



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: 07 2008 - 001 Project Number: 2007-08-115

Parent Company: Golden Triangle Energy, LLC

Parent Company Address: 15053 Highway 111, Craig, MO 64437

Installation Name: Golden Triangle Energy, LLC

Installation Address: 15053 Highway 111, Craig, MO 64437

Location Information: Holt County, S13, T62N, R40W

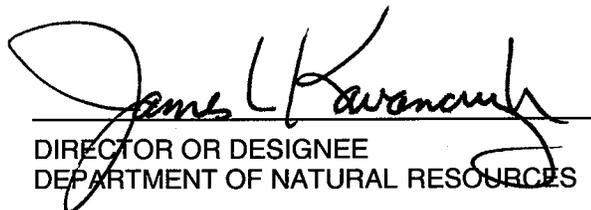
Application for Authority to Construct was made for:

The addition of product storage tank capacity, the use of industrial denaturants, add a new distillation column, revise the NO_x cap emission factors, revise the particulate emission calculations for haul road traffic, revise the particulate emission calculation for the new cooling tower, grain receiving and DDGS. This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

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

JUL - 2 2008

EFFECTIVE DATE


 DIRECTOR OR DESIGNEE
 DEPARTMENT OF NATURAL RESOURCES

~~10017-0000~~
STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years 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 department's 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, MO 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 30 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 Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit. 10017-0000

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.

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EFFECTIVE DATE

DIRECTOR OR DESIGNEE
DEPARTMENT OF NATURAL RESOURCES

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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 department's 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, MO 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 30 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 Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 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."

Golden Triangle Energy, LLC
Holt County, S13, T62N, R40W

1. Superseding Condition

The conditions of this permit supersede all special conditions found in previously issued Air Pollution Control Program construction permits listed in Table 1 .

Table 1: Superseded permits issued to 087-0016.

Permit Number	Project Number
022000-004	1999-07-077
052003-014	2003-03-031
052003-014A	2005-05-020
072005-033	2005-06-011
122005-004	2005-07-100

2. Acrolein Control

Golden Triangle Energy must show compliance at the nearest property boundaries with the 24 hour and Annual Risk Assessment Levels (RAL) of acrolein from each source of acrolein being emitted at this site. Stack testing for acrolein must be done at a detection level that will confirm compliance when the emission rate from all acrolein sources on site is evaluated. The data shall be processed in accordance with current MDNR procedures and through the modeling program EPA Screen 3 or refined modeling.

- A. The 24 hour RAL is 0.55 micrograms per meter cubed.
- B. The Annual RAL is 0.02 micrograms per meter cubed.
- C. This demonstration of compliance must be completed and submitted as soon as possible upon test completion, and no later than December 01, 2008.
- D. If the demonstration of compliance does not show compliance with the 24 hour and annual RAL an operating restriction emission limit must be put in place and an amendment to this permit must be submitted to the Air Pollution Control Program as soon as possible upon completion of a test that does shows compliance with the RAL limit.

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SPECIAL CONDITIONS:

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

3. **Paved Haul Road Control**

Golden Triangle Energy LLC's haul road is 0.6 miles long and 0.24 miles are paved. Golden Triangle Energy, LLC shall control fugitive emissions from 0.24 miles of haul road at this site by paving and washing/cleaning.

 - A. Golden Triangle Energy, LLC shall pave with materials such as asphalt, concrete, and/or other material(s). If materials other than asphalt or concrete are used, Golden Triangle Energy, LLC must receive approval from the Air Pollution Control Program. The pavement shall be applied in accordance with industry standards for such pavement so as to achieve control of fugitive emissions while the plant is operating.
 - B. 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 areas.

4. **Non-Paved Haul Road Control**

Golden Triangle Energy LLC's haul road is 0.6 miles long and 0.36 miles are not paved.

 - A. Golden Triangle Energy, LLC personnel will inspect the roadway on a weekly basis for wear, frost boils, etc. and will observe truck traffic for signs of visible emissions.
 - B. Golden Triangle Energy, LLC will apply dust suppressant or water within forty-eight (48) hours of observation of fugitive dust emissions caused by car/truck traffic on the road.
 - C. Golden Triangle personnel will record roadway inspection observation data including but not limited to:
 1. Date and time of inspection, name of inspector, map or site plan showing locations, and site line of visible emission observations and location of road surface problem areas, corrective actions taken to eliminate visible emissions or problem surface conditions.
 2. Any deviation of monitoring frequency and range shall be reported.

5. **Grain Receiving Operational Limits**
 - A. Golden Triangle Energy, LLC shall limit its truck and rail grain receiving rate to 217,778 tons of grain per year.

 - B. To demonstrate compliance with Special Condition 5.A., Golden Triangle Energy, LLC shall keep a record of the daily weight (tons) of grain received by rail or truck per day. Attachment A, or equivalent form(s), shall be used for this purpose.

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

- C. Golden Triangle Energy, LLC shall report to the Air Pollution Control Program's Enforcement Section (P. O. Box 176, Jefferson City, MO 65102) no later than ten (10) days after the end of any month during which the records required by Special Condition 5.C. show that the grain receiving limitation has been exceeded.
6. **DDGS Shipped Operational Limits**
 - A. Golden Triangle Energy, LLC shall limit its truck and rail DDGS shipment rate to 78,840 tons of DDGS shipped per year.
 - B. To demonstrate compliance with Special Condition 6.A., Golden Triangle Energy, LLC shall keep a record of the daily weight (tons) of DDGS shipped by rail or truck per day. Attachment B, or equivalent form(s), shall be used for this purpose.
 - C. Golden Triangle Energy, LLC shall report to the Air Pollution Control Program's Enforcement Section (P. O. Box 176, Jefferson City, MO 65102) no later than ten (10) days after the end of any month during which the records required by Special Condition 6.C. show that the DDGS shipped limitation has been exceeded.
7. **Ethanol Production Limits**
 - A. Golden Triangle Energy, LLC shall limit its annual denatured ethanol production rate to 22,050,000 gallons per twelve (12) consecutive month period. The total ethanol production remains at 21,000,000 gallons per year. The maximum amount of denaturant used per year is 1,050,000 gallons per year.
 - B. To demonstrate compliance with Special Condition 7.A., (ethanol) Golden Triangle Energy, LLC shall keep a record of the amount of ethanol produced per twelve (12) consecutive month period. Attachment C, or equivalent forms, shall be used for this purpose.
 - C. To demonstrate compliance with Special Condition 7.A. (denaturant), Golden Triangle Energy, LLC shall keep a record of the amount of denatured used per twelve (12) consecutive month period. Attachment C, or equivalent forms, shall be used for this purpose.
 - D. Golden Triangle Energy, LLC shall report to the Air Pollution Control Program's Enforcement Section (P. O. Box 176, Jefferson City, MO 65102) no later than ten (10) days after the end of any month during which the records required by Special Condition 7.C. show that the ethanol

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SPECIAL CONDITIONS:

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

production and denaturant added limitations have been exceeded.

