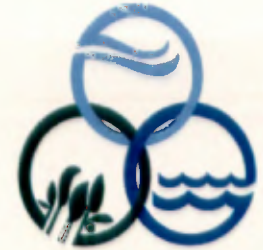




State of Mississippi



AIR POLLUTION CONTROL PERMIT

To Construct Air Emissions Equipment

**THIS CERTIFIES**

Goodrich Petroleum Company LLC,- Crosby Minerals 12-1 -IE Production Facility  
Leake Road  
Centreville, MS  
Wilkinson County

has been granted permission to construct air emissions equipment to comply with the emission limitations, monitoring requirements and other conditions set forth herein. This permit is issued in accordance with the provisions of the Mississippi Air and Water Pollution Control Law (Section 49-17-1 et. seq., Mississippi Code of 1972), and the regulations and standards adopted and promulgated thereunder.

**Mississippi Environmental Quality Permit Board**

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**Mississippi Department of Environmental Quality**

Issued/Modified: APR 22 2013

Expires:

Permit No. 2940-00021

Agency Interest # 57872

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### Other Relevant Documents:

The federal regulations referenced in this permit may be found on-line at <http://ecfr.gpoaccess.gov/> and the State of Mississippi regulations may be found on-line at <http://www.mdeq.ms.state.us/> or a copy of the regulations may be obtained by contacting the Mississippi Department of Environmental Quality, Environmental Permitting Division, Post Office Box 2261, Jackson, Mississippi 39255, phone (601) 961-5171. The following regulations were referenced in this permit:

Mississippi Air Regulations APC-S-1, Air Emission Regulations for the Prevention, Abatement, and Control of Air Contaminants

Mississippi Air Regulations APC-S-2, Permit Regulations for the Construction and/or Operation of Air Emissions Equipment

40 CFR Part 60, Subpart JJJJ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

40 CFR Part 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

40 CFR Part 63, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Stationary Internal Combustion Engines

40 CFR Part 63, Subpart HH - National Emissions Standards for Hazardous Air Pollutants: Oil and Natural Gas Production Facilities: Area Sources

40 CFR Part 60, Subpart OOOO - New Source Performance Standards for Crude Oil and Natural Gas Production, Transmission, and Distribution

## To Construct Air Emissions Equipment

Goodrich Petroleum Company LLC,- Crosby Minerals 12-1 -1E Production Facility

Subject Item Inventory

Permit Number:2940-00021

Activity ID No.: PER20130001

### Subject Item Inventory:

ID	Designation	Description
AI57872	57872	Oil and Gas Production
EQPT27	AA-001	1 MMBTU/hr Line Heater Burner Stack (Facility Ref. No. 1-12-LH-BS)
EQPT41	AA-002	0.5 MMBtu/hr Heater Treater Burner Stack (Facility Ref. No. 2-12-HT-BS)
EQPT26	AA-003	0.25 MMBtu/hr Glycol Regenerator Burner Stack (Facility Ref. No. 3-12-GR-BS)
EQPT48	AA-004	1,825 MMSCF/Yr Glycol Regenerator Still Column (Facility Ref. No. 4-12-GR-SCC)
EQPT28	AA-005	Less than 500 HP Reciprocating Internal Combustion Engine (E-101)
EQPT47	AA-006	10 HP Reciprocating Internal Combustion Engine (Circulating Pump, Facility Ref. No. 6-12-ICE-ES)
EQPT46	AA-007	400 Barrel (16,800 gallon) Oil Storage Tank with a common vent (Facility Ref. No. 7a-12-OST-CV)
EQPT45	AA-008	400 Barrel (16,800 gallon) Oil Storage Tank with a common vent (Facility Ref. No. 7b-12-OST-CV)
EQPT44	AA-009	400 Barrel (16,800 gallon) Oil Storage Tank with a common vent (Facility Ref. No. 7c-12-OST-CV)
EQPT43	AA-010	400 Barrel (16,800 gallon) Oil Storage Tank with a common vent (Facility Ref. No. 7d-12-OST-CV)
EQPT42	AA-011	400 Barrel (16,800 gallon) Produced Water Storage Tank with a common vent (Facility Ref. No. 7e-12-WST-CV)
EQPT29	AA-012	400 Barrel (16,800 gallon) Produced Water Storage Tank with a common vent (Facility Ref. No. 7f-12-WST-CV)
EQPT25	AA-013	Low Pressure Separator - waste gas (Facility Ref. No. 9-12-LPS-WG)
EQPT40	AA-014	Heater Treater - waste gas (Facility Ref. No. 10-12-HT-WG)
EQPT39	AA-015	Glycol Pump Flash Separator - waste gas (Facility Ref. No. 11-12-GPFS-WG)
EQPT38	AA-016	Blowcase Vessel - Compressor Skid Fluids (Facility Ref. No. 12-12-BV)
EQPT37	AA-017	Blowcase Vessel - Condensed Liquids (Facility Ref. No. 13-12-BV)
EQPT36	AA-018	Gas Operated Pump - chemical injection (Facility Ref. No. 14-12-GOP)
EQPT35	AA-019	Gas Operated Pump (Facility Ref. No. 15-12-GOP)
EQPT33	AA-020	Oil Tank Transfer to Truck Loading - Loading Losses (Facility Ref. No. 16-12-LL)
EQPT34	AA-021	Pneumatic Controllers (Facility Ref. No. 17-12-PC)

