechanical seal system that includes a barrier fluid system is exempt from permit condition 8.1 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 chapter 16.0 of this permit; 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. Each sensor shall be checked daily or equipped with an audible alarm;

4. Each pump is checked by visual inspection, each calendar week, for indications of liquids dripping from the pump seals; and
5. The owner or operator determines, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.

A leak is detected if there are indications of liquids dripping from the pump seal or the sensor indicates failure of the seal system, the barrier fluid system, or both based on the criterion determined in subsection 5 above. 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 15.1.

8.3 Pumps in light liquid service with no detectable emissions exempt from monitoring. In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-2(e), any pump that is designated by permit condition 5.8(1) and (2) for no detectable emission is exempt from permit conditions 8.1 and 8.2 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 17.14; and
3. Is tested for compliance with subsection 2 initially upon designation, annually, and at other times requested by the Secretary.

8.4 Pumps in light liquid service with a closed vent system exempt from monitoring. 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 control device is exempt from monitoring provided the control device is in compliance with chapter 16.0 of this permit.

9.0 COMPRESSORS

9.1 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 that 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 chapter 16.0 of this permit; 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. 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 15.1.

The owner or operator shall comply with this permit condition, except as provided in permit conditions 9.2, 9.3, and 18.1.

9.2 Compressors equipped with a closed vent system exempt from barrier fluid. 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 any leakage from the seal to a control device is exempt from permit condition 9.1. The control device must comply with the requirements of chapter 16.0 of this permit.

9.3 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 by permit condition 5.8(1) and (2) for no detectable emission is exempt from permit condition 9.1 and 9.2 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 17.14; and

2. Is tested for compliance with subsection 1 initially upon designation, annually, and at other times requested by the Secretary.

10.0 PRESSURE RELIEF DEVICE IN GAS/VAPOR SERVICE

10.1 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), each pressure relief device in gas/vapor service shall be operated with no detectable emissions, except during pressure releases. "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 15.1, the pressure relief device shall be monitored to confirm the condition of no detectable emissions. No detectable emissions shall be demonstrated by an instrument reading of less than 500 parts per million above background as determined by the methods specified in permit condition 17.14.

The owner or operator shall comply with this permit condition, except as provided in permit condition 10.2.

10.2 Pressure relief device exemption. 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 10.1. The control device must comply with the requirements of chapter 16.0 of this permit.

11.0 SAMPLING CONNECTION SYSTEMS

11.1 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. Return the purged process fluid directly to the process line;
2. Collect and recycle the purged process fluid to a process; or
3. Be designed and operated to capture and transport all the purged process fluid to a control device that complies with the requirements of chapter 16.0 of this permit.

The owner or operator shall comply with this permit condition, except as provided in permit conditions 11.2 and 18.1.

11.2 In situ sampling systems and sampling systems without purges exempt. 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 11.1. "In-situ sampling system" means non-extractive samplers or in-line samplers.

12.0 OPEN-ENDED VALVES OR LINES

12.1 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 conditions 12.2 and 18.1.

12.2 Double block-and-bleed system exemption. 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 12.1 at all other times.

13.0 VALVES IN GAS/VAPOR SERVICE AND LIGHT LIQUID SERVICE

13.1 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 17.13. 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.

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 15.1. 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 conditions 13.2, 13.3, 13.4, 13.5, 13.6, and 18.1.

13.2 Monitoring valves with no detectable emissions exempt. In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-7(f), any valve that is designated by permit condition 5.8(2) for no detectable emission is exempt from permit condition 13.1 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 17.14; and
3. Is tested for compliance with subsection 2 initially upon designation, annually, and at other times requested by the Secretary.

13.3 Unsafe-to-monitor valves exempt. In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-7(g), any valve that is designated by permit condition 5.8(1) as an unsafe-to-monitor valve is exempt from permit condition 13.1 if:

1. The owner or operator of the valve demonstrates that the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with permit condition 13.1; 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.

