United States Environmental Protection Agency Region 8 Air Program 1595 Wynkoop Street Denver, CO 80202



Air Pollution Control Synthetic Minor Source Permit to Construct

40 CFR 49.151

SMNSR-SU-000053-2013.001

Permit to Construct to establish legally and practically enforceable limitations and requirements on sources at an existing facility

Permittee:

Samson Resources Company

Permitted Facility:

Spring Creek Compressor Station Southern Ute Indian Reservation La Plata County, Colorado

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I. Conditional Permit to Construct

A. General Information

<u>Facility</u>: Samson Resources Company, Spring Creek Compressor Station

Permit Number: SMNSR-SU-000053-2013.001

SIC Code and SIC Description: 1311- Crude Petroleum and Natural Gas

Site Location: Corporate Office Location

Spring Creek Compressor Station Samson Resources Company

SW 1/4 NE 1/4, Sec 23 T33N R7W Samson Plaza

Southern Ute Indian Reservation Two West Second Street
La Plata County, CO Tulsa, Oklahoma 74103-3103

The equipment listed in this permit may only be operated by the Samson Resources Company (Samson) at the following location:

Latitude 37.09241N, Longitude -107.57601W

B. Background

On July 1, 2011, the EPA promulgated the Tribal Minor New Source Review (MNSR) Permit Program at 40 CFR Part 49. The rule became effective on August 30, 2011. The purpose of the rule is to establish a preconstruction permitting program for new and modified minor sources and minor modifications at existing major sources. In addition, the rule provides a mechanism to create legally and practically enforceable restrictions upon request to recognize emission controls, limits in hours of operation, limits on throughputs, etc. creating synthetic minor sources. In other words, an otherwise major stationary source may receive restrictions on its total potential to emit to become a synthetic minor source for purposes of the Prevention of Significant Deterioration Permit Program at 40 CFR Part 52 (PSD) and/or the Title V Operating Permit Program at 40 CFR Part 71 (Part 71). This mechanism is voluntary and may also be used to establish an otherwise major source of hazardous air pollutants (HAP) as a synthetically minor source of HAP.

40 CFR 49.153(a)(3)(iv) of the MNSR rule provides the EPA with the authority to require at their discretion existing sources whose limits were established through mechanisms such as a consent decree to apply for a permit under the MNSR Permit Program to transfer the limits to a MNSR permit.

C. Proposal

Through this permit action, the EPA is incorporating legally and practically enforceable emission limits that were established in a May 1, 2014 Consent Agreement Final Order (CAFO) #CAA-08-2013-0015 between Samson and the EPA. The CAFO required Samson to equip and operate each of the engines with air-to-fuel ratio (AFR) control systems to reduce the emissions of nitrogen oxide (NO_X) pollutants to minor levels. The emission limits in this permit provide enforceable recognition of the AFR control systems installed and operating on each of the engines.

D. Applicability

1. This permit is being issued under authority of the MNSR Permit Program.

- 2. The requirements in this permit have been created, at the Permittee's request to establish legally and practically enforceable restrictions for limiting compressor engine NO_X emissions.
- 3. Any conditions established for this facility or any specific units at this facility pursuant to any permit issued under the authority of the PSD Permit Program or the MNSR Permit Program shall continue to apply.
- 4. By issuing this permit, the EPA does not assume any risk of loss which may occur as a result of the operation of the permitted facility by the Permittee, Owner, and/or Operator, if the conditions of this permit are not met by the Permittee, Owner, and/or Operator.

E. Construction and Operational Limits

- 1. The Permittee may install and operate no more than nine (9) reciprocating internal combustion engines used for compression, each meeting the following specifications:
 - (a) Operated as a 4-stroke lean-burn engine;
 - (b) Fired with natural gas; and
 - (c) Limited to a maximum site rating of 1,092 horsepower (hp).
- 2. The Permittee shall install, operate, and maintain an AFR control system, as specified in this permit, on each of the nine (9) engines.
- 3. Only the natural gas-fired engines that are operated and controlled as specified in this permit are approved for installation under this permit.

F. Emission Limits

- 1. NO_X emissions from each of the nine (9) engines equipped with AFR control systems, shall not exceed:
 - (a) 2.3 grams per horsepower-hour (g/hp-hr); and
 - (b) 24.8 tons in any consecutive 12-month period.
- 2. Emission limits shall apply at all times, unless otherwise specified in this permit.

G. Control and Operational Requirements

- 1. The Permittee shall ensure that the AFR control system on each of the nine (9) engines is capable of reducing uncontrolled emissions of NO_X to meet the emission limits specified in this permit.
- 2. The Permittee shall install, operate, and maintain either a NO_X sensor or an oxygen (O₂) sensor with a display for the NO_X or O₂ set point for the AFR controller on each of the nine (9) engines. Each NO_X sensor or O₂ sensor shall be calibrated and operated by the Permittee according to manufacturer specifications or equivalent specifications developed by the Permittee or vendor.
- 3. The Permittee shall determine a NO_X or O₂ set point for the AFR controller on each of the nine (9) engines that ensures compliance with the NO_X emission limits specified in this permit. The set points shall be determined by developing a correlation between the NO_X or O₂ set point on the engine control panel and the post-catalyst engine exhaust NO_X emissions measured during the

- initial performance test required under this permit. The Permittee shall operate the AFR control system on each of the nine (9) engines at that NO_X or O₂ set point at all times.
- 4. The NO_X or O₂ set points on each AFR controller shall only be adjusted through the use of a computer equipped with manufacturer-supplied software that is physically connected to the control panel. The set points shall only be changed by mechanics employed or hired by the Permittee, not by operations personnel at the facility.
- 5. The Permittee shall only fire the nine (9) engines with natural gas. The natural gas shall be pipeline-quality in all respects except that the CO₂ concentration in the gas shall not be required to be within pipeline-quality.
- 6. The Permittee shall follow, for each engine and AFR control system, the manufacturer's recommended maintenance schedule and procedures, or equivalent procedures developed by the Permittee or vendor, to ensure optimum performance of each engine and its respective AFR control system.
- 7. The Permittee may rebuild an existing permitted engine or replace an existing permitted engine with an engine of the same horsepower rating, and configured to operate in the same manner as the engine being rebuilt or replaced. Any emission limits, requirements, control technologies, testing or other provisions that apply to the permitted engines that are rebuilt or replaced shall also apply to the rebuilt or replaced engines.
- 8. The Permittee may resume operation without the AFR control system during an engine break-in period, which shall not exceed 200 operating hours, for rebuilt and replaced engines.

H. Performance Testing Requirements

- 1. Performance tests shall be conducted on all nine (9) engines at the facility for measuring NO_X emissions to demonstrate compliance with the NO_X emission limits specified in this permit. The performance tests shall be conducted in accordance with the EPA Reference Method 7E, specified in 40 CFR Part 60, Appendix A, or an appropriate EPA-approved American Society for Testing and Materials (ASTM) Method D-6438-03. The Permittee may submit to the EPA a written request for approval of an alternate test method, but shall only use that alternate test method after obtaining approval from the EPA.
 - (a) The initial performance tests shall be conducted within 90 calendar days of startup of a new engine.
 - (b) Subsequent performance tests shall be conducted within 180 calendar days of the most recent performance test.
 - (c) Performance tests shall be conducted within 90 calendar days of startup of all rebuilt engines and replaced engines.
- 2. Performance tests for NO_X emissions shall meet the following requirements:
 - (a) A post-catalyst exhaust NO_X ceiling monitoring value shall be established during the performance test for each of the controlled engines at the facility that are equipped with a NO_X sensor. This monitoring value shall be established by determining the NO_X set point

- in parts per million (ppm) that is required for the engine to demonstrate compliance with the NO_X emission limits specified in this permit.
- (b) A post-catalyst exhaust O₂ concentration floor monitoring value shall be established during the performance test for each of the controlled engines at the facility that are equipped with an O₂ sensor. This monitoring value shall be established by determining the O₂ % in the exhaust that is required for the engine to demonstrate compliance with the NO_X emission limits specified in this permit.
- (c) All tests shall be performed at a maximum operating rate (90% to 110% of the maximum achievable load available at the time of the test). The Permittee may submit to the EPA a written request for approval of an alternate load level for testing, but shall only test at that alternate load level after obtaining written approval from the EPA.
- (d) During each test run, data shall be collected on all parameters necessary to document how emissions were measured or calculated (such as test run length, minimum sample volume, volumetric flow rate, moisture and oxygen corrections, etc.).
- (e) Each test shall consist of at least three 1-hour or longer valid test runs. Emission results shall be reported as the arithmetic average of all valid test runs and shall be in terms of the emission limits.
- (f) Performance test plans shall be submitted to the EPA for approval 60 calendar days prior to the date the test is planned.
- (g) Performance test plans that have already been approved by the EPA for the emission units approved in this permit may be used in lieu of new test plans unless the EPA requires the submittal and approval of new test plans. The Permittee may submit new test plans for EPA approval at any time.
- (h) The test plans shall include and address the following elements:
 - (i) Purpose of the test;
 - (ii) Engines and any respective AFR control systems to be tested;
 - (iii) Expected engine operating rate(s) during the test;
 - (iv) Sampling and analysis procedures (sampling locations, test methods, laboratory identification);
 - (v) Quality assurance plan (calibration procedures and frequency, sample recovery and field documentation, chain of custody procedures); and
 - (vi) Data processing and reporting (description of data handling and quality control procedures, report content).
- 3. The Permittee shall not perform engine tuning or make any adjustments to engine settings, AFR control system settings, processes, or operational parameters the day of or during the engine testing. Any such tuning or adjustments may result in a determination by the EPA that the test is invalid. Artificially increasing an engine load to meet testing requirements is not considered engine tuning or adjustments.
- 4. The Permittee shall not abort any engine tests that demonstrate non-compliance with the NO_X emission limits specified in this permit.

- 5. The Permittee shall notify the EPA at least 30 calendar days prior to scheduled performance testing. The Permittee shall notify the EPA at least 1 week prior to scheduled performance testing if the testing cannot be performed.
- 6. If the results of a complete and valid performance test of the emissions from any of the nine (9) engines demonstrate noncompliance with the emission limits specified in this permit, the engine shall be shut down as soon as safely possible, and appropriate corrective action shall be taken (e.g., repairs, catalyst cleaning, catalyst replacement). The Permittee shall notify the EPA in writing within 24 hours of each such shut down. The engine must be retested within 7 days of being restarted and the emissions must meet the applicable limits in this permit. If the retest shows that the emissions continue to exceed the limits specified in this permit, the engine shall again be shut down as soon as safely possible, and the engine may not operate, except for purposes of startup and testing, until the Permittee demonstrates through testing that the emissions do not exceed the emission limits specified in this permit.
- 7. If a permitted engine is not operating, the Permittee does not need to start up the engine solely to conduct a performance test. The Permittee may conduct the performance test when the engine is started up again.
- 8. Upon change out of the NO_X or O₂ sensor on any engine, the Permittee shall measure NO_X emissions from the post-catalyst engine exhaust using a portable analyzer and the protocol specified in the Monitoring Requirements section of this permit in order to calibrate the set-point for the new sensor to ensure compliance with the NO_X emission limits specified in this permit.

I. Monitoring Requirements

- 1. The Permittee shall monitor NO_X emissions from the post-catalyst exhaust of each of the nine (9) engines at least quarterly, to confirm the unit's respective AFR set point is adequate to achieve compliance with the NO_X emission limits specified in this permit. To meet this requirement, the Permittee shall:
 - (a) Measure NO_X emissions at the normal operating load using a portable analyzer in accordance with the following protocol, or conduct a performance test as specified in this permit:
 - (i) Measure NO_X concentration in parts per million (ppm) and the O₂ concentration in % O₂ for 20 minutes, recording the NO_X and O₂ concentrations once every minute;
 - (ii) Calculate and record the average NO_X and O₂ concentrations over the 20-minute period; and
 - (iii) Calculate and record the average NO_X emission rate (EF) in g/hp-hr using the following equation¹:

 $EF (g/hp-hr) = \underbrace{[(NO_X \text{ ppm}) (1.19x10^7 \text{ lb } NO_X/\text{scf-ppm}) (454 \text{ g/lb}) (8,710 \text{ dscf/MMBtu}) (20.9/20.9-\%O_2) (8,367 \text{ Btu/hp-hr})]}_{(10^6 \text{ Btu/MMBtu})}$

Note: scf-ppm = standard cubic feet-parts per million; g/lb = grams per pound; dscf/MMBtu = dry standard cubic feet per million British thermal units; Btu/hp-hr = British thermal units per horsepower-hour; Btu/MMBtu = British thermal units per British thermal units.

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¹ Equation originates from the May 1, 2014 CAFO

- (b) Commence monitoring for NO_X emissions within 180 calendar days of the Permittee's submittal of the initial performance test results for NO_X emissions to the EPA.
- 2. The Permittee shall not perform engine tuning or make any adjustments to engine settings, AFR control system settings, processes or operational parameters the day of or during measurements. Any such tuning or adjustments may result in a determination by the EPA that the result is invalid. Artificially increasing an engine load to meet testing requirements is not considered engine tuning or adjustments.
- 3. The Permittee is not required to conduct emissions monitoring on engines that have not operated during the monitoring period. The Permittee shall certify that the engine(s) did not operate during the monitoring period in the annual report.

J. Recordkeeping Requirements

- 1. Records shall be kept of manufacturer specifications and maintenance requirements developed by the manufacturer, vendor, or Permittee for each engine, and each AFR control system, NO_X sensor, and O₂ sensor required in this permit.
- 2. Records shall be kept of all calibration and maintenance conducted for each engine, and each AFR control system, NO_x sensor, and O₂ sensor required in this permit.
- 3. Records shall be kept that are sufficient to demonstrate that the fuel used for each engine is pipeline quality natural gas in all respects, with the exception of CO₂ concentrations.
- 4. Records shall be kept of all required testing and monitoring in this permit. The records shall include the following:
 - (a) The date, place, and time of sampling or measurements;
 - (b) The date(s) analyses were performed;
 - (c) The company or entity that performed the analyses;
 - (d) The analytical techniques or methods used;
 - (e) The results of such analyses or measurements; and
 - (f) The operating conditions as existing at the time of sampling or measurement.
- 5. Records shall be kept of all AFR control system or NO_X or O₂ sensor replacements or repairs, engine rebuilds, and engine replacements.
- 6. Records shall be kept of each rebuilt or replaced engine break-in period for the nine (9) engines equipped with AFR control systems, pursuant to the requirements of this permit, where an existing engine that has been rebuilt or replaced resumes operation without the AFR control system, for a period not to exceed 200 hours.
- Records shall be kept of each time any of the nine (9) engines equipped with AFR control systems is shut-down due to a deviation in the NO_X or O₂ set point. The Permittee shall include in the record the cause of the problem, the corrective action taken, and the timeframe for bringing the NO_X or O₂ set point into compliance.

K. Records Retention Requirements

- 1. The Permittee shall retain all records required by this permit for a period of at least five (5) years from the date the record was created.
- 2. Records shall be kept in the vicinity of the facility, such as at the facility, the location that has day-to-day operational control over the facility, or the location that has day-to-day responsibility for compliance of the facility.

L. Reporting Requirements

- 1. Annual Emission Reports
 - (a) The Permittee shall submit a written annual report of the actual annual emissions from all emission units at the facility each year no later than April 1st. The annual report shall cover the period for the previous calendar year. All reports must be certified to truth and accuracy by the person primarily responsible for Clean Air Act compliance for the Permittee.
 - (b) The report shall include NO_X emissions.
 - (c) The report shall be submitted to:

U.S. Environmental Protection Agency, Region 8 Office of Partnerships and Regulatory Assistance Tribal Air Permitting Program, 8P-AR 1595 Wynkoop Street Denver, Colorado 80202

The report may be submitted via electronic mail to r8AirPermitting@epa.gov.

2. All other documents required to be submitted under this permit, with the exception of the Annual Emission Reports, shall be submitted to:

U.S. Environmental Protection Agency, Region 8
Office of Enforcement, Compliance & Environmental Justice
Air Toxics and Technical Enforcement Program, 8ENF-AT
1595 Wynkoop Street
Denver, Colorado 80202

Documents may be submitted electronically to r8airreportenforcement@epa.gov.

- 3. The Permittee shall promptly submit to the EPA a written report of any deviations of permit requirements, a description of the probable cause of such deviations and any corrective actions or preventative measures taken. A "prompt" deviation report is one that is post marked or submitted via electronic mail to r8airreportenforcement@epa.gov as follows:
 - (a) Within 30 days from the discovery of any deviation of the emission limits or operational limits that are left un-corrected for more than 5 days after discovering the deviation; and

- (b) By April 1st for the discovery of a deviation of recordkeeping or other permit conditions during the preceding calendar year that do not affect the Permittee's ability to meet the emission limits.
- 4. The Permittee shall submit a written report for any required performance tests to the EPA within 60 days after completing the tests.
- 5. The Permittee shall submit any record or report required by this permit upon EPA request.

II. General Provisions

A. Conditional Approval:

Pursuant to the authority of 40 CFR 49.151, the EPA hereby conditionally grants this permit. This authorization is expressly conditioned as follows:

- 1. *Document Retention and Availability:* This permit and any required attachments shall be retained and made available for inspection upon request at the location set forth herein.
- 2. *Permit Application:* The Permittee shall abide by all representations, statements of intent and agreements contained in the application submitted by the Permittee. The EPA shall be notified 10 days in advance of any significant deviation from this permit application as well as any plans, specifications or supporting data furnished.
- 3. *Permit Deviations:* The issuance of this permit may be suspended or revoked if the EPA determines that a significant deviation from the permit application, specifications, and supporting data furnished has been or is to be made. If the proposed source is constructed, operated, or modified not in accordance with the terms of this permit, the Permittee will be subject to appropriate enforcement action.
- 4. *Compliance with Permit:* The Permittee shall comply with all conditions of this permit, including emission limitations that apply to the affected emissions units at the permitted facility/source. Noncompliance with any permit term or condition is a violation of this permit and may constitute a violation of the Clean Air Act and is grounds for enforcement action and for a permit termination or revocation.
- 5. Fugitive Emissions: The Permittee shall take all reasonable precautions to prevent and/or minimize fugitive emissions during the construction period.
- 6. *National Ambient Air Quality Standard and PSD Increment:* The permitted source shall not cause or contribute to a National Ambient Air Quality Standard violation or a PSD increment violation.
- 7. Compliance with Federal and Tribal Rules, Regulations, and Orders: Issuance of this permit does not relieve the Permittee of the responsibility to comply fully with all other applicable federal and tribal rules, regulations, and orders now or hereafter in effect.
- 8. *Enforcement:* It is not a defense, for the Permittee, in an enforcement action, to claim that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

- 9. *Modifications to Existing Permitted Emissions Units/Limits:* For proposed modifications, as defined at 40 CFR 49.152(d), that would increase an emissions unit allowable emissions of pollutants above its existing permitted annual allowable emissions limit, the Permittee shall first obtain a permit modification pursuant to the MNSR regulations approving the increase. For a proposed modification that is not otherwise subject to review under the PSD or MNSR regulations, such proposed increase in the annual allowable emissions limit shall be approved through an administrative permit revision as provided at 40 CFR 49.159(f).
- 10. Relaxation of Legally and Practically Enforceable Limits: At such time that a new or modified source within this permitted facility/source or modification of this permitted facility/source becomes a major stationary source or major modification solely by virtue of a relaxation in any legally and practically enforceable limitation which was established after August 7, 1980, on the capacity of the permitted facility/source to otherwise emit a pollutant, such as a restriction on hours of operation, then the requirements of the PSD regulations shall apply to the source or modification as though construction had not yet commenced on the source or modification.
- 11. Revise, Reopen, Revoke and Reissue, or Terminate for Cause: This permit may be revised, reopened, revoked and reissued, or terminated for cause. The filing of a request by the Permittee, for a permit revision, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition. The EPA may reopen this permit for a cause on its own initiative, e.g., if this permit contains a material mistake or the Permittee fails to assure compliance with the applicable requirements.
- 12. *Severability Clause:* The provisions of this permit are severable, and in the event of any challenge to any portion of this permit, or if any portion is held invalid, the remaining permit conditions shall remain valid and in force.
- 13. *Property Rights:* This permit does not convey any property rights of any sort or any exclusive privilege.
- 14. *Information Requests:* The Permittee shall furnish to the EPA, within a reasonable time, any information that the EPA may request in writing to determine whether cause exists for revising, revoking and reissuing, or terminating this permit or to determine compliance with this permit. For any such information claimed to be confidential, you shall also submit a claim of confidentiality in accordance with 40 CFR Part 2, Subpart B.
- 15. *Inspection and Entry:* The EPA or its authorized representatives may inspect this permitted facility/source during normal business hours for the purpose of ascertaining compliance with all conditions of this permit. Upon presentation of proper credentials, the Permittee shall allow the EPA or its authorized representative to:
 - (a) Enter upon the premises where this permitted facility/source is located or emissions-related activity is conducted, or where records are required to be kept under the conditions of this permit;
 - (b) Have access to and copy, at reasonable times, any records that are required to be kept under the conditions of this permit;
 - (c) Inspect, during normal business hours or while this permitted facility/source is in operation, any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit;

- (d) Sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with this permit or other applicable requirements; and
- (e) Record any inspection by use of written, electronic, magnetic and photographic media.
- 16. *Permit Effective Date:* This permit is effective immediately upon issuance unless comments resulted in a change in the proposed permit, in which case the permit is effective 30 days after issuance. The Permittee may notify the EPA, in writing, that this permit or a term or condition of it is rejected. Such notice should be made within 30 days of receipt of this permit and should include the reason or reasons for rejection.
- 17. *Permit Transfers:* Permit transfers shall be made in accordance with 40 CFR 49.159(f). The Air Program Director shall be notified in writing at the address shown below if the company is sold or changes its name.

U.S. Environmental Protection Agency, Region 8 Office of Partnerships and Regulatory Assistance Tribal Air Permitting Program, 8P-AR 1595 Wynkoop Street Denver, Colorado 80202

- 18. *Invalidation of Permit:* This permit becomes invalid if construction is not commenced within 18 months after the effective date of this permit, construction is discontinued for 18 months or more, or construction is not completed within a reasonable time. The EPA may extend the 18-month period upon a satisfactory showing that an extension is justified. This provision does not apply to the time period between the construction of the approved phases of a phased construction project. The Permittee shall commence construction of each such phase within 18 months of the projected and approved commencement date.
- 19. *Notification of Start-Up:* The Permittee shall submit a notification of the anticipated date of initial start-up of this permitted source to the EPA within 60 days of such date, unless this permitted source is an existing source.

B. Authorization:

Authorized by the	ne United	States Env	ironmental	Protection A	Agency, 1	Region 8	3

Callie A. Videtich Date

Acting Assistant Regional Administrator Office of Partnerships and Regulatory Assistance