8. Emission Limitations

A. Emission Limit of Particulate Matter Less than Ten Microns in Diameter (PM₁₀)

- 1.) Golden Triangle Energy, LLC shall not discharge PM₁₀ into the atmosphere from the stacks listed in Table 2 in excess of the listed amounts and has an installation wide limit of less than 95 tons of PM₁₀ per 12 month period.
- 2.) The stack emission rates in Table 2 shall be verified through performance testing as specified in Special Conditions 15 and 16. Only stacks SV008 and SV011 can use AP42 SCC emission factors to show compliance or be tested.
- 3.) An equipment specific limit of 3.4 pounds of PM₁₀ per hour exists for the RTO (SV012). This equipment limit is necessary to conform to the Consent Decree, Civil Action No. 05-6032-CV-SJ-SOW.

Table 2: Emission Rate Limits for PM₁₀

Emission Point	Emission Unit	Stack Description	Tons per year
SV001	EU001, EU002, EU003, EU004, EU005, EU006, EU007, EU008, EU009, EU010, EU011,EU012	Grains Handling Baghouse	0.272
SV003	EU013, EU003	Hammermill/belt scale & hominy unload	1.314
SV007	EU027	Cooling /separating cyclone	1.34
SV008	EU028	Boiler #1 natural gas, 60.5 MMbtu (low NOx)	2.01
SV011	EU034	Boiler #2 natural gas, 60.5 MMbtu	2.01
SV012	EU026	Dryer/RTO (C008)	8.67

B. Emission Limit of Nitrogen Oxides (NO_x)

- 1.) Golden Triangle Energy, LLC shall not discharge NO_x into the atmosphere from the stacks listed in Table 3 in excess of the listed amounts.
- 2.) Golden Triangle Energy, LLC shall not emit NO_x above the installation wide limit of less than 95 tons of NO_x per any consecutive twelve (12) month period.
- 3.) The emission rates in Table 3 shall be verified through performance testing as specified in Special Conditions 15 and 16.
- 4.) The authorized emission factors used to calculate the NO_x limits are listed in Table 4.
- 5.) This installation has two NO_x limits, an equipment limitation and an installation wide limit of less than 95 tons of NO_x any consecutive

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SPECIAL CONDITIONS:

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

twelve (12) month period. The NO_x equipment limitation is an equipment specific limitation that applies to SV008 and SV012 which is boiler #1 (EU028) and DDGS dryer outlet (EU026). The boiler #1 (EU028) and the DDGS dryer outlet (EU026) together have an equipment limit for NO_x of 20.24 tons per year. This equipment limit is necessary to conform to the Consent Decree, Civil Action No. 05-6032-CV-SJ-SOW.

- 6.) Thermal oxidizer (TO) alternative operating scenarios (A.O.S.) regeneration shall not exceed fifty (50) dryer operating hours per year.
- 7.) Individual TO A.O.S. regeneration events shall be limited to no longer than twelve (12) hours for each event.
- 8.) Each regeneration event is to be recorded and NO_x emissions calculated, accounted for and reported in the installation wide record keeping for the NO_x limit of < 95 tons per year.
- 9.) Attachment D, *Monthly Total NO_x Emissions Tracking Record*, or equivalent form(s), shall be used to demonstrate compliance for Special Conditions 8B.2.) and 8B.8.).

Table 3: Emission Rate Limits for Group NO_x Cap

Stack ID	Emission Unit	Stack Description	NO _x Limit	Units
SV008 & SV012 (dryer outlet)	EU028 & EU026	Boiler #1, 60.5 MMBtu/hr (with low NO _x burner) & DDGS dryer outlet	20.24	tons per year

Table 4: Authorized Emission Factors for NO_x

Stack ID	Emission Unit	Stack Description	NO _x Limit	Units
SV006	EU026	DDGS dryer 36MMBtu/hr	0.04 Ref. 6/11/07	Pounds per million Btu
SV008	EU028	Boiler #1, 60.5 MMBtu/hr (with low NO _x burner)	0.03 Ref. 6/11/07	Pounds per million Btu
SV011	EU034	Boiler #2, 60.5 MMBtu/hr (with low NO _x burner)	0.032 Ref. scc102 00602	Pounds per million Btu
SV012	EU026 and EU038	DDGS dryer 36MMBtu/hr and RTO Thermal Oxidizer Burner	2.69	Pounds per hour

C. Emission Limit of Hazardous Air Pollutants (HAPs)

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SPECIAL CONDITIONS:

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

- 1.) Golden Triangle Energy, LLC shall emit less than twenty-four (24.0) tons of combined HAPs from this installation in any consecutive twelve (12) month period. Attachment E, *Monthly Total HAPs Emissions Tracking Record*, or equivalent form(s), shall be used to demonstrate compliance.
 - 2.) Golden Triangle Energy, LLC shall emit less than nine (9.0) tons of individual HAPs from this installation in any consecutive twelve (12) month period. Attachment F, *Monthly Individual HAPs Emissions Tracking Record*, or equivalent form(s), shall be used to demonstrate compliance.
 - 3.) Golden Triangle Energy, LLC shall emit less than 0.46 tons per year of acrolein. This installation wide limit for acrolein is based on the PTE of the calculated emission rate using no detection limits as emission rates.
 - 4.) Attachment F, *Monthly Individual HAPs Emissions Tracking Record*, or equivalent form(s), shall be used to demonstrate compliance with Special Conditions 8C.1., 8C.2. and 8.C.3.
 - 5.) Golden Triangle Energy, LLC shall report to the Air Pollution Control Program's Enforcement Section (P. O. Box 176, Jefferson City, MO 65102) no later than ten (10) days after the end of any month during which the records required by Special Conditions 8C.1., 8C.2. and 8.C.3 show that the HAPs emission limits have been exceeded.
- D. Emission Limit of Volatile Organic Compounds (VOCs)
- 1.) Golden Triangle Energy, LLC shall emit less than 95 tons of VOCs from the entire installation in any consecutive twelve (12) month period. Golden Triangle Energy, LLC has specific equipment limits of 95 percent reduction or less than 10 ppm of VOC on the DDGS dryer (SV012) and an equipment limit of 95 percent reduction or less than 20 ppm VOC on the Fermentation Scrubber COO3 (SV004), see Table 5. The equipment limits are necessary to conform to the Consent Decree, Civil Action No. 05-6032-CV-SJ-SOW.
 - 2.) Golden Triangle Energy, LLC shall record the monthly amount and the sum of the most recent consecutive twelve (12) months VOC emissions in tons from this installation. Attachment G, *Monthly VOC Emissions Tracking Record*, or equivalent form(s), shall be used for this purpose. The emission rates used in Attachments G shall be determined by performance testing, as detailed in Special Conditions 15 and 16, or from emission factors from AP-42 or DENCO.

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- 3.) Golden Triangle Energy, LLC shall report to the Air Pollution Control Program's Enforcement Section (P. O. Box 176, Jefferson City, MO 65102) no later than ten (10) days after the end of any month during which the records required by Special Condition 8D.2. show that the emission limit has been exceeded.

Table 5: Emission Rate Limits for VOC

Stack ID	Emission Unit	Stack Description	Short term emission rate
SV012	EU026	DDGS Dryer/RTO (Dryer 36 MMBtu/hr and Thermal Oxidizer Burner 8 MMBtu/hr RTO)	95% reduction or less than 10 ppm VOC, Ref. C.D. table 4.1
SV004	COO3	Fermentation Scrubber	95% reduction or less than 20 ppm VOC Ref. C.D. table 4.1

E. Emission Limit of Carbon Monoxides (CO)

- 1.) Golden Triangle Energy, LLC shall emit less than 95 tons of CO in any consecutive twelve (12) month period.
- 2.) Golden Triangle Energy, LLC shall not discharge CO into the atmosphere from the stacks listed in Table 6 in excess of the listed amounts.
- 3.) The emission rates in Table 6 shall be verified through performance testing as specified in Special Conditions 15 and 16.

Table 6: Emission Rate Limits for CO

Stack ID	Emission Unit	Stack Description	Short term emission rate
SV012	EU026	DDGS Dryer/RTO (Dryer 36 MMBtu/hr and Thermal Oxidizer Burner 8 MMBtu/hr RTO)	90% reduction or <100 ppm, Ref. C.D. table 4.1

- 4.) Golden Triangle Energy, LLC shall record the monthly amount and the sum of the most recent consecutive twelve (12) months CO emissions in tons from this installation. Attachment H, *Monthly CO Emissions Tracking Record*, or equivalent form(s), shall be used for this purpose. The emission rates used in Attachments G shall be determined by performance testing, as detailed in Special Conditions 15 and 16, or from emission factors from AP-42 or DENCO.

F. Emission Limit of Sulfur Oxides (SO_x)

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SPECIAL CONDITIONS:

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

- 1.) Golden Triangle Energy, LLC shall emit less than 95 tons of Sulfur Oxides (SO_x) from this installation in any consecutive twelve (12) month period.
 - 2.) Golden Triangle Energy, LLC shall only burn natural gas, combustion of which will produce less than 8 pounds per million Btu of SO_x. Golden Triangle Energy, LLC shall supply certification to show compliance with this condition from all suppliers of natural gas. A mass balance calculation can be submitted for SO_x as the concentration of sulfur in the fuel has a direct impact on emissions. A calculation can be submitted with the actual sulfur content of the fuel and all sulfur emissions reporting as SO₂ to show compliance, for the boilers. Upon approval of the calculation by the Director, the initial compliance testing of the boilers is not needed for SO_x.
 - 3.) Golden Triangle Energy, LLC shall record the monthly amount and the sum of the most recent consecutive twelve (12) months SO_x emissions in tons from this installation. Attachment I, *Monthly SO_x Emissions Tracking Record*, or equivalent form(s), shall be used for this purpose.
9. Control Measure – Capture Efficiency
- A. The grain handling and process equipment (EU001 to EU012) and the grain milling equipment (EU013) shall be enclosed by ductwork and shall be maintained under negative pressure and exhausted to baghouses.
 - B. Golden Triangle Energy, LLC shall demonstrate negative pressure by using visual indicators such as streamers, talc puff test, negative pressure gauges, flags, etc. at openings that are not closed during normal operations. All openings must indicate the presence of negative pressure for compliance.
 - C. Golden Triangle Energy, LLC shall perform a visual indicator check for each emission point at least once in every 24-hour period while the grain handling, grain storage, and grain milling equipment are in operation.
 - D. Golden Triangle Energy, LLC shall maintain an operating and maintenance log for the grain and DDGS storage, handling equipment and process equipment which shall include the following:
 - 1.) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions.
 - 2.) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
 - 3.) A record of regular inspection schedule, the date and results of all

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inspections, including any actions or maintenance activities that result from the inspections. Either paper copy or electronic formats are acceptable.

- E. The grain storage building is a multi purpose building. The DDGS storage pile and DDGS truck loading and corn dump pits are all located in this building. The building is divided into halves by a low concrete wall separating the DDGS storage from the DDGS loading and corn unloading area. The cooling cyclone underflow conveyor discharges into this building supplying the DDGS and creating the DDGS storage pile.
 - 1.) The DDGS floor pits which convey the DDGS to the DDGS leg for rail car or truck loadout are controlled with negative pressure to the baghouse C001. The equipment is expected to be maintained at 100 percent capture efficiency. No visible emissions are expected from the transferring equipment.
 - 2.) The site claimed 80 percent capture on the dump pits. Visible emission created from the corn dump pits are expected from this portion of the building.
 - 3.) The site claimed reduced wind flow for the storage pile of 2 mph. Visible emissions are expected from the storage pile portion of the building.
 - 4.) No capture efficiency is claimed for the building. All building openings are not required to indicate the presence of negative pressure for compliance.

10. Control Equipment – Baghouses

- A. The baghouses must be in use at all times when the equipment listed in Table 7 is operating:

Table 7: Equipment to be Controlled by Baghouses and/or Cyclones

Emission Unit	Emission Unit Description	Control ID	Type of Control
EU001 through EU012, and EU-041 through EU044	corn dump pit/auger, corn elevator, scalper, the corn bins, and grain handling storage and DDGS handling	C001	Baghouse #1
EU013 and EU033	hammer mill and hominy unload system	C002	Baghouse #2

- B. The baghouses and any related instrumentation or equipment shall be operated and maintained in accordance with the manufacturer's specifications. The baghouses shall be equipped with gauges or meters,

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which indicate the pressure drop across the baghouses. These gauges or meters shall be located such that Department of Natural Resources' employees may easily observe them.

- C. Replacement bags 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).
- D. Golden Triangle Energy, LLC shall monitor and record, in an operating and maintenance log, the operating pressure drop across the baghouses at least once every 24 hours. Either paper copy or electronic formats of the log are acceptable. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty. If the pressure drop reading fall outside of this normal operating range, then the associated equipment shall be shut down as quickly as is feasible and corrective action taken to address the cause of the pressure drop problem. The problem shall be corrected and the baghouse shall be operational before restarting the equipment.
- E. Golden Triangle Energy, LLC 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
 - 2.) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
 - 3.) A record of regular inspection schedule, the date and results of all inspections, including any actions or maintenance activities that result from the inspections. Either paper copy or electronic formats are acceptable.

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SPECIAL CONDITIONS:

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

11. Control Equipment – Wet Scrubbers

- A. The wet scrubbers must be in use at all times when the equipment listed in Table 8 is in operation:

Table 8: Equipment to be Controlled by Wet Scrubbers

Equipment Controlled by Wet Scrubbers	Wet Scrubber Description
Fermenters (EU014 to EU017)	CO ₂ Scrubber (Fermentation Scrubber) (C003)
Beer stripper, rectifier, side stripper, molecular sieve, evaporator., slurry tank, yeast tank, and or production rundown (EU018 to EU025) and industrial distillation columns #1-4, (EU035 to EU037 & EU040)	(Distillation Scrubber) (C004)

- B. The scrubbers and any related instrumentation or equipment shall be operated and maintained in accordance with the manufacturer's specifications and the conditions determined from condition 15.B. Each scrubber shall be equipped with a gauge or meter that indicates the pressure drop across the scrubber. Each scrubber shall be equipped with a water flow meter that indicates the flow to the scrubber. These gauges and meters shall be located in such a way they may be easily observed by Department of Natural Resources' personnel.
- C. Fermentation scrubber C003 was tested at a 28 gallons per minute (gpm) water rate and a 1 gallon/hour of 36 % sodium bisulfite addition. The calculated pressure drop based on Flexiring packing curves and variable speed fan curves ranges from 1.0 to 14 inches water column (inWC). The distillation scrubber (C004) was tested at a 4 gpm water rate and a 0 gallon/hour of 36% sodium bisulfate addition. The calculated pressure drop based on Flexiring packing curves and fan curves ranges from 0.4 to 8 inWC. The scrubbers C003 and C004 shall be operated within the parameters described.
- D. Bisulfate addition is required all times COO3 is in operation. To change the condition, to operate without bisulfate addition in C003, the installation must retest the fermentation scrubber as defined in Special Conditions 15 and 16 while operating COO3 without the bisulfate addition. Bisulfate addition can be discontinued only for authorized stack testing. Using the data from the test, calculate the installation wide annual PTE for acetaldehyde. If the PTE value is below the current SMAL value for acetaldehyde presently at 9 tons per year, bisulfate addition can be discontinued upon approval and concurrence of calculation method and

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SPECIAL CONDITIONS:

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

testing procedures by the Permitting and Enforcement section of the Air Pollution Control Program. Bisulfate addition must be maintained until approval to discontinue is obtained.

- E. Golden Triangle Energy, LLC shall monitor and record the operating pressure drop across each scrubber at least once every twenty-four (24) hours. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty and the condition determined from stack testing defined in Special Conditions 15 and 16.
 - F. Golden Triangle Energy, LLC shall maintain an operating and maintenance log for the scrubber, which shall include the following.
 - 1.) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions.
 - 2.) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
 - 3.) A record of regular inspection schedule, the date and results of all inspections, including any actions or maintenance activities that result from the inspection. Either paper copy or electronic formats are acceptable.
12. Control Equipment – Flare
- A. The flare must be in use at all times during denatured ethanol truck/rail load out (FS001).
 - B. The flare shall be operated and maintained in accordance with the manufacturer's specifications. The flare must be operated in accordance with 40 CFR Part 60.18, *General Control Device Requirements*. Golden Triangle, LLC shall maintain records that sufficiently indicate compliance with 40 CFR Part 60.18.
 - C. Golden Triangle, LLC shall maintain an operating and maintenance log for the flare, which shall include the following.
 - 1.) Incidents of malfunction, with impact on emissions, duration of events, probable cause, and corrective actions taken.
 - 2.) Maintenance activities, with inspection schedules, repair actions, and replacements.
 - 3.) A record of regular inspection schedule, the date and results of all inspections, including any actions or maintenance activities that result from the inspections. Either paper copy or electronic formats are acceptable.

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SPECIAL CONDITIONS:

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

13. Control Equipment – Cooling/Separating Cyclone (EU027)
 - A. The cyclone system shall be used at all times when the DDGS dryers are in operation. The cyclone system shall be operated and maintained in accordance with the manufacturer’s specifications.
 - B. The Cooling Cyclone (EU027) shall be tested to determine the emission factors of acetaldehyde, acrolein, formaldehyde, and methanol when all equipment controlled by these devices is in operation.
 - C. The VOC limit for the cooling cyclone is 2.79 pounds per hour. This equipment specific limit is necessary to conform to the Consent Decree, Civil Action No. 05-6032-CV-SJ-SOW.
 - D. HAPs (speciated) are limited to 0.33 pounds of total HAPs emitted per hour.
 - E. Pressure drop monitoring is required.
 - 1.) The observation of pressure drop deviations for this emission unit outside of the range 3 to 8 inWC will be considered an excursion and corrective actions shall be implemented within a reasonable period.
 - 2.) An excursion does not necessarily indicate a violation of the applicable requirement. When the level of excursions exceed three percent of the of the total number of observations in a six month period and corrective actions fail to return the emission unit to a no visible emission condition, then the permittee shall conduct source testing within 90 days of the last excursion to demonstrate compliance with 10 CSR 10-6.400.
 - 3.) If the test demonstrates noncompliance with the above emission limitation the permittee shall propose a schedule to implement further corrective actions to bring the source into compliance and demonstrate that compliance.
 - F. Golden Triangle, LLC shall maintain an operating and maintenance log for the cyclone system 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.

14. Control Equipment – Regenerative Thermal Oxidizer.
 - A. The regenerative thermal oxidizer (RTO) must be in use at all times when the dryer is in operation or any time that regulated PM₁₀, volatile organic

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SPECIAL CONDITIONS:

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

compounds (VOC) or hazardous air pollutant (HAP) emissions are possible. Time during the 50 hr/yr A.O.S., per the consent decree, is exempted. The thermal oxidizer shall be operated and maintained in accordance with the manufacturer's specifications. Emission rates of PM₁₀, VOC, HAPs, CO and NO_x will be tested, as detailed in Special Conditions 15, to verify the thermal oxidizer is operating as assumed.

- B. The operating temperature of the thermal oxidizer shall be continuously monitored and recorded during operation. The operating temperature of the thermal oxidizer shall be maintained at 1614 degrees Fahrenheit or greater based on a 1 hour averaging time. The acceptable temperature range may be reestablished by performing a new set of emission tests.
 - C. Golden Triangle, LLC shall maintain an operating and maintenance log for the thermal oxidizer 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.
15. Performance Testing
- A. Golden Triangle, LLC shall conduct performance tests as specified in Table 10 and below to verify the emission rates as follows:
 - 1.) The following stacks shall be tested to determine the VOC and total HAP emission rates when all equipment controlled by these devices is in operation: The wet scrubber stacks for main fermentation, and distillation (C003 and C004); the RTO for the DDGS Dryer (SV012) and the cooling cyclone (EU027). These emission rates shall be used to demonstrate compliance with Special Conditions 8.C.1., and 8.D.1...
 - 2.) The following stacks shall be tested to determine the emission rates of acetaldehyde, acrolein, formaldehyde, and methanol when all equipment controlled by these devices is in operation: The wet scrubber stacks for fermentation, and distillation (C003 and C004). The RTO for the DDGS Dryer (SV012) and cooling cyclone (EU027).
 - 3.) These emission rates shall be used to demonstrate compliance with Special Condition 8.C.1 and 8.C.2..
 - 4.) The following stacks shall be tested to determine the emission rates

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SPECIAL CONDITIONS:

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

of CO when all equipment controlled by these devices is in operation: The RTO for the dried distiller's grain with solubles DDGS Dryer (SV-012) and the boilers SV006 and SV011. These emission rates shall be used to demonstrate compliance with Special Condition 8.E.1..

- 5.) The stacks listed in Special Conditions 8.A. (Table 2) shall be tested to determine the PM₁₀ emission rates. These emission rates shall not exceed the amounts listed in Special Condition 8.A. Table 2.
- 6.) The stacks listed in Special Conditions 8.B. shall be tested to determine the NO_x emission rates. These emission rates shall not exceed the amounts listed in Special Condition 8.B. Table 3.
- 7.) The RTO for the DDGS Dryer (EU026 and EU038) and the scrubbers (C003 and C004) shall be tested to determine the SO₂ content of these streams.
- 8.) Emission factors from AP42 can be used to determine VOC, HAP, PM₁₀ and SO_x emissions for boilers #1 and #2 with stack SV008 and SV011; or the site may test to determine these emission factors.

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SPECIAL CONDITIONS:

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

Table 10: Testing Requirements

Column A	Column B	Column C	Column D	Column E	Column F
Emission Point	Description	Pollutant	Units	Attachments	Special Condition
SV001	Baghouse	PM ₁₀	lb of pollutant/hr, lb of pollutant/ton of grain	N/A	8.A.1. and 8.A.2.
SV003	Baghouse	PM ₁₀	lb of pollutant/hr, lb of pollutant/ton of grain	N/A	8.A.1. and 8.A.2.
Sv007	Cooling Cyclones	PM ₁₀	lb of pollutant/hr, lb of pollutant/ton of grain	N/A	8.A.1. and 8.A.2.
SV008	Boiler #1	VOC, speciated HAP, CO, PM ₁₀ , NO _x , SO _x	lb of pollutant/hr, lb of pollutant/MMB TU	D, E, F, G, H, I	8.A.1., 8.A.2., 8.B1., 8.B2., 8C. 1., 8C2., 8D1., 8D2., 8E.1., 8E.2., 8.F.1., 8F.2.,
SV011	Boiler #2	VOC, speciated HAP, CO, PM ₁₀ , NO _x , SO _x	lb of pollutant/hr, lb of pollutant/MMB TU	D, E, F, G, H, I	8.A.1., 8.A.2., 8.B1., 8.B2., 8C. 1., 8C2., 8D1., 8D2., 8E.1., 8E.2., 8.F.1., 8F.2.,
SV004	Scrubber	VOC, speciated HAP, PM ₁₀ , SO _x	lb of pollutant/hr, lb of pollutant/1000 gallon of ethanol	D, E, F, G, H, I	8.A.1., 8.A.2., 8.B1., 8.B2., 8C. 1., 8.C2., 8D1., 8.D2., 8E.1., 8.E.2., 8.F.1., 8.F.2.,
SV005	Scrubber	VOC, speciated HAP, PM ₁₀ , SO _x	lb of pollutant/hr, lb of pollutant/ 1000 gallon of ethanol	D, E, F, G, H, I	8.A.1., 8.A.2., 8.B1., 8.B2., 8C. 1., 8C2., 8D1., 8D2., 8E.1., 8E.2., 8.F.1., 8F.2.,
SV012	RTO and process emissions from dryer	VOC, speciated HAP, CO, PM ₁₀ , NO _x , SO _x	lb of pollutant/hr, lbs of pollutant/ton of DDGS produced	D, E, F, G, H, I	8.A.1., 8.A.2., 8.B1., 8.B2., 8C. 1., 8C2., 8D1., 8D2., 8E.1., 8E.2., 8.F.1., 8F.2.,

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SPECIAL CONDITIONS:

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

- B. The operating parameters (water flowrate, amount of additives) at which the stack tests are conducted shall be used to set the appropriate values used in actual operations of the following control devices. Inlet air temperature, pH and pressure may vary under normal operating conditions and can be operated at different values than the value used during stack testing.
 - 1.) The Wet Scrubbers (C003,C004).
 - 2.) The RTO (SV012).

- C. The operating parameters discussed in Special Condition 16.B. shall be determined and agreed upon by the Air Pollution Control Program's Enforcement Section and Golden Triangle, LLC before the start of the performance tests.

- D. The operating parameters discussed in Special Condition 15.B. shall be recorded on record keeping sheet(s) and be made available to Department of Natural Resources personnel upon request. The frequency of the record keeping is dependent upon the parameters being kept and should be determined and agreed upon by the Air Pollution Control Program's Enforcement Section and Golden Triangle, LLC before the start of the performance tests.

- E. The performance tests for the fermentation wet scrubber (C003) shall be conducted for one of the following time periods:
 - 1.) A complete cycle, defined as the time period between transferring the contents of one fermenter to the beer well and transferring the contents of the next fermenter; or
 - 2.) During period(s) of representative emissions. Golden Triangle, LLC shall submit, in the proposed test plan outlined in Special Condition 16, sufficient data to determine the point(s) of representative emissions. The representative emissions are the average of 3 points identified as highest airflow, lowest airflow, and mid-range airflow going up or down the pressure curve. Testing will consist of three (3) 1-hour runs at each of the 3 points. These points must be approved by the Air Pollution Control Program's Compliance/Enforcement section prior to conducting the tests. Weighted averages can be used to determine the average emission rate. If sufficient data is not supplied supporting these representative emission points, Golden Triangle, LLC must conduct testing for the time period outlined in Special Condition 15.E.1.

- F. The testing required may be limited to conducting tests on a representative piece(s) of each type of equipment upon approval by the

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SPECIAL CONDITIONS:

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

Director. In addition, an alternate method(s) of quantifying the emission rates of criteria air pollutants from these sources may be used in place of the above testing requirement if requested by Golden Triangle, LLC and approved by the Director.

- G. All performance tests required shall be performed within sixty (60) days after achieving the maximum production rate of the installation, but no later than 180 days after initial start-up for commercial operation.
 - H. All performance tests required shall be conducted in accordance with the stack test procedures outlined in Special Condition 16.
 - I. Golden Triangle, LLC shall conduct performance tests to verify the emission rates as indicated in Special Condition 15.A. once every five (5) years from the date of the most recent performance tests, except for baghouse stacks. The baghouse stacks shall be tested once upon startup in accordance with Special Condition 15.G.. No further testing will be necessary unless the stack tests do not show compliance with limits in this permit or the facility modifies the equipment or the process in a manner that could cause a change in emission rates from these stacks. During the life of the Consent Decree (CD) the performance test frequency for group NO_x cap and CD equipment with limits shall be per attachment 2 in the CD.
16. Proposed Test Plan and Final Test Report
- A. A completed proposed test plan form must be submitted to the Air Pollution Control Program thirty (30) days prior to the proposed test date so that the Air Pollution Control Program may arrange a pretest meeting, if necessary, and assure that the test date is acceptable for an observer to be present. The proposed test plan may serve the purpose of notification and must be approved by the Director prior to conducting the required emission testing.
 - B. Two (2) copies of a written report of the performance test results shall be submitted to the Director within thirty (30) days of completion of any required testing. The report must include legible copies of the raw data sheets, analytical instrument laboratory data, and complete sample calculations from the required U. S. EPA Method for at least one (1) sample run.
 - C. The test report is to fully account for all operational and emission parameters addressed both in the permit conditions as well as in any other

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SPECIAL CONDITIONS:

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

applicable state or federal rules or regulations.

- D. If the performance testing required by Special Condition 15 of this permit indicates that any of the emission limits specified in this permit are being exceeded, Golden Triangle, LLC must propose a remedial plan to the Air Pollution Control Program within thirty (30) days of submitting the performance test results. This plan must demonstrate how Golden Triangle, LLC will reduce emission rates to show compliance with specified limits in this permit. Golden Triangle, LLC must begin to implement any such plan immediately upon its approval by the Director and conduct stack testing. Additional controls if necessary must be started-up within 12 months after the stack test results report (Ref. CD terms).
17. Cooling Tower Requirements
- A. The cooling tower(s) (CT) shall be operated and maintained in accordance with the manufacturer's specifications. Manufacturer's specifications shall be kept onsite and made readily available to Department of Natural Resources' Employees.
- B. The cooling water design circulation rate is 7,700 gpm for CT #1 (FS005) and 9,600 gpm for CT #2 (FS006).
- C. Golden Triangle, LLC shall keep records of the monthly and 12-month rolling averages of the hours of cooling tower operation (this is already being logged and reported to EPA).
- D. The drift loss from the towers shall not exceed 548 gallons per minute or 1.4% percent of the water circulation rate. Verification of evaporative loss shall be by manufacturer's guaranteed evaporative loss and shall be kept onsite and be made readily available to Department of Natural Resources' employees upon request.
- E. The total dissolved solids (TDS) concentration in the circulated cooling water shall not exceed a TDS concentration of 3,500 [PTE calculations used 3,500] parts per million (ppm). A TDS sample shall be collected monthly and the results recorded monthly to verify the TDS concentration.
- F. The requirements for TDS Sample collection may be eliminated or the frequency reduced upon written approval by the Air Pollution Control Program if TDS sampling results demonstrate compliance for twenty-four (24) consecutive months.

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SPECIAL CONDITIONS:

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

18. **Operating Permit Requirements**
Golden Triangle, LLC shall apply for an Intermediate Operating Permit amendment from the Air Pollution Control Program for this installation within 90 days of receipt of a construction permit. Golden Triangle must respond to any requests for information from the Department in a timely fashion.
19. **Record Keeping Requirements**
All records required by this permit shall be kept onsite for no less than five (5) years and shall be made available to any Department of Natural Resources' personnel upon request.
20. **Golden Triangle, LLC shall report to the Air Pollution Control Program's Compliance/Enforcement Section at P.O. Box 176, Jefferson City, MO, 65102, no later than ten (10) days after the end of the month during which the records or testing from any Special Condition in this permit indicate that the source exceeds its emission limits.**

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (5) REVIEW

Project Number: 2007-08-115
Installation ID Number: 087-0016
Permit Number:

Golden Triangle Energy, LLC
15053 Highway 111
Craig, MO 64437

Complete: April 08, 2008

Parent Company:
Golden Triangle Energy, LLC
15053 Highway 111
Craig, MO 64437

Holt County, S13, T62N, R40W

REVIEW SUMMARY

- Golden Triangle Energy, LLC has applied for authority for the addition of product storage tank capacity, the use of industrial denaturants, add a new distillation column, revise the NO_x cap emission factors, revise the particulate emission calculations for haul road traffic, revise the particulate emission calculation for the new cooling tower, grain receiving and DDGS.
- Hazardous Air Pollutants (HAPs) emissions are expected from the proposed increase in production. Known HAPs released include formaldehyde, methanol, acetaldehyde, and acrolein.
- Multiple New Source Performance Standards (NSPS) apply to the facility. Subpart Kb, *Standards of Performance for Volatile Organic Liquid Storage Vessels* applies to storage tanks T801, T802, T803, and T804. Subpart Dc, *Standards of Performance for Small Industrial-Commercial-Institution-Steam Generating Units*, applies to boiler #1 (EU028) and boiler #2 (EU034). Subpart VV for equipment installed before 11-7-06 and VVa for equipment installed after 11-7-06, *Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry (SOCMI)* applies to the facility. *Standards of Performance for Volatile Organic Compound Emissions from SOCMI Distillation Operations* applies to the distillation group (GR002).
- None of the National Emission Standards for Hazardous Air Pollutants (NESHAPs) or currently promulgated Maximum Achievable Control Technology (MACT) regulations apply to the proposed equipment.
- A thermal oxidizer, two (2) wet scrubbers, two (2) fabric filters, an open flare, and two low NO_x burners are being used to control emissions from the equipment in this permit.

- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of proposed project are below de minimis levels.
- This installation is located in Holt County, an attainment area for all criteria air pollutants.
- This installation is on the List of Named Installations [10 CSR 10-6.020(3)(B), Table 2], number 20. *Chemical Process plants*.
- Ambient air quality modeling was not performed for this review. No model is currently available which can accurately predict ambient ozone concentrations caused by this installation's VOC emissions.
- Emissions testing is required for the equipment.
- A modified Intermediate Operating Permit is required for this installation within 90 days of equipment startup.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Golden Triangle Energy is an existing installation that currently manufactures 22.050 million gallons per year of denatured ethanol. Fuel grade ethanol is manufactured by the fermentation of corn. Gasoline is added (as denaturant) to form a 95%-5% blend of ethanol and gasoline. An Intermediate Operating Permit OP200107010 has been issued. A notice of excess emissions (NOEE) was issued October 29, 2003, for excess opacity from the DDGS Dryer. The following permits have been issued to Golden Triangle Energy, LLC from the Air Pollution Control Program.

Table 11: Permits issued to Golden Triangle Energy.

Permit Number	Description
022000-004	New 18 Million Gallon Ethanol Plant
OP	Intermediate Operating Permit
052003-014 ¹	Two New Storage Tanks
No Permit Required	Hominy Receiver
Permit Required	Extension Tank Changes
072005-033 ²	Four New Tanks
122005-004	Update controls and products
OP	Intermediate Operating Permit Renewal (applied for but not issued)
N/A	Project number 2006-08-067 modify for stack test data

¹ Permit 052003-014 tanks were never installed.

² Permit 072005-033 is part of this current project, emissions included herein.

PROJECT DESCRIPTION

Golden Triangle Energy, L.L.C. is applying for the authority to construct four additional product storage tanks and one additional distillation column for industrial alcohol product quality improvement. Two additional industrial denaturants will also be added. The group NO_x cap emission factor has been revised based on the most recent stack test results dated June 12, 2007. New concrete has been installed on the haul roads; consequently the particulate emission calculations have been revised. Cooling tower particulate emission calculations have been revised. The new cooling tower #2 previously permitted now has a higher water recirculation rate but a lower drift rate. Both tower calculations have been revised to include an increased safety factor on total dissolved solids level in the recirculation water. The total ethanol produced remains at 21,000,000 gallons per year. The maximum amount of denaturant used per year remains at 5% or 1,050,000 gallons per year

This permit also incorporates emission limitations for the installation and individual units called to action by United States District Court Western District of Missouri Consent Decree, Civil Action Number 05-6032-SJ-SOW. The consent decree is incorporated by reference into this permit and includes additional repetitive testing requirements. Civil Action Number 05-6032-CV-SJ-SOW sets the installation limits at 95 tons per year for PM₁₀, SO_x, NO_x and CO while HAPs are limited to 24 tons total and 9 tons each.

In addition, emission factors and emission limits were established during May, June and November 2006 and June 2007. Stack Testing and emission limit setting was required by the consent decree lodged 04/11/2005 Civil Action Number 05-6032-CV-SJ-SOW. Civil Action Number 05-6032-CV-SJ-SOW impacts several specific equipment limits and emission factors and operating criteria.

The NO_x cap limit is from Special condition number 2 in permit 122005-004 with project number 2005-07-100. This equipment limit applied to boiler number 1 (EU-028) and the DDGS dryer (EU026). It was limited to 20.24 tons per 12 month period of NO_x. This limit did not apply during periods of thermal oxidizer (TO) regeneration, 50 dryer operating hours per year. Also, individual TO regeneration events were limited to no longer than 12 hours for each event and no more than 50 hours per year. Also, the installation limit for NO_x was established in permit number 122005-004 by way of the Consent Decree to below 95 tons per year. The DDGS dryer (EU026) has a separate stack SV006 for the alternate operating scenario (AOS) during a maximum of 50 hr/yr when the RTO is under maintenance. The process emissions for the dryer are vented to a cooling/separating cyclone and then vented to an RTO (SV012). Emission factors from stack testing have been submitted for the dryer combustion emissions, the #1 boiler (EU028), the cooling separating cyclone (EU027) and the RTO (SV012). Civil Action Number 05-6032-CV-SJ-SOW sets the boiler NO_x emission factor at 0.03 pounds NO_x/MMBtu and sets the DDGS Dryer NO_x emission factor 0.04 pounds of NO_x per MMBtu/hour. [Ref. 6-12-07 stack test]

Acetaldehyde had a 2 ton per year limit established in permit 122005-004 with project number 2005-07-100. Those limits have been superseded because the potential to emit of acetaldehyde (2.77 tons per year) based on the stack test data does not exceed

the screen modeling action level of 9 tons per year for acetaldehyde.

Acrolein was given a 0.04 tons per year (80 pounds per year) limit in permit 122005-004 with project number 2005-07-100. Acrolein may be formed in the ethanol production process in the slurry cooking stage before fermentation, from the distillation/molecular sieve dehydration process and the rotary drum dried distiller's grains with solubles dryer. The acrolein PTE based on stack tests is 0.46 tons per year or 920 pounds per year. The acrolein PTE is above the Screen Modeling Action Level (SMAL) value of 0.04 tons per year. For a limit to be raised the facility must show compliance with the RAL values at the higher emission rate. The installation has not shown compliance with the RAL values at the current emission rate. The installation wide limit for acrolein is set at the PTE for acrolein pending the results of the Spring 2008 stack testing.

If the installation chooses to take a limit at the SMAL level, modeling to show compliance with the RAL levels is not required. This was the basis for the acrolein limit established in permit number 122005-004 with project number 2005-07-100. With the existing stack test data, Golden triangle does not pass the RAL levels modeling. However, the detection limits indicated no acrolein was detected at the level of 0.01 pounds per hour. 0.01 pounds per hour was used in the calculations for the PTE emission rate. Use of the detection limit indicate only that less than 0.01 pound per hour is being emitted, not that no acrolein was detected. Therefore, the plant must be retested in Spring of 2008 and tested at a lower detection level that will show compliance with RAL requirements for acrolein. Because 0.01 pounds per hour is a non-detect amount, it is believed that the plant will pass this RAL test when the new stack tests are performed in Spring 2008 with a low enough detection limit. However, if re-testing does not show compliance with the RAL an operation emission limit must be proposed within 30 days and submitted to the Air Pollution Control Program as soon as is possible that shows compliance with the RAL limit.

A dried DDGS product is separated from the DDGS dryer exhaust by collection cyclones (multiclones). This solid product is pneumatically transferred to the cooling cyclone by inducing makeup air flow into the DDGS product and blowing it to the cooling cyclone. Some acrolein may be emitted from the DDGS dry product during this conveying and cyclone cooling process. The cooling cyclone VOC limit has changed from 0.385 pounds per hour to 2.79 pounds per hour. This limit was derived by adding a tested standard deviation of 0.30 pounds per hour and an estimated 7% accuracy of measurement to the average tested emission of 2.33 pounds per hour. The HAPs limit has been changed from 0.0598 pounds per hour to 0.33 pounds per hour. This limit was developed by adding a tested standard deviation of 0.05 pounds per hour and an estimated 7 % accuracy of measurement to the average tested emission of 0.26 pounds per hour. The emission factors from the latest test indicate 2.33 pounds per hour VOC and 0.26 lb/hr HAPs.

A PM₁₀ Emission Factor for dryer RTO SV012 from the testing was determined to be 1.986 pounds per hour. The previous PM₁₀ emission limit in permit 122005-004 with project number 2005-07-100 for DDGS dryer RTO SV012 was 4.8 pound per hour. This has been lowered to 3.4 pounds per hour or 14.89 tons per year.

The RTO operating temperature minimum will be 1614 degrees Fahrenheit for one hour maximum consecutive time period. The VOC emission factor and limit for RTO stack SV012 was required to be set by Civil Action Number 05-6032-CV-SJ-SOW. The emission factor proposed is 2.22 pounds per hour. The emission limit will be 95% reduction of the inlet VOC mass rate or <10 ppm VOC emission [Ref. CD table 4.1].

Upon inspection of the grains flow diagram, it became apparent that conveyors in and out of the corn bins had never been permitted. They have always been part of the system. In addition the corn elevator leg handles corn twice, the first time is lifting corn up to the scalper, and the second is from the bin unload to the EU004 surge bin. In permit number 022000-004 with project number 1999-07-077, the amount submitted by the applicant for grain receiving was 22.1 tons per hour or 193, 200 tons per year. The annual amount of grain received was divided by 8760 hours to determine the hourly rate. Screen 3 modeling was performed using this rate of 22.1 tons per hour but did not result in any PM₁₀ limits because the site altered the design of the grain dryer to show compliance with NAAQS for PM₁₀. The PTE calculation was made on the pound per hour rate of 22.1 tons per hour at 8760 hours, but the permit did not establish a grain receiving limit. In permit 122005-004 with project number 2005-07-100, the PTE was calculated from the annual amount of grain received, 217,778 tons of grain per year, and this amount was divided by 8760 hours. In this current project, 2007-08-115, it was determined that the receiving rate based on the design of the equipment is 280 tons per hour. A limit is required for the annual amount of grain received. Since this project does not trip modeling requirements, NAAQS impact at the higher hourly grain receiving rate was not investigated. When future construction or modifications are done that trip modeling requirements at this site the MHDR of the grain receiving equipment is 280 tons per hour and modeling should be run at the higher hourly rate. The PTE of the grain receiving loop was adjusted to account for the corn elevator leg being used twice in the grain receiving process.

Upon inspection of the grains flow diagram, it became apparent that DDGS pit conveyor C800 and DDGS loadout conveyor C802 had never been permitted. They have always been part of the system. The maximum hourly design rate was found to be 185 ton/hr. The maximum annual rate of DDGS production is 78,840 ton/yr. In permit number 022000-004 with project number 1999-07-077 the amount of capacity submitted by the applicant for the DDGS dryer was 45,990 DDGS tons per year or 5.25 tons per hour. In permit 122005-004 with project number 2005-07-100 the PTE was calculated using 28,415 DDGS tons per year or 7.425 tons/hr. At that time, the PTE was calculated for the dryer operating at 3,777 hrs per year. In this current project, 2007-08-115, it was determined that the receiving rate based on the design of the equipment is 185 tons per year. When calculating emissions based on annual amounts and not maximum hourly rates, limits should have been applied in the previous permits. A limit has been applied in this permit (project number 2007-08-100) that limits the amount of DDGS processed to 78,840 tons per year. When future construction or modifications are done that trip modeling requirements at this site the MHDR of the DDGS processed is 185 tons per hour and modeling should be run at this higher hourly rate.

EMISSIONS/CONTROLS EVALUATION

The emission factors used in this analysis were obtained from the stack test data submitted in the application. Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8760 hours per year.) The following table provides an emissions summary for this project.

Table 12: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Calculated PTE of the Installation	Existing Actual Emissions (2006 EIQ)	Potential Emissions of the Application*	New Installation Conditioned Potential
PM ₁₀	15.0	23.92	18.97	10.05	<95.0
SO _x	40.0	0.44	0.14	0.00	<95.0
NO _x	40.0	28.02	12.98	7.99	<95.0
VOC	40.0	88.97	92.39	5.61	<95.0
CO	100.0	18.89	12.99	N/A	<95.0
HAPs	10.0/25.0	4.84	5.85	N/A	<9/24

*The changes in process emissions. The installation PTE is calculated in column 3

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of all pollutants are below de minimis levels.

APPLICABLE REQUIREMENTS

Golden Triangle Energy, LLC shall comply with the following applicable requirements. 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

GENERAL REQUIREMENTS

- *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

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SPECIFIC REQUIREMENTS

- *Restriction of Emission of Particulate Matter From Industrial Processes*, 10 CSR 10-6.400
- *New Source Performance Regulations*, 10 CSR 10-6.070 – *New Source Performance Standards (NSPS)*, 40 CFR Part 60, Subparts Dc, Kb, VV and VVa,.
- *Maximum Allowable Emissions of Particulate Matter From Fuel Burning Equipment Used for Indirect Heating*, 10 CSR 10-3.060

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted with special conditions.

Timothy Paul Hines
Environmental Engineer

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated August 17, 2006, received August 21, 2007, supplemented March 2007, designating Golden Triangle Energy, LLC as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- Kansas City Regional Office Site Survey.
- Civil Action Number 05-6032-CV-CJ-SOW F

Mr. Roger Hill
General Manager
Golden Triangle Energy, LLC
15053 Highway 111
Craig, MO 64437

RE: New Source Review Permit - Project Number: 2007-08-115

Dear Mr. Hill:

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 amended 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 Tim Hines at the departments' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Kendall B. Hale
New Source Review Unit Chief

KBH:thl

Enclosures

c: Kansas City Regional Office
PAMS File 2007-08-115
Permit Number: