

PERMIT BOOK

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION



PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: **022007 - 004** Project Number: 2006-06-027

Owner: Prairie Pride, Inc.

Owner's Address: P.O. Box 125
Deerfield, Missouri 64741

Installation Name: Prairie Pride, Inc.

Installation Address: State Highway T
Deerfield, Missouri 64741

Location Information: Vernon County, S9, T35N, R33W

Application for Authority to Construct was made for:

A 2,000 ton per day soybean processing facility with an integrated 33 million gallon per year biodeisel production plant. A combined heat and power combustion turbine will also be installed to provide steam for soybean processing and to generate electricity for distribution to the grid. This review was conducted in accordance with Section 6, Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required.*

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- Standard Conditions (on reverse) are applicable to this permit.
- Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

FEB - 6 2007

EFFECTIVE DATE


DIRECTOR OR DESIGNEE
DEPARTMENT OF NATURAL RESOURCES

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within eighteen months from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Air Pollution Control Program of the anticipated date of start up of this (these) air contaminant source(s). The information must be made available not more than 60 days but at least 30 days in advance of this date. Also, you must notify the Department of Natural Resources Regional office responsible for the area within which you are located with 15 days after the actual start up of this (these) air contaminant source(s).

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, Missouri 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within thirty days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant source(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Air Pollution Control Program, P.O. Box 176, Jefferson City, Missouri 65102-0176, attention: Construction Permit Unit.

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

Prairie Pride, Inc.
Newton County, S9, T35N, R33W

1. Volatile Organic Compound (VOC) Emission Limitation for Soybean Extraction and Downstream Processing.
 - A. Prairie Pride, Inc. shall emit less than 230 tons of VOC from the solvent extraction process and downstream processing in any consecutive 12-month period. When accounting for emissions from the solvent extraction process and downstream processing Prairie Pride shall equate "actual solvent loss" to VOC emissions and shall calculate "actual solvent loss" in accordance with 40 CFR 63.2853.
 - B. The solvent loss ratio, calculated in accordance with 40 CFR Part 63, Subpart GGGG, shall not exceed 0.115 gallons of solvent per ton of oilseed in any consecutive 12-month period.
 - C. Prairie Pride, Inc. shall maintain an accurate record of solvent loss and oilseed throughput. Such records shall be maintained for not less than five (5) years and shall be made available immediately to any Missouri Department of Natural Resources' personnel upon request.
 - D. Prairie Pride, Inc. shall report to the Air Pollution Control Program's Enforcement Section, P.O. Box 176, Jefferson City, Missouri 65102, no later than ten (10) days after the end of the month during which the records from Special Condition 1.C. indicate that the source exceeds the limitations of Special Conditions 1.A or 1.B.
2. VOC Control Equipment
 - A. A thermal oxidizer shall be used to process emissions from the mineral oil scrubber at all times when solvent extraction processes are in operation. The thermal oxidizer shall be operated and maintained in accordance with manufacturer's specifications and shall be operated at a bed temperature equal to or greater than 1400 F, or the average temperature maintained during destruction efficiency testing, whichever is greater. The operating

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

temperature shall be verified by a continuous temperature monitoring system. The temperature monitoring system shall alert the operator whenever the oxidizer temperature drops below the required minimum operating temperature.

- B. A condenser/water scrubber system shall be used at all times when the associated biodiesel production equipment is in operation and shall be operated and maintained in accordance with the manufacturer's specifications.
- C. Prairie Pride, Inc. shall maintain an operating and maintenance log for the thermal oxidizer and the water scrubber which shall include the following:
 - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
 - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
 - 3) A written record of regular inspection schedule, the date and results of all inspections including any actions or maintenance activities that result from that inspection.
- 3. **PM₁₀ Emission Limitation to Ensure Compliance with Air Quality Standards.** The following conditions are intended to ensure that emissions of particulate matter less than ten microns in diameter (PM₁₀) are below levels that would result in a violation of the increment standard of 30 micrograms per cubic meter, 24-hr average (see 10 CSR 10-6.060(6)(A)3, 10 CSR 10-6.060(11)(A) and the ambient air quality impact analysis memorandum associated with this permit).
 - A. Calculated fugitive emission from haul roads shall not exceed 18.7 pounds in any consecutive 24-hour period.
 - B. Prairie Pride, Inc. shall use the equation referenced below for the purpose of calculating fugitive emissions from haul roads:

*USEPA, Compilation of Air Pollution Emission Factors
Subsection 13.2.2 Unpaved Roads (11/06)
Equation 1a*

A 95 percent control efficiency shall be applied to the haul road fugitive emission calculation due to pavement and periodic washing of the roads.

