CONSTRUCTION PERMIT
OFFICE OF AIR MANAGEMENT

Texas Eastern Transmission Corporation
Jonesboro Road, 2 miles east of Hwy 26 off I-69
Marion, IN 46953

is hereby authorized to construct

(a) One (1) natural gas-fired Clean Burn reciprocating compressor engine, known as 12202, exhausted through stack S12202, rated at 3,400 horsepower.

(b) One (1) natural gas-fired Lean Burn reciprocating compressor engine, known as 12203, equipped with pre-combustion chamber technology, exhausted through stack S12203, rated at 5,500 horsepower.

(c) One (1) natural gas-fired emergency generator, known as 12235, exhausted through S12235, rated at 602 horsepower.

This permit is issued to the above mentioned company (herein known as the Permittee) under the provisions of 326 IAC 2-1 and 40 CFR 52.780, with conditions listed on the attached pages.

Construction Permit No.: CP 053-9377-00040	
Issued by: Paul Dubenetzky, Branch Chief Office of Air Management	Issuance Date:

Construction Conditions

General Construction Conditions

1. That the data and information supplied with the application shall be considered part of this permit. Prior to any proposed change in construction which may affect allowable emissions, the change must be approved by the Office of Air Management (OAM).

2. That this permit to construct does not relieve the permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.

Effective Date of the Permit

3. That pursuant to IC 13-15-5-3, this permit becomes effective upon its issuance.

4. That pursuant to 326 IAC 2-1-9(b)(Revocation of Permits), the Commissioner may revoke this permit if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.

5. That notwithstanding Construction Condition No. 6, all requirements and conditions of this construction permit shall remain in effect unless modified in a manner consistent with procedures established for modifications of construction permits pursuant to 326 IAC 2 (Permit Review Rules).

First Time Operation Permit

6. That this document shall also become a first-time operation permit pursuant to 326 IAC 2-1-4 (Operating Permits) when, prior to start of operation, the following requirements are met:

   (a) The attached affidavit of construction shall be submitted to the Office of Air Management (OAM), Permit Administration & Development Section, verifying that the facilities were constructed as proposed in the application. The facilities covered in the Construction Permit may begin operating on the date the Affidavit of Construction is postmarked or hand delivered to IDEM.

   (b) If construction is completed in phases; i.e., the entire construction is not done continuously, a separate affidavit must be submitted for each phase of construction. Any permit conditions associated with operation start up dates such as stack testing for New Source Performance Standards (NSPS) shall be applicable to each individual phase.

   (c) Permittee shall receive an Operation Permit Validation Letter from the Chief of the Permit Administration & Development Section and attach it to this document.

   (d) The operation permit will be subject to annual operating permit fees pursuant to 326 IAC 2-7-19 (Fees).

   (e) The Permittee has submitted their Part 70 (T-053-5821-00040) application on May 2, 1996 for the existing source. The equipment being reviewed under this permit shall be incorporated in the submitted Part 70 application.

Operation Conditions

General Operation Conditions

1. That the data and information supplied in the application shall be considered part of this permit. Prior to any change in the operation which may result in an increase in allowable emissions exceeding those specified in 326 IAC 2-1-1 (Construction and Operating Permit Requirements), the change must be approved by the Office of Air Management (OAM).

2. That the permittee shall comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder.

Preventive Maintenance Plan

3. That pursuant to 326 IAC 1-6-3 (Preventive Maintenance Plans), the Permittee shall prepare and maintain a preventive maintenance plan, including the following information:

   (a) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices.

   (b) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions.

   (c) Identification of the replacement parts which will be maintained in inventory for quick replacement.

   The preventive maintenance plan shall be submitted to IDEM, OAM upon request and shall be subject to review and approval.

Transfer of Permit

4. That pursuant to 326 IAC 2-1-6 (Transfer of Permits):

   (a) In the event that ownership of these two (2) compressor engines and one (1) emergency generator are changed, the Permittee shall notify OAM, Permit Branch, within thirty (30) days of the change. Notification shall include the date or proposed date of said change.

   (b) The written notification shall be sufficient to transfer the permit from the current owner to the new owner.

   (c) The OAM shall reserve the right to issue a new permit.

Permit Revocation

5. That pursuant to 326 IAC 2-1-9(a)(Revocation of Permits), this permit to construct and operate may be revoked for any of the following causes:

   (a) Violation of any conditions of this permit.

   (b) Failure to disclose all the relevant facts, or misrepresentation in obtaining this permit.

(c) Changes in regulatory requirements that mandate either a temporary or permanent reduction of discharge of contaminants. However, the amendment of appropriate sections of this permit shall not require revocation of this permit.

(d) Noncompliance with orders issued pursuant to 326 IAC 1-5 (Episode Alert Levels) to reduce emissions during an air pollution episode.

(e) For any cause which establishes in the judgment of IDEM, the fact that continuance of this permit is not consistent with purposes of 326 IAC 2-1 (Permit Review Rules).

Availability of Permit

6. That pursuant to 326 IAC 2-1-3(l), the Permittee shall maintain the applicable permit on the premises of this source and shall make this permit available for inspection by the IDEM, or other public official having jurisdiction.