13.4 Difficult-to-monitor valves exempt. In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-7(h), any valve that is designated by permit condition 5.8(2) as a difficult-to-monitor valve is exempt from permit condition 13.1 if:

1. The owner or operator of the valve demonstrates that 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.

13.5 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 13.1 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 6.5;
2. A performance test, as specified in permit condition 17.18, 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 13.1.

The owner or operator who elects to comply with this permit condition shall not have a leak percentage greater than 2.0 percent. If the leak percentage is greater than 2.0 percent, the owner or operator shall comply with the requirements described in permit condition 13.1.

13.6 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 13.1 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 6.5:

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 1 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 dividing the sum of valves found leaking during current monitoring and valves for which repair has been delayed by the total number of valves subject to the requirements of this section. If the percent of valves leaking is greater than 2.0, the owner or operator shall comply with permit condition 13.1 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.

14.0 OTHER PUMPS, VALVES, PRESSURE RELIEF DEVICES, FLANGES, AND CONNECTORS

14.1 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, the owner or operator shall monitor pumps and valves in heavy liquid service, pressure relief devices in light liquid or heavy liquid service, and flanges and other connectors within five days of detecting a potential leak. Visual, audible, olfactory, or any other detection method may be used to determine a potential leak. A leak is detected if a monitor reading of 10,000 parts per million or greater is measured.

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 15.1. 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.

15.0 DELAY OF REPAIR

15.1 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. A delay may occur if the repair is technically infeasible without a process unit shutdown. Repair of this equipment shall occur before the end of the next process unit shutdown;
2. A 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. A 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 affected, the purged material is collected and destroyed or recovering a control device complying with chapter 16.0 of this permit.
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.
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 units shutdown.

16.0 CLOSED VENT SYSTEMS AND CONTROL DEVICES

16.1 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), (e), (f), (g), and (m), the owner or operator of closed vent system and control device shall comply with the following:

1. Vapor recovery system 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;
2. The control device shall be monitored to ensure that the control device is operated and maintained in conformance with its design. In addition, the owner or operator shall monitor the fresh water flow into the control device. The flow rate should be greater than or equal to the flow rate, in gallons per minute, recorded during the latest performance test that demonstrated compliance with this permit condition. The flow rate shall be recorded every two hours when the control device is operating; and

3. Except as provided in permit conditions 16.3, 16.4, and 16.5, 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 17.13 and conduct 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 17.13.

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 16.2. 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.

16.2 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.

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

16.4 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 inspecting any part of the closed vent system that is designated, as described in permit condition 5.9, as unsafe to inspect if the owner or operator complies with the following:

1. The owner or operator determines that the equipment is unsafe to inspect because inspection personnel would be exposed to an imminent or potential danger as a consequence of complying with permit condition 16.1(3); 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.

16.5 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 are designated, as described in permit condition 5.9, as difficult to inspect if the owner or operator comply with the following:

1. The owner or operator determines that 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.

17.0 PERFORMANCE TESTS

17.1 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.

17.2 Test methods and procedures. 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.

17.3 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.

17.4 Submittal of test plan. In accordance with ARSD 74:36:11:01, the owner or operator shall submit the proposed testing procedures to the Secretary at least 30 days prior to any performance test. The Secretary will notify the owner or operator if the proposed test procedures

are approved or denied. If the proposed test procedures are denied, the Secretary will provide written notification that outlines what needs to be completed for approval.

17.5 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.

17.6 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;
5. Quality assurance procedures and results;
6. Records of operating conditions during the test, 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.

17.7 Initial demonstration of compliance. In accordance with ARSD 74:36:07:22, as referenced to 40 CFR §§ 60.8 and 60.482-1(a) and (b), the owner or operator shall demonstrate that the new ethanol plant is in compliance with chapters 8.0, 9.0, 10.0, 11.0, 12.0, 13.0, 14.0, 15.0, and 16.0 of this permit, within 180 days after initial start-up of the new ethanol plant. Compliance will be determined by reviewing records and reports, reviewing performance test results, and an initial inspection using the methods and procedures specified in this chapter.

17.8 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 chapters 8.0, 9.0, and 10.0 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.

17.9 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 permit conditions 8.3, 9.3, 10.1, 13.2, and 16.1 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.

17.10 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 series. "Not in volatile organic compound series" 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 series:

1. Procedures that conform to the general methods in ASTM E-260, E-168, E-169 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.

17.11 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. Standard reference texts or ASTM D-2879 shall be used to determine the vapor pressures;
2. The total concentration of the pure components having a vapor pressure greater than 0.3 kilo Pascal at 20 degrees Celsius is equal to or greater than 20 percent by weight; and
3. The fluid is a liquid at operating conditions.

17.12 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 conditions 17.10 and 17.11 shall be representative of the process fluid that is contained in or contacts the equipment.

17.13 Performance test for allowable percentage of valves leaking. In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.483-1(c), a performance test of the allowable percentage of valves leaking 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 of the owner or operator notifying the Secretary in accordance with permit condition 13.5, by the testing methods specified in permit condition 17.9;
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.

17.14 Visual inspection of internal floating roof. In accordance with ARSD 74:36:07:14, as referenced to 40 CFR § 60.113b(a)(1), the owner or operator shall visually inspect the internal floating roof, the primary seal, and the secondary seal (if one is in service) prior to filling Unit #16, #31, #32, #33, #34, and/or #35, 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.

18.0 EQUIVALENT LIMITS AND EXEMPTIONS

18.1 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 chapters 8.0, 9.0, 11.0, 12.0, 13.0, 14.0, and 16.0 of this permit. 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. The Secretary will use the minor permit amendment procedures to amend this permit to include the requirements of the determination.

18.2 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 of this permit 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. A requirement by the Administrator of EPA that is necessary to assure operation and maintenance to achieve the same emission reduction as the equipment, design, and operational requirements will be added to this permit as a minor permit amendment.

18.3 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 required by this permit 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. A requirement by the Administrator of EPA that assures operation and maintenance to achieve the same emission reduction as the required work practice will be added to this permit as a minor permit amendment.

18.4 In vacuum service equipment exemption. In accordance with ARSD 74:36:07:22, as referenced to 40 CFR § 60.482-1(d), equipment that is in vacuum service is exempt from the requirements of chapters 8.0, through 16.0, inclusive, of this permit, if the equipment is identified in accordance with permit condition 5.8(5). "In vacuum service" means that equipment is operating at an internal pressure, which is at least five kilo Pascal below ambient pressure.

19.0 Monitoring

19.1 Monitoring water flow rate for Unit #4 and #22. In accordance with ARSD 74:36:05:16.01(9), the owner or operator shall continuously monitor and record the water flow rate for the wet scrubber(s) associated with Units #4 and #22. The monitor shall record the water

flow rate at a minimum of 15-minute increments. If the water flow rate falls below the desired flow rate for the wet scrubber(s), the owner or operator must record the incident in the monitoring log required in permit condition 5.4.

The owner or operator shall maintain the water flow rate as follows:

1. The initial water flow rate shall be maintained according to the manufacturer's specification;
2. After the initial performance test required in Chapter 17.0 demonstrates compliance with the emission limits of the permit, the water flow rate shall be maintained equal to or greater than the average water flow rate achieved during the performance test; and
3. If the average water flow rate 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 Unit #4 or #22 with the wet scrubber at or above the average water flow rate achieved during a performance test that demonstrated compliance with the emission limits of the permit; and
   b. Conduct a performance test on the wet scrubber to determine compliance with the emission limits at the lower water flow rate. 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 rate, the water flow rate shall be maintained equal to or greater than the average water flow rate achieved during that performance test.

19.2 <u>Monitoring temperature for Unit #23.</u> 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 indicates and records the temperature of the exhaust gases exiting the thermal oxidizer associated with Unit #23. The monitors shall record the temperature at a minimum of one-minute increments. The monitoring device shall have an accuracy of the 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.

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

1. The initial temperature shall be maintained as recommended by the manufacturer;
2. After the initial performance test required in Chapter 17.0 demonstrates compliance with emission limits of the permit, the exhaust gas temperature exiting the thermal oxidizer combustion chamber and the regenerative thermal oxidizer shall be maintained equal to or greater than the average temperature achieved during the performance test for the appropriate thermal oxidizer; and
3. If the temperature of the exhaust gases exiting the thermal oxidizer combustion chamber and/or the regenerative thermal oxidizer falls below the desired temperature by more than 25 degrees Fahrenheit for more than an one hour, the owner or operator shall perform the following steps:

a. The owner or operator will only operate Unit #23 with the thermal oxidizer(s) at or above the average temperature achieved during a performance test that demonstrated compliance with the emission limits of the permit; and
b. Conduct a performance test on the gases exiting the thermal oxidizer(s) to determine compliance with the emission limits of the permit 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 and/or regenerative thermal oxidizer exhaust gases shall be maintained equal to or greater than the average temperature achieved during the performance test.

19.3 Periodic monitoring for opacity limits. In accordance with ARSD 74:36:13:07, the owner or operator shall demonstrate compliance with the opacity limits in Chapter 7.0, except for Units #4, #8, #16, #22, #26, #31, #32, #33, #34, and #35, inclusive, 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 during the semiannual visible emission reading, the owner or operator may decrease the frequency of testing of readings from semiannually to annually for that unit; and

Step 2: If visible emissions are observed from a unit 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 Steps 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 19.4, 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.

19.4 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.

19.5 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 Tanks #16, #31, #32, #33, #4, and #35 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 very 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 6.9. 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.

19.6 Monitoring sulfur content. In accordance with ARSD 74:36:05:16.01(9), the owner or operator shall obtain a fuel supplier certification for each load of distillate oil purchased or received. The fuel supplier certification shall include the following information:

1. The name of the oil supplier;
2. A statement from the oil supplier that the oil complies with the specifications under the definition of distillate oil. Distillate oil means fuel oil that complies with the specifications for fuel oil numbers 1 or 2. Residual oil means crude oil, fuel oil that does not comply with the specifications under the definition of distillate oil, and all fuel oil numbers 4, 5, and 6. Specifications for fuel oils are defined in the American Society for Testing and Materials in ASTM D396-78, "Standards Specifications for Fuel Oils"; and
3. A statement that the sulfur content of the oil does not exceed 0.5 weight percent sulfur.

In the case where a fuel supplier certification is not obtained, the owner or operator shall collect a grab sample from the distillate oil storage tank within 30 days of receiving the shipment of distillate oil but before another load of distillate oil is transferred into the storage tank. The grab sample shall be analyzed to determine the sulfur content of the distillate oil in the storage tank.

19.7 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 Unit #16, #31, #32, #33, #4, and #35 that warns the owner or operator when the liquid surface drops below the height of the support legs.

19.8 Monitoring natural gas consumption in Unit #23. In accordance with ARSD 74:36:05:16.01(9), the owner or operator shall install a continuous reading fuel flow meter on the thermal oxidizer / heat recover boiler inlet gas line. The flow meter shall continuously record on an hourly basis the amount of natural gas burned in the thermal oxidizer/heat recovery boiler.

20.0 Prevention of Significant Deterioration and MACT Exemption

20.1 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, sulfur dioxide, nitrogen oxide, volatile organic compounds, and carbon monoxide. The exemption is based on operational and air emission limits in permit conditions 1.1, 7.9 through 7.13 and 7.15 through 17.17. Any relaxation in the permit conditions stated above that increases applicable emissions equal to or greater than 238 tons per 12-month rolling period for the existing operations and the new operations may require a full prevention of significant deterioration review as though construction had not commenced on the source.

20.2 MACT exemption. The owner or operator is exempt from a Case-by-Case MACT determination for hazardous air pollutants and from the National Emission Standards for

Hazardous Air Pollutants for Miscellaneous Organic Chemical Manufacturing. The exemption for hazardous air pollutants is based on the operational and air emission limits in permit condition 1.1 and 7.14. Any relaxation in the permit conditions 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 tons per 12-month rolling period for any combination of hazardous air pollutants may require a Case-by-Case MACT determination or be applicable to the National Emission Standards for Hazardous Air Pollutants for Miscellaneous Organic Chemical Manufacturing as though construction had not commenced on the source.

21.0 FLARE OPERATIONAL REQUIREMENTS

21.1 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 conduct the following for the flare associated with Unit #8:

1. Operate with no visible emissions except for periods not to exceed 5 minutes during any two consecutive hours as determine by permit condition 21.2;
2. Operate with a flame present at all times when the air emissions may be vented to the flare as determined by permit condition 21.3;
3. For a non-assisted flare, operate with a diameter of 3 inches or greater, have a hydrogen content of 8.0 percent or greater and are designed with an exit velocity less than 37.2 meters per second and less than the velocity of permitted maximum velocity. The permitted maximum velocity is determined by permit condition 21.7. The actual exit velocity is determined by permit condition 21.5;
4. For a non-assisted flare, operate only with the net heating value of the gas being combusted at 200 Btus per standard cubic foot or greater. The net heat value shall be determined by permit condition 21.4;
5. For a steam-assisted or air-assisted flare, operate only with the net heating value of the gas being combusted at 300 Btus per standard cubic foot or greater. The net heating value shall be determined by permit condition 21.4;
6. For a non-assisted or steam-assisted flare, operate with an exit velocity of 18.3 meters per second or greater as determined by permit condition 21.5 with the following two exceptions:
   a. The exit velocity is greater than 18.3 meters per second but less than 122 meters per second and the gas being burned is greater than 1,000 Btus per standard cubic foot.
   b. The exit velocity is less than the maximum permitted velocity as determined by permit condition 21.8 and less than 122 meters per second.
7. For an air-assisted flare, operate with an exit velocity as determined by permit condition 21.5 less than the maximum permitted velocity as determined by permit condition 21.6.

21.2 Monitoring visible emissions. 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 Unit #8 in accordance with 40 CFR Appendix A Method 22.

21.3 Monitoring for a 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.

21.4 Calculating net heating value. 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 using Equation 21-1.

Equation 21-1 – Determining net heating value

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

Where:

- Ht = net heating value of the sample in mega joules per standard cubic meters;
- Ci = concentration of sample component I in parts per million on a wet basis;
- Hi = Net heat of combustion of sample component I in kilocalories per gram mole at 25 degrees Celsius and 760 millimeters of mercury; and
- K = a constant of 0.000000174 gram mole-mega joules per part per million – standard cubic meters – kilocalorie.

21.5 Calculating actual exit velocity. 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 as determined by 40 CFR Appendix A Methods 2, 2A, 2C or 2D by the cross sectional area of the flare tip.

21.6 Calculating maximum permit velocity for air-assisted flares. 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 permit velocity for air-assisted flares using Equation 21-2.

Equation 21-2 – Determining maximum permit velocity for air-assisted flares

$$V\max = 8.706 + (0.7084)(Ht)$$

Where:

- Vmax = maximum permit velocity; and
- Ht = the net heating value as determined by permit condition 21.4.

21.7 Calculating maximum permit velocity for non-assisted flares. In accordance with ARSD 74:36:07:01, as reference to 40 CFR § 60.18(c)(3)(i)(A), the owner or operator shall calculate the maximum permit velocity for non-assisted flares using Equation 21-3.

Equation 21-3 – Determining maximum permit velocity for non-assisted flares

$$V\max = (X - K1)(K2)$$

Where:

- Vmax = maximum permit velocity;
- X = the volume percent of hydrogen on a wet basis as calculated by ASTM method D1946-77;
- K1 = constant of 6.0 volume percent hydrogen; and
- K2 = constant of 3.9 meters per second per volume percent hydrogen.

21.8 Calculating maximum permit velocity for steam-assisted flares. In accordance with ARSD 74:36:07:01, as reference to 40 CFR § 60.18(c)(3)(i)(A), the owner or operator shall calculate the maximum permit velocity for steam-assisted flares using Equation 21-4.

Equation 21-4 – Determining maximum permit velocity for steam-assisted flares

$$Log10(V\,\max) = (Ht + _28.8)/(31.7)$$

Where:

- Vmax = maximum permit velocity; and
- Ht = the net heating value as determined by permit condition 21.4.