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- C. The amount of soybeans unloaded from rail shall not exceed 12,000 tons in any consecutive 24-hr period.
 - D. Prairie Pride, Inc. shall maintain records sufficient to demonstrate compliance with Special Conditions 3.A. and 3.C. for not less than five (5) years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request.
 - E. Prairie Pride, Inc. shall report to the Air Pollution Control Program's Enforcement Section, P.O. Box 176, Jefferson City, Missouri 65102, no later than ten (10) days after the end of the month during which the records from Special Condition 3.D. indicate that the source exceeds the limitation of Special Condition 3.A. or 3.C.
4. Baghouses and Other Particulate Control Devices
- A. All baghouses shall be operated and maintained in accordance with the manufacturer's specifications. Each baghouse shall be equipped with a gauge that indicates pressure drop across the control device. Pressure gauges or a visual display of the pressure data (i.e., monitor or chart) shall be located such that the Department of Natural Resources' employees may easily observe them during a site visit. Replacement filters for the baghouses shall be kept on hand at all times. The bags shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).
 - B. Prairie Pride, Inc. shall monitor and record the operating pressure drop across the baghouses at least once every 24 hours. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer.
 - C. Prairie Pride, Inc. shall maintain an operating and maintenance log for the baghouses which shall include the following:
 - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
 - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
 - D. Bin vent filters, cyclones and other particulate control devices shall be operated in accordance with manufacturer's recommendations and shall receive periodic inspection and maintenance to ensure proper operation.

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- E. With regard to as-built particulate control devices, any departure from representations made in the permit application (Revision 2, Received November 9, 2006) must be approved in writing by the Air Pollution Control Program prior to start-up of the plant.
5. Fuel Oil Sulfur Content Restriction. The sulfur content of the fuel to be used in the HRSG (EP-1B) shall not exceed 0.05% by weight. Prairie Pride, Inc. shall obtain the sulfur content of the fuel oil for each fuel oil delivery from the fuel vendors or conduct their own fuel analysis to evaluate the typical sulfur content weight percent of the fuel oil. The fuel consumption records and results of sulfur analyses shall be kept on-site for five (5) years and shall be made immediately available to the Missouri Department of Natural Resources' personnel upon request.
6. Haul Roads. Prairie Pride, Inc. shall pave all haul roads. Maintenance and/or repair of the road surface shall be conducted as necessary to ensure that the physical integrity of the pavement is adequate to achieve control of fugitive emissions from these roads. Prairie Pride, Inc. shall periodically water, wash and/or otherwise clean all of the paved portions of the haul roads as necessary to achieve control of fugitive emissions from these roads.
7. Emergency Fire Pump Engine - Hours of Operation. The hours in operation for the emergency fire pump engine (EP-15) shall not exceed 500 hours in any consecutive 12-month period. Prairie Pride, Inc. shall maintain a log showing the hours of operation of the emergency fire pump engine. The hours of operation log shall be kept on-site for five (5) years and shall be made immediately available to the Missouri Department of Natural Resources' personnel upon request.
8. Performance Testing
 - A. Prairie Pride, Inc. shall conduct testing to determine the destruction efficiency of the thermal oxidizer, initially, and then once every five years thereafter. Destruction efficiency results shall be for both n-hexane and VOC.
 - B. Prairie Pride, Inc. shall conduct initial performance testing to determine the emission rate of PM₁₀ and PM_{2.5} from the following emission points:
 - Plant Exhaust Filter (EP-3)
 - Common Prep/Dehulling Stack (EP-4)
 - Meal Grinding Baghouse (EP-5)

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

Receiving/Loadout Baghouse (EP-8)

These tests shall be conducted at full production rate.

- C. Prairie Pride, Inc. shall conduct initial performance testing to determine the emission rate of NO_x from the HRSG (HRSG) under at least two operating scenarios, defined as follows:

Scenario 1 – Steam-only mode. HRSG burning natural gas at 140 MMBTU/hr (plus or minus ten percent) - combustion turbine off-line.

Scenario 2 – Steam-only mode. HRSG burning burning fuel oil at 140 MMBTU/hr (plus or minus ten percent) - combustion turbine off-line.