Performance Testing

7. That pursuant to 326 IAC 2-1-3 (Construction and Operating Permit Requirements) compliance stack tests shall be performed to determine NO_X and VOC emission rates for the two (2) natural gas-fired reciprocating compressor engines within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up. These tests shall be performed according to 326 IAC 3-6 (Source Sampling Procedures) using the methods specified in the rule or as approved by the Commissioner.

(a) A test protocol shall be submitted to the OAM, Compliance Data Section, 35 days in advance of the test.

(b) The Compliance Data Section shall be notified of the actual test date at least two (2) weeks prior to the date.

(c) All test reports must be received by the Compliance Data Section within 45 days of completion of the testing.

(d) Whenever the results of the stack test performed exceed the level specified in this permit, appropriate corrective actions shall be implemented within thirty (30) days of receipt of the test results. These actions shall be implemented immediately unless notified by OAM that they are acceptable. The Permittee shall minimize emissions while the corrective actions are being implemented.

(e) Whenever the results of the stack test performed exceed the level specified in this permit, a second test to demonstrate compliance shall be performed within 120 days. Failure of the second test to demonstrate compliance may be grounds for immediate revocation of this permit to operate the affected facility.

Malfunction Condition

8. That pursuant to 326 IAC 1-6-2 (Records; Notice of Malfunction):

(a) A record of all malfunctions, including startups or shutdowns of any facility or emission control equipment, which result in violations of applicable air pollution control regulations or applicable emission limitations shall be kept and retained for a period of three (3) years and shall be made available to the Indiana Department of Environmental Management (IDEM), Office of Air Management (OAM) or appointed representative upon request.

(b) When a malfunction of any facility or emission control equipment occurs which lasts more than one (1) hour, said condition shall be reported to OAM, using the Malfunction Report Forms (2 pages). Notification shall be made by telephone or facsimile, as soon as practicable, but in no event later than four (4) daytime business hours after the beginning of said occurrence.

(c) Failure to report a malfunction of any emission control equipment shall constitute a violation of 326 IAC 1-6, and any other applicable rules. Information of the scope and expected duration of the malfunction shall be provided, including the items specified in 326 IAC 1-6-2(a)(1) through (6).

(d) Malfunction is defined as any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. [326 IAC 1-2-39]

Annual Emission Reporting

9. That pursuant to 326 IAC 2-6 (Emission Reporting), the Permittee must annually submit an emission statement for the source. This statement must be received by July 1 of each year and must comply with the minimum requirements specified in 326 IAC 2-6-4. A copy of this rule is enclosed. The annual statement must be submitted to:

Indiana Department of Environmental Management
Technical Support and Modeling Section, Office of Air Management
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

The annual emission statement covers the twelve (12) consecutive month time period starting January 1 and ending December 31.

Opacity Limitations

10. That pursuant to 326 IAC 5-1-2 (Visible Emission Limitations) except as provided in 326 IAC 5-1-3 (Temporary Exemptions), the visible emissions shall meet the following:

(a) Visible emissions shall not exceed an average of 40 percent opacity in 24 consecutive readings.

(b) Visible emissions shall not exceed 60 percent opacity for more than a cumulative total of 15 minutes (60 readings) in a 6-hour period.

Fugitive Dust Emissions

11. That pursuant to 326 IAC 6-4 (Fugitive Dust Emissions), the Permittee shall be in violation of 326 IAC 6-4 (Fugitive Dust Emissions) if any of the criteria specified in 326 IAC 6-4-2(1) through (4) are violated. Observations of visible emissions crossing the property line of the source at or near ground level must be made by a qualified representative of IDEM. [326 IAC 6-4-5(c)].

BACT Condition

12. That pursuant to 326 IAC 8-1-6, the one (1) natural gas-fired Lean Burn reciprocating compressor engine, known as 12203, equipped with pre-combustion chamber technology, shall adhere to the following:

    (a) VOC emissions shall not exceed 2.0 grams per horsepower-hour.

    (b) The one (1) natural gas-fired Lean Burn reciprocating compressor engine, known as 12203, shall not exceed a fuel throughput of 337.3 million cubic feet per year, equivalent to VOC potential to emit of 24.2 pounds per hour (106 tons per year) from this facility.

    (c) Performance testing found in Operating Condition 7 will develop the surrogate parameters for routine compliance determination.

NO_X Condition

13. The one (1) natural gas-fired Lean Burn reciprocating compressor engine, known as 12203, equipped with pre-combustion chamber technology, shall adhere to the following:

    (a) NO_X emissions shall not exceed 2.5 grams per horsepower-hour.

    (b) The one (1) natural gas-fired Lean Burn reciprocating compressor engine, known as 12203, equipped with pre-combustion chamber technology, with a minimum eighty percent (80%) NO_X control efficiency, shall not exceed a fuel throughput of 337.3 million cubic feet per year, equivalent to NO_X potential to emit of 30.3 pounds per hour (133 tons per year) from this facility.

    (c) Performance testing found in Operating Condition 7 will develop the surrogate parameters for routine compliance determination.

Open Burning

14. That the Permittee shall not open burn any material except as provided in 326 IAC 4-1-3, 326 IAC 4-1-4 or 326 IAC 4-1-6.

Emergency Reduction Plans

15. Pursuant to 326 IAC 1-5-2 (Emergency Reduction Plans; Submission):

    (a) The Permittee prepared and submitted written emergency reduction plans (ERPs) consistent with safe operating procedures on May 2, 1996.

    (b) If the ERP is disapproved by IDEM, OAM, the Permittee shall have an additional thirty (30) days to resolve the differences and submit an approvable ERP. If after this time, the Permittee does not submit an approvable ERP, IDEM, OAM, shall supply such a plan.

    (c) These ERPs shall state those actions that will be taken, when each episode level is declared, to reduce or eliminate emissions of the appropriate air pollutants.

    (d) Said ERPs shall also identify the sources of air pollutants, the approximate amount of reduction of the pollutants, and a brief description of the manner in which the reduction will be achieved.

(e) Upon direct notification by IDEM, OAM, that a specific air pollution episode level is in effect, the Permittee shall immediately put into effect the actions stipulated in the approved ERP for the appropriate level. [326 IAC 1-5-3]

Emergency Generator

16. The emergency generator (12235) shall not operate more than five hundred (500) hours per consecutive twelve- (12) month period.

Record Keeping

17. That pursuant to 326 IAC 2-1-3(i)(8):

(a) Records of number of hours that the emergency generator operates per consecutive twelve-(12)month period shall be maintained for a minimum period of 36 months and made available upon request of the Office of Air Management (OAM).

(b) Records of natural gas throughput from the 5,500 horsepower reciprocating compressor engine per consecutive twelve-(12)month period shall be maintained for a minimum period of 36 months and made available upon request of the Office of Air Management (OAM).

PSD Minor

18. This construction is considered a minor modification to an existing minor PSD source which will result in potential NO_X emissions after pre-combustion chamber technology control of 221 tons per year. Any change or modification which may increase potential NO_X emissions to equal to or greater than 250 tons per year from the equipment covered in this permit shall obtain a PSD permit pursuant to 326 IAC 2-2 before such change may occur.

MALFUNCTION REPORT

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR MANAGEMENT
FAX NUMBER - 317 233-5967

This form should only be used to report malfunctions applicable to Rule 326 IAC 1-6 and to qualify for the exemption under 326 IAC 1-6-4.

THIS FACILITY MEETS THE APPLICABILITY REQUIREMENTS BECAUSE: IT HAS POTENTIAL TO EMIT 25 LBS/HR PARTICULATES ?_____, 100 LBS/HR VOC ?_____, 100 LBS/HR SULFUR DIOXIDE ?_____ OR 2000 LBS/HR OF ANY OTHER POLLUTANT ?_____ EMISSIONS FROM MALFUNCTIONING CONTROL EQUIPMENT OR PROCESS EQUIPMENT CAUSED EMISSIONS IN EXCESS OF APPLICABLE LIMITATION _____.

THIS MALFUNCTION RESULTED IN A VIOLATION OF: 326 IAC _____ OR, PERMIT CONDITION # _____ AND/OR PERMIT LIMIT OF _____

THIS INCIDENT MEETS THE DEFINITION OF 'MALFUNCTION' AS LISTED ON REVERSE SIDE ? Y N

THIS MALFUNCTION IS OR WILL BE LONGER THAN THE ONE (1) HOUR REPORTING REQUIREMENT ? Y N

COMPANY: Texas Eastern Transmission Corporation PHONE NO. 713-989-2330

LOCATION: (CITY AND COUNTY) Marion / Grant

PERMIT NO. 053-9377 AFS PLANT ID: 053-00040 AFS POINT ID: _____ INSP: _____

CONTROL/PROCESS DEVICE WHICH MALFUNCTIONED AND REASON: _____

DATE/TIME MALFUNCTION STARTED: _____/_____/ 19____ _____ AM / PM

ESTIMATED HOURS OF OPERATION WITH MALFUNCTION CONDITION: _____

DATE/TIME CONTROL EQUIPMENT BACK-IN SERVICE_____/_____/ 19____ _____ AM/PM

TYPE OF POLLUTANTS EMITTED: TSP, PM-10, SO2, VOC, OTHER: _____

ESTIMATED AMOUNT OF POLLUTANT EMITTED DURING MALFUNCTION: _____

MEASURES TAKEN TO MINIMIZE EMISSIONS: _____

REASONS WHY FACILITY CANNOT BE SHUTDOWN DURING REPAIRS:

CONTINUED OPERATION REQUIRED TO PROVIDE ESSENTIAL* SERVICES: _____

CONTINUED OPERATION NECESSARY TO PREVENT INJURY TO PERSONS: _____

CONTINUED OPERATION NECESSARY TO PREVENT SEVERE DAMAGE TO EQUIPMENT: _____

INTERIM CONTROL MEASURES: (IF APPLICABLE) _____

MALFUNCTION REPORTED BY: _____ TITLE: _____
(SIGNATURE IF FAXED)

MALFUNCTION RECORDED BY: _____ DATE: _____ TIME: _____

Please note - This form should only be used to report malfunctions applicable to Rule 326 IAC 1-6 and to qualify for the exemption under 326 IAC 1-6-4.

326 IAC 1-6-1 Applicability of rule

Sec. 1. The requirements of this rule (326 IAC 1-6) shall apply to the owner or operator of any facility which has the potential to emit twenty-five (25) pounds per hour of particulates, one hundred (100) pounds per hour of volatile organic compounds or SO2, or two thousand (2,000) pounds per hour of any other pollutant; or to the owner or operator of any facility with emission control equipment which suffers a malfunction that causes emissions in excess of the applicable limitation.

326 IAC 1-2-39 "Malfunction" definition

Sec. 39. Any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. (Air Pollution Control Board; 326 IAC 1-2-39; filed Mar 10, 1988, 1:20 p.m.: 11 IR 2373)

***Essential services** are interpreted to mean those operations, such as, the providing of electricity by power plants. Continued operation solely for the economic benefit of the owner or operator shall not be sufficient reason why a facility cannot be shutdown during a control equipment shutdown.

If this item is checked on the front, please explain rationale:

_____

_____

Indiana Department of Environmental Management
Office of Air Management

Technical Support Document (TSD) for New Construction and Operation

Source Background and Description

Source Name:	Texas Eastern Transmission Corporation
Source Location:	Jonesboro Road, 2 miles east of Hwy 26 off I-69, Marion, IN 46953
County:	Grant
Construction Permit No.:	CP 053-9377-00040
SIC Code:	4922
Permit Reviewer:	Peter E. Fountaine E. Fountaine

The Office of Air Management (OAM) has reviewed an application from Texas Eastern Transmission Corporation relating to the construction and operation of two (2) reciprocating compressor engines and one (1) emergency generator, operating no more than five hundred (500) hours per year. One (1) of the two (2) reciprocating compressor engines, known as 12203, will be retrofit with pre-combustion chamber technology to reduce nitrogen oxide (NO_x) emissions. This air pollution control is an integral part of the process and will increase emissions of volatile organic compounds (VOC) over the 326 IAC 8-1-6 threshold of twenty-five (25) tons per year. As both NO_x and VOC are precursors to ozone, the pre-combustion chamber technology is the best available control technology to minimize combustion contaminants of combined NO_x and VOC emissions. The modification consists of the following equipment:

(a) One (1) natural gas-fired Clean Burn reciprocating compressor engine, known as 12202, exhausted through stack S12202, rated at 3,400 horsepower.

(b) One (1) natural gas-fired Lean Burn reciprocating compressor engine, known as 12203, equipped with pre-combustion chamber technology, exhausted through stack S12203, rated at 5,500 horsepower.

(c) One (1) natural gas-fired emergency generator, known as 12235, exhausted through S12235, rated at 602 horsepower.

As a result of this modification, the following equipment will be taken out of service:

One (1) natural gas-fired emergency generator, known as 12235, exhausted through S12235, rated at 240 horsepower.

Air Pollution Control Justification as Integral Part of the Process

The company has submitted the following justifications such that the pre-combustion chamber technology be considered as an integral part of the 5,500 horsepower reciprocating compressor engine, known as 12203.

Pre-combustion chamber technology involves igniting a fuel-rich mixture in the pre-combustion chamber, which in turn propagates into the main chamber and ignites a lean-fuel mixture. Due to the nature of the combustion sequence and fuel input, the 5,500 horsepower reciprocating compressor engine, known as 12203, will not operate without the pre-combustion chamber technology. Therefore, this technology will be considered as an integral part of the process.

The OAM has evaluated the justifications and agreed that the pre-combustion chamber technology will be considered as an integral part of the 5,500 horsepower reciprocating compressor engine, known as 12203. Therefore, the permitting level will be determined using the potential emissions after the pre-combustion chamber technology. Operating conditions will be specified in the proposed permit that this pre-combustion chamber technology shall operate at all times when the 5,500 horsepower reciprocating compressor engine is in operation.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (^{E}F)
12202	3400 HP R.I.C. Engine	40.5	3.0	29,737	500
12203	5500 HP R.I.C. Engine	40.5	4.5	51,527	680
12235	602 HP R.I.C. Engine	14.0	0.7	2,725	1,028

Recommendation

The staff recommends to the Commissioner that the construction and operation be approved. This recommendation is based on the following facts and conditions:

Information, unless otherwise stated, used in this review was derived from the application and additional information submitted by the applicant.

A complete application for the purposes of this review was received on January 13, 1998, with additional information received on March 12, 1998.

Emissions Calculations

See pages 1 through 2 of Appendix A (Emissions Calculation Spreadsheets) for detailed calculations.

Total Potential and Allowable Emissions

Indiana Permit Allowable Emissions Definition (after compliance with applicable rules, based on 8,760 hours of operation per year at rated capacity):

Pollutant	Allowable Emissions (tons/yr)	Potential Emissions (tons/yr)
Particulate Matter (PM)	2.90	2.90
Particulate Matter (PM_{10})	2.90	2.90
Sulfur Dioxide (SO_2)	0.176	0.176
Volatile Organic Compounds (VOC)	129	129
Carbon Monoxide (CO)	209	209
Nitrogen Oxides (NO_x)	221	221
Single Hazardous Air Pollutant (Formaldehyde)	14.8	14.8
Combination of HAPs	15.4	15.4

(a) VOC and NO_x emissions from the 5,500 horsepower reciprocating compressor engine were determined after pre-combustion chamber technology because this technology is an integral part of the process.

(b) Emissions from the emergency generator were determined for a total of 500 hours per year.

(c) The potential emissions are the same as the allowable emissions, therefore, the allowable emissions are used for the permitting determination.

(d) Allowable emissions (as defined in the Indiana Rule) of VOC, CO, and NOx are greater than 25 tons per year. Therefore, pursuant to 326 IAC 2-1, Sections 1 and 3, a construction permit is required.

(e) Allowable emissions (as defined in the Indiana Rule) of a single hazardous air pollutant (HAP) are greater than 10 tons per year. Therefore, pursuant to 326 IAC 2-1, a construction permit is required.

County Attainment Status

(a) Volatile organic compounds (VOC) and oxides of nitrogen (NO_X) are precursors for the formation of ozone. Therefore, VOC and NO_X emissions are considered when evaluating the rule applicability relating to the ozone standards. Grant County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NO_X emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

(b) Grant County has been classified as attainment or unclassifiable for VOC, CO, and NOx. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

(c) Fugitive Emissions

Since this type of operation is not one of the 28 listed source categories under 326 IAC 2-2 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive PM emissions are not counted toward determination of PSD and Emission Offset applicability.

Source Status

Existing Source PSD, Part 70 or FESOP Definition (emissions after controls, based on 8,760 hours of operation per year at rated capacity and/ or as otherwise limited):

Pollutant	**Emissions** (tons/yr)
PM	0.90
PM_{10}	0.90
SO_2	0.054
VOC	10.6
CO	78.0
NO_x	198

(a) This existing source is not a major stationary source because no attainment regulated pollutant is emitted at a rate of 250 tons per year or more, and it is not in one of the 28 listed source categories.

(b) These emissions were based on AIRS Facility Quick Look Report, dated 1995.

Proposed Modification

PTE from the proposed modification (based on 8,760 hours of operation per year at rated capacity including enforceable emission control and production limit, where applicable):

Pollutant	**PM** (tons/yr)	**PM_{10}** (tons/yr)	**SO_2** (tons/yr)	**VOC** (tons/yr)	**CO** (tons/yr)	**NO_X** (tons/yr)
Proposed Modification	2.90	2.90	0.176	129*	209	221**
PSD Threshold Level	250	250	250	250	250	250

This modification to an existing minor stationary source is not major because the emission increase is less than the PSD significant levels. Therefore, pursuant to 326 IAC 2-2, and 40 CFR 52.21, the PSD requirements do not apply.

* The VOC emissions consist of 106 tons per year from the 5,500 horsepower reciprocating compressor engine with pre-combustion chamber technology known as 12203, 23.0 tons per year from the 3,400 horsepower reciprocating compressor engine known as 12202, and 0.0475 tons per year from the 602 horsepower emergency generator known as 12235 operating 500 hours per year.

** The NO_X emissions consist of 133 tons per year from the 5,500 horsepower reciprocating compressor engine with pre-combustion chamber technology known as 12203, 82.0 tons per year from the 3,400 horsepower reciprocating compressor engine known as 12202, and 6.20 tons per year from the 602 horsepower emergency generator known as 12235 operating 500 hours per year.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

This existing source has submitted their Part 70 (T-053-5821-00040) application on May 2, 1996. The equipment being reviewed under this permit shall be incorporated in the submitted Part 70 application.

Federal Rule Applicability

There are no New Source Performance Standards (326 IAC 12) and 40 CFR Part 60 applicable to these facilities. There are no NESHAP 40 CFR Part 63 applicable to these facilities.

State Rule Applicability

326 IAC 2-6 (Emission Reporting)

This facility is subject to 326 IAC 2-6 (Emission Reporting), because the source emits more than 100 tons per year in Grant county of VOC. Pursuant to this rule, the owner/ operator of this facility must annually submit an emission statement of the facility. The annual statement must be received by July 1 of each year and must contain the minimum requirements as specified in 326 IAC 2-6-4.

326 IAC 8-1-6 (New facilities; General reduction requirements)

The one (1) natural gas-fired Lean Burn reciprocating compressor engine, equipped with pre-combustion chamber technology, known as 12203, has the potential to emit more than twenty-five (25) tons per year of VOC, therefore, 326 IAC 8-1-6 is applicable to this facility. The VOC emissions would be below the 326 IAC 8-1-6 threshold of twenty-five (25) tons per year without the pre-combustion chamber technology, this would also increase NO_X emissions by 520 tons per year. Five (5) control technologies were evaluated by Texas Eastern Transmission Corporation for the 5,500 horsepower, Clark TCV-16 reciprocating compressor engine, known as 12203.

(a) Pre-combustion chamber technology (PCC)
This technology involves igniting a fuel-rich mixture in the pre-combustion chamber, which in turn propagates into the main chamber and ignites a lean-fuel mixture. This method of enhancing lean combustion results in a NO_X emission reduction of approximately eighty (80) percent based on test results of a like unit.

(b) Air/Fuel ratio in combination with Ignition Retard (A/F+IR)
For a lean burn engine, adjusting the air/fuel ratio in combination with retarding the ignition timing (A/F+IR) causes the ignition spark to occur later in the combustion cycle, thus lowering the peak firing pressures in the cylinder. This in turn, lowers the combustion temperature during the cycle and reduces the formation of thermal NO_X. According to the *Alternative Control Techniques Document - NO_X Emissions from Stationary Reciprocating Internal Combustion Engines* (ACT), a combination of both adjusting the air/fuel ratio and retarding the ignition (A/F+IR) result in a reduction of NO_X emissions by forty (40) percent.

(c) Air/Fuel ratio (A/F)
For a lean burn engine, adjusting the air/fuel ratio causes the ignition spark to occur later in the combustion cycle, thus lowering the peak firing pressures in the cylinder. This in turn, lowers the combustion temperature during the cycle and reduces the formation of thermal NO_X. Adjusting the air/fuel ratio alone is reported by the ACT document to reduce NO_X emissions by up to fifteen (15) percent.

(d) Ignition Retard (IR)
For a lean burn engine, timing retardation causes the ignition spark to occur later in the combustion cycle, thus lowering the peak firing pressures in the cylinder. This in turn, lowers the combustion temperature during the cycle and reduces the formation of thermal NO_X. Retarding the ignition timing alone is reported by the ACT document to have up to a ten (10) percent reduction of NO_X emissions.

(e) Selective Catalytic Reduction (SCR)
This technology is a post-combustion NO_X control which involves injecting ammonia into the exhaust upstream of a catalyst. The mix of the exhaust, ammonia, and catalyst result in nitrogen and water. This technology is dependent on a continuous emission monitor (CEM) to measure NO_X concentrations. At the appropriate concentration, this unit will signal the SCR system to inject a stream of ammonia into the exhausting emissions. Unfortunately, CEM units are not reliable under varying load conditions involved in natural gas pipeline service. The failure of the CEM unit will result in unreliable NO_X reduction and non-reacted ammonia emissions (ammonia slip) during periods of load loss. This technology is not technically feasible.

Taking into account the NO_X reduction rates, the proposed pre-combustion chamber technology, with a minimum eighty percent (80%) NO_X control efficiency, is BACT for this facility. The proposed pre-combustion chamber technology reduces the emissions of NO_X by 520 tons per year while increasing the VOC emissions by 83 tons per year. As such, this facility will have a limited fuel throughput of 337.3 million cubic feet per minute feet of natural gas per year. This limit is equivalent to maximum VOC emissions of 106 tons per year and maximum NO_X emissions of 133 tons per year.

Air Toxic Emissions

Indiana presently requests applicants to provide information on emissions of the 187 hazardous air pollutants set out in the Clean Air Act Amendments of 1990. These pollutants are either carcinogenic or otherwise considered toxic and are commonly used by industries. They are listed as air toxics on the Office of Air Management (OAM) Construction Permit Application Form Y.

(a) This proposed modification will emit levels of air toxics greater than those that constitute major source applicability according to Section 112 of the Clean Air Act. The concentrations of these air toxics were modeled and found to be (in worst case possible) as indicated in the following table. The concentrations of these air toxics were compared to the Permissible Exposure Limits (PEL) developed by the Occupational Safety and Health Administration (OSHA). The Office of Air Management (OAM) does not have at this time any specific statutory or regulatory authority over these substances.

Air Toxic Emissions

Pollutant	**Rate** (lb/hr)	**Rate @ 8,760 hr/yr** (ton/yr)	**Modeled Concentration** ($\mu g/m^3$)	**OSHA PEL** ($\mu g/m^3$)	**% OSHA PEL**
Benzene	0.030	0.131	0.312	3,200	0.001
Ethyl benzene	0.020	0.088	0.207	435,000	0.00005
Formaldehyde	3.38	14.8	35.3	930	0.038
Toluene	0.030	0.131	0.312	375,000	0.00008
Xylene	0.050	0.219	0.523	435,000	0.0001
TOTAL	3.51	15.4			

Air Toxic Stacks

Stack ID	**Height** (feet)	**Diameter** (feet)	**Flow Rate** (acfm)	**Temperature** (EF)
S12202	40.5	3.0	29,737	500
S12203	40.5	4.5	51,527	680
S12235	14.0	0.7	2,725	1,028

(b) See attached spreadsheets for detailed air toxic calculations, page 2 of 2 of Appendix A.

Conclusion

The construction of the two (2) reciprocating compressor engines and one (1) emergency generator will be subject to the conditions of the attached proposed **Construction Permit No. CP 053-9377-00040.**

Indiana Department of Environmental Management
Office of Air Management

Addendum to the
Technical Support Document for New Construction and Operation

Source Name:	Texas Eastern Transmission Corporation
Source Location:	Jonesboro Road, 2 miles east of Hwy 26 off I-69, Marion, Indiana 46953
County:	Grant
Construction Permit No.:	CP 053-9377-00040
SIC Code:	4922
Permit Reviewer:	Peter E. Fountaine

On May 28, 1998, the Office of Air Management (OAM) had a notice published in the Marion Chronicle Tribune, Marion, Indiana, stating that Texas Eastern Transmission Corporation had applied for a construction permit to construct and operate two (2) reciprocating compressor engines and one (1) emergency generator, operating no more than five hundred (500) hours per year. One (1) of the two (2) reciprocating compressor engines, known as 12203, will be retrofit with pre-combustion chamber technology to reduce nitrogen oxide (NO_x) emissions. The notice also stated that OAM proposed to issue a permit for this installation and provided information on how the public could review the proposed permit and other documentation. Finally, the notice informed interested parties that there was a period of thirty (30) days to provide comments on whether or not this permit should be issued as proposed.

Upon further review, the OAM has decided to make the following changes in Operating Conditions Nos. 12 and 13 to include NO_X and VOC hourly allowable emission rates and to include grams per horsepower-hour NO_X and VOC emission limits. In addition Operating Condition No. 18 has been added to the permit. The conditions are as follows:

BACT Condition

12. That pursuant to 326 IAC 8-1-6, the one (1) natural gas-fired Lean Burn reciprocating compressor engine, known as 12203, equipped with pre-combustion chamber technology, shall adhere to the following:

    (a) VOC emissions shall not exceed 2.0 grams per horsepower-hour.

    (b) The one (1) natural gas-fired Lean Burn reciprocating compressor engine, known as 12203, shall not exceed a fuel throughput of 337.3 million cubic feet per year, equivalent to VOC potential to emit of 24.2 pounds per hour (106 tons per year) from this facility.

    (c) Performance testing found in Operating Condition 7 will develop the surrogate parameters for routine compliance determination.

NO_X Condition

13. The one (1) natural gas-fired Lean Burn reciprocating compressor engine, known as 12203, equipped with pre-combustion chamber technology, shall adhere to the following:

    (a) NO_X emissions shall not exceed 2.5 grams per horsepower-hour.

    (b) The one (1) natural gas-fired Lean Burn reciprocating compressor engine, known as 12203, equipped with pre-combustion chamber technology, with a minimum eighty percent (80%) NO_X control efficiency, shall not exceed a fuel throughput of 337.3 million cubic feet per year, equivalent to NO_X potential to emit of 30.3 pounds per hour (133 tons per year) from this facility.

(c) Performance testing found in Operating Condition 7 will develop the surrogate parameters for routine compliance determination.

PSD Minor

18. This construction is considered a minor modification to an existing minor PSD source which will result in potential NO_X emissions after pre-combustion chamber technology control of 221 tons per year. Any change or modification which may increase potential NO_X emissions to equal to or greater than 250 tons per year from the equipment covered in this permit shall obtain a PSD permit pursuant to 326 IAC 2-2 before such change may occur.

In addition on June 9, 1998, David A. Felcman of Texas Eastern Transmission Corporation submitted a comment on Operating Conditions Nos. 12 and 13 in the proposed Construction Permit. The comment and changes are as follows:

COMMENT 1:

The draft permit describes fuel throughput at "337.3 million cubic feet per minute feet per year" (emphasis added). This description is found in Operation Conditions 12 and 13 (pages 5 and 6), and in the TSD on page 6. It appears that the phrase "per minute feet" should be deleted.

RESPONSE 1:

Permit Operating Conditions Nos. 12 and 13 have been changed to omit the words "per minute feet". The revised conditions are cited above.

MINOR SOURCE SCREENING FORM

Construction Permit: CP 053-9377-00040

Company Name: Texas Eastern Transmission Corporation

Location: Jonesboro Road, 2 miles east of Hwy 26 off I-69, Marion, Indiana 46953

Reviewer: Peter E. Fountaine

Modeler: Peter E. Fountaine

Maximum Permitted Emission Rate (lb/hr)

Criteria Pollutants						Air Toxins		
Stack	PM_{10}	CO	SO_2	NO_X	Pb	Benzene	Ethyl benzene	Formaldehyde
						0.030	0.020	3.38
Demin	3.43	22.83	9.132	9.132	0.137	0.0271	3.68	0.00313

Parameters for each emission point and adjacent building. Convert from English to Metric (conversion factors):

[3.28 ft = 1 meter], [1 lb/hr = 0.126 g/s], [{5/9 *(EFahrenheit)} + 255.38 = EKelvin]

Stack (no.)	Emission Rate (g/s)	Stack Height (m)	Stack Diameter (m)	Flow Rate (m/sec)	Stack Temp. (EK)	Building Height (m)	Building Width (m)	Building Length (m)	Closest Property Line (m)
12202		12.35	0.915	21.3	533	9.99	12.2	22.1	48.8

Results ($\mu g/m^3$)

Criteria Pollutants						Air Toxins		
Max. Conc.	PM_{10}	CO	SO_2	NO_X	Pb	Benzene	Ethyl benzene	Formaldehyde
1-Hour						0.446	0.296	50.4
3-Hour						0.401	0.266	45.4
8-Hour						0.312	0.207	35.3
24-Hour						0.178	0.118	20.2
Annual						0.036	0.024	4.03
OSHA PEL ($\mu g/m^3$)						3,200	435,000	930

MINOR SOURCE SCREENING FORM

Construction Permit: CP 053-9377-00040

Company Name: Texas Eastern Transmission Corporation

Location: Jonesboro Road, 2 miles east of Hwy 26 off I-69, Marion, Indiana 46953

Reviewer: Peter E. Fountaine

Modeler: Peter E. Fountaine

Maximum Permitted Emission Rate (lb/hr)

Criteria Pollutants						Air Toxins	
Stack	PM_{10}	CO	SO_2	NO_X	Pb	Toluene	Xylene
						0.030	0.050
Demin	3.43	22.83	9.132	9.132	0.137	3.18	3.68

Parameters for each emission point and adjacent building. Convert from English to Metric (conversion factors):

[3.28 ft = 1 meter], [1 lb/hr = 0.126 g/s], [{5/9 *(EFahrenheit)} + 255.38 = EKelvin]

Stack (no.)	Emission Rate (g/s)	Stack Height (m)	Stack Diameter (m)	Flow Rate (m/sec)	Stack Temp. (EK)	Building Height (m)	Building Width (m)	Building Length (m)	Closest Property Line (m)
12202		12.35	0.915	21.3	533	9.99	12.2	22.1	48.8

Results ($\mu g/m^3$)

Criteria Pollutants						Air Toxins	
Max. Conc.	PM_{10}	CO	SO_2	NO_X	Pb	Toluene	Xylene
1-Hour						0.446	0.75
3-Hour						0.401	0.672
8-Hour						0.312	0.523
24-Hour						0.178	0.299
Annual						0.036	0.0597
OSHA PEL ($\mu g/m^3$)						375,000	435,000

Mail to: Permit Administration & Development Section
Office of Air Management
100 North Senate Avenue
P.O. Box 6015
Indianapolis, Indiana 46206-6015

Texas Eastern Transmission Corporation
PO Box 1642
Houston, TX 77251-1642

Affidavit of Construction

I, _____, being duly sworn upon my oath, depose and say:
(Name of the Authorized Representative)

1. I live in _____ County, Indiana and being of sound mind and over twenty-one (21) years of age, I am competent to give this affidavit.

2. I hold the position of _____ for Texas Eastern Transmission Corporation .
(Title) (Company Name)

3. By virtue of my position with Texas Eastern Transmission Corporation, I have personal knowledge of the representations contained in this affidavit and am authorized to make these representations on behalf of Texas Eastern Transmission Corporation.

4. I hereby certify that Texas Eastern Transmission Corporation, Jonesboro Road, 2 miles east of Hwy 26 off I-69, Marion, Indiana 46953, has constructed the two (2) reciprocating compressor engines and one (1) emergency generator in conformity with the requirements and intent of the Construction Permit application received by the Office of Air Management on January 13, 1998 and as permitted pursuant to **Construction Permit No. 053-9377, Plant ID No. 053-00040** issued on _____ .

5. Additional TYPEOFFACILITY were constructed/substituted as described in the attachment to this document and were not made in accordance with the Construction Permit. (Delete this statement if it does not apply.)

6. I hereby certify that Texas Eastern Transmission Corporation has submitted their Part 70 (T 053-5821-00040) application on March 19, 1998 for the existing source. The equipment being reviewed under this permit shall be incorporated in the submitted Part 70 application.

Further Affiant said not.

I affirm under penalties of perjury that the representations contained in this affidavit are true, to the best of my information and belief.

_____
Signature

_____
Date

STATE OF INDIANA)
)SS
COUNTY OF _____)

Subscribed and sworn to me, a notary public in and for _____ County and State of Indiana on this _____ day of _____, 19 _____ .

My Commission expires: _____ .

_____
Signature

_____
Name (typed or printed)

Appendix A: Emission Calculations
Reciprocating Compressor Engines
Hazardous Air Pollutants

Company Name: Texas Eastern Transmission Corporation
Address City IN Zip: Jonesboro Road; two(2) miles east of Highway 26 off I-69, Marion, IN 46953
CP No.: CP 053-9377
Plt ID: 053-00040
Reviewer: Peter E. Fountaine
Date: January 13, 1998

Point	Stack	Source	Potential Operating Hours	Source Status	Fuel Type	Heat Rate (MMBtu/hr)	Formaldehyde Factor (lbs/hr)	Potential Formaldehyde (tons/yr)	Benzene Factor (lbs/hr)	Potential Benzene (tons/yr)	Toluene Factor (lbs/hr)	Potential Toluene (tons/yr)	Ethylbenzene Factor (lbs/hr)	Potential Ethylbenzene (tons/yr)	Xylene Factor (lbs/hr)	Potential Xylene (tons/yr)
12235	S12235	240 HP R.I.C. Engine	500.0	Existing	Natural Gas	1.91	0.050	0.0125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
12202	S12202	3400 HP R.I.C. Engine	8760.0	Proposed	Natural Gas	27.0	1.20	5.26	0.0100	0.0438	0.0100	0.0438	0.0100	0.0438	0.0200	0.0876
12203	S12203	5500 HP R.I.C. Engine	8760.0	Proposed	Natural Gas	38.5	2.18	9.55	0.0200	0.0876	0.0200	0.0876	0.0100	0.0438	0.0300	0.131
12235	S12235	602 HP R.I.C. Engine	500.0	Proposed	Natural Gas	4.30	0.130	0.0325	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
		Potential Removed Emissions:					0.050	0.0125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Potential Proposed Emissions:					3.51	14.8	0.0300	0.131	0.0300	0.131	0.0200	0.0876	0.0500	0.219

Total HAPs (tons/yr): 15.4

1) Emission factors for NOx, CO, and VOC from the 3400 HP and 5500 HP R.I.C. Engines were supplied by the applicant from the manufacturer with pre-combustion chamber technology, which is BACT.

2) Emission factors for NOx, and CO from the 602 HP R.I.C. Engine were supplied by the applicant from the manufacturer.

3) Emission factors for the 240 HP R.I.C. Engine were supplied by the applicant.

4) Remaining emission factors were obtained from the AIRS Emission Factors and AP-42 (1/95 edition)