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ID	Designation	Description
AREA2	AA-022	Fugitive Emissions (Facility Ref. No. 18-12-FE)
EQPT32	AA-023	Lube Oil Tank (Facilty Ref. No. 19-12-LOT)
EQPT31	AA-024	Glycol Storage Tank (Facility Ref. No. 20-12-GST)
EQPT30	AA-025	Chemical Storage Tank (Facility Ref. No. 21-12-CST)
CONT2	AA-026	Control Flare (8-12-F)
EQPT50	AA-027	Methanol Storage Tank (E-4)

### Subject Item Groups:

ID	Description	Components
GRPT10	Crude Oil Storage Tanks	EQPT46 400 Barrel (16,800 gallon) Oil Storage Tank with a common vent (Facility Ref. No. 7a-12-OST-CV)
		EQPT45 400 Barrel (16,800 gallon) Oil Storage Tank with a common vent (Facility Ref. No. 7b-12-OST-CV)
		EQPT44 400 Barrel (16,800 gallon) Oil Storage Tank with a common vent (Facility Ref. No. 7c-12-OST-CV)
		EQPT43 400 Barrel (16,800 gallon) Oil Storage Tank with a common vent (Facility Ref. No. 7d-12-OST-CV)
GRPT11	Produced Water Storage Tanks	EQPT42 400 Barrel (16,800 gallon) Produced Water Storage Tank with a common vent (Facility Ref. No. 7e-12-WST-CV)
		EQPT29 400 Barrel (16,800 gallon) Produced Water Storage Tank with a common vent (Facility Ref. No. 7f-12-WST-CV)
GRPT12	Line Heater, Heater Treater Burner, Glycol Regenerator Burner	EQPT27 1 MMBTU/hr Line Heater Burner Stack (Facility Ref. No. 1-12-LH-BS)
		EQPT41 0.5 MMBtu/hr Heater Treater Burner Stack (Facility Ref. No. 2-12-HT-BS)
		EQPT26 0.25 MMBtu/hr Glycol Regenerator Burner Stack (Facility Ref. No. 3-12-GR-BS)
GRPT13	Compressor Engines (Emission Points: AA-005)	EQPT28 Less than 500 HP Reciprocating Internal Combustion Engine (E-101)
GRPT7	Gas Operated Pumps	EQPT36 Gas Operated Pump - chemical injection (Facility Ref. No. 14-12-GOP)
		EQPT35 Gas Operated Pump (Facility Ref. No. 15-12-GOP)
GRPT8	Miscellaneous small storage tanks	EQPT50 Methanol Storage Tank (E-4)
		EQPT32 Lube Oil Tank (Facilty Ref. No. 19-12-LOT)

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ID	Description	Components
GRPT8	Miscellaneous small storage tanks	EQPT31 Glycol Storage Tank (Facility Ref. No. 20-12-GST)
		EQPT30 Chemical Storage Tank (Facility Ref. No. 21-12-CST)
GRPT9	Blowcase Vessels	EQPT38 Blowcase Vessel - Compressor Skid Fluids (Facility Ref. No. 12-12-BV)
		EQPT37 Blowcase Vessel - Condensed Liquids (Facility Ref. No. 13-12-BV)

**KEY**

ACT = Activity

AREA = Area

CONT = Control Device

IA = Insignificant Activity

RPNT = Release Point

AI = Agency Interest

CAFO = Concentrated Animal Feeding Operation

EQPT = Equipment

MAFO = Animal Feeding Operation

TRMT = Treatment

## To Construct Air Emissions Equipment

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Facility Requirements

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### AI0000057872 (57872) Oil and Gas Production:

#### Limitation Requirements:

Condition No.	Parameter	Condition
L-1	Hydrogen sulfide	Hydrogen sulfide: The permittee shall not cause or permit the emission of any gas stream which contains hydrogen sulfide in excess of one grain per 100 standard cubic feet. Gas streams containing hydrogen sulfide in excess of one grain per 100 standard cubic feet shall be incinerated at temperatures of not less than 1600 degrees Fahrenheit for a period of not less than 0.5 seconds, or processed in such manner which is equivalent to or more effective for the removal of hydrogen sulfide  . [APC-S-1 4.2.b]
L-2	Sulfur Dioxide	Sulfur Dioxide: Sulfur dioxide concentration limitations in the gas streams resulting from such incineration or processing shall be determined for each emission point on a case-by-case basis to insure that the resulting maximum ground level concentration of sulfur dioxide as determined by acceptable method or methods will be in compliance with the National Ambient Air Quality Standards for sulfur dioxide. Testing to determine the productive capacity of new fields shall be exempted from emission limitation provisions of the paragraph of the regulation providing such testing has been previously negotiated and approved by the Mississippi Office of Pollution Control. [APC-S-1 4.2.b]
L-3	Fuel Combusted	Fuel Combusted: For all combustion units operating at this facility, the permittee shall only combust commercial grade propane or natural gas. [APC-S-2 II.B(10)]
L-4		The internal combustion engines may be subject to 40 CFR Part 60, Subpart JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines and 40 CFR Part 60, Subpart IIII -Standards of Performance for Stationary Compression Ignition Internal Combustion Engines depending upon the manufacture date of the engines. The permittee shall comply with all applicable requirements 40 CFR Part 60, Subpart JJJJ and 40 CFR Part 60, Subpart IIII. [APC-S-2 II.B(10)]
L-5		The facility may be subject to 40 CFR Part 60, Subpart OOOO, New Source Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution for the reciprocating internal combustion engine, the pneumatic controller and the storage vessels. If any of the affected facilities listed in 40 CFR 60.5360 (a) through (g) are constructed at this facility, the permittee will be required to comply with all applicable requirements of 40 CFR 60, Subpart OOOO. [APC-S-2 II.B(10)]

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### AI0000057872 (continued):