- D. In the event that visible emissions are observed from the soybean and meal loading/unloading building, the Air Pollution Control Program may require capture efficiency testing for the associated air handling systems.
- E. Prairie Pride, Inc. shall conduct testing sufficient to demonstrate compliance with any and all applicable new source performance standard(s).
- F. The initial performance tests shall be performed within 60 days of achieving the maximum production rate, but no later than 180 days after initial startup.
- G. The initial performance test date(s) shall be pre-arranged with the Air Pollution Control Program a minimum of 30 days prior to the proposed test date so that a pre-test meeting may be arranged if necessary, and to assure that the test date is acceptable for an observer from the Air Pollution Control Program to be present. A proposed test plan shall be submitted to the Air Pollution Control Program a minimum of 30 days prior to the proposed test date. The test plan must be approved by the Air Pollution control Program prior to the test date.
- H. Prairie Pride, Inc. shall allow the owner/operator of the combustion turbine portion of the combined heat/power plant access to the HRSG stack (EP-1B) for the purpose of any monitoring or testing of emissions that may be required of that owner/operator.

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

9. Soybean and Meal Loading/Unloading Area. In the event that visible emissions are observed from the soybean and meal loading/unloading building, the Air Pollution Control Program may require certain corrective actions to minimize fugitive emissions.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (6) REVIEW

Project Number: 2006-06-027
Installation ID Number: 217-0043
Permit Number:

Prairie Pride, Inc.
State Highway T
Deerfield, Missouri 64741

Complete: September 5, 2006

Reviewed: Sep-Nov 2006

Parent Company:
Prairie Pride, Inc.
P.O. Box 125
Deerfield, Missouri 64741

Vernon County, S9, T35N, R33W

REVIEW SUMMARY

- Prairie Pride, Inc. has applied for authority to construct a 2,000 ton per day soybean processing facility with an integrated 33 million gallon per year biodeisel production plant. A natural gas turbine with a HRSG (HRSG) will also be installed to provide steam for soybean processing and to generate electricity for distribution to the grid.
- Hazardous Air Pollutant (HAP) emissions are expected from the proposed equipment. HAP emissions will include hexane, which is used for soybean oil extraction, and methanol, which is used in the biodiesel manufacturing process.
- 40 CFR Part 60, Subpart Db – *Standards of Performance for Industrial, Commercial, Institutional Steam Generating Units* applies to steam generating units constructed after June 19, 1984 with a heat input capacity greater than 100 MMBtu/hr, which encompasses the HRSG. However, 40 CFR, Part 60, Subpart KKKK applies to the HRSG and the rule specifically exempts the HRSG (see 40 CFR 60.4305). Currently, Missouri has not adopted Subpart KKKK into their State Implementation Plan (SIP); therefore subpart Db is listed as an applicable requirement.
- 40 CFR Part 60, Subpart Kb – *Standards of Performance for Volatile Organic Liquid Storage Vessels for Which Construction, Reconstruction or Modification Commenced After July 23, 1984* applies to the large storage tanks such as fuel, methanol, and hexane tanks.
- 40 CFR Part 60, Subpart DD – *Standards of Performance for Grain Elevators* applies to the soybean processing operations.
- 40 CFR Part 60, Subpart GG – *Standards of Performance for Stationary Gas Turbines* applies to stationary gas turbines with a heat input at peak load equal to or 10 MMBtu/hr, which encompasses the combustion turbine. However, 40 CFR Part 60, Subpart KKKK applies to the turbine and the rule specifically exempts the turbine

from Subpart GG (see 40 CFR 60.4305). Currently, Missouri has not adopted Subpart KKKK into their State Implementation Plan (SIP); therefore subpart GG is listed as an applicable requirement.

- 40 CFR Part 60, Subpart VV – *Standards of Performance for Equipment Leaks of VOC From Synthetic Organic Chemical Manufacturing Industry* applies to the biodiesel facility.
- 40 CFR Part 60, Subpart NNN – *Standards of Performance for Volatile Organic Compound (VOC) Emissions from Synthetic Organic Chemical Manufacturing Industry Distillation Operation* applies to the biodiesel facility.
- 40 CFR Part 60, Subpart RRR – *Standards of Performance for Volatile Organic Compound Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes* applies to the biodiesel processing facility.
- 40 CFR Part 60, Subpart KKKK – *Standards of Performance for Stationary Combustion Turbines* applies to both the combustion turbine and HRSG associated with the combined heat and power project. Currently, Missouri has not adopted this rule into their SIP; however it is enforceable at the federal level.
- 40 CFR Part 63, Subpart FFFF – *National Emission Standards for Hazardous Air Pollutants for Miscellaneous Organic Chemical Manufacturing* applies to the biodiesel facility.
- 40 CFR Part 63, Subpart GGGG – *National Emission Standards for Hazardous Air Pollutants for Solvent Extraction for Vegetable Oil Production* applies to the soybean extraction facility.
- 40 CFR Part 63, Subpart YYYY – *National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines* applies to the combustion turbine portion of the combined heat and power plant. MJMEUC will be responsible for compliance with this rule.
- 40 CFR Part 63, Subpart ZZZZ – *National Emission Standards for Hazardous Air Pollutants Stationary Reciprocating Internal Combustion Engines* applies to the emergency diesel fire pump engine. Submittal of an initial notification is the only requirement for this rule.
- 40 CFR Part 63, Subpart DDDDD – *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial and Institutional Boilers and Process Heaters* applies to the duct burners associated with the HRSG. Since the supplemental duct burners are designed to supply more than 50% of the total rated capacity of the HRSG, it does not meet the definition of waste heat boiler in 40 CFR 63.7575 and is considered a boiler per that definition.
- Fabric filters and/or cyclones will be used for particulate control. A mineral oil

scrubber followed by a thermal oxidizer will be used to control hexane emissions from the solvent extraction process. A condenser and water scrubber will be used to control methanol emissions from the biodiesel production process. Refer to the application and the project description for further detail.

- This review was conducted in accordance with Section (6) of 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of PM₁₀, VOC and NO_x are above de minimis levels but below Prevention of Significant Deterioration (PSD) significance levels. Potential emissions of HAPs (hexane and methanol) are above major source levels, however, Section (9) of 10 CSR 10-6.060 defers to federal MACT standards, when applicable. In this case several MACT standards apply, therefore a Section (9) review was not conducted.
- This installation is located in Vernon County, an attainment area for all criteria air pollutants.
- The biodiesel production portion of this installation is in the named source category of "Chemical Processing Plant", however, the installation as a whole is not considered a named installation. See the installation/project description and 10 CSR 10-6.020(3)(B), Table 2 for further detail.
- Ambient air quality modeling was performed by the applicant, and by the Air Pollution Control Program, to determine the ambient impact of PM₁₀. Results of the modeling predict ambient impact below the increment standard (see 10 CSR 10-6.060(6)(A)3 and 10 CSR 10-6.060(11)(A)) and below the national ambient air quality standard (see 10 CSR 10-6.010).
- Emission testing is required per NSPS standards and the special conditions of this permit.
- A Part 70 Operating Permit application is required for this installation within 1 year of equipment startup.
- Approval of this permit is recommended with special conditions.

INSTALLATION/PROJECT DESCRIPTION

The Prairie Pride, Inc. facility consists of a soybean processing plant, a biodiesel manufacturing plant, a combined heat/power plant (combustion turbine with a HRSG) and ancillary equipment. The soybean processing plant includes material handling operations (such as unloading, crushing, conveying, pelletization and storage), soy meal conditioning (thermal/mechanical), solvent extraction (with hexane), distillation for solvent recovery and refining and bleaching processes (for oil that is to be used for biodiesel production). The proposed front-end capacity of the soybean processing plant is 2,000 tons of soybeans per day. Products from the soybean processing plant include crude soy oil, refined and bleached soy oil, soy meal and soy hulls.

The biodiesel plant includes chemical reaction vessels, soy oil storage tanks, methanol storage tanks, glycerine storage tanks, biodiesel storage tanks and other process equipment. The primary feedstock for the biodiesel plant is refined and bleached soy oil from the soybean processing plant, but purchased soy oil may also be used as well as other feedstock, such as animal fat and waste cooking oil. Biodiesel is produced from the base-catalyzed transesterification of soy oil with methanol. The by-product of this reaction is glycerine. The proposed capacity for biodiesel production is 90,500 gallons per day.

The combustion turbine portion of the combined heat/power plant will be a 141.4 MMBTU per hour (lower heating value) Solar Titan 130-20501S natural gas fired turbine. The HRSG portion of the combined heat/power plant will be equipped with duct burners capable of burning natural gas or fuel oil. The duct burners will be rated at 140 MMBTU/hr, higher heating value.

Ancillary equipment includes cooling towers, a fire pump engine and a fuel oil tank.

Air Pollution Control equipment includes cyclones for wet particulate-generating processes, fabric filters for dry particulate-generating processes, a water absorber for control of emissions from the biodiesel reactor, a mineral oil absorber for hexane absorption and a thermal oxidizer for destruction of hexane that is exhausted from the mineral oil absorber.

This is a new installation – no permits have been issued to Prairie Pride, Inc. prior to this construction permit.

PSD Applicability Discussion

Prairie Pride, Inc. indicates that most of their revenue will come from sales of soy meal and that the primary activity at his installation will be soybean processing. In this case, the Air Pollution Control Program is considering soybean processing as the primary activity. For the purpose of PSD applicability determination, the biodiesel plant and the combined heat/power plant are considered as part of the same installation due to support facility and common control issues. Further explanation and discussion of the implications to follow.

Installation is defined at 10 CSR 10-6.020(2)(l)7. as,

“All source operations including activities that result in fugitive emissions, that belong to the same industrial grouping (that have the same 2-digit code as described in the Standard Industrial Classification Manual, 1987), and any marine vessels while docked at the installation, located on one (1) or more contiguous or adjacent properties and under the control of the same person (or persons under common control)”

However, as explained in the Federal Register notice that redefined source:

“Each source is to be classified according to its primary activity, which is determined by its principal product or group of products produced or distributed, or services rendered. Thus, one source classification encompasses both primary and support facilities, even when the latter includes units with a different two-digit SIC code.” See 45 FR 52695.

Portions of this installation are described by at least three SIC codes: The appropriate SIC code for a soybean processing plant is 2075. SIC code 2075 is for establishments primarily engaged in manufacturing soybean oil, cake, and meal, and soybean protein isolates and concentrates, or in processing purchased soybean oil other than into edible cooking oils. The appropriate SIC code for a biodiesel plant is 2869. SIC code 2869 is for establishments primarily engaged in manufacturing industrial organic chemicals, not elsewhere classified. The appropriate SIC code for a combined heat and power plant that is primarily in business for the purpose of electricity production is 4911. SIC code 4911 is for establishments primarily engaged in Electric Services (fossil fuel power generation and electric power distribution).

According to Prairie Pride, Inc. soybean processing operations represent the main revenue source and a review of emissions estimates shows that the main pollutant-emitting activity is also soybean processing. Therefore soybean processing is considered the primary activity for the installation as a whole. Soybean processing operations, in turn support the production of biodiesel, since refined and bleached soy oil from soybean processing is the primary feedstock for the biodiesel plant. The primary activity (soybean processing) is supporting a secondary activity (biodiesel production). Or, another perspective would be to say that a group of products (derived from soybeans) are produced at this installation. The group of products includes crude soy oil, refined and bleached soy oil, soy meal, soy hulls and biodiesel fuel.

The combined heat/power plant will provide process steam to the soybean processing and biodiesel plants. The combined heat/power plant will also produce electricity for distribution to the grid. The location and economic feasibility of the combined heat/power plant is influenced by the fact that Prairie Pride will utilize process steam from the HRSG. The primary operator for the turbine section of the combined heat/power plant will be Missouri Joint Municipal Electric Utility Commission (MJMEUC). Prairie Pride intends to lease space to MJMEUC and will have a business relationship with MJMEUC related to the steam production aspect of the combined heat/power plant. MJMEUC will be engaged in electricity generation and distribution. Prairie Pride, Inc. indicates that they will have no involvement with electricity generation or distribution.

The combustion turbine and HRSG portions of the combined heat/power plant are linked in a unit operations sense. Under normal operations, the combustion turbine exhaust will pass through the heat recovery section and will be vented to a common stack. Normal operation is when the combined heat/power plant is producing both steam and electricity. The combined heat/power plant will be designed with a diverter valve and by-pass stack for electricity-only mode; in this mode combustion gases from the turbine section will not travel through the heat recovery section.

Prairie Pride, Inc. will install and operate duct burners in the heat recovery section. In the event that MJMEUC is not operating the combustion turbine and there is a need for process steam, Prairie Pride, Inc. will have the ability to operate the duct burners, along with a supplemental combustion air fan, in steam-only mode. Prairie Pride, Inc. also intends to utilize the duct burners for supplemental heat in order to meet steam demand during normal operations.

Prairie Pride, Inc. intends to enter in to a contract with MJMEUC regarding the purchase and operation of the turbine. Proposed contract stipulations include the following:

A. MJMEUC RESPONSIBILITIES

1. MJMEUC shall install, own, operate and maintain a Solar Titan 130 combustion turbine, electric generator and substation, on a parcel of land PPI will lease to.
 - a. MJMEUC shall be responsible for 100% of the capital costs through the combustion turbine to the outlet of the diverter valve.

B. PPI RESPONSIBILITIES

1. PPI will install, own, operate and maintain a HRSG system (HRSG). PPI's facilities shall commence from the outlet of the diverter valve.
2. PPI will lease to MJMEUC land for the MJMEUC facilities

MJMEUC will be required to keep the combustion turbine on-line 80 percent of the time on an annual basis.

Anticipated maximum process steam requirements for soybean processing, biodiesel production, tank and building heat are 116,000 pounds per hour at 150 psig, saturated steam. The enthalpy difference from 150 psig, saturated vapor to 228 F saturated liquid (return state) is 1000 BTU/lb, therefore maximum process steam requirements are approximately 116 MMBTU/hr. The ISO rating of the generator is 15 mW (equivalent to 52,100 MMBTU/hr). For production of 15 mW of electricity and 116,000 pounds per hour of steam, fuel consumption is expected to be approximately 157 MMBTU/hr to the combustion turbine and 75 MMBTU/hr to the duct burners, for a total of 232 MMBTU/hr.

If Prairie Pride were to have chosen a firetube boiler with 80 percent thermal efficiency instead of a combined heat/power plant, fuel consumption to meet the maximum process steam requirement would have been approximately 145 MMBTU/hr. This is more than half of the maximum heat input rate to the combined heat/power plant.

Prairie Pride, Inc. is in control of the property, as a lessor, and to a very limited extent, in control of operation of the combustion turbine through contract stipulations. Prairie Pride, Inc. is in control of the decision-making process as it relates to the methods, equipment and business relationships established for the purpose of meeting the process steam requirements for this installation. EPA guidance on the issue of common control has not been consistent. In some cases EPA has utilized the dictionary definition of control, in other cases they have used a more limited Securities and Exchange Commission (SEC) definition –

Webster's Dictionary Definition-

1. To exercise authority or influence over: DIRECT.
2. To hold in restraint: CHECK

SEC Definition-

Control is the possession, direct or indirect, of the power to direct or cause the direction of the management and policies of a person (or organization or association) whether through the ownership of voting shares, contract or otherwise.

EPA has also considered other factors, such as support/dependency relationships, contract for service relationships, etc. when making common control determinations. A few pertinent quotes from "Major Source Determination for Military Installations under the Air Toxics, New Source Review, and Title V Operating Permit Programs", memorandum from John Seitz, EPA Office of Air Quality Planning and Standards dated August 2, 1996.

"In general, leased activities may be considered separate "sources" when they are not under the direct or indirect control of a lessor (e.g, through a contract for service arrangement) and they do not support another activity that is owned or operated by the lessor."

.....

"For leased activities that contract only part of their output (i.e., less than 100 percent) to a military controlling entity that is located at that military installation, the permitting authority should consider on a case-by-case basis whether the leased/contracted activity is under common control with that entity. Among the factors that would need to be considered are: how integral the leased/contracted activity's output is to the entity's operations; the percentage of the output that goes to the entity; whether the activity must be onsite to perform its service or produce its product; whether the activity would remain on site if the entity no longer received the output; and the terms of the contract between the entity and the activity. For example, the fact that less than 50 percent of the leased/contracted activity's output is provided to the military controlling entity could be one factor supporting a determination that the leased/contracted activity can be considered under separate control."

Another letter from EPA Region VII talks about how a company may be able to rebut the presumption that locating on another company's land establishes a "control" relationship – similar factors to those discussed in the reference above are discussed in this letter. The EPA Region VII letter also asserts that the dictionary definition of control is appropriate for use in these types of regulatory interpretations since EPA's PSD regulations do not provide a definition of control. See letter from William Spratlin, EPA Region VII to Peter Hamlin, Iowa Department of Natural Resources, September 18, 1995.

A letter from EPA Region VIII asserts that common control is established for a power plant located on a brewery site due to support/dependency considerations. See “Single Source Determination for Coors/Trigen”, EPA Region VIII, letter dated November 12, 1998.

A letter from EPA Region III concludes that Dominion Energy’s cogeneration plant that provides steam to Georgetown University is under common control due to contract for service considerations. See letter from Bernard Turlinski, EPA Region III to Westy McDermid, DC Advisory Neighborhood Council.

EPA Region V has a different take in its letter regarding Madison Gas & Electric (MGE) generating units located on the Oscar Mayer Foods facility in Madison, Wisconsin. EPA Region V separates the support facility determination issues from the common control issues and finds that the generating units are not under common control since Oscar Mayer controls the operation only to the extent that, in the event of an outage, Oscar Mayer would be entitled to 100 percent of the output until normal power distribution is restored. Oscar Mayer has no ownership interest in the generators and nothing in its contract with MGE indicates that Oscar Mayer will have any power to manage the generator’s pollutant-emitting activities or to make any decisions relating to emission control or compliance with environmental regulations.

