Smith, Claudia

From: Smith, Claudia
Sent: Tuesday, September 05, 2017 10:56 AM
Subject: Notice of Issuance of Permit to Construct on the Uintah and Ouray Indian Reservation

This is to notify you that the EPA has issued a final Clean Air Act (CAA) synthetic minor permit to construct for the existing Anadarko Uintah Midstream, LLC, Antelope Flats and Sand Wash Compressor Stations with South Central Tank Battery pursuant to the Tribal Minor New Source Review (MNSR) Permit Program at 40 CFR Part 49. The final MNSR permit, response to comments and administrative permit record will be available in PDF format on our website at: http://www.epa.gov/caa-permitting/caa-permits-issued-epa-region-8.

In accordance with the regulations at §49.159(a), the permit will be effective 30 days after the date of this notice, on October 5, 2017. Within 30 days after a final permit decision has been issued, any person who filed comments on the proposed permit or participated in the public hearing may petition the Environmental Appeals Board (EAB) to review any condition of the permit decision. The 30-day period within which a person may request review under this section begins when we have fulfilled the notice requirements for the final permit decision. Motions to reconsider a final order by the EAB must be filed within 10 days after service of the final order. A petition to the EAB is under Section 307(b) of the CAA, a prerequisite to seeking judicial review of the final agency action. For purposes of judicial review, final agency action occurs when we issue or deny a final permit and agency review procedures are exhausted.

Thank you,

Claudia Young Smith
Environmental Scientist
Air Program
U.S. Environmental Protection Agency, Region 8
Tel: (303) 312-6520
Email: smith.claudia@epa.gov
Web: http://www.epa.gov/caa-permitting/caa-permitting-epas-mountains-and-plains-region
Mail: 1595 Wynkoop Street, Mail Code 8P-AR, Denver, Colorado 80202
****

Smith, Claudia

From: Smith, Claudia
Sent: Tuesday, September 05, 2017 10:47 AM
To: shon.rhoton@andarko.com
Cc: Ohlhausen, Natalie (Natalie.Ohlhausen@anadarko.com); Minnie Grant; Bruce Pargeets; Fallon, Gail
Subject: Final SMNSR Permit for Antelope Flats and Sand Wash Compressor Stations with South Central Tank Battery
Attachments: Anadarko Antelope Flats-Sand Wash RTC & Final Permit SMNSR-UO-000027-2012 001.pdf

Mr. Rhoton,

I have attached the final requested permit and the accompanying response to comments document for the Antelope Flats and Sand Wash Compressor Stations with South Central Tank Battery, issued pursuant to the Tribal Minor New Source Review (MNSR) Program at 40 CFR Part 49. We will also be posting the final MNSR permit and response to comments and the administrative permit record in PDF format on our website at: http://www.epa.gov/caa-permitting/caa-permits-issued-epa-region-8.

In accordance with the regulations at §49.159(a), the permit will be effective 30 days after the date of this notice, on October 5, 2017. Within 30 days after a final permit decision has been issued, any person who filed comments on the proposed permit or participated in the public hearing may petition the Environmental Appeals Board (EAB) to review any condition of the permit decision. The 30-day period within which a person may request review under this section begins when we have fulfilled the notice requirements for the final permit decision. Motions to reconsider a final order by the EAB must be filed within 10 days after service of the final order. A petition to the EAB is under Section 307(b) of the CAA, a prerequisite to seeking judicial review of the final agency action. For purposes of judicial review, final agency action occurs when we issue or deny a final permit and agency review procedures are exhausted.

If you have any questions or concerns regarding this final permit action, or would like a paper copy, please contact me.

Thank you,

Claudia Young Smith
Environmental Scientist
Air Program
U.S. Environmental Protection Agency, Region 8
Tel: (303) 312-6520
Email: smith.claudia@epa.gov
Web: http://www.epa.gov/caa-permitting/caa-permitting-epas-mountains-and-plains-region
Mail: 1595 Wynkoop Street, Mail Code 8P-AR, Denver, Colorado 80202
****

ANADARKO UINTAH MIDSTREAM, LLC

1201 LAKE ROBBINS DRIVE • THE WOODLANDS, TEXAS 77380
P.O. BOX 1330 • HOUSTON, TEXAS 77251-1300

Anadarko
Uintah Midstream, LLC

July 11, 2017

Sent Via Certified Mail No.: 7014 3490 0001 8054 1043

Ms. Claudia Smith
U.S. EPA, Region 8
1595 Wynkoop Street, 8P-AR
Denver, CO 80202-1129

RE: Proposed Permit: Antelope Flats / Sand Wash Compressor Stations w/ South Central Tank Battery
Permit # SMNSR-UP-000027-2012.001

Dear Ms. Smith:

Thank you for the opportunity to provide comments on the proposed permit for the Antelope Flats / Sand Wash Compressor Stations w/ South Central Tank Battery. The comment letter is presented in two (2) sections. The first section outlines high level comments to the permit and the second section provides specific comments on the proposed conditions.

I – Permit Wide Comment

APC Comment: Natural gas and pipeline quality natural gas are referenced in several places in the proposed permit. This facility compresses unprocessed gas more commonly referred to as wet gas that undergoes processing at the Chipeta Gas Plant. There is no equipment present at this facility to meet a specific fuel gas requirement. Therefore, APC requests all references to natural gas and pipeline quality be removed from this permit.

II – Condition Specific Comments

C. Requirements for the Low-Emission Dehydrator

2. Recordkeeping Requirements

~~(b) Records shall be kept of all required inspections, including repairs made in response to leaks detected in the closed-vent system.~~

APC Comment: This permit does not contain inspection requirements for Low-Emission Dehydration units. APC requests that this condition be removed from the permit.

D. Requirements for 4SLB Compressor Engines

3. Performance Test Requirements

(e) All performance tests conducted on the engines shall meet the following requirements:

(i) ~~All performance tests shall be conducted at 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~~

APC Comment: This is not a condition of testing under the consent decree. APC requests that this condition be removed from the permit.

(ii) Each test shall consist of at least one (1) 21-minute or longer valid test run *or (2) two consecutive 21-minute or longer valid test run, one pre-catalyst and one post-catalyst run*;

APC Comment: Appendix F of Consent Decree, *Carbon Monoxide Control Efficiency Portable Analyzer Monitoring Protocol*, requires two consecutive 21 min test runs, one pre and one post catalyst. APC is requesting that this condition clarify that either consecutive or simultaneous test runs are acceptable for determining compliance.

(g) If a permitted engine is not operating, the Permittee does not need to start up the engine solely to conduct the performance test. The performance test requirements apply when the ~~engine begins operating~~ *again a shutdown engine is restarted and operates more than 720 consecutive hours (30days) in a given semi-annual period. If an engine is permanently shutdown prior to testing, the Permittee does not need to start up the engine solely to conduct the performance test.*

APC Comment: Compression equipment in the field can see infrequent or seasonal use depending on demand. This operating mode will be more likely to occur as production in this field continues to decline. APC is requesting establishing a runtime threshold for testing shutdown equipment as well as provisions for equipment that will be permanently shutdown. This should reduce the need to restart equipment specifically to conduct testing.

A minimum of 30days is required in order to make the appropriate testing notifications to the EPA per condition (f) above. If an engine is shutdown and re-starts but operated for less than 30days, the Permittee would be required to start the engine up again in order to meet the testing requirements. Requiring engines that run a minimum of 30 days (720hrs) during a 6-month period would capture engines that are run long enough to meet the test notification requirements.

D. Requirements for Pneumatic Controllers

1. The Permittee shall not operate any high-bleed pneumatic controllers. High-bleed controllers are defined as any controller with the capacity to bleed in excess of 6 standard cubic feet of gas per hour (50,000 scf/yr) in normal operations. ~~All pneumatic controllers shall be low-bleed controllers or operated using instrument air.~~

APC Comment: APC requesting to make the language consistent with the requirements of the consent decree to not operate high-bleed pneumatic controllers.

G. Requirements for Reporting

1. Test reports shall be submitted within 60 days after each required initial engine and catalytic control system performance test.

> **APC Comment:** APC requests that all test reports be submitted in the annual report for consistency.

Sincerely,

Anadarko Uintah Midstream LLC

Natalie Ohlhausen
Sr. HSE Representative

Enclosures

Smith, Claudia

From: Smith, Claudia
Sent: Friday, June 09, 2017 1:45 PM
Subject: Notice of Public Comment Period – Proposed Permit to Construct on the Uintah and Ouray Indian Reservation
Attachments: Anadarko Antelope Flats-Sand Wash-SCTB Bulletin Board Notice.pdf

In accordance with the regulations at 40 CFR 49.157 and 49.158, the EPA is hereby providing notification of the availability for public comment of the proposed Clean Air Act synthetic minor New Source Review permit for the following source located on the Uintah and Ouray Indian Reservation:

Anadarko Uintah Midstream, LLC – Antelope Flats & Sand Wash Compressor Stations with South Central Tank Battery

Electronic copies of the proposed permit, technical support document, application and other supporting permit information may be viewed online at http://www.epa.gov/caa-permitting/caa-permit-public-comment-opportunities-region-8.

Paper copies of the proposed permit, technical support document, application, and other supporting permit information may be reviewed by contacting the Federal and/or Tribal contacts identified on the attached public notice bulletin.

Comments may be sent by mail to:

US EPA Region 8
Air Program Office
1595 Wynkoop Street, 8P-AR
Denver, CO 80202
Attn: Tribal NSR Coordinator

or

Electronically to R8AirPermitting@epa.gov

In accordance with the regulations at §49.157, the Agency is providing a 30-day period from June 12, 2017 through July 13, 2017, for public comment on this proposed permit. Comments must be received by 5:00pm MT July 13, 2017, to be considered in the issuance of the final permit. If a public hearing is held regarding this permit, you will be sent a copy of the public hearing notice at least 30 days in advance of the hearing date.

Claudia Young Smith
Environmental Scientist
Air Program, Mail Code 8P-AR
US Environmental Protection Agency Region 8
1595 Wynkoop Street
Denver, Colorado 80202

Phone: (303) 312-6520
Fax: (303) 312-6064
http://www.epa.gov/caa-permitting/caa-permitting-epas-mountains-and-plains-region

****

Smith, Claudia

From: Smith, Claudia
Sent: Tuesday, June 06, 2017 4:51 PM
To: shon.rhoton@andarko.com
Cc: Bruce; minnieg@utetribe.com; Fallon, Gail; Morales, Monica; Natalie.Ohlhausen@anadarko.com; Schwartz, Colin
Subject: CORRECTION: Proposed Synthetic Minor NSR Permit for Antelope Flats and Sand Wash Compressor Stations with SCTB
Attachments: Anadarko Antelope Flats-Sand Wash-SCTB Bulletin Board Notice.pdf; Anadarko Antelope Flats-Sand Wash-SCTB Proposed SMNSR Permit-TSD.pdf

(Please note corrected public comment period dates and corrected PDF attachments – Disregard email sent by Colin Schwartz on May 31, 2017)

Mr. Rhoton,

I have attached the requested proposed permit, the accompanying technical support document, and the bulletin board notice for the Antelope Flats and Sand Wash Compressor Stations with SCTB. We will also be posting the application, proposed permit, technical support document, and other supporting information in PDF format on our website at http://www2.epa.gov/caa-permitting/caa-permit-public-comment-opportunities-region-8 by the start of the public comment period.

In accordance with the regulations at 40 CFR 49.157, we are providing a 30-day period from June 12, 2017 to July 13, 2017 for public comment on this proposed permit. Comments must be received by 5:00pm MDT July 13, 2017, to be considered in the issuance of the final permit.

Please submit any written comments you may have concerning the terms and conditions of this permit. You can send them directly to me at schwartz.colin@epa.gov, and either smith.claudia@epa.gov or r8airpermitting@epa.gov. Should the EPA not accept any or all of these comments, you will be notified in writing and will be provided with the reasons for not accepting them.

Thank you,

Colin C. Schwartz
Environmental Scientist
Air Permits Division
US EPA Region 8- Denver, CO
303-312-6043

Smith, Claudia

From: Schwartz, Colin
Sent: Wednesday, May 31, 2017 10:16 AM
To: shon.rhoton@andarko.com
Cc: Bruce; minnieg@utetribe.com; Fallon, Gail; Morales, Monica; Smith, Claudia; Natalie.Ohlhausen@anadarko.com
Subject: Proposed Synthetic Minor NSR Permit for Antelope Flats and Sand Wash Compressor Stations with SCTB
Attachments: Anadarko Antelope Flats SCTB Proposed SMNSR Permit.pdf; Anadarko Antelope Flats SCTB Proposed TSD.pdf; Anadarko Antelope Flats SCTB Proposed Public Notice.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Mr. Rhoton,

I have attached the requested proposed permit, the accompanying technical support document, and the bulletin board notice for the Antelope Flats and Sand Wash Compressor Stations with SCTB. We will also be posting the application, proposed permit, technical support document, and other supporting information in PDF format on our website at http://www2.epa.gov/caa-permitting/caa-permit-public-comment-opportunities-region-8 by the start of the public comment period.

In accordance with the regulations at 40 CFR 49.157, we are providing a 30-day period from June 12, 2015 to July 13, 2015 for public comment on this proposed permit. Comments must be received by 5:00pm MDT July 13, 2015, to be considered in the issuance of the final permit.

Please submit any written comments you may have concerning the terms and conditions of this permit. You can send them directly to me at schwartz.colin@epa.gov, and either smith.claudia@epa.gov or r8airpermitting@epa.gov. Should the EPA not accept any or all of these comments, you will be notified in writing and will be provided with the reasons for not accepting them.

Thank you,

Colin C. Schwartz
Environmental Scientist
Air Permits Division
US EPA Region 8- Denver, CO
303-312-6043

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
Denver, CO 80202-1129
Phone 800-227-8917
www.epa.gov/region08

JUN 05 2017

Ref: 8P-AR

Ms. Minnie Grant
Air Coordinator, Energy, Minerals, & Air
Energy and Minerals Department, Ute Indian Tribe
P.O. Box 70
Fort Duchesne, Utah 84026

Dear Ms. Grant:

The U.S. Environmental Protection Agency Region 8 is proposing to issue a synthetic minor permit for the Anadarko Uintah Midstream, LLC, Cottonwood Wash Compressor Station on the Uintah and Ouray Indian Reservation. As requested by Anadarko, this permit would incorporate enforceable requirements for the installation and operation of two low-emission tri-ethylene glycol (TEG) dehydration systems for control of volatile organic compound emissions. Anadarko also has requested enforceable carbon monoxide emission control requirements for the seven 4-stroke lean-burn compressor engines using catalytic emissions control systems. Lastly, Anadarko requested enforceable requirements to install and operate only instrument air-driven or low-bleed pneumatic controllers. This permit is only intended to incorporate requested emission limits and provisions from the permit application for existing emissions units operating at the facility.

A public comment period for the proposed permit will begin on June 12, 2017, and end on July 13, 2017.

We have enclosed a CD and paper copy containing the proposed permit and supporting documentation, and we ask that you please make this material available for public review until the end of the public comment period. In addition, we have provided copies of the bulletin board public notice announcement and would appreciate it if you could post this announcement in prominent locations in your area. All of these documents will also be available for review in electronic format on our website at: https://www.epa.gov/caa-permitting/caa-permit-public-comment-opportunities-region-8.

Thank you for your assistance in this matter. Should you have any questions regarding our request you may contact me at (303) 312-6043.

Sincerely,

Colin Schwartz
Air Permit Engineer

Enclosures

Cc (w/o enclosures):
Bruce Pargeets, Director, Energy, Minerals, and Air, Ute Indian Tribe

Public Notice: Request For Comments

Proposed Air Quality Permit to Construct Anadarko Uintah Midstream, LLC Antelope Flats & Sand Wash Compressor Stations with South Central Tank Battery

Notice issued: June 12, 2017

Written comments due:
5 p.m., July 13, 2017

Where is the facility located?
Antelope Flats & Sand Wash Compressor Stations with South Central Tank Battery:
Uintah and Ouray Indian Reservation
Uintah County, Utah
SE/NW Sec. 12, T9S, R22E
Latitude 39.995703 N
Longitude -109.4683111 W

What is being proposed?

This permit action will apply to an existing facility operating on the Uintah and Ouray Indian Reservation in Utah.

The Antelope Flats and Sand Wash Compressor Stations with South Central Tank Battery are a natural gas production source that compresses and treats natural gas and stores condensate from the field.

Anadarko Uintah Midstream, LLC currently operates under a Federal Consent Decree (CD) between the United States of America (Plaintiff) and the State of Colorado, the Rocky Mountain Clean Air Action and the Natural Resources Defense Council (Plaintiff-Intervenors), and Kerr-McGee Corporation (Civil Action No. 07-CV-0134-EWN-KMT).

The facility currently operates seven (7) natural gas-fired 4-stroke lean-burn (4SLB) reciprocating internal combustion engines to compress natural gas gathered from the field, two low-emission tri-ethylene glycol (TEG) dehydration systems, and fifteen (15) natural gas condensate and produced water storage tanks.

Anadarko has requested enforceable requirements for the installation and operation of the low-emission TEG dehydration systems for control of volatile organic compound emissions. Anadarko has also requested enforceable carbon monoxide (CO) emissions control efficiency requirements for the 4SLB compressor engines using catalytic emissions control systems. Lastly, Anadarko requested enforceable requirements to install and operate only instrument air-driven or low-bleed pneumatic controllers. The permit the EPA is proposing to issue reflects the incorporation of the requested requirements, which are consistent with the Federal CD.

What are the effects on air quality?
This action will have no adverse air quality impacts. The emissions at this existing facility will not be increasing due to this permit action. In addition, this action does not authorize the construction of any new emission sources, or emission increases from existing sources, nor does it otherwise authorize any other physical modifications to the facility or its operations.

Where can I send comments?
EPA accepts comments by mail, fax and e-mail.

US EPA Region 8 Air Program, 8P-AR
Attn: Federal Minor NSR Coordinator
1595 Wynkoop Street,
Denver, CO 80202
R8AirPermitting@epa.gov
Fax: 303-312-6064

How can I review documents?
You can review a paper or electronic copy of the proposed permit and related documents at the following locations:

Ute Indian Tribe Energy and Minerals Department Office
988 South 7500 East, Annex Building
Fort Duchesne, Utah 84026
Contact: Minnie Grant, Air Coordinator, at (435) 725-4900
or minnieg@utetribe.com

US EPA Region 8 Office:
1595 Wynkoop Street, Denver, CO 80202
Hours: Mon-Fri 8:00 a.m. – 5:00 p.m.
Contact: Claudia Smith, Environmental Scientist, at 303-312-6520
or smith.claudia@epa.gov

US EPA Region 8 Website:
https://www.epa.gov/caa-permitting/caa-permit-public-comment-opportunities-region-8

Permit number:
SMNSR-UO-000027-2012.001

What happens next?
The EPA will review and consider all comments received during the comment period. Following this review, the EPA may issue the permits as proposed, issue modified permits based on comments, or deny the permits.

Tribal Minor New Source Review in Indian Country

United States Environmental Protection Agency

Region 8
Air Program
1595 Wynkoop Street
Denver, CO 80202
Phone 800-227-8917

https://www.epa.gov/caa-permitting/tribal-nsr-permits-region-8

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
Denver, CO 80202-1129
Phone 800-227-8917
www.epa.gov/region8

MAY 26 2017

Ref: 8P-AR

Shon Rhoton
Midstream Operations Manager
Anadarko Uintah Midstream, LLC
P.O. Box 173779
Denver, Colorado 80202-3779

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Re: Anadarko Uintah Midstream, LLC, Antelope Flats and Sand Wash Compressor Stations with South Central Tank Battery, Permit # SMNSR-UO-000027-2012.001, Proposed Minor New Source Review Permit

Dear Mr. Rhoton:

The U.S. Environmental Protection Agency Region 8 has completed its review of Anadarko Uintah Midstream, LLC's application requesting a synthetic minor permit pursuant to the Tribal Minor New Source Review (MNSR) Permit Program at 40 CFR part 49 for the Antelope Flats and Sand Wash Compressor Stations with South Central Tank Battery on Indian country lands within the Uintah and Ouray Indian Reservation, in Uintah County, Utah.

Enclosed are the proposed permit and the corresponding technical support document. The regulations at 40 CFR 49.157 require that the affected community and the general public have the opportunity to submit written comments on any proposed MNSR permit. All written comments submitted within 30 calendar days after the public notice is published will be considered by the EPA in making its final permit decision. Enclosed is a copy of the public notice which will be published on the EPA's website located at: https://www.epa.gov/caa-permitting/caa-permit-public-comment-opportunities-region-8, on June 12, 2017. The public comment period will end at 5:00 p.m. on July 13, 2017.

The conditions contained in the proposed permit will become effective and enforceable by the EPA if the permit is issued final. If you are unable to accept any term or condition of the draft permit, please submit your written comments along with the reason(s) for non-acceptance to:

Tribal NSR Permit Contact
c/o Air Program (8P-AR)
U.S. EPA, Region 8
1595 Wynkoop Street
Denver, Colorado 80202

or

R8AirPermitting@epa.gov

If you have any questions concerning the enclosed proposed permit or technical support document, please contact Claudia Smith of my staff at (303) 312-6520.

Sincerely,

Scott Jackson
Acting Director
Air Program

Enclosures (3)

cc: Bruce Pargeets, Director, Energy, Minerals and Air, Ute Indian Tribe
Minnie Grant, Air Coordinator, Energy, Minerals, and Air, Ute Indian Tribe
Honorable Shaun Chapoose, Chairman, Ute Indian Business Committee (w/o enclosures)
Edred Secakuku, Vice Chairman, Ute Indian Business Committee (w/o enclosures)
Reannin Tapoof, Executive Assistant, Ute Indian Business Committee (w/o enclosures)
Natalie Olhausen, Senior HSE Representative, Anadarko Uintah Midstream, LLC

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

PROPOSED

Air Pollution Control
Minor Source Permit to Construct

40 CFR 49.151

 # SMNSR-UO-000027-2012.001

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

Permittee:

Anadarko Uintah Midstream, LLC

Permitted Facility:

Antelope Flats and Sand Wash Compressor Stations with South Central Tank Battery
Uintah and Ouray Indian Reservation
Uintah County, Utah

Summary

On September 6, 2012, the EPA received an application from Anadarko Uintah Midstream, LLC (Anadarko), requesting a synthetic minor permit for the Antelope Flats and Sand Wash Compressor Stations with South Central Tank Battery in accordance with the requirements of the Tribal Minor New Source Review (MNSR) Permit Program. On February 18, 2015, November 15, 2016 and April 3, 2017, the EPA received updated applications from Anadarko to completely replace each previously submitted application.

This permit action applies to an existing facility operating on Indian country lands within the Uintah and Ouray Indian Reservation in Utah.

This permit does not authorize the construction of any new emission sources, or emission increases from existing units, nor does it otherwise authorize any other physical modifications to the facility or its operations. This permit is intended only to incorporate required and requested enforceable emission limits and operational restrictions from a March 27, 2008, federal Consent Decree (CD) between the United States of America (Plaintiff), and the State of Colorado, the Rocky Mountain Clean Air Action and the Natural Resources Defense Council (Plaintiff-Intervenors), and Kerr-McGee Corporation (Civil Action No. 07-CV-01034-EWN-KMT), and the April 3, 2017 synthetic MNSR application. Anadarko has requested legally and practically enforceable requirements for the installation and operation of two (2) low-emission tri-ethylene glycol (TEG) dehydration systems for dehydrating gas compressed into a high-pressure pipeline, consistent with the CD. Anadarko also requested enforceable requirements for installation and operation of a catalytic control system and air-to-fuel ratio (AFR) controls on seven (7) natural gas-fired 4-stroke lean-burn (4SLB) reciprocating internal combustion engines (used for natural gas compression at the facility), including associated carbon monoxide (CO) control efficiency requirements, consistent with the CD. Lastly, Anadarko requested an enforceable requirement to install and operate only low-bleed or instrument air-driven pneumatic controllers, consistent with the CD.

Upon compliance with the permit, Anadarko will have legally and practically enforceable restrictions on emissions that can be used when determining the applicability of other Clean Air Act (CAA) permitting requirements, such as those imposed by the Prevention of Significant Deterioration (PSD) Permit Program at 40 CFR part 52 and the Title V Operating Permit Program at 40 CFR part 71 (Part 71 Permit Program).

The EPA has determined that issuance of this MNSR permit will not contribute to National Ambient Air Quality Standards (NAAQS) violations, or have potentially adverse effects on ambient air quality.

Table of Contents

I. Conditional Permit to Construct

A. General Information

Facility: Anadarko Uintah Midstream, LLC – Antelope Flats and Sand Wash Compressor Stations with South Central Tank Battery

Permit Number: SMNSR-UO-000027-2012.001

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

Site Location:
Antelope Flats and Sand Wash Compressor Stations with South Central Tank Battery
SE/NW Sec 12 T9S R22E
Uintah and Ouray Indian Reservation
Uintah County, Utah
Latitude 39.995703N, Longitude -109.4683111W

Corporate Office Location
Anadarko Uintah Midstream, LLC
P.O. Box 173779
Denver, Colorado 80202-3779

The equipment listed in this permit shall be operated by Anadarko Uintah Midstream, LLC at the location described above.

B. Applicability

1. This federal Permit to Construct is being issued under authority of the MNSR Permit Program.

2. The requirements in this permit have been created, at the Permittee's request and pursuant to the MNSR permit program, to establish legally and practically enforceable emissions restrictions for a TEG dehydration system and pneumatic controllers and control of CO emissions from natural gas-fired engines.

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.

C. Requirements for the Low-Emission Dehydrator

1. Construction and Operational Limits

   (a) The Permittee shall install, operate and maintain no more than two (2) TEG Low-Emission Dehydration units that each meet the specifications set forth in Appendix A of this permit and shall mean a dehydration unit that:

      (i) Incorporates an integral vapor recovery function such that the dehydrator cannot operate independent of the vapor recovery function;

(ii) Either returns the captured vapors to the inlet of the facility where the dehydrator is located or routes the captured vapors to the facility's fuel gas supply header; and

(iii) Is designed and operated to emit less than 1.0 ton of VOC in any consecutive 12-month period, inclusive of VOC emissions from the reboiler burner.

(b) Only the dehydration units that are designed and operated as specified in this permit are approved for installation and operation under this permit.

2. Recordkeeping Requirements

(a) Records shall be kept of the manufacturer specifications for each TEG Low-Emission Dehydration unit, and a certification that it meets the specifications in this permit for a Low-Emission Dehydration unit. The certification shall be signed by the person the Permittee has designated as primarily responsible for CAA compliance for the source and shall include the following: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete."

(b) Records shall be kept of all required inspections, including repairs made in response to leaks detected in the closed-vent system.

3. Requirements under **Section C. Requirements for the Low-Emission Dehydrator** shall be effective upon termination of the March 27, 2008, federal CD between the United States of America (Plaintiff), and the State of Colorado, the Rocky Mountain Clean Air Action and the Natural Resources Defense Council (Plaintiff-Intervenors), and Kerr-McGee Corporation (Civil Action No. 07-CV-01034-EWN-KMT).

D. Requirements for 4SLB Compressor Engines

1. Construction and Operational Requirements

(a) The Permittee shall install and operate emission controls as specified in this permit on seven (7) existing engines used for natural gas compression, all meeting the following specifications:

(i) Operated as a 4-stroke lean-burn engine;
(ii) Fired with natural gas; and
(iii) Four (4) engines limited to a maximum site rating of 1,340 horsepower (hp) and three (3) engines limited to a maximum site rating of 2,370 hp.

(b) Only the engines that are operated and controlled as specified in this permit are approved for installation under this permit.

2. Control, Operation and Maintenance Requirements

(a) The Permittee shall install, continuously operate and maintain a catalytic control system on each engine that is capable of reducing the uncontrolled emissions of CO by at least 93.0% by weight when the engine is operating at a 90% load or higher.

(b) The Permittee shall fire each engine with natural gas only. To ensure that there are no contaminants in the fuel that might foul the catalysts, the natural gas shall be pipeline-quality in all respects except that the carbon dioxide (CO_2) concentration in the gas is not required to be within pipeline-quality.

(c) The Permittee shall follow, for each engine and its respective catalytic 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 catalytic control system to ensure compliance with the CO control efficiency requirement in this permit.

(d) The Permittee may rebuild an existing permitted engine or replace an existing permitted engine with an engine of the same hp rating, and configured to operate in the same manner as the engine being rebuilt or replaced. Any operational requirements, control technologies, testing or other provisions that apply to the engines that are rebuilt or replaced shall also apply to the replaced engines.

(e) The Permittee may resume operation without the catalytic control system during an engine break-in period, not to exceed 200 operating hours, for any rebuilt or replaced engines.

3. Performance Test Requirements

(a) Performance tests shall be conducted on each engine and catalytic control system for measuring CO to demonstrate compliance with the control efficiency requirement specified in this permit. The performance tests shall be conducted in accordance with the Carbon Monoxide Control Efficiency Portable Analyzer Monitoring Protocol in Appendix B of this permit to measure the oxygen (O_2) and CO concentrations at the inlet (pre-catalyst) and outlet (post-catalyst) of the catalytic control system.

(i) Initial performance tests shall be conducted within 60 calendar days after achieving the maximum production rate at which the facility will be operated, but no later than 180 days after initial startup, including initial startup for engines that are rebuilt or replaced. The results of initial performance tests conducted prior to the effective date of this permit may be used to demonstrate compliance with the initial performance test requirements, provided the tests were conducted in an equivalent manner as the performance test requirements in this permit.

(ii) Subsequent performance tests shall be conducted semi-annually on each engine.

(b) The Permittee may submit to the EPA a written request for approval of alternate test methods, but shall only use the alternate test methods after obtaining written approval from the EPA.

(c) The Permittee shall not perform engine tuning or make any adjustments to engine settings, catalytic control system settings, processes or operational parameters immediately prior to the engine testing 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.

(d) The Permittee shall not abort any engine tests that demonstrate non-compliance with the CO control efficiency requirement specified in this permit.

(e) All performance tests conducted on the engines shall meet the following requirements:

(i) All performance tests shall be conducted at 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.

(ii) Each test shall consist of at least one (1) 21-minute or longer valid test run;

(iii) The CO control efficiency shall be determined based on the pre- and post-catalyst CO measurements;

(iv) If the catalyst fails to meet the CO control efficiency requirement specified in this permit, appropriate steps shall be taken to correct the deficiency and the catalyst shall be retested within 30 days after the failed test.

(v) Performance test plans for alternate test methods shall be submitted to the EPA for approval at least 60 calendar days prior to the date the test is planned.

(vi) Alternate test plans shall include and address the following elements:

(A) Purpose of the test;
(B) Engines and catalytic control systems to be tested;
(C) Expected engine operating rate(s) during the test;
(D) Sampling and analysis procedures (sampling locations and test methods);
(E) Quality assurance plan (calibration procedures and frequency and field documentation; and
(F) Data processing and reporting (description of data handling and quality control procedures, report content).

(f) 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.

(g) If a permitted engine is not operating, the Permittee does not need to start up the engine solely to conduct the performance test. The performance test requirements apply when the engine begins operating again.

4. Recordkeeping Requirements

(a) Records shall be kept of manufacturer and/or vendor specifications for each engine, catalytic control system and portable analyzer.

(b) Records shall be kept of all calibration and maintenance conducted for each engine, catalytic control system and portable analyzer.

(c) Records shall be kept of all required testing in this permit. The records shall include the following:

(i) The date, place and time of portable analyzer measurements;
(ii) The company or entity that performed the portable analyzer measurement;
(iii) The portable analyzer measurement techniques or methods used;
(iv) The results of such measurements; and
(v) The operating conditions as existing at the time of measurement.

(d) Records shall be kept of all engine rebuilds and engine replacements.

(e) Records shall be kept of each rebuilt or replaced engine break-in period, pursuant to the requirements of this permit, where the existing engine that has been rebuilt resumes operation without the catalyst control system for a period not to exceed 200 hours.

(f) Records shall be kept of each time a deviation in the CO control efficiency required in this permit is detected for an engine. The Permittee shall include in the record the cause of the problem, the corrective action taken and the timeframe for bringing the CO control efficiency into compliance.

5. Requirements under **Section D. Requirements for 4SLB Compressor Engines** shall be effective upon termination of the March 27, 2008, federal CD between the United States of America (Plaintiff), and the State of Colorado, the Rocky Mountain Clean Air Action and the Natural Resources Defense Council (Plaintiff-Intervenors), and Kerr-McGee Corporation (Civil Action No. 07-CV-01034-EWN-KMT).

E. Requirements for Pneumatic Controllers

1. All pneumatic controllers shall be low-bleed controllers or operated using instrument air.

2. Records shall be kept of manufacturer's and/or vendor's specifications for each pneumatic controller that is not operated using instrument air.

3. Requirements under **Section E. Requirements for Pneumatic Controllers** shall be effective upon termination of the March 27, 2008, federal CD between the United States of America (Plaintiff), and the State of Colorado, the Rocky Mountain Clean Air Action and the Natural Resources Defense Council (Plaintiff-Intervenors), and Kerr-McGee Corporation (Civil Action No. 07-CV-01034-EWN-KMT).

F. Requirements for Records Retention

1. The Permittee shall retain all records required by this permit for a period of at least 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.

G. Requirements for Reporting

1. Test reports shall be submitted within 60 days after each required initial engine and catalytic control system performance test.

2. Annual Reports

   (a) The Permittee shall submit a written annual report of all required monitoring and testing conducted on emission units at the facility covered under this permit each year no later than March 1st. The annual report shall cover the period for the previous calendar year. All reports shall be certified to truth and accuracy by the person designated by the Permittee as responsible for CAA compliance for the facility.

   (b) The report shall include:

      (i) A summary of the results of each required initial engine and catalytic control system performance test;
      (ii) Test reports for all subsequent semi-annual engine and catalytic control system performance tests; and
      (iii) A summary of all deviations of permit conditions and corrective actions taken, per paragraph I.G.4. of this permit.

3. All documents required to be submitted under this permit 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 via electronic mail to R8AirReportEnforcement@epa.gov.

4. The Permittee shall promptly submit to the EPA a written report of any deviations of control or operational limits specified in this permit and a description of 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 a deviation that would cause the Permittee to exceed the control or operational limits in this permit if left un-corrected for more than 5 days after discovering the deviation; and

(b) By March 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 control or operational limits, included as part of the Annual Reports required in this permit.

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 to construct. 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 CAA 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. *NAAQS and PSD Increments:* The permitted source shall not cause or contribute to a NAAQS 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 of Existing 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, the Permittee 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:* Unless this permitted source of emissions is an existing source, 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 startup of this permitted source to the EPA within 60 days of such date, unless this permitted source of emissions is an existing source.

B. Authorization:

Authorized by the United States Environmental Protection Agency, Region 8

_____

Scott Jackson, Acting Director Date
Air Program

Appendix A

Low-Emission Dehydrator Specifications

[Copy of Appendix C to the CD in the matter of United States of America and the State of Colorado V. Kerr-McGee Corporation (Civil Action No. 07-CV-01034-EWN-KMT), Low-Emission Dehydrator Specifications]

APPENDIX C

to the

Consent Decree

in the matter of

United States of America and the State of Colorado v. Kerr-McGee Corporation

LOW-EMISSION DEHYDRATOR SPECIFICATIONS

Overview and Purpose

Kerr-McGee has agreed to employ "Low-Emission Dehydrator" technology at its existing and planned facilities in the Uinta Basin as part of the settlement of alleged Clean Air Act violations with the United States and the State of Colorado. The terms of that settlement will be memorialized in a consent decree to be entered by the United States District Court for the District of Colorado to be styled *United States of America and the State of Colorado v. Kerr-McGee Corporation* (hereafter the "Consent Decree"). As required in the Consent Decree at Section IV.A., this Appendix C includes:

> (a) a description of physical electrical hard-wiring between the vapor recovery unit ("VRU") compressor(s) and the glycol circulation pumps employed or to be employed, so that if the VRU compressor(s) go down then the glycol circulation pump(s) also shut down, thereby halting the circulation of glycol through the wet gas, as well as the emissions associated with the regeneration of the glycol;
>
> (b) a description of a second level of protection (redundancy) incorporated into a Programmable Logic Controller that uses instrumentation to shut down the glycol dehydration system in the event all VRU compressor(s) go down; and
>
> (c) a description of any third level of protection and discussion of how the non-condensible gases from glycol dehydrator operation shall be piped exclusively to the station inlet or fuel system for use as fuel and is not used for blanket gas in storage tanks or otherwise vented.

Background

Natural gas often contains water vapor at the wellhead which must be removed to avoid pipeline corrosion and solid hydrate formation. Glycol dehydration is the most widely used natural gas dehumidification process. In a glycol dehydration system, dry triethylene glycol ("TEG") or ethylene glycol ("EG") is contacted with wet natural gas. The glycol absorbs water from the natural gas, but also absorbs hydrocarbons including volatile organic compounds ("VOCs") and certain hazardous air pollutants ("HAPs"). Pumps circulate the glycol from a low-pressure distillation column for regeneration back to high pressure in order to contact with the high pressure wet gas. As the wet glycol pressure is reduced prior to distillation, much of the absorbed hydrocarbon is released, including some of the VOCs and HAPs. A flash tank is typically utilized to separate these vapors at a pressure where they can be utilized for fuel. Distillation removes the absorbed water along with any remaining hydrocarbon, including VOCs and HAPs, from the glycol to the still column vent as overhead vapor. Conventional dehydrator still columns often emit the non-condensable portion of this overhead vapor directly to the atmosphere, or to a combustion device such as a thermal oxidizer or reboiler burner.

Kerr-McGee currently utilizes low-emission glycol dehydrators at its facilities in the Uinta Basin. These units capture the non-condensable portion of still vent and flash tank vapors and recompress the vapor with reciprocating or scroll compressors that route the

vapor to the station inlet as natural gas product, to fuel lines for power generation turbines or to the station fuel system. They also employ electric glycol circulation pumps, and except for the recompression of non-condensable vapors, resemble conventional glycol dehydrators in their configuration. See Figure 1.

To insure that the non-condensable vapor compression system is fully integrated into dehydrator operation such that the units cannot be disabled so as to operate while venting to the atmosphere, each unit;

a. incorporates an integral vapor recovery function that prevents the dehydrator from operating independent of the vapor recovery function;
b. either returns the captured vapors to the inlet of the facility where each glycol dehydrator is located or routes the captured vapors to that facility's fuel gas supply header; and
c. thereby emits no more than 1.0 ton per year of VOCs.

Description of Interlocks

The low-emission glycol dehydrators have at least three (3) levels of protection to prevent emissions from occurring.

(a) Physical electrical hard-wiring between the vapor recovery unit (VRU) compressor(s) and the glycol circulation pumps ensures that if the VRU compressor(s) goes down, the glycol pump(s) also shut down, thereby halting the circulation of glycol through the wet gas as well as the emissions associated with the regeneration of glycol. More specifically:

1. Loss of station power interrupts the 480 volt power to the glycol pump(s) circulating glycol through the contactor.
2. Loss of 24 volt power to a relay interrupts the 480 volt power to the glycol pump(s) circulating glycol through the contactor. The 24 volt power is wired in parallel through the run status contacts of each VRU compressor in a specific service. If all VRU compressors in each specific service are shutdown, the 24 volt power is interrupted. There is at least one spare VRU compressor in standby mode for each specific service at existing Uinta Basin facilities engaged in gas dehydration. Non-condensable gas from VRU compressor discharge always has an outlet because if the station inlet pressure rises to a level greater than VRU compressor output, the flash tank vapors automatically go through a back pressure regulator to the fuel gas system until gathering pressure is reduced.
3. If the glycol still column/reboiler pressure rises above pressure set points, the 24 volt power to a relay is interrupted. The unpowered relay interrupts the 480 volt power to the glycol pump(s) circulating glycol to the contactor. If one of the glycol still VRU compressors is running but not compressing vapors, the pressure switch will detect the pressure rise in the still and shutdown the glycol circulating pump(s).

4. The operation of at least one of the VRU compressors is required to complete the electrical circuit and allow one of the glycol circulation pumps to operate.
5. There is a 10 second time delay switch installed in the physical electrical circuit that must time out before the glycol circulating pump(s) shut down for causes 2 and 3 above. This allows for switching of compressors and helps to prevent false shutdowns.
6. Everything is hard wired and does not depend on any type of controller.

(b) A second level of protection redundancy has been incorporated by utilizing the station Programmable Logic Controller (PLC) to shut down the dehydration system in the event the VRU compressor(s) go down.

1. A PLC timer will start counting when none of the VRU compressor(s) are in operation. When the timer times out, the PLC will not allow the regenerator system to be in run status.

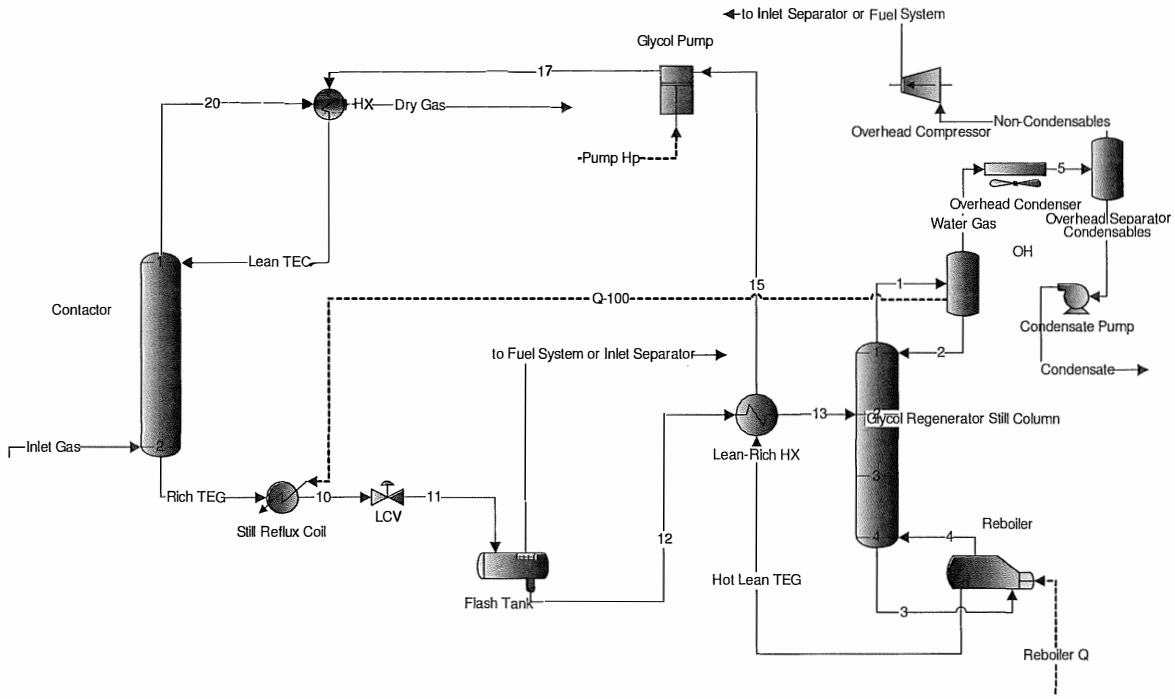
(c) A third level of protection is the routing of non-condensables directly to combustion devices in the stations that utilize micro-turbine electrical generators or central heat medium systems.

1. The non-condensable regenerator overhead vapors are routed to the inlet of each station or used as fuel. In instances where the inlet pressure rises above VRU compressor outlet pressures, a regulator opens allowing the VRU-compressed vapors to be discharged into the fuel system, where they are used throughout the station.
2. In Kerr-McGee's planned electrified compressor stations, liquids that condense at the compression stations, including those condensed from the glycol still overhead vapors, will be contained at pressure, separated from any water and pumped downstream into the high pressure gathering system. This process change will eliminate atmospheric storage of hydrocarbon liquids at such facilities.

Conclusion

Kerr-McGee's adherence to these specifications shall satisfy its commitment in the Consent Decree to utilize low-emission dehydrator technology in its existing and planned Uinta Basin operations.

Figure 1: Kerr-McGee Low-Emission Dehydrator Schematic



Appendix C: Low-Emission Dehydrator Specifications

Appendix B

Carbon Monoxide Control Efficiency Portable Analyzer Monitoring Protocol

[Copy of Appendix F to the CD in the matter of United States of America and the State of Colorado V. Kerr-McGee Corporation (Civil Action No. 07-CV-01034-EWN-KMT), Carbon Monoxide Control Efficiency Portable Analyzer Monitoring Protocol]

APPENDIX F

to the

Consent Decree

in the matter of

United States of America and the State of Colorado v. Kerr-McGee Corporation

CARBON MONOXIDE CONTROL EFFICIENCY PORTABLE ANALYZER MONITORING PROTOCOL

Determination of Carbon Monoxide Control Efficiency from Controlled Natural Gas-Fired Reciprocating Engines Located in the Uinta Basin

TABLE OF CONTENTS

OVERVIEW AND PURPOSE

Kerr-McGee has agreed to conduct portable analyzer testing for carbon monoxide ("CO") on certain reciprocating internal combustion engines ("RICE") located in the Uinta Basin that are controlled with oxidation catalysts as part of a settlement of alleged Clean Air Act violations with the United States and the State of Colorado. The terms of that settlement will be memorialized in a consent decree to be entered by the United States District Court for the District of Colorado to be styled *United States of America and the State of Colorado v. Kerr-McGee Corporation* (hereafter the "Consent Decree"). As required in the Consent Decree at Section IV.D., Kerr-McGee will conduct portable analyzer testing on certain RICE located in the Uinta Basin that will be controlled with oxidation catalysts.

1. APPLICABILITY AND PRINCIPLE

1.1 Applicability. This protocol was prepared to be implemented by Kerr-McGee Oil and Gas Onshore LP, Westport Field Services LLC and/or certain of their corporate affiliates ("Kerr-McGee") will monitor carbon monoxide (CO) and oxygen (O_2) concentrations from controlled natural gas-fired reciprocating engines using portable analyzers with electrochemical cells.

1.2 Principle. A gas sample is continuously extracted from a stack and conveyed to a portable analyzer for determination of CO and O_2 gas concentrations using electrochemical cells. Analyzer design specifications, performance specifications, and test procedures are provided to ensure reliable data. Additions to or modifications of vendor-supplied analyzers (e.g. heated sample line, flow meters, etc.) may be required to meet the design specifications of this test method.

2. RANGE AND SENSITIVITY

2.1 Analytical Range. The analytical range for each gas component is determined by the electrochemical cell design. A portion of the analytical range is selected to be the nominal range by choosing a span gas concentration near the flue gas concentrations or permitted emission level in accordance with Sections 2.1.1 and 2.1.2.

2.1.1 CO Span Gas. Choose a CO span gas such that the concentration is approximately 1.25 times average expected pre-catalyst stack gas reading.

2.1.2 O_2 Span Gas. The O_2 span gas shall be dry ambient air at 20.9% O_2.

2.1.2 NO Span Gas. The NO span gas shall be approximately 250 ppm.

3. DEFINITIONS

3.1 Measurement System. The total equipment required for the determination of gas concentration. The measurement system consists of the following major subsystems:

3.1.1 Sample Interface. That portion of a system used for one or more of the following: sample acquisition, sample transport, sample conditioning, or protection of the electrochemical cells from particulate matter and condensed moisture.

3.1.2 External Interference Gas Scrubber. A tube filled with scrubbing agent used to remove interfering compounds upstream of some electrochemical cells.

3.1.3 Electrochemical (EC) Cell. The portion of the system that senses the gas to be measured and generates an output proportional to its concentration. Any cell that uses diffusion-limited oxidation and reduction reactions to produce an electrical potential between a sensing electrode and a counter electrode.

3.1.4 Data Recorder. It is recommended that the analyzers be equipped with a strip chart recorder, computer, or digital recorder for recording measurement data. However, the operator may record the test results manually in accordance with the requirements of Section 7.4.

3.2 Nominal Range. The range of concentrations over which each cell is operated (25 to 125 percent of span gas value). Several nominal ranges may be used for any given cell as long as the linearity and stability check results remain within specification.

3.3 Span Gas. The high level concentration gas chosen for each nominal range.

3.4 Zero Calibration Error. For the CO channel, the absolute value of the difference, expressed as a percent of the span gas, between the gas concentration exhibited by the gas analyzer when a zero level calibration gas is introduced to the analyzer and the known concentration of the zero level

calibration gas. For the O_2 channel, the difference, expressed as percent O_2, between the gas concentration exhibited by the gas analyzer when a zero level calibration gas is introduced to the analyzer and the known concentration of the zero level calibration gas.

3.5 Span Calibration Error. For the CO channel, the absolute value of the difference, expressed as a percent of the span gas, between the gas concentration exhibited by the gas analyzer when a span gas is introduced to the analyzer and the known concentration of the span gas. For the O_2 channel, the difference, expressed as percent O_2, between the gas concentration exhibited by the gas analyzer when a span gas is introduced to the analyzer and the known concentration of the span gas.

3.6 Response Time. The amount of time required for the measurement system to display 95 percent of a step change in the CO gas concentration on the data recorder.

3.7 Linearity Check. A method of demonstrating the ability of a gas analyzer to respond consistently over a range of gas concentrations.

3.8 Stability Check. A method of demonstrating an electrochemical cell operated over a given nominal range provides a stable response and is not significantly affected by prolonged exposure to the analyte.

3.9 Stability Time. As determined during the stability check; the elapsed time from the start of the gas injection until a stable reading has been achieved.

3.10 Test. The collection of emissions data consisting of two consecutive 21 minute sampling periods, 21 minutes pre-catalyst and 21 minutes post catalyst, from each source.

4. MEASUREMENT SYSTEM PERFORMANCE SPECIFICATIONS

4.1 Zero Calibration Error. Less than or equal to ±3 percent of the span gas value for CO channels and less than or equal to ±0.3 percent O_2 for the O_2 channel.

4.2 Span Calibration Error. Less than or equal to ±5 percent of the span gas value for CO channels and less than or equal to ±0.5 percent O_2 for the O_2 channel.

4.3 Linearity. For the zero, mid-level, and span gases, the absolute value of the difference, expressed as a percent of the span gas, between the gas value and the analyzer response shall not be greater than 2.5 percent for the CO cell.

4.4 Stability Check Response. The analyzer responses to CO span gases shall not vary more than 3.0 percent of span gas value over a 30-minute period or more than 2.0 percent of the span gas value over a 15-minute period.

4.5 CO Measurement, Hydrogen (H_2) Compensation. It is recommended that CO measurements be performed using a hydrogen-compensated EC cell since CO-measuring EC cells can experience significant reaction to the presence of H_2 in the gas stream. Sampling systems equipped with a scrubbing agent prior to the CO cell to remove H_2 interferent gases may also be used.

5. APPARATUS AND REAGENTS

5.1 Measurement System. Use any measurement system that meets the performance and design specifications in Sections 4 and 5 of this method. The sampling system shall maintain the gas sample at a temperature above the dew point up to the moisture removal system. The sample conditioning system shall be designed so there are no entrained water droplets in the gas sample when it contacts the electrochemical cells. A schematic of an acceptable measurement system is shown in Figure 1. The essential components of the measurement system are described below:

5.1.1 Sample Probe. Glass, stainless steel, or other nonreactive material, of sufficient length to sample per the requirements of Section 7. If necessary to prevent condensation, the sampling probe shall be heated.

5.1.2 Heated Sample Line. Heated (sufficient to prevent condensation) nonreactive tubing such as teflon, stainless steel, glass, etc. to transport the sample gas to the moisture removal system. (Includes any particulate filters prior to the moisture removal system.)

5.1.3 Sample Transport Lines. Nonreactive tubing such as teflon, stainless steel, glass, etc. to transport the sample from the moisture removal system to the sample pump, sample flow rate control, and electrochemical cells.

5.1.4 Calibration Assembly. A tee fitting to attach to the probe tip or where the probe attaches to the sample line for introducing calibration gases at ambient pressure during the calibration error checks. The vented end of the tee should have a flow indicator to ensure sufficient calibration gas flow. Alternatively use any other method that introduces calibration gases at the probe at atmospheric pressure.

5.1.5 Moisture Removal System. A chilled condenser or similar device (e.g., permeation dryer) to remove condensate continuously from the sample gas while maintaining minimal contact between the condensate and the sample gas.

5.1.6 Particulate Filter. Filters at the probe or the inlet or outlet of the moisture removal system and inlet of the analyzer may be used to prevent accumulation of particulate material in the measurement system and extend the useful life of the components. All filters shall be fabricated of materials that are nonreactive to the gas being sampled.

5.1.7 Sample Pump. A leak-free pump to pull the sample gas through the system at a flow rate sufficient to minimize the response time of the measurement system. The pump may be constructed of any material that is nonreactive to the gas being sampled.

5.1.8 Sample Flow Rate Control. A sample flow rate control valve and rotameter, or equivalent, to maintain a constant sampling rate within 10 percent during sampling and calibration error checks. The components shall be fabricated of materials that are nonreactive to the gas being sampled.

5.1.9 Gas Analyzer. A device containing electrochemical cells to determine the CO and O_2 concentrations in the sample gas stream. The analyzer shall meet the applicable performance specifications of Section 4. A means of controlling the analyzer flow rate and a device for determining proper sample flow rate (e.g., precision rotameter, pressure gauge downstream of all flow controls, etc.) shall be provided at the analyzer.

5.1.10 Data Recorder. A strip chart recorder, computer, or digital recorder, for recording measurement data. The data recorder resolution (i.e., readability) shall be at least 1 ppm for CO and 0.1 percent O_2 for O_2; and one degree (C or F) for temperature.

5.1.11 External Interference Gas Scrubber. Used by some analyzers to remove interfering compounds upstream of a CO electrochemical cell. The scrubbing agent should be visible and should have a means of determining when the agent is exhausted (e.g., color indication).

5.2 Calibration Gases. Both the CO and NO calibration gases for the gas analyzer shall be CO or

NO in nitrogen.

5.2.1 Span Gases. Used for calibration error, linearity, and interference checks of each nominal range of each cell. Select concentrations according to procedures in Section 2.1.1. Clean dry air may be used as the span gas for the O_2 cell as specified in Section 2.1.2.

5.2.2 Mid-Level Gases. Select concentrations that are 40-60 percent of the span gas concentrations.

5.2.3 Zero Gas. Concentration of less than 0.25 percent of the span gas for each component. Ambient air may be used in a well ventilated area for the CO.

6. MEASUREMENT SYSTEM PERFORMANCE CHECK PROCEDURES. Perform the following procedures before the measurement of emissions under Section 7.

6.1 Calibration Gas Concentration Certification. For the mid-level and span cylinder gases, use calibration gases certified according to EPA Protocol 1 procedures. Calibration gases must meet the criteria under 40 CFR 60, Appendix F, Section 5.1.2 (3). Expired Protocol 1 gases may be recertified using the applicable reference methods.

6.2 Linearity Check. Conduct the following procedure once for each nominal range to be used on each electrochemical cell. After a linearity check is completed, it remains valid for seven consecutive calendar days. After the seven calendar day period has elapsed, the linearity check must be reaccomplished. Additionally, reaccomplish the linearity check if the cell is replaced.

6.2.1 Linearity Check Gases. For the CO cell obtain the following gases: zero (0-0.25 percent of nominal range), mid-level (40-60 percent of span gas concentration), and span gas (selected according to Section 2.1).

6.2.2 Linearity Check Procedure. If the analyzer uses an external interference gas scrubber with a color indicator, using the analyzer manufacturer's recommended procedure, verify the scrubbing agent is not depleted. After calibrating the analyzer with zero and span gases, inject the zero, mid-level, and span gases appropriate for each nominal range to be used on each cell. Gases need not be injected through the entire sample handling system. Purge the analyzer briefly with ambient air between gas injections. For each gas injection, verify the flow rate is constant and the analyzer responses have stabilized before recording the responses on Form A.

6.3 Stability Check. Conduct the following procedure once for the maximum nominal range to be used on each electrochemical cell. After a stability check is completed, it remains valid for seven consecutive calendar days. After the seven calendar day period has elapsed, the stability check must be reaccomplished. Additionally, reaccomplish the stability check if the CO cell is replaced.

6.3.1 Stability Check Procedure. Inject the CO span gas for the maximum nominal range to be used during the emission testing into the analyzer and record the analyzer response at least once per minute until the conclusion of the stability check. One-minute average values may be used instead of instantaneous readings. After the analyzer response has stabilized, continue to flow the span gas for at least a 30-minute stability check period. Make no adjustments to the analyzer during the stability check except to maintain constant flow. Record the stability time as the number of minutes elapsed between the start of the gas injection and the start of the 30-minute stability check period. As an alternative, if the concentration reaches a peak value within five minutes, you may choose to record the data for at least a 15-minute stability check period following the peak.

6.3.2 Stability Check Calculations. Determine the highest and lowest CO concentrations recorded during the 30-minute period and record the results on Form B. The absolute value of the difference between the maximum and minimum values recorded during the 30-minute period must be less than 3.0 percent of the span gas concentration. Alternatively, record stability check data in the same manner for the 15-minute period following the peak concentration. The difference between the maximum and minimum values for the 15-minute period must be less than 2.0 percent of the span gas concentration.

6.4 Interference Check. Conduct the following procedure once for the average anticipated NO stack gas concentration as reported by the manufacuture (250 ppm for Caterpillar lean burns). After a interference check is completed, this value will be utilized for interference calculations for the next 7 calendar days. After the seven calendar day period has elapsed, the interference check must be reaccomplished.

6.4.1 Interference Check Procedure. Inject the 250 ppm NO span gas for the into the analyzer and record the analyzer response at least once per minute until the conclusion of the interference check. One-minute average values may be used instead of instantaneous readings. After the analyzer response has stabilized, continue to flow the span gas for at least a 15-minute period. Make no adjustments to the analyzer during the stability check except to maintain constant flow. Record the CO cell response to this NO calibration gas.

7. EMISSION TEST PROCEDURES.

Prior to performing the following emission test procedures, calibrate/challenge all electrochemical cells in the analyzer in accordance with the manufacturer's instructions.

7.1. Pre/Post-Catalyst Sampling. Select both a pre-catalyst and post catalyst sampling site that will provide continuous uninterrupted exhaust gas flow.

7.2 Warm Up Period. Assemble the sampling system and allow the analyzer and sample interface to warm up and adjust to ambient temperature at the location where the stack measurements will take place.

7.3 Pretest Calibration Error Check. Conduct a zero and span calibration error check before testing each new facility. Conduct the calibration error check near the sampling location just prior to the start of the first emissions test.

7.3.1 Scrubber Inspection. For analyzers that use an external interference gas scrubber tube, inspect the condition of the scrubbing agent and ensure it will not be exhausted during sampling. If scrubbing agents are recommended by the manufacturer, they should be in place during all sampling, calibration and performance checks.

7.3.2 Zero and Span Procedures. Inject the zero and span gases using the calibration assembly. Ensure the calibration gases flow through all parts of the sample interface. During this check, make no adjustments to the system except those necessary to achieve the correct calibration gas flow rate at the analyzer. Set the analyzer flow rate to the value recommended by the analyzer manufacturer. Allow each reading to stabilize before recording the result on Form C. The time allowed for the span gas to stabilize shall be no less than the stability time noted during the stability check. After achieving a stable response, disconnect the gas and briefly purge with ambient air.

7.3.3 Response Time Determination. Determine the CO response time by observing the time required to respond to 95 percent of a step change in the analyzer response for both the zero and span

gases. Note the longer of the two times as the response time.

7.3.4 Failed Pretest Calibration Error Check. If the zero and span calibration error check results are not within the specifications in Section 4, take corrective action and repeat the calibration error check until acceptable performance is achieved.

7.4 Sample Collection. Position the sampling probe at the pre-catalyst sample point and begin sampling at the same rate used during the calibration error check. Maintain constant rate sampling (± 10 percent of the analyzer flow rate value used in Section 7.3.2) during the entire test. The concentration data must be recorded either (1) at least once each minute, or (2) as a block average for the test using values sampled at least once each minute. Repeat this procedure from the post-catalyst sampling location. Two consecutive 21 minute samples, one pre-catalyst and one post catalyst, shall be considered a test for each source

7.5 Re-Zero. At least once every four hours, recalibrate the analyzer at the zero level according to the manufacturer's instructions and conduct a pretest calibration error check before resuming sampling. If the analyzer is capable of reporting negative concentration data (at least 5 percent of the span gas below zero), then the tester is not required to re-zero the analyzer.

8. DATA COLLECTION. This section summarizes the data collection requirements for this protocol.

8.1 Linearity Check Data. Using Form A, record the analyzer responses in ppm for CO, and percent O_2 for the zero, mid-level, and span gases injected during the linearity check under Section 6.2.2.

8.2 Stability Check Data. Record the analyzer response in pmm for CO at least once per minute during the stability check under Section 6.3.1. One-minute average values may be used instead of instantaneous readings. Record the stability time as the number of minutes elapsed between the start of the gas injection and the start of the 30-minute stability check period. If the concentration reaches a peak value within five minutes of the gas injection, you may choose to record the data for at least a 15-minute stability check period following the peak. Use the information recorded to determine the analyzer stability under Section 6.3.2.

8.3 Pretest Calibration Error Check Data. On Form C, record the analyzer responses to the zero and span gases for CO and O_2 injected prior to testing each new source. Record the calibration zero and span gas concentrations for CO and O_2. For CO, record the absolute difference between the analyzer response and the calibration gas concentration, divide by the span gas concentration, and multiply by 100 to obtain the percent of span. For O_2, record the absolute value of the difference between the analyzer response and the O_2 calibration gas concentration. Record whether the calibration is valid by comparing the percent of span or difference between the calibration gas concentration and analyzer O_2 response, as applicable, with the specifications under Section 4.1 for the zero calibrations and Section 4.2 for the span calibrations. Record the response times for the CO zero and span gases as described under Section 7.3.3. Select the longer of the two times as the response time for that pollutant.

8.4 Test Data. On Form D-1 record the source operating parameters during the test. Record the test start and end times. From the analyzer responses recorded each minute during the test, obtain the average flue gas concentration of each pollutant.

9. CONTROL EFFICIENCY CALCULATIONS

9.1 Control Efficiency Calculations. CO control efficiencies will be calculated using the following calculation:

$$\% \quad Control = \frac{(C_{pre} - C_{post})}{C_{pre}} \times 100$$

where: % control = actual control efficiency of the oxidation catalyst
C_{Pre} = stack gas concentration at the pre-catalyst sampling location (ppm)
C_{post} = stack gas concentration at the post-catalyst sampling location (ppm)

9.2 Interference Check. Utilize the data collected in Section 6.3.4 and the average pre-catalyst CO emission concentrations to calculate interference responses (I_{CO}) for the CO cell. If an interference response exceeds 5 percent, all emission test results since the last successful interference test for that compound are invalid.

9.2.1 CO Interference Calculation.

$$I_{CO} = [(\frac{R_{CO\text{-}NO}}{C_{NOG}})(\frac{C_{NOS}}{C_{COS}})]x100$$

where:
I_{CO} = CO interference response (percent)
$R_{CO\text{-}NO}$ = CO response to NO span gas (ppm CO)
C_{NOG} = concentration of NO span gas (ppm NO)
C_{NOS} = Anticipated concentration of NO in stack gas (250 ppm NO)
C_{COS} = concentration of CO in stack gas (ppm CO)

10. REPORTING REQUIREMENTS AND RECORD KEEPING REQUIREMENTS

Test reports shall be submitted to the Environmental Protection Agency (EPA), as required by Section IV C of Consent Decree, within thirty (30) days of completing the test. A separate test report shall be submitted for each facility where an emission source was tested and, at a minimum, the following information shall be included:

- **Form A, Linearity/Interference Check Data Sheet,** Submit the linearity check as required by Section 6.2 for the nominal range tested.
- **Form B, Stability Check Data Sheet,** Submit the stability check as required by Section 6.4 for the nominal range tested.
- **Form C, Calibration Error Check Data Sheet**
- **Form D-1,** Submit the appropriate test results form.

Records pertaining to the information above and supporting documentation shall be kept for five (5) years and made available upon request by EPA. Additionally, if the source is equipped with a fuel meter, records of all maintenance and calibrations of the fuel meter shall be kept for five (5) years from the date of the last maintenance or calibration.

Form A

Linearity/Interference Check Data Sheet

Date:_____

Analyst:_____

Analyzer Manufacturer/Model #:_____

Analyzer Serial #:_____

Pollutant		Calibration Gas Concentration (ppm)	Analyzer Response (ppm CO)	Analyzer Response % O_2	Absolute Difference (ppm)	Percent of Span	Linearity Valid (Yes or No)
CO	Zero						
	Mid						
	Span						
NO	Span						

Form B
Stability Check Data Sheet

Date:_____ **Analyst:**_____
Analyzer Manufacturer/Model #:_____

Analyzer Serial #:_____

Pollutant: CO Span Gas Concentration (ppm):_____

STABILITY CHECK					
Elapsed Time (Minutes)	Analyzer Response	Elapsed Time (Continued)	Analyzer Response	Elapsed Time (Continued)	Analyzer Response
1		17		33	
2		18		34	
3		19		35	
4		20		36	
5		21		37	
6		22		38	
7		23		39	
8		24		40	
9		25		41	
10		26		42	
11		27		43	
12		28		44	
13		29		45	
14		30		46	
15		31		47	
16		32		48	

For 30-minute Stability Check Period:

Maximum Concentration (ppm): _____ **Minimum Concentration (ppm):** _____

For 15-minute Stability Check Period:

Maximum Concentration (ppm): _____ **Minimum Concentration (ppm):** _____

Maximum Deviation = 100*(Max. Conc. - Min. Conc.)/Span Gas Conc. = _____ **percent**

Stability Time (minutes): _____

Form C
Calibration Error Check Data Sheet

Company:_____ **Facility:**_____

Source Tested:_____ **Date:**_____

Analyst:_____ **Analyzer Serial #:**_____

Analyzer Manufacturer/Model #:_____

PRETEST CALIBRATION ERROR CHECK								
			A	B	|A-B|	|A-B|/SG*100		
		Pump Flow Rate (Indicate Units)	Analyzer Reading (Indicate Units)	Calibration Gas Concentration (Indicate Units)	Absolute Difference (Indicate Units)	Percent of Span Note 1	Calibration Valid (Yes or No)	Response Time (Minutes)
CO	Zero							
	Span							
O_2	Zero							
	Span							

SG = Span Gas

Form D-1
Reciprocating Engine Test Results

Company:_____ **Facility:**_____

Source Tested:_____ **Date:**_____

Source Manufacturer/Model #:_____

Site-rated Horsepower:_____ **Source Serial #:**_____

Type of Emission Control:_____

Analyst:_____ **Analyzer Serial #:**_____

Analyzer Manufacturer/Model #:_____

Operating Conditions

Source operating at 90 percent or greater site-rated horsepower during testing? yes no

Engine Tested Horsepower (hp)	Engine RPM	Engine Fuel Consumption (Indicate Units)	Fuel Heat Content (Btu/cf)	Engine Specific Fuel Consumption (Btu/hp-hr)[1]

[1] As reported by the Manufacturer

Test Results

Test Start Time:_____ _____Test End Time:_____

O_2	CO				
Avg. Tested O_2 %	Avg. Pre-Catalyst CO ppm	Avg. Post-Catalyst CO ppm	Tested CO Reduction (%)	Required CO Reduction (%)	CO Interference Response (I_{CO}, %):
				93%	

I certify to the best of my knowledge the test results are accurate and representative of the emissions from this source.

_____ _____

Print Name **Signature**

Air Pollution Control
40 CFR Part 49 Tribal Minor New Source Review Permit to Construct
Technical Support Document
Proposed Permit #SMNSR-UO-000027-2012.001

Anadarko Uintah Midstream, LLC
Antelope Flats and Sand Wash Compressor Stations with South Central Tank Battery
Uintah and Ouray Indian Reservation
Uintah County, Utah

In accordance with the requirements of the Tribal Minor New Source Review (MNSR) Permit Program at 40 CFR part 49, this Federal permit to construct is being issued under authority of the Clean Air Act (CAA). The EPA has prepared this technical support document describing the conditions of this permit and presents information that is germane to this permit action.

Table of Contents

I. Introduction

On September 6, 2012, the EPA received an application from Anadarko Uintah Midstream, LLC (Anadarko), requesting a synthetic minor permit for the Antelope Flats and Sand Wash Compressor Stations with South Central Tank Battery in accordance with the requirements of the MNSR Permit Program. On February 18, 2015, November 15, 2016 and April 3, 2017, the EPA received updated applications from Anadarko to completely replace each previously submitted application.

This permit action will apply to an existing facility operating on the Uintah and Ouray Indian Reservation in Utah. The physical location is Latitude 39.995703N, Longitude -109.4683111W, in Uintah County, Utah.

This permit does not authorize the construction of any new emission sources, or emission increases from existing units, nor does it otherwise authorize any other physical modifications to the facility or its operations. This permit is only intended to incorporate required and requested enforceable emission limits and operational restrictions from a March 27, 2008, federal Consent Decree (CD) between the United States of America (Plaintiff), and the State of Colorado, the Rocky Mountain Clean Air Action and the Natural Resources Defense Council (Plaintiff-Intervenors), and Kerr-McGee Corporation (Civil Action No. 07-CV-01034-EWN-KMT), and the April 3, 2017 synthetic MNSR application.

Anadarko has requested legally and practically enforceable requirements for the installation and operation of two (2) low-emission tri-ethylene glycol (TEG) dehydration systems for dehydrating gas compressed into a high-pressure pipeline, consistent with the CD. Anadarko also requested enforceable requirements for installation and operation of a catalytic control system and air-to-fuel ratio (AFR) controls on seven (7) natural gas-fired 4-stroke lean-burn (4SLB) reciprocating internal combustion engines (RICE) (used for natural gas compression at the facility), including associated carbon monoxide (CO) control efficiency requirements, consistent with the CD. Lastly, Anadarko requested enforceable requirement to install and operate only low-bleed or instrument air-driven pneumatic controllers, consistent with the CD.

Upon compliance with the permit, the legally and practically enforceable reductions in emissions can be used when determining the applicability of other CAA requirements, such as the Prevention of Significant Deterioration (PSD) Permit Program at 40 CFR part 52 and the Title V Operating Permit Program at 40 CFR part 71 (Part 71).

II. Facility Description and History

Antelope Flats and Sand Wash Compressor Stations were both constructed by Kerr-McGee in 2007 and South Central Tank Battery was constructed in 2011. All three (3) facilities are located on contiguous or adjacent surface sites. Therefore, according to the meaning of the term "adjacent" that is used to determine the scope of a "stationary source" for the purposes of the MNSR Permit Program and the scope of a "major source" for the purposes of the Part 71 Operating Permit Program, Antelope Flats Compressor Station, Sand Wash Compressor Station and South Central Tank Battery are considered a single stationary source and major title V source.[1]

[1] The meaning of the term "adjacent" was clarified for sources in the onshore oil and natural gas sector in a rulemaking published in the Federal Register on June 3, 2016 titled Source Determination for Certain Emission Units in the Oil and Natural Gas Sector (81 FR 35622).

Antelope Flats Compressor Station collects gas and liquid from the field and compresses the gas into an intermediate pressure pipeline. The liquid is further separated into condensate and produced water. The condensate is sent to the discharge of Sand Wash Compressor Station to be transferred into a high-pressure pipeline. The produced water is stored onsite in atmospheric storage tanks. Antelope Flats Compressor Station also handles fluids received from Sand Wash Compressor Station.

Sand Wash Compressor Station collects natural gas from the intermediate pressure pipeline and compresses it into the high-pressure pipeline. The natural gas is dehydrated using low-emission dehydrators before being compressed into the high-pressure pipeline. All of the liquid that condenses at Sand Wash Compressor Station is transferred to Antelope Flats Compressor Station.

Pipeline pigging operations occur at both Antelope Flats and Sand Wash Compressor Stations.

South Central Tank Battery is a facility that processes well production liquids and entrained gas. Well production liquids are received at the facility through a series of underground pipelines and from truck off-load racks. The facility also separates and sells condensate from the production fluids. The water is then filtered and is boosted for disposal to various water injection wells via buried pipelines.

The emission units identified in Table 1 are currently installed and/or operating at the facility. The information provided in this table is for informational purposes only and is not intended to be viewed as enforceable restrictions or open for public comment. The units and control requirements identified here either existed prior to any pre-construction permitting requirements or were approved/required through the alternative methods as identified below. Table 2, Facility-wide Emissions, provides an accounting of enforceable controlled emissions in tons per year (tpy).

Table 1. Existing Emission Units

Unit Description	**Controls**	**Original Preconstruction Approval Date &/or Emission Control Requirement Details**
Four (4) 4SLB, natural gas-fired RICE for gas compression, each with a maximum site rating of 1,340 hp. Three (3) at Antelope Flats (Unit IDs ATF 1, ATF 2, ATF 3), One (1) at Sand Wash (Unit ID SND 1).	Oxidation Catalyst	No pre-construction approval required for the installation of the engines. Installed prior to the promulgation of the MNSR Permit Program. Control requirements established for all engines in the March 27, 2008 Consent Decree Civil Action No. 07-CV-01034-EWN-KMT. Area source operation and maintenance required for all four (4) engines per applicability to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Reciprocating Internal Combustion Engines at 40 CFR part 63, subpart ZZZZ (NESHAP ZZZZ). Emissions control required for Unit ID ATF 3 per applicability to the New Source Performance Standards (NSPS) for Spark Ignition Internal Combustion Engines at 40 CFR part 60, subpart JJJJ (NSPS JJJJ).
Three (3) 4SLB, natural gas-fired RICE for gas compression, each with a maximum site rating of 2,370 hp at Antelope Flats (Unit IDs ATF 4, ATF 5, and ATF 6).	Oxidation Catalyst	No pre-construction approval required for the installation of the engines. Installed prior to the promulgation of the MNSR Permit Program. Control requirements established for all engines in the March 27, 2008 Consent Decree Civil

		Action No. 07-CV-01034-EWN-KMT. Emissions control required per applicability to NSPS JJJJ.
One (1) 70 MMscfd* tri-ethylene glycol (TEG) low-emission dehydration unit at Sand Wash.	Low-Emission Dehydrator Technology	No pre-construction approval required for the installation of the TEG dehydration unit. Installed prior to the promulgation of the MNSR Permit Program. Control requirements established in the March 27, 2008 Consent Decree Civil Action No. 07-CV-01034-EWN-KMT.
One (1) 100 MMscfd* tri-ethylene glycol (TEG) low-emission dehydration unit at Sand Wash.	Low-Emission Dehydrator Technology	No pre-construction approval required for the installation of the TEG dehydration unit. Installed prior to the promulgation of the MNSR Permit Program. Control requirements established in the March 27, 2008 Consent Decree Civil Action No. 07-CV-01034-EWN-KMT.
Pneumatic controllers (instrument air-driven).	None	No pre-construction approval required for the installation of the controllers. Installed and converted to instrument air prior to the promulgation of the MNSR Permit Program. Instrument air conversion requirements established in the March 27, 2008 Consent Decree Civil Action No. 07-CV-01034-EWN-KMT.
Two (2) 2.5 MMBtu/hr burners.	None	No pre-construction approval required for the installation of the burners. Installed prior to the promulgation of the MNSR Permit Program.
One (1) 2.0 MMBtu/hr* heater.	None	No pre-construction approval required for the installation of the heater. Installed prior to the promulgation of the MNSR Permit Program.
One (1) 1.2 MMBtu/hr* heater.	None	No pre-construction approval required for the installation of the heater. Installed prior to the promulgation of the MNSR Permit Program.
Eight (8) hydrogen sulfide treatment tanks.	N/A	No pre-construction approval required for the installation of the tanks. Installed prior to the promulgation of the MNSR Permit Program.
Three (3) 400 bbl* each atmospheric condensate storage tanks at Antelope Flats.	None	No pre-construction approval required for the installation of the tanks. Installed prior to the promulgation of the MNSR Permit Program.
At South Central Tank Battery: • Two (2) 750 bbl* atmospheric condensate / produced water storage tanks. • Six (6) 650 bbl* atmospheric condensate / produced water storage tanks. • Four (4) 500 bbl* atmospheric condensate / produced water storage tanks.	One (1) 24-inch 4.0 MMBtu-hr* Flare (not enforceable)	No pre-construction approval required for the installation of the tanks. Installed prior to the promulgation of the MNSR Permit Program.

Pigging Operations.	N/A	No pre-construction approval required for the pigging operations. Commenced prior to the promulgation of the MNSR Permit Program.
Condensate Loadout at South Central Tank Battery.	None	No pre-construction approval required for the loadout operations. Commenced prior to the promulgation of the MNSR Permit Program.
Facility Fugitives.	None	No pre-construction approval required for the construction of the facility. Commenced prior to the promulgation of the MNSR Permit Program.

* bbl = barrel; MMBtu/hr = million British thermal units per hour; MMscfd = million standard cubic feet per day.

Table 2. Facility-wide Emissions

Pollutant	**Controlled Potential Emissions (tpy)**
PM	0.0
PM_{10}	0.0
$PM_{2.5}$	NA
SO_2	NA
NO_X	246.5
CO	225.9
VOC	157.0
Greenhouse Gases	
CO_2e (Total)	**51,506.0**
Hazardous Air Pollutants (HAP)	
Acetaldehyde	3.2
Acrolein	2.0
Benzene	0.6
Ethyl-Benzene	0.1
Toluene	0.3
n-Hexane	3.3
Xylene	NA
Formaldehyde	8.4
2,2,4-Trimethylpentane	NA
Cyclohexane	NA
Total HAP**	**19.0**

PM – Particulate Matter
PM_{10} – Particulate Matter less than 10 microns in size
$PM_{2.5}$ – Particulate Matter less than 2.5 microns in size
SO_2 – Sulfur Dioxide
NO_X – Nitrogen Oxides
CO – Carbon Monoxide
VOC – Volatile Organic Compounds
CO_2 – Carbon dioxide
CH_4 – Methane
N_2O – Nitrous oxide
HFCs – Hydrofluorocarbons
PFCs – Perfluorocarbons
SF_6 – Sulfur hexafluoride
CO_2e – Equivalent CO_2. A measure used to compare the emissions from various greenhouse gases based upon their global warming potential (GWP)

HFCs, PFCs, and SF_6 emissions are not created during oil and natural gas production operations.

NA – Not Available

*BTEX = benzene, toluene, ethylbenzene and xylenes.

**Total HAP is inclusive of but not limited to the individual HAP listed above.

III. Proposed Synthetic Minor Permit Action

A. Low-Emission Dehydration System

Field gas often contains water vapor at the production site which must be removed to avoid pipeline corrosion and solid hydrate formation. The natural gas industry commonly uses the glycol absorption process to remove naturally occurring water from raw field gas. Most commonly, the glycol absorbent used is TEG. The TEG dehydration process produces VOC and HAP emissions

from pressure reduction of rich glycol (immediately post absorption and prior to stripping and regeneration) and from the stripping of the rich glycol to regenerate lean glycol to be reused in the process. The HAP emissions consist primarily of benzene, toluene, ethylbenzene and n-hexane.

A flash tank is typically utilized to separate these vapors at a pressure where they can be utilized for fuel. Distillation removes the absorbed water along with any remaining hydrocarbon, including VOC and HAP, from the glycol to the still column vent as overhead vapor. The typical form of emission control for conventional dehydrator still vents that emit the non-condensable portion of this overhead vapor is to route the vapors to a combustion device, such as a thermal oxidizer or reboiler burner to destroy the hydrocarbon content of the vapors. However, Anadarko has installed and operates two (2) low-emission TEG dehydrators at Sand Wash Compressor Station. These units capture the non-condensable portion of the still vent and the flash tank vapors and recompress the vapor with a reciprocating or scroll compressor that routes the vapor to the station inlet as natural gas product or to the station fuel system. The units also employ an electric glycol circulation pump and, except for the recompression of non-condensable vapors, resemble conventional glycol dehydrators in their configuration.

To ensure that the non-condensable vapor compression systems are fully integrated into dehydrator operation such that the units cannot be disabled so as to operate while venting to the atmosphere, the units: 1) incorporate an integral vapor recovery function that prevents the dehydrator from operating independently of the vapor recovery function; 2) either returns the captured vapors to the inlet of the facility where the glycol dehydrators are located or route the captured vapors to that facility's fuel gas supply header; and 3) thereby emit no more than 1.0 ton per year of VOC each.

The low-emission glycol dehydrators have at least three (3) levels of protection to prevent emissions from occurring:

(a) Physical electrical hard-wiring between the vapor recovery unit (VRU) compressor and the glycol circulation pumps ensures that if the VRU compressor goes down, the glycol pump also shuts down thereby halting the circulation of glycol through the wet gas as well as the emissions associated with the regeneration of glycol;

(b) A second level of protection redundancy has been incorporated by using the station Programmable Logic Controller (PLC) to shut down the dehydration system in the event the VRU compressor goes down; and

(c) A third level of protection is the routing of non-condensables directly to combustion devices in the stations that utilize micro-turbine electrical generators or central heat medium systems.

The units were certified through a third-party independent engineering evaluation to have zero (0) emissions of VOC from the routing of regenerator and flash tank overheads to an integrated VRU, and that safeguards exist to ensure that the dehydrators shut down if the VRU is shut down for any reason. The independent engineering evaluation is available in the administrative docket for this permit.

Based on our review of Anadarko's permit application, we are proposing the emission, operational, monitoring, recordkeeping and reporting requirements in Table 3 for the Low-Emission Dehydrators, which are consistent with the requirements in the CD. The proposed requirements are based, in part, on the unit specifications and independent engineering evaluation provided by Anadarko in the permit application and ensure that the requested emission limits are legally and practically enforceable.

Table 3. Proposed Low-Emission Dehydrators Construction, Operational, Monitoring, Recordkeeping