#### Monitoring Requirements:

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Condition No.	Parameter	Condition
M-1		<p>The permittee shall conduct a semi-annual produced field gas analysis. This analysis shall include: hydrogen sulfide concentration, sulfur content, methane concentration (volume), gross heating value, molecular weight, specific gravity, well gas-to-oil ratio and produced field gas speciated analysis. The first annual produced field gas analysis shall be conducted no later than 30 days after the date of certification of construction</p> <p>Additionally, an updated produced field gas analysis must be conducted within 60 days from startup of any additional wells at this production site . [APC-S-2 II.B(11)]</p>

#### Record-Keeping Requirements:

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Condition No.	Condition
R-1	<p>The permittee shall keep the following records:</p> <ol style="list-style-type: none"><li>(1) monthly lbs and /or tons of volatile organic compounds, total hazardous air pollutants and individual hazardous air pollutants including sample calculations;</li><li>(2) result of annual produced gas analysis;</li><li>(3) produced crude oil (barrels), monthly;</li><li>(4) produced water (barrels), monthly</li><li>(4) produced field gas (MMscf), monthly</li><li>(5) Cubic feet of waste gas flared, monthly;</li><li>(6) Cubic feet of natural gas sold, monthly</li></ol> <p>The permittee shall maintain a copy of this record on site for at least five years and shall make them available upon request by the Mississippi Department of Environmental Quality (MDEQ) personnel . [APC-S-2 II.B(11)]</p>

## To Construct Air Emissions Equipment

Goodrich Petroleum Company LLC,- Crosby Minerals 12-1 -1E Production Facility

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### AI0000057872 (continued):

#### Submittal/Action Requirements:

Condition No.	Condition
S-1	General Condition: The permittee shall submit certification of construction: Due within thirty (30) days of completion of construction or installation of an approved stationary source or prior to startup, whichever is earlier. The notification shall certify that construction or installation was performed in accordance with the approved plans and specifications. In the event there is any change in construction from the previously approved plans and specifications or permit, the permittee shall promptly notify MDEQ in writing. If MDEQ determines the changes are substantial, MDEQ may require the submission of a new application to construct with "as built" plans and specifications. Notwithstanding any provision herein to the contrary, the acceptance of an "as built" application shall not constitute a waiver of the right to seek compliance penalties pursuant to State Law. [APC-S-2 V.D]
S-2	Within fifteen (15) days of beginning actual construction, the permittee must notify DEQ in writing that construction has begun. [APC-S-2 V.C(2)]
S-3	The permittee must notify DEQ in writing when construction does not begin within eighteen (18) months of issuance or if construction is suspended for eighteen (18) months or more. [APC-S-2 V.C(3)]
S-4	The permittee shall report to MDEQ all applicable requirements that the facility is subject to and must comply with under the following rules:  40 CFR Part 60, Subpart A; 40 CFR Part 60, Subpart JJJJ; 40 CFR Part 60, Subpart IIII; and 40 CFR Part 60, Subpart OOOO. 40 CFR Part 63, Subpart A; 40 CFR Part 63, Subpart ZZZZ; 40 CFR Part 63, Subpart HH  This report shall include, at a minimum, standards, initial compliance demonstration, continuous compliance demonstration, record keeping, notification, performance testing, and reporting and shall be submitted within 30 days of certification of construction. This report shall be attached to the facility's copy of the air permit and shall be made available to MDEQ personel during an inspection of the site . [APC-S-2 II.B(11)]

## To Construct Air Emissions Equipment

Goodrich Petroleum Company LLC,- Crosby Minerals 12-1 -1E Production Facility

Facility Requirements

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### AI0000057872 (continued):

#### Submittal/Action Requirements:

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Condition No.	Condition
S-5	<p>The permittee shall report annually by January 31st for the preceding calendar year:</p> <ul style="list-style-type: none"><li>(1) monthly lbs and /or tons of volatile organic compounds, total hazardous air pollutants and individual hazardous air pollutants including sample calculations;</li><li>(2) result of annual produced gas analysis;</li><li>(3) produced crude oil (barrels), monthly;</li><li>(4) produced water (barrels), monthly</li><li>(4) produced field gas (MMscf), monthly;</li><li>(5) cubic feet of waste gas flared, monthly;</li><li>(6) cubic feet of natural gas sold, monthly</li></ul> <p>. [APC-S-2 II.B(11)]</p>

#### Narrative Requirements:

##### General Condition:

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Condition No.	Condition
T-1	<p>General Condition: The stationary source shall be designed and constructed so as to operate without causing a violation of any Applicable Rules and Regulations or this permit, without interfering with the attainment and maintenance of State and National Ambient Air Quality Standards, and such that the emission of air toxics does not result in an ambient concentration sufficient to adversely affect human health and well-being or unreasonably and adversely affect plant or animal life beyond the stationary source boundaries. [APC-S-2 V.A]</p>
T-2	<p>General Condition: Any activities not identified in the application are not authorized by this permit. [Miss. Code Ann. 49_17_29 1.b]</p>
T-3	<p>General Condition: The necessary facilities shall be constructed so that solids removed in the course of control of air emissions may be disposed of in a manner such as to prevent the solids from becoming windborne and to prevent the materials from entering State waters without the proper environmental permits. [Miss. Code Ann. 49_17_29]</p>

## To Construct Air Emissions Equipment

Goodrich Petroleum Company LLC,- Crosby Minerals 12-1 -1E Production Facility

Facility Requirements

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### AI0000057872 (continued):

#### Narrative Requirements:

##### General Condition:

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Condition No.	Condition
T-4	General Condition: The air pollution control facilities shall be constructed such that diversion from or bypass of collection and control facilities is not needed except as provided for in Regulation APC-S-1, "Air Emission Regulations for the Prevention, Abatement, and Control of Air Contaminants", Section 10. [APC-S-1 10]
T-5	General Condition: The permittee shall allow the Mississippi Environmental Quality Commission, the Mississippi Environmental Quality Permit Board, MDEQ staff and/or their authorized representatives, upon the presentation of credentials: a. To enter upon the permittee's premises where an air emission source is located or in which any records are required to be kept under the terms and conditions of this permit; and b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit, to inspect any monitoring equipment or monitoring method required in this permit, and to sample any air emission. [Miss. Code Ann. 49_17_21]
T-6	General Condition: After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for good cause shown including, but not limited to, the following: a. Persistent violation of any terms or conditions of this permit; b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or c. A change in any condition that requires either a temporary or permanent reduction or elimination of previously authorized air emissions. [APC-S-2 II.C]
T-7	General Condition: Except for data determined to be confidential under the Mississippi Air & Water Pollution Control Law, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Mississippi Department of Environmental Quality Office of Pollution Control. [Miss. Code Ann. 49_17_39]

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Condition No.	Condition
T-8	General Condition: This permit is for air pollution control purposes only. [APC-S-2 I.D]
T-9	General Condition: The knowing submittal of a permit application with false information may serve as the basis for the Permit Board to void the permit issued pursuant thereto or subject the applicant to penalties for operating without a valid permit pursuant to State Law. [APC-S-2 II.B(5)]

## To Construct Air Emissions Equipment

Goodrich Petroleum Company LLC,- Crosby Minerals 12-1 -1E Production Facility

Facility Requirements

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### AI0000057872 (continued):

#### Narrative Requirements:

Condition No.	Condition
T-10	General Condition: It is the responsibility of the applicant/permittee to obtain all other approvals, permits, clearances, easements, agreements, etc., which may be required including, but not limited to, all required local government zoning approvals or permits. [APC-S-2 I.D(6)]
T-11	General Condition: The issuance of a permit does not release the permittee from liability for constructing or operating air emissions equipment in violation of any applicable statute, rule, or regulation of state or federal environmental authorities. [APC-S-2 II.B(7)]
T-12	General Condition: It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of the permit, unless halting or reducing activity would create an imminent and substantial endangerment threatening the public health and safety of the lives and property of the people of this state. [APC-S-2 II.B(15)a]
T-13	General Condition: The permit and/or any part thereof may be modified, revoked, reopened, and reissued, or terminated for cause. Sufficient cause for a permit to be reopened shall exist when an air emissions stationary source becomes subject to Title V. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition. [APC-S-2 II.B(15)b]
T-14	General Condition: The permit does not convey any property rights of any sort, or any exclusive privilege. [APC-S-2 II.B(15)c]
T-15	General Condition: The permittee shall furnish to the DEQ within a reasonable time any information the DEQ may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the DEQ copies of records required to be kept by the permit or, for information claimed to be confidential, the permittee shall furnish such records to the DEQ along with a claim of confidentiality. The permittee may furnish such records directly to the Administrator along with a claim of confidentiality. [APC-S-2 II.B(15)d]
T-16	General Condition: This permit shall not be transferred except upon approval of the Permit Board. [APC-S-2 XVI.B]
T-17	General Condition: The provisions of this permit are severable. If any provision of the permit, or the application of any provision of the permit to any circumstances, is challenged or held invalid, the validity of the remaining permit provisions and/or portions thereof or their application to other persons or sets of circumstances, shall not be affected thereby. [APC-S-2 I.D(7)]
T-18	General Condition: The permit to construct will expire if construction does not begin within eighteen (18) months from the date of issuance or if construction is suspended for eighteen (18) months or more. [APC-S-2 V.C(1)]

## To Construct Air Emissions Equipment

Goodrich Petroleum Company LLC,- Crosby Minerals 12-1 -1E Production Facility

Facility Requirements

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### AI0000057872 (continued):

#### Narrative Requirements:

Condition No.	Condition
T-19	General Condition: A new stationary source issued a Permit to Construct cannot begin operation until certification of construction by the permittee. [APC-S-2 V.D(3)]
T-20	General Condition: Except as prohibited in APC-S-2, Section V.D.7, after certification of construction by the permittee, the Permit to Construct shall be deemed to satisfy the requirement for a permit to operate until the date the application for issuance or modification of the Title V Permit or the application for issuance or modification of the State Permit to Operate, whichever is applicable, is due. This provision is not applicable to a source excluded from the requirement for a permit to operate as provided by APC-S-2, Section XIII.G. [APC-S-2 V.D(4)]
T-21	General Condition: Except as otherwise specified in APC-S-2, Section V.D.7, the application for issuance or modification of the State Permit to Operate or the Title V Permit, whichever is applicable, is due twelve (12) months after beginning operation or such earlier date or time as specified in the Permit to Construct. The Permit Board may specify an earlier date or time for submittal of the application. Beginning operation will be assumed to occur upon certification of construction, unless the permittee specifies differently in writing. [APC-S-2 V.D(5)]
T-22	General Condition: Except as otherwise specified in APC-S-2, Section V.D.7, upon submittal of a timely and complete application for issuance or modification of a State Permit to Operate or a Title V Permit, whichever is applicable, the applicant may continue to operate under the terms and conditions of the Permit to Construct and in compliance with the submitted application until the Permit Board issues, modifies, or denies the Permit to Operate. [APC-S-2 V.D(6)]
T-23	General Condition: For moderate modifications that require contemporaneous enforceable emissions reductions from more than one emission point in order to net out of PSD/NSR, the applicable Title V Permit to Operate or State Permit to Operate must be modified prior to beginning operation of the modified facilities. [APC-S-2 V.D(7)]
T-24	General Condition: Regarding compliance testing: (a) The results of any emissions sampling and analysis shall be expressed both in units consistent with the standards set forth in any Applicable Rules and Regulations or this permit and in units of mass per time. (b) Compliance testing will be performed at the expense of the permittee. (c) Each emission sampling and analysis report shall include but not be limited to the following: 1. detailed description of testing procedures; 2. sample calculation(s); 3. results; and 4. comparison of results to all Applicable Rules and Regulations and to emission limitations in the permit. [APC-S-2 VI.B(3, 4 and 6)]

## To Construct Air Emissions Equipment

Goodrich Petroleum Company LLC,- Crosby Minerals 12-1 -1E Production Facility

Facility Requirements

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### AI0000057872 (continued):

#### Narrative Requirements:

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Condition No.	Condition
T-25	General Condition: The construction of the stationary source shall be performed in such a manner so as to reduce fugitive dust emissions from construction activities to a minimum. [APC-S-2 V.A(4)]

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## To Construct Air Emissions Equipment

Goodrich Petroleum Company LLC,- Crosby Minerals 12-1 -1E Production Facility

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### EQPT0000000048 (AA-004) 1,825 MMSCF/Yr Glycol Regenerator Still Column (Facility Ref. No. 4-12-GR-SCC):

#### Limitation Requirements:

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Condition No.	Parameter	Condition
L-1		The permittee shall only operate the glycol still column with vapors routed through a condenser to the glycol reboiler firebox. [APC-S-2 II.B(10)]
L-2		The glycol dehydration unit is an affected unit at an area source and the permittee is subject to and shall comply with all applicable requirements of the National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Plants, 40 CFR Part 63, Subpart HH. [40 CFR 63.Subpart HH]
L-3		Such air emission/equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants. [APC-S-2 II.B(11)]

#### Monitoring Requirements:

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Condition No.	Parameter	Condition
M-1		The permittee shall determine glycol dehydration unit natural gas flow rate or benzene emissions as specified in 63.772(b) . [40 CFR 63.Subpart HH]

#### Record-Keeping Requirements:

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Condition No.	Condition
R-1	The permittee shall maintain records to support the determination of exemption in accordance with 40 CFR 63.774(d)(1)(i) or 40 CFR 63.774(d)(1)(ii) . [40 CFR 63.774(d)(1)i and ii]

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### EQPT0000000048 (continued):

#### Record-Keeping Requirements:

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Condition No.	Condition
R-2	The permittee shall record the date, start time, and duration of any failure of the control equipment which results in emissions from the glycol still column bypassing the glycol reboiler firebox. The permittee shall use this information to calculate a percentage of deviation time that the unit operated under compared to total run time for each calendar year. [APC-S-2 II.B(11)]

#### Submittal/Action Requirements:

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Condition No.	Condition
S-1	The permittee shall submit an annual report summarizing the date, start time and duration of any upsets which result in still column emissions bypassing the glycol reboiler firebox. The facility shall also submit the results of the calculated percentage of deviation time for the emission point. If no bypasses have occurred, the facility should submit a negative declaration. This report shall be included in the facility's annual report due by January 31st for the preceding calendar year. [APC-S-2 II.B(11)]

## To Construct Air Emissions Equipment

Goodrich Petroleum Company LLC,- Crosby Minerals 12-1 -1E Production Facility

Facility Requirements

Permit Number:2940-00021

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### EQPT000000028 (AA-005) Less than 500 HP Reciprocating Internal Combustion Engine (E-101):

#### Limitation Requirements:

Condition No.	Parameter	Condition
L-1	Particulate Matter	Particulate Matter: The maximum permissible emission of ash and/or particulate matter from fossil fuel burning installation of less than 10 million BTU per hour heat input shall not exceed 0.6 pounds per million BTU per hour heat input. [APC-S-1 3.4.a(1)]
L-2	Opacity	Opacity: The compressor engine shall have emissions of opacity less than or equal to 40%, as determined by EPA Reference Method 9, 40 CFR Part 60, Appendix A. [APC-S-1 3.1.a]
L-3		This unit is an existing spark ignition reciprocating engine, rated at less than or equal to 500 hp, located at an area source of Hazardous Air Pollutants (HAPs) subject to 40 CFR 63, Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines. [40 CFR 63.Subpart ZZZZ]
L-4		If this non-emergency engine is manufactured after July 1, 2008; or if the engine is reconstructed or modified after June 12, 2006, as defined in §60.14 and §60.15, it is subject to the New Source Performance Standards for Stationary Spark Ignition Internal combustion Engines, 40 CFR Part 60, Subpart JJJJ . [40 CFR 60.4340(a)(4)iii]
L-5		If this compressor engine is modified or reconstructed after June 12,2006, the permittee shall comply with the emission standards in 40 CFR 60.4233(f)(4). [40 CFR 60.4233(f)(4)]
L-6		If this compressor engine is manufactured after January 1, 2011, the permittee shall comply with the following standard:  Nitrogen Oxide (NOx)                      1 gm/bhp-hr Carbon Monoxide (CO)                      2 gm/bhp-hr Volatile Organic Compounds (VOC)    0.7 gm/bhp-hr . [40 CFR 60.4233(e), 40 CFR 60.Subpart JJJJ(Table 1)]
L-7		Such air emission equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants. [APC-S-2 II.B(10)]

## To Construct Air Emissions Equipment

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### EQPT0000000028 (continued):

#### Monitoring Requirements:

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Condition No.	Parameter	Condition
M-1		<p>If this compressor engine is subject to NSPS Subpart JJJJ, the permittee shall demonstrate compliance according to one of the following methods:</p> <p>Purchasing an engine certified according to procedures specified in 40 CFR Part 60, Subpart JJJJ, for the same model year and demonstrating compliance according to one of the methods specified in 60.4243(a) or;</p> <p>If the compressor engine is subject to NSPS Subpart JJJJ and is not certified by the manufacturer, the permittee must conduct an initial performance test . [40 CFR 60.4243(b)(i)]</p>

#### Record-Keeping Requirements:

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Condition No.	Condition
R-1	<p>If the engine is subject to NSPS, Subpart JJJJ, the permittee must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions . [40 CFR 60.4243(b)(ii)]</p>

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### EQPT0000000028 (continued):

#### Record-Keeping Requirements:

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Condition No.	Condition
R-2	<p>If the compressor engine is subject to NSPS Subpart JJJJ, the permittee must keep records of the following:</p> <ol style="list-style-type: none"><li>(1) All notifications submitted to comply with this subpart and all documentation supporting any notification</li><li>(2) Maintenance conducted on the engine</li><li>(3) If the engine is certified, documentation from the manufacturer that the engine is certified to meet the emissions standards and information as required in 40 CFR Parts 90 &amp; 1048</li><li>(4) If the engine is not certified, or a certified engine is operated in a non-certified manner and subject to 60.4243(a) (20), documentation that the engine meets the emission standards must be kept . [40 CFR 60.4245(a)(1-4)]</li></ol>

#### Submittal/Action Requirements:

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Condition No.	Condition
S-1	<p>If the compressor engine is subject to NSPS, Subpart JJJJ, within 30 days of engine startup date, the permittee shall submit the engine manufacture date and the brake horse power. [APC-S-2 II.B(11)]</p>
S-2	<p>If the compressor engine is subject to NSPS Subpart JJJJ, and is not certified by the manufacturer, the permittee must submit a copy of each performance test as conducted in accordance with 40 CFR 60.4244 within 60 days after the test has been complete. [40 CFR 60.4243(f)]</p>

## To Construct Air Emissions Equipment

Goodrich Petroleum Company LLC,- Crosby Minerals 12-1 -1E Production Facility

Facility Requirements

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### EQPT0000000047 (AA-006) 10 HP Reciprocating Internal Combustion Engine (Circulating Pump, Facility Ref. No. 6-12-ICE-ES):

#### Limitation Requirements:

Condition No.	Parameter	Condition
L-1	Particulate Matter	Particulate Matter: The maximum permissible emission of ash and/or particulate matter from fossil fuel burning installation of less than 10 million BTU per hour heat input shall not exceed 0.6 pounds per million BTU per hour heat input. [APC-S-1 3.4.a(1)]
L-2	Opacity	Opacity: Emissions of opacity shall be less than or equal to 40%, as determined by EPA Reference Method 9, 40 CFR Part 60, Appendix A. [APC-S-1 3.1.a]
L-3		This unit is a new stationary engine less than or equal to 500 hp, located at an area source of Hazardous Air Pollutants (HAPs), and shall comply with 40 CFR Part 63, Subpart ZZZZ by complying with all applicable requirements of 40 CFR 60, Subpart IIII, New Source Performance Standard (NSPS) for Stationary Compression Ignition Internal Combustion Engines. [40 CFR 63.Subpart ZZZZ]
L-4		<p>If the circulation pump engine has a displacement of less than 30 liters per cylinder and is subject to NSPS, Subpart IIII, the permittee shall only use diesel fuel that meets the requirements of 40 CFR 80.510(b) for non road diesel fuel. [40 CFR 60.4207(b)]</p> <p>If the engine is subject to NSPS, Subpart IIII and the engine is a pre-2007 model year engine with a displacement of less than 10 liters per cylinder, the engine must comply with the emission standards of Table 1 of Subpart IIII of the entire life of the engine. [40 CFR 60.4240(a)]</p> <p>If the circulating pump engine is subject to NSPS, Subpart IIII and is a 2007 model year or later engine with a displacement of less than 30 liters per cylinder, the engine must comply with the emission standards for new CI engines in 60.4201, as applicable. [40 CFR 60.4204(b)]                      . [40 CFR 60.Subpart JJJJ]</p>
L-5		Such air emission equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants. [APC-S-2 II.B(10)]

**To Construct Air Emissions Equipment**

Goodrich Petroleum Company LLC,- Crosby Minerals 12-1 -1E Production Facility

Facility Requirements

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**EQPT0000000047 (continued):**

Monitoring Requirements:

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Condition No.	Parameter	Condition
M-1		If the circulation pump engine has a displacement of less than 30 liters per cylinder and is subject to NSPS, Subpart IIII, the permittee must conduct an initial performance test to demonstrate compliance with the emissions standards according to the requirements specified in §60.4212 (a) through(d), as applicable. [40 CFR 60.4211(b)]

### To Construct Air Emissions Equipment

Goodrich Petroleum Company LLC,- Crosby Minerals 12-1 -1E Production Facility

Facility Requirements

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#### **EQPT0000000025 (AA-013) Low Pressure Separator - waste gas (Facility Ref. No. 9-12-LPS-WG):**

##### Limitation Requirements:

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Condition No.	Parameter	Condition
L-1		The low pressure separator shall only be operated with separated gas routed to a control flare or to a natural gas liquids recovery unit; or to a natural gas transportation and sales pipeline. [APC-S-2 II.B(10)]
L-2		Such air emission equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants. [APC-S-2 II.B(10)]

**To Construct Air Emissions Equipment**

Goodrich Petroleum Company LLC,- Crosby Minerals 12-1 -1E Production Facility

Facility Requirements

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**EQPT0000000040 (AA-014) Heater Treater - waste gas (Facility Ref. No. 10-12-HT-WG):**

Limitation Requirements:

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Condition No.	Parameter	Condition
L-1		The heater treater shall only be operated with separated gas routed to a control flare or to a natural gas liquids recovery unit; or to a natural gas transportation and sales pipeline. [APC-S-2 II.B(10)]
L-2		Such air emission equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants. [APC-S-2 II.B(10)]

**To Construct Air Emissions Equipment**

Goodrich Petroleum Company LLC,- Crosby Minerals 12-1 -1E Production Facility

Facility Requirements

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**EQPT0000000039 (AA-015) Glycol Pump Flash Separator - waste gas (Facility Ref. No. 11-12-GPFS-WG):**

Narrative Requirements:

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Condition No.	Condition
T-1	The glycol pump flash separator shall only be operated with emissions routed to and controlled by a control flare. [APC-S-2 II.B(10)]
T-2	Such air emission equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants. [APC-S-2 II.B(10)]

**To Construct Air Emissions Equipment**

Goodrich Petroleum Company LLC,- Crosby Minerals 12-1 -1E Production Facility

Facility Requirements

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**EQPT0000000033 (AA-020) Oil Tank Transfer to Truck Loading - Loading Losses (Facility Ref. No. 16-12-LL):**

Limitation Requirements:

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Condition No.	Parameter	Condition
L-1		Such air emission equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants. [APC-S-2 II.B(10)]

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**To Construct Air Emissions Equipment**

Goodrich Petroleum Company LLC,- Crosby Minerals 12-1 -1E Production Facility

Facility Requirements

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**EQPT0000000034 (AA-021) Pneumatic Controllers (Facility Ref. No. 17-12-PC):**

Limitation Requirements:

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Condition No.	Parameter	Condition
L-1		Such air emission equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants. [APC-S-2 II.B(10)]

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## To Construct Air Emissions Equipment

Goodrich Petroleum Company LLC,- Crosby Minerals 12-1 -1E Production Facility

Facility Requirements

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### CONT0000000002 (AA-026) Control Flare (8-12-F):

#### Limitation Requirements:

Condition No.	Parameter	Condition
L-1	Particulate Matter	<p>Particulate Matter: (1) The maximum permissible emission of ash and/or particulate matter from fossil fuel burning installation of less than 10 million BTU per hour heat input shall not exceed 0.6 pounds per million BTU per hour heat input</p> <p>(2) The maximum permissible emission of ash and /or particulate matter from fossil fuel burning installations equal to or greater than 10 million BTU per hour heat input but less than 10,000 million BTU per hour heat input shall not exceed an emission rate as determined by the relationship</p> $E = 0.8808 * I^{-0.1667}$ <p>Where E is the emission rate in pounds per million BTU per hour heat input and I is the heat input in millions of BTU per hour                      . [APC-S-1 3.4.a]</p>
L-2		For the flare, the permittee shall comply with all applicable requirements of 40 CFR 60.18. [40 CFR 60.18]
L-3		The permittee shall operate the control flare with no visible emissions as determined by EPA Method 22, except for periods not to exceed a total of 5 minutes during any consecutive two (2) hours. [APC-S-2 II.B(10)]
L-4		The permittee shall maintain a flare pilot flame at all times. [APC-S-2 II.B(10)]
L-5		The net heating value of the gas being combusted shall be 300 Btu/scf or greater if the flare is steam-assisted or air-assisted; or the net heating value of the gas being combusted shall be 200 Btu/scf or greater if the flare is non-assisted. [APC-S-2 II.B(10)]
L-6		Flares shall be operated at all times when emissions are being vented to them. [APC-S-2 II.B(10)]
L-7		Flares shall be operated and maintained in conformance with their design and manufacturer's recommendations. [APC-S-2 II.B(10)]

## To Construct Air Emissions Equipment

Goodrich Petroleum Company LLC,- Crosby Minerals 12-1 -1E Production Facility

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### CONT0000000002 (continued):

#### Monitoring Requirements:

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Condition No.	Parameter	Condition
M-1		The permittee shall monitor the presence of the flare pilot flame by one of the following methods: using a thermo-couple or any other equivalent device to detect the presence of a flare; or visually observe the presence of the flare flame, daily. [APC-S-2 II.B(11)]
M-2		The permittee shall visually observe the flare for a minimum of five (5) minutes during operation using EPA Method 22, weekly. If smoking is observed, corrective actions must be taken. The permittee shall perform a follow-up visual observation for a period of two (2) hours using EPA Method 22 immediately after corrections are made to demonstrate compliance with the visible emissions limitations. [APC-S-2 II.B(11)]
M-3		The net heating value of the gas being combusted shall be determined monthly by the methods specified in 40 CFR 60.18 (f) or by the semi-annual field gas analysis. Analysis must demonstrate that the heat content of the flare gas is 300 Btu/scf or greater if the flare is steam-assisted; or the net heating value of the gas being combusted is 200 Btu/scf or greater if the flare is non-assisted. [APC-S-2 II.B(11)]
M-4		The permittee shall measure the volume of gas combusted in the flare. [APC-S-2 II.B(11)]

#### Record-Keeping Requirements:

---

Condition No.	Condition
R-1	The permittee shall keep records of all maintenance performed on the flare in order to operate the flare in a manner consistent with good air pollution control practices to minimize emissions and shall make said records available upon request. [APC-S-2 II.B(11)]
R-2	The permittee shall maintain a record and/or a log documenting all visual observations/test, the nature and cause of any visible emissions, any corrective actions(s) taken to prevent or minimize the emissions, the date and time when visible observations were conducted and the date and time when corrective action was taken. [APC-S-2 II.B(11)]
R-3	The permittee shall record on a log sheet anytime the facility is operating without a flame present and the corrective action taken. [APC-S-2 II.B(11)]

**To Construct Air Emissions Equipment**

Goodrich Petroleum Company LLC,- Crosby Minerals 12-1 -1E Production Facility

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**CONT0000000002 (continued):**

**Record-Keeping Requirements:**

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Condition No.	Condition
R-4	The permittee shall keep a record of the net heating value of the stream combusted in the flare. [APC-S-2 II.B(11)]

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**To Construct Air Emissions Equipment**

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Facility Requirements

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**GRPT0000000007 (Pumps) Gas Operated Pumps:**

Limitation Requirements:

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Condition No.	Parameter	Condition
L-1		Such air emission equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants . [APC-S-2 II.B(10)]

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**To Construct Air Emissions Equipment**

Goodrich Petroleum Company LLC,- Crosby Minerals 12-1 -1E Production Facility  
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**GRPT0000000008 (Storage Tanks) Miscellaneous small storage tanks:**

Limitation Requirements:

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Condition No.	Parameter	Condition
L-1		Such air emission equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants. [APC-S-2 II.B(10)]

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**To Construct Air Emissions Equipment**

Goodrich Petroleum Company LLC,- Crosby Minerals 12-1 -1E Production Facility

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**GRPT0000000009 (Vessels) Blowcase Vessels:**

Limitation Requirements:

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Condition No.	Parameter	Condition
L-1		Such air emission equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants. [APC-S-2 II.B(10)]

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### To Construct Air Emissions Equipment

Goodrich Petroleum Company LLC,- Crosby Minerals 12-1 -1E Production Facility

Facility Requirements

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#### GRPT0000000010 (Storage Tanks) Crude Oil Storage Tanks:

##### Limitation Requirements:

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Condition No.	Parameter	Condition
L-1		Emission Point AA-007, AA-008, AA-009, AA-010 shall only be operated with vapors routed to a control flare. [APC-S-2 II.B(10)]
L-2		Such air emission equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants. [APC-S-2 II.B(10)]

**To Construct Air Emissions Equipment**

Goodrich Petroleum Company LLC,- Crosby Minerals 12-1 -1E Production Facility  
Facility Requirements  
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**GRPT0000000011 (Storage Tanks) Produced Water Storage Tanks:**

Limitation Requirements:

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Condition No.	Parameter	Condition
L-1		Emission Point AA-011 and AA-012 shall only be operated with emissions routed to a control flare. [APC-S-2 II.B(10)]
L-2		Such air emission equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants. [APC-S-2 II.B(10)]

## To Construct Air Emissions Equipment

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### GRPT0000000012 (Combustion Units Rated Less than 10 MMBtu/hr ) Line Heater, Heater Treater Burner, Glycol Regenerator Burner:

#### Limitation Requirements:

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Condition No.	Parameter	Condition
L-1	Particulate Matter	Particulate Matter: The maximum permissible emission of ash and/or particulate matter from fossil fuel burning installation of less than 10 million BTU per hour heat input shall not exceed 0.6 pounds per million BTU per hour heat input. [APC-S-1 3.4.a(1)]
L-2	Opacity	Opacity: The permittee shall not have emissions of opacity greater than or equal to 40% as determined by EPA Reference Method 9, 40 CFR 60, Appendix A. [APC-S-1 3.1.a]
L-3		Such air emission equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants. [APC-S-2 II.B(10)]

## GENERAL INFORMATION

Goodrich Petroleum Company LLC,- Crosby Minerals 12-1 -1E Production Facility  
Leake Road  
Centreville, MS  
Wilkinson County

### Alternate/Historic Identifiers

ID	Alternate/Historic Name	User Group	Start Date	End Date
57872	Goodrich Petroleum Company, LLC	Official Site Name	6/20/2012	
2815700021	Goodrich Petroleum Company, LLC	Air-AIRS AFS	6/21/2012	
294000021	Goodrich Petroleum Company LLC,- Crosby Minerals 12-1 -1E Production Facility	Air-Construction	1/24/2013	

**Basin:** South Independent Streams Basin

### Location Description:

## GENERAL INFORMATION

### Relevant Documents:

The federal regulations referenced in this permit may be found on-line at <http://ecfr.gpoaccess.gov/> and the State of Mississippi regulations may be found on-line at <http://www.mdeq.ms.state.us/> or a copy of the regulations may be obtained by contacting the Mississippi Department of Environmental Quality, Environmental Permitting Division, Post Office Box 2261, Jackson, Mississippi 39255, phone (601) 961-5171. The following regulations were referenced in this permit:

Mississippi Air Regulations APC-S-1, Air Emission Regulations for the Prevention, Abatement, and Control of Air Contaminants

Mississippi Air Regulations APC-S-2, Permit Regulations for the Construction and/or Operation of Air Emissions Equipment

40 CFR Part 60, Subpart JJJJ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

40 CFR Part 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

40 CFR Part 63, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Stationary Internal Combustion Engines

40 CFR Part 63, Subpart HH - National Emissions Standards for Hazardous Air Pollutants: Oil and Natural Gas Production Facilities: Area Sources

40 CFR Part 60, Subpart OOOO - New Source Performance Standards for Crude Oil and Natural Gas Production, Transmission, and Distribution