The only precedent found where the combustion turbine and heat recovery sections of a combined heat and power plant were considered separate installations was for two recently permitted ethanol plants in Missouri. These installations did not contemplate or design in, duct burning, and both installations had existing boilers that could serve as back-up or supplemental capacity for steam generation.

In conclusion, the Air Pollution Control Program believes that the combined heat/power plant and soybean processing operations are under common control because:

- The location and economic feasibility of the combined heat/power plant is influenced by the fact that Prairie Pride, Inc. will utilize process steam from the HRSG. Prairie Pride, Inc. could choose to use a firetube boiler instead, in this case the MJMEUC combustion turbine would not be built.
- Prairie Pride will control production levels of MJMEUC through contract stipulations.
- Prairie Pride owns the property and has some control over what happens on their property as a lessor.
- The two portions of the combined heat/power plant are linked in a unit operations sense. MJMEUC combustion turbine emissions will typically occur on the Prairie Pride side of the combined heat/power plant.
- Greater than 50 percent of output of the combined heat/power plant is steam.

- Greater than 50 percent of the fuel burned in the combined heat/power plant is burned for the purpose of meeting the process steam needs of the installation.

The Air Pollution Control Program further believes that a support facility relationship exists due to the factors discussed in the last two bulleted items above.

All operations – combined heat/power plant, soybean processing, biodiesel production and ancillary operations are considered as the same installation for the purpose of determining whether the prevention of significant deterioration (PSD) permitting regulations apply. However, since there are two operators for the combined heat/power plant, two construction permits and two operating permits will be issued to this installation.

With regard to PSD permitting requirements, the threshold for applicability depends on whether or not a source is within a named source category. If the source falls in to one of the 28 named source categories then the threshold for applicability is 100 tons per year of potential emissions for any given criteria pollutant. If the source does not fall in to one of the 28 named source categories then the threshold for PSD applicability is 250 tons per year of potential emissions for any given criteria pollutant. Review of EPA guidance indicates that the major source status of a nested activity does not dictate the major source status of the overall source independent of the total emission rate. In other words, if an entire source (in this case the soybean processing plant, the biodeisel plant, the combined heat/power plant and all ancillary operations) has the potential to emit less than 250 tons per year, then the existence of a major nested source does not make the entire source major for purposes of PSD applicability (see January 22, 1998 letter from Ms. Cheryl Newton, USEPA to Robert Hodanbasi, Ohio Environmental Protection Agency). Similarly, if the overall source consists of a named source category and a non-named source category this does not necessarily make the overall source/installation “named”.

In this case, biodiesel production falls in to the named source category of a *chemical processing plant*. Soybean processing operations do not fall into any of the named source categories. The combined heat/power plant does not fall in to the *fossil fuel boilers* source category since the heat input to the duct burners is less than 250 MMBTU/hr.

For this installation, as permitted, there is no single pollutant that has a potential to emit of 250 tons per year or greater, therefore the PSD “major stationary source” requirements do not apply.

EMISSIONS/CONTROLS EVALUATION

The emission factors and control efficiencies used in this analysis were obtained from the following sections of Environmental Protection Agency (EPA) document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition:

- Section 1.3, Fuel Oil Combustion (9/98)
- Section 1.4, Natural Gas Combustion (7/98)
- Section 3.1, Stationary Gas Turbines (4/00)
- Section 3.3, Gasoline and Industrial Engines (10/96)
- Section 9.9.1, Grain Elevators and Processes (4/03)
- Section 9.11.1, Vegetable Oil Processing (11/95)
- Subsection 13.2.2, Unpaved Roads (11/06)
- Section 13.4, Wet Cooling Towers (1/95)
- Appendix B.2, Generalized Particle Size Distribution, Table B.2-3 (9/90)

One exception to use of the AP-42 emission factors was the NO_x emission factor for the combustion turbine. In this case, the emission factor was based on 25 parts per million NO_x, corrected to 15 percent oxygen. This is consistent with the recently promulgated new source performance standards for combustion turbines (see 40 CFR Part 60, Subpart KKKK). Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8760 hours per year). Potential emissions of SO₂, VOC and hexane are limited by special permit conditions. The following table provides an emissions summary for this project.

Table 1: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Potential Emissions Minus Combustion Turbine*	Potential Emissions With Combustion Turbine*
PM ₁₀	15	37.1	41.62
SO ₂	40	18.5	20.8
NO _x	40	57.4	118.6
VOC	40	243.4	244.8
CO	100	26.8	64
HAPs	10/25	159.6	160.3
Hexane	10	147.8	147.8
Methanol	10	10.3	10.3

*Note: The combustion turbine portion of the combined heat/power plant will be owned and operated by MJMEUC, a separate construction permit will be issued to MJMEUC for the combustion turbine.

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (6) of 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of PM₁₀, VOC and NO_x are above de minimis levels but below Prevention of Significant Deterioration (PSD) significance levels. Potential emissions of HAPs (hexane and methanol) are above major source

levels, however, Section (9) of 10 CSR 10-6.060 defers to federal MACT standards, when applicable. In this case there are applicable MACT standards for the solvent extraction process and for the biodiesel production facility, therefore a Section (9) review was not conducted.

APPLICABLE REQUIREMENTS

Prairie Pride, Inc. shall comply with the regulatory requirements identified in the review summary of this permit. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements for your installation, please consult your operating permit. In addition to the regulatory requirements identified in the review summary of this permit, Prairie Pride, Inc. shall comply with the following rules:

- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110
The emission fee is the amount established by the Missouri Air Conservation Commission annually under Missouri Air Law 643.079(1). Submission of an Emissions Inventory Questionnaire (EIQ) is required April 1 for the previous year's emissions.
- *Operating Permits*, 10 CSR 10-6.065
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-3.090
- *Restriction of Emission of Particulate Matter From Industrial Processes*, 10 CSR 10-6.400
- *Restriction of Emission of Sulfur Compounds*, 10 CSR 10-6.260
- *Maximum Allowable Emissions of Particulate Matter From Fuel Burning Equipment Used for Indirect Heating*, 10 CSR 10-3.060

AMBIENT AIR QUALITY IMPACT ANALYSIS

Ambient air quality modeling was performed by the applicant, and by the Air Pollution Control Program, to determine the ambient impact of PM₁₀. Results of the Air Pollution Control Program verification run predict ambient impact below the increment standard (see 10 CSR 10-6.060(6)(A)3 and 10 CSR 10-6.060(11)(A)) and below the national

ambient air quality standard, NAAQS (see 10 CSR 10-6.010).

To show compliance with the increment standard for PM₁₀ the modeled ambient impact of emissions from this installation must be below 17 µg/m³ on an annual basis and 30 µg/m³ on a 24-hour basis. There was no inclusion of surrounding interactive sources in the increment consumption analysis, per Air Pollution Control Program policy. The results from the Air Pollution Control Program verification run indicate no violations of the PM₁₀ increment standard. The worst-case emissions scenario resulted in a predicted maximum annual concentration of 5.38 µg/m³ and a 24-hour maximum of 29.56 µg/m³.

To show compliance with the NAAQS for PM₁₀ the modeled ambient impact must be below 50 µg/m³ on an annual basis and 150 µg/m³ on a 24-hour basis. The results from the Air Pollution Control Program verification run indicate no violations of the PM₁₀ NAAQS. The worst-case emissions scenario resulted in a predicted maximum annual concentration of 20.38 µg/m³ and a high-sixth-high 24-hour maximum of 70.66 µg/m³. Predicted concentrations included a background concentration of 15.0 µg/m³, and 48.0 µg/m³ for the annual and 24-hour averaging periods. The background concentrations account for the impact of natural sources, nearby sources not accounted for in the model analysis, and potential unidentified sources.

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section(6) of 10 CSR 10-6.060, *Construction Permits Required*, I recommend permit issuance, with special conditions.

Steve Jaques, P.E.
Environmental Engineer

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated November 8, 2006, received November 9, 2006, designating Prairie Pride, Inc. as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- Southwest Regional Office Site Survey, dated June 19, 2006.
- Air Pollution Control Program Internal Memorandum, Dated November 16, 2006, from Dawn Froning to Steve Jaques regarding Prairie Pride Ambient Air Quality Impact Analysis (AAQIA)-Version 2, November 7, 2006 Submittal.

Mr. John Nelson
General Manager
Prairie Pride, Inc.
P.O. Box 125
Deerfield, MO 64741

RE: New Source Review Permit - Project Number: 2006-06-027

Dear Mr. Nelson:

Enclosed with this letter is your permit to construct. Please study it carefully. Also, note the special conditions, if any, on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files.

Operation in accordance with these conditions, your new source review permit application and with your operating permit is necessary for continued compliance.

The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you have any questions regarding this permit, please do not hesitate to contact me at (573) 751-4817, or you may write to me at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102.

Thank you,

AIR POLLUTION CONTROL PROGRAM

Kendall B. Hale
New Source Review Unit Chief

KBH:sjl

Enclosures

c: Southwest Regional Office
PAMS File 2006-06-027

Permit Number: