

217/782-2113

JOINT CONSTRUCTION AND OPERATING PERMIT
PREVENTION OF SIGNIFICANT DETERIORATION APPROVAL
NSPS SOURCE

PERMITTEE

Archer Daniels Midland Co.
Attn: Pat Dennis
4666 Faries Parkway
Decatur, Illinois 62526

Application No.: 00090052
Applicant's Designation: ALCOHOL PSD
Subject: Ethyl Alcohol Production
Date Issued:
Location: 4666 Faries Parkway, Decatur

I.D. No.: 115015AAE
Date Received: September 21, 2000
Expiration Date:

Permit is hereby granted to the above-designated Permittee to CONSTRUCT and OPERATE emission source(s) and/or air pollution control equipment consisting of an expansion of the alcohol production plant with installation of additional air pollution control equipment and the equipment listed in Attachment A as described in the above referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

In conjunction with this permit, approval is given with respect to the Prevention of Significant Deterioration of Air Quality Regulations (PSD) to construct and operate the above referenced project, in that the Illinois Environmental Protection Agency (Agency) finds that the application fulfills all applicable requirements of 40 CFR 52.21. This approval is issued pursuant to the Clean Air Act, as amended, 42 U.S.C. 7401 et. seq., the Federal regulations promulgated thereunder at 40 CFR 52.21 for Prevention of Significant Deterioration of Air Quality (PSD), and a Delegation of Authority agreement between the United States Environmental Protection Agency and the Illinois EPA for the administration of the PSD Program. This approval becomes effective in accordance with the provisions of 40 CFR 124.15 and may be appealed in accordance with the provisions of 40 CFR 124.19. This approval is also based upon and subject to the following findings and the conditions, which follow:

1. Archer Daniels Midland (ADM) has requested a joint construction and operating permit for the Alcohol Plant (Plant) at its Decatur manufacturing complex. The alcohol plant produces fuel ethanol from dextrose (corn sugar) that is produced elsewhere at the complex. The permit would allow for a greater daily production rate of 1,000,000 gal/day, monthly average, of ethanol as 200 proof (100%) ethanol. At the same time, ADM would install additional control devices to better control volatile organic material (VOM) emissions from the plant (refer to Attachment D).

2. The source is located in Decatur Township in Macon county. The area is designated attainment for all pollutants.
- 3a. The alcohol plant is subject to PSD review for volatile organic material (VOM) because:
 - i. ADM's Decatur complex is a major source of emissions;
 - ii. The expansion of the alcohol plant has the potential to increase emissions of VOM by a significant amount, i.e., more than 40 tons/year; and
 - iii. ADM has not previously obtained a PSD permit for the existing alcohol plant.
- b. This permit is issued based upon the construction and operation of the expanded alcohol plant covered by this permit not constituting a major modification for the purpose of PSD for pollutants other than VOM. In this regard, this permit does not address drying of the residual solids from the fermentation process, which are transferred to and constitute a minor component in the feed drying operations at the corn wet mill.
4. After reviewing the materials submitted by ADM, Illinois EPA has determined that the plant, as proposed, would (i) be in compliance with applicable Board emission standards and (ii) utilize Best Available Control Technology (BACT) on emissions of VOM.
5. The Illinois EPA has determined that the plant, as proposed, would comply with all applicable Illinois Air Pollution Board Regulations and the federal Prevention of Significant Deterioration of Air Quality Regulations (PSD), 40 CFR 52.21.
6. A copy of the application and the Illinois EPA's formal review of the application and a draft of this permit were placed in a location in the vicinity of the project, and the public was given notice and an opportunity to examine this material and to submit comments and to request a public hearing on this matter.

The Illinois EPA is issuing this approval subject to the following conditions and consistent with the specifications and data included in the application. Any departure from the conditions of this approval or terms expressed in the application would need to receive prior written authorization by Illinois EPA.

1. Standard conditions for issuance of construction permits, attached hereto and incorporated herein by reference, shall apply unless superseded by the following conditions.
- 2a. Significant emission units in the alcohol plant emitting VOM, other than units with negligible VOM emissions as identified in Attachment B, shall be enclosed and ducted through a closed vent system to a VOM emission control system as generally designated in Attachment A.

- b. i. Each VOM emission control system shall be designed and operated to achieve at least 95% control of VOM comparing the amount of VOM introduced into the control system and the emissions to the atmosphere. These control systems shall be operated and maintained in conformance with good air pollution control practices.
- ii. Notwithstanding the above:
 - A. In the event of a malfunction or breakdown of the CO₂ scrubbing system, the affected scrubber may be bypassed in order to avoid severe damage to equipment for a period not to exceed 12 hours while repairs are attempted. If repairs cannot be made within 12 hours, the fermentor blend rate shall be reduced to 75% of its maximum operating rate. This restriction will remain in effect until the control system is once again fully operational.
 - B. Outage of the CO₂ scrubbing system for scheduled preventative maintenance is allowed once in every six months for a period of up to 12 hours prior to mandatory reduction of fermentor blend rate as set forth in Condition 2(b)(ii)(A).
- c. As an alternative to the above, a storage tank may be equipped, operated and maintained with a floating roof that would comply with 40 CFR 60 Subpart Kb.

3. Disposition of Collected VOM

All VOM collected through control systems, i.e. scrubbers or condensers effluent stream, shall be managed to ensure that it is not emitted from another process, e.g., the waste water treatment plant at the source.

- 4a. The alcohol plant is subject to 40 CFR 60, Subpart VV, Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry. The Permittee shall implement a Leak Detection and Repair Program for components in VOM service in the alcohol plant pursuant to Subpart VV.
- b. The Permittee shall implement a comparable leak detection and repair program including recordkeeping, for any components in VOM service in the alcohol plant that the Permittee excludes from requirements pursuant to 40 CFR 60, Subpart VV because they are not part of a process unit, e.g., piping associated with product loadout.

Conditions 2, 3 and 4 address Best Available Control Technology as required by Section 165 of the Clean Air Act.

5. Good Air Pollution Control Practices

- a. The Permittee shall operate, maintain, and repair emission units in the alcohol plant, including their associated control systems

in a manner to minimize emissions and reasonably assure compliance with applicable emission standards by implementing the following procedures.

- i. Operating Procedures: Written operating procedures shall be developed and maintained describing normal air pollution control equipment operation. Such procedures shall include maintenance practices and may incorporate the manufacturers recommended operating instructions.
 - ii. Inspections: Visual inspections of air pollution control equipment shall be conducted on at least a weekly basis.
 - iii. Inventory of Parts: An inventory of spare parts that require routine replacement shall be maintained for all control systems.
 - iv. Repairs: Prompt repairs shall be made upon identification of need either as a consequence of formal inspections or other observations in conformance with good air pollution control practice. Maintenance and repair shall be coordinated with scheduled outages of units. In the event of a malfunction or breakdown, the Permittee shall make all reasonable attempts to correct the problem in a timely manner including but not limited to calling in off shift, overtime and independent labor
 - v. Records: Records of inspection, maintenance, and repair activities for all equipment shall be kept on site and shall include as a minimum:
 - A. Date of inspection, maintenance, and repair activities.
 - B. Description of maintenance or repair activity if not routine preventative maintenance.
 - C. Probable cause for requiring maintenance or repair if not routine or preventative.
- b. The VOM control systems for processes shall be operated with their operating parameters at levels which compliance with applicable requirements has been demonstrated or shown, as follows:
- i. For the flare on the loadout system, this shall be accomplished by operating the flare in accordance with 40 CFR 60.18.
 - ii. For other control systems, this shall be done by maintaining the operating parameters within the levels measured during emission testing in accordance with

Condition 9 or relied upon to be excused from such testing.
In particular:

- A. For scrubbers, by maintaining minimum scrubbant flow rate and pressure drop of the scrubber. Scrubbant flow rate may be maintained at a level proportionate to the exhaust flow rate, if flow rate is measured.
- B. For condensers, by maintaining inlet and outlet gas/liquid temperatures.
- C. The above requirements.

6. Federal Standards for Storage Tanks

- a. Existing denaturant (gasoline) storage tanks D-5 and D-6 are subject to 40 CFR 60 Subpart Ka and shall comply with all applicable requirements of this Subpart.
- b. New Alcohol storage tank MST7 is subject to 40 CFR 60 Subpart Kb and shall comply with all applicable requirements of this Subpart.

7. Operating Limitations

- a. The production rate of the alcohol plant shall not exceed 1,000,000 gallons/day, monthly average, determined as 200 proof ethanol not including denaturant.
- b. Notwithstanding the above, the production rate of the existing alcohol plant, as addressed by this permit, shall not be in excess of 760,000 gallons/day until construction of all new VOM control system is complete and all testing requirements of this permit have been satisfied or such earlier date that the Permittee notifies the Illinois EPA that it will begin complying with the VOM limitation in Condition 8.

8. Emission Limitations

- a.
 - i. Plant emissions of VOM, other than from leaking components, shall not exceed 280 tons per year. This limit shall take effect 15 months after completion of the final control system (scheduled November 30, 2005) as specified in Attachment D, "Control System Installation Timeline". Compliance with this limit shall be determined on a rolling 12 month basis, with monthly compliance determinations.
 - ii. Beginning four months after completion of the final control system, plant emissions of VOM, other than from leaking components, shall not exceed a pro-rated share of the 280 ton annual limitation. For example, in this fourth month VOM emissions shall not exceed 1/12 of 280 tons; in the

fourth and fifth month, VOM emissions shall not exceed 2/12 of 280 tons.

Note: The above limits do not include VOM emissions from leaking components.

This permit is issued based on maximum VOM emissions from leaking components of 450 tons/year. This determination is based on USEPA's SOCFI emissions estimating methodology and compliance with requirements of 40 CFR 60 Subpart VV for inspections, recordkeeping, and repair of leaking components.

- b. VOM emissions from individual units (vents) shall not exceed the limits in Attachment C. Upon timely request by the Permittee, limits for individual units in Attachment C may be revised by the Illinois EPA based upon the results of the initial emissions testing as required by Condition 9 of this permit provided that the combined limits continue to meet the total limit in Attachment C.

9. Emissions Testing

- a.
 - i. Within 90 days of completion of the last control system utilizing wet scrubbing (scheduled for November 30, 2005), the Permittee shall have the VOM emissions from and efficiency of the VOM control systems, other than the flare, measured at its expense by an approved testing service, during conditions which are representative of maximum emissions to verify compliance with the requirements of this permit.
 - ii. The Permittee shall retest these VOM control system at least every 5 years, or as established in the CAAPP permit.
 - iii. Where the inherent design of an existing control system makes inlet testing of the control system impractical or unreliable, the Illinois EPA may waive testing of inlet emissions provided that the Permittee provides information to the Illinois EPA that documents achievement of a control efficiency of at least 95% for VOM.
 - iv. Measurements of VOM emissions from specified emission unit(s) shall also be conducted upon reasonable written request from the Illinois EPA in accordance with such request.
 - v. If the Permittee is unable to test at 95% of plant or process capacity, an emissions test shall be repeated when consistent operation at 95% capacity is achievable.
- b. The following methods and procedures shall be used for emission testing. Refer to 40 CFR 60, Appendix A for USEPA test methods.

Location of Sample Points	USEPA Method 1
Gas Flow and Velocity	USEPA Method 2
Flue Gas Weight	USEPA Method 3
Moisture	USEPA Method 4
Volatile Organic Material	USEPA Method 25 or 25A and Method 18*

- * VOM emissions from selected emission units shall be measured by using both Method 25 and Method 18 to develop an adjusted factor that is applied to measurements conducted by Method 25A to account for the presence of compounds other than ethanol in the emissions.

- c. The Permittee shall submit a written test plan to the Illinois EPA for review and comment for the initial testing for VOM and if a significant change in the procedures for this testing is planned from the procedures followed in the previous test. This plan shall be submitted at least 60 days prior to the actual date of testing and include the following information as a minimum:
 - i. A description of the planned test procedures.
 - ii. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 - iii. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum emissions.
 - iv. The methodology that will be used to determine the operating rate during the period of testing, e.g., the rate of VOM introduced to the plant.

- d. The Permittee shall notify the Illinois EPA prior to conducting these measurements to enable the Illinois EPA to observe testing. Notification for the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may accept shorter advance notice if it does not interfere with the Illinois EPA's ability to observe testing.

- e. Copies of the Final Report(s) for these tests shall be submitted to the Illinois EPA within 30 days after the test results are compiled and finalized. The Final Report from testing shall include as a minimum:
 - i. A summary of results.
 - ii. General Information.

- iii. A detailed description of methodology for determination of the rate of VOM introduced in to processes during the period of testing, with supporting information.
- iv. Detailed description of operating conditions of the emission unit(s) being tested, including:
 - A. Process information, e.g. alcohol production rate; and
 - B. Control equipment information, i.e. equipment condition and operating parameters during testing, e.g. scrubbant flow rate and pressure drop.
- v. Data and calculations.

10. Instrumentation and Monitoring

- a. The Permittee shall install, operate and maintain measurement and monitoring devices as follows:
 - i. These devices shall be operational at all times that the unit on which it is located is in operation.
 - ii. These devices shall be installed, calibrated and maintained at least according to vendor's specifications and instructions.
 - iii. The Permittee shall keep logs for the operation and maintenance of these devices.
 - iv. The Permittee shall manually record the information from continuous monitoring systems at least once every 30 minutes if automatic recoding devices are not in service for more than one hour.
- b. The Permittee shall install, maintain and operate continuous monitors on the scrubbers for the following parameters:
 - i. Pressure drop
 - ii. Scrubbant flow rate (gallons/minute)
- c. The Permittee shall install, maintain and operate continuous monitors on the condensers for the following parameters:
 - i. Outlet gas temperature and
 - ii. Inlet gas temperature
- d. The Permittee shall equip each bypass vent in the ductwork to a control system with a device to identify release through the bypass vent.

11. Record Keeping

- a. The Permittee shall maintain a file that contains the following which shall be kept current:
 - i. The Permittee shall keep an inventory of all equipment and/or components, by type, in VOM service required to be monitored by 40 CFR 60 subpart VV. In the case of flanges, fittings and connectors, the number of components may be determined by engineering estimate.
 - ii. The maximum VOM emissions from these components determined in accordance with SOCFI estimating guidance.
- b. The Permittee shall keep the following operating records for the plant:
 - i. Alcohol production, gallons/month and gallons/day, monthly average.
 - ii. Amount and type of organic denaturant received, gallons/month
- c.
 - i. The VOM control systems, other than the loadout flare for the monitoring systems and measurements required by Condition 10 including:
 - A. Records of the data collected.
 - B. Records identifying periods of time other than routine calibration when required data was not collected.
 - ii. The Permittee shall maintain records for the flare of the analyses and calculations performed to verify with 40 CFR 60.18.
 - iii. The Permittee shall maintain the applicable records required by the NSPS for storage tanks controlled with floating roofs.
- d. The Permittee shall maintain records for any period during which equipment in the alcohol plant was in operation when their air pollution control equipment was not in operation or was not operating properly.
 - i. These records shall include each period of time when an operating parameter of a control system, as recorded above, deviated outside the level set as good air pollution control practice (date, duration and description of the incident).

- ii. These records shall include the cause for pollution control equipment not operating properly or being out of normal service, for incidents when control equipment failed to operate properly and shall identify the corrective actions that were taken, the repairs that were made, and the steps that were taken to prevent any such reoccurrence.
 - iii. These records shall also identify any such periods during which an emission unit exceeded the requirements of this permit, including applicable emission limits. This record shall include the cause for noncompliance, if known, and the corrective action(s) and preventive measures taken to prevent any such reoccurrence if any.
- e. The Permittee shall maintain monthly records of the following items with supporting calculations, related to VOM emissions from the plant:
- i. Periods of time when:
 - A. Significant processes vented to a control system were not in operation, or
 - B. The control system was not in service or operating properly
 - ii. The VOM (lbs) emitted from each significant processes during each month and year, based on stack test data, actual operation of control equipment and production rates.
 - iii. The VOM (lbs) emitted from storage and handling of alcohol, denaturant, denatured alcohol and each other volatile organic liquid stored at the plant, with supporting calculations. Emissions shall be calculated using the latest version of TANKS.

12. Retention and Availability of Records

- a. The Permittee shall retain all records required by this permit at the source for at least five years, at a location where the records are readily accessible for inspection by the Illinois EPA.
- b. The Permittee shall make all records required by this permit available for inspection at the source by the Illinois EPA, providing copies of records to the Illinois EPA upon request, as further specified below.
 - i. The Permittee may keep records in a computerized data system provided that, upon request by the Illinois EPA during the source's normal working hours, requested information is retrieved and available prior to inspection completion to the Illinois EPA.

- ii. The Permittee shall identify any records that it considers to contain information that it would claim as trade secret under Section 7.1 of the Environmental Protection Act. As required by rule to claim material as a trade secret the Permittee shall mark such records as trade secret, safeguard them from becoming available to persons other than those selected by the Permittee, and have available an undated claim letter for the records, accompanied by a statement of justification for its claim that the records contain trade secrets. When copies of these records are provided to the Illinois EPA, upon its request, they shall be accompanied by a copy of the claim letter and the statement of justification.

13. Reports and Notifications

- a. With its Annual Emission Statement the Permittee shall report the annual emissions of VOM from the plant with supporting summary activity data and calculations.
- b. If there is an exceedance of the emission limits of this permit as determined by the records required by this permit or by other means, the Permittee shall submit a report to the Illinois EPA within 30 days after the exceedance. The report shall include the emissions released in accordance with the recordkeeping requirements, a copy of the relevant records, and a description of the exceedance or violation and efforts to reduce emissions and future occurrences.

14. Agency Addresses

- a. Any required reports and notifications concerning equipment operation, emissions testing, or a monitoring system shall be sent to the Illinois EPA at the following address unless otherwise indicated:

Illinois Environmental Protection Agency
Division of Air Pollution Control
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276
Telephone: 217/782-5811 Fax: 217/524-4710

- b. A copy of all required reports and notifications, except the Annual Emission Report required by 35 Ill. Adm. Code 254, shall also be sent to the Illinois EPA at the following address:

Illinois Environmental Protection Agency
Division of Air Pollution Control
2009 Mall Street
Collinsville, Illinois 62234
Telephone: 618/346-5120

15. Effectiveness of Permit

- a. i. Pursuant to 40 CFR 52.21(r)(2), this permit shall become invalid if construction is not commenced within 18 months after this permit becomes affective, if construction is discontinued for a period of 18 months or more, or if construction is not completed with a reasonable period of time. The 18 month period may be extended by the Illinois EPA upon a satisfactory showing that an extension is justified. This condition supersedes Standard Condition 1.
- ii. For this purpose, it is expected that the Permittee will commence and complete construction no later than the dates set forth in Attachment D. Unjustified delays in this schedule shall be considered a violation of this Permit.
- b. i. For this purpose, further control of the existing alcohol plant and expansion of the alcohol plant shall be addressed separately. To "commence construction" of the expansion of the plant, the Permittee must commence construction on process equipment or control systems whose capacity facilitates the expansion of the plant. There after, until construction is complete, the Permittee shall submit annual reports to demonstrate that a continuous program of construction is underway, which reports shall describe the various new and replacement units that the Permittee has constructed in the last year and that intends to construct in the upcoming year.
- ii. This permit shall become invalid as applied to further expansion of the alcohol plant if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable period of time.

16. Other Requirements

This permit does not relieve the Permittee of the responsibility to comply with all applicable local, state and federal requirements which are part of Illinois' State implementation Plan, as well as all other applicable local, state and federal requirements.

17. Authorization to Operate

Once construction of all new control systems is completed, the expanded alcohol plant as addressed by this permit may be operated pursuant to this permit until a CAAPP permit is issued for the source and this permit will supersede Construction Permit No. 94100011 for previous modifications to the alcohol plant.

Page 13

If you have any questions concerning this permit, please contact Kevin Smith at 217/782-2113.

Donald E. Sutton, P.E.
Manager, Permit Section
Division of Air Pollution Control

DES:KLS:psj

cc: Region 3

ATTACHMENT A

Alcohol Plant Process and Control Equipment

Description	Control
Sterile Tank	-
Dextrose Tank	-
Blend Tank	-
Propagators (4-12)	Wet Scrubbers
Fermenters (x-1 thru x-5, x-5A thru x-5d, x-6 thru x-14, A-1 thru A-6, B-1 thru B-6, C-2 thru C-6, and D-1 thru D-6)	Wet Scrubbers ¹
CO2 Collection/Defoam Tank	Wet Scrubbers
Beer Wells (1 & 2)	Wet Scrubbers
MR Evaporators (1-6)	Wet Scrubber
Centrifuge	-
MR Feed, Product and Condensate Tanks	-
Distillation (Stills 1-6 and Grits 1-4)	Condensers and Wet Scrubbers
Reflux Stripper	Condensers and Wet Scrubbers
Fusel Oil Decanter and Tank	-
Recycle Tank	Wet Scrubber
Hi Wine Tanks (1-4 & 9)	Floating Roof or Condensers
Nitrogen Stripper	Wet Scrubber
Denaturant Tanks (D-5 & D-6)	Floating Roofs
Denatured Alcohol Storage Tanks (MST5, MST6 & MST7)	Floating Roofs
Loadout	Flare
Rust Inhibitor Tanks North and South	-
CO2 Plant (Carbon and Dryer Columns)	-
CO2 Stripper Column	Condenser

Notes:

1. The exhaust from the scrubber on the final stage is sent to the CO2 plant at the complex.

ATTACHMENT B

List of Operations in Alcohol Plant with Negligible VOM Emissions

Description
Sterile Tank
Dextrose Tank
Blend Tank
Centrifuge
MR Feed, Product and Condensate Tanks
Fusel Oil Decanter and Tank
Rust Inhibitor Tanks North and South
CO2 Plant (Carbon and Dryer Columns)

Attachment C

VOM Emission Limitations for Individual Emission Units (Vents)

Description	Limitations	
	Lb/hr	Ton/yr
Fermentation/Distillation/Process		
Propagators, Fermenters, and Beer Wells	25.0	109.5
Beer Stills Vent Scrubbers (1-4 East and West, 5 and 6)	12.0	52.6
CO ₂ Stripper Condenser/Reflux Stripper Scrubber	2.0	8.8
Nitrogen Stripper Scrubber	10.0	43.8
Sharples	2.0	8.8
MR Evaporators	3.0	13.1
Truck and Rail Loadout	15.0	16.1
Total:	69.0	252.7
Process Tanks/Storage Tanks		
Fusel Oil Decanter	---	5.9
Fusel Oil Tank	---	0.1
Hi Wine Tanks (1,2,3,4 and 9)	---	4.2
Rust Inhibitor Tanks (North and South)	---	0.7
Denaturant Tanks (D-5 and D-6)	---	1.0
Denatured Alcohol Tanks (MST5, MST6)	---	1.0
Denatured Alcohol Tank (MST7)	---	0.5
Total:	---	13.4*
Misc. Units (Dextrose, Blend, Sterile Tank, etc.)*		13.8
Grand Total:		280

* This limitation accounts for emissions from miscellaneous units that have been individually addressed and are not subject to control requirements. For purposes of determining compliance with the VOM emission limitations in Condition 8(a), monthly VOM emissions from these units shall be presumed to be 1.15 tons.

Attachment D

Control System Installation Timeline

Control System	Start Date	Completion Date
Truck/Railcar Loadout Flare	June 1, 2003	May 31, 2004
Alcohol Storage Tanks (MST5 and MST6) Floating Roofs	June 1, 2003	May 31, 2004
Primary Fermentation CO2 Collection and Scrubbing	July 1, 2003	Jan 31, 2005
Small Alcohol Storage Tanks ("High-Wine" Tanks) Floating Roofs	June 1, 2004	May 31, 2005
Alcohol Department MR Evaporator Scrubbing	*March 1, 2005	Aug. 31, 2005
Secondary Fermentation/Propagator CO2 Collection and Scrubbing	*March 1, 2005	Aug. 31, 2005

* NOTE: The secondary fermentation CO2 collection, scrubbing system and MR Evaporator scrubbing requires that the primary fermentation project be completed first.

KLS:00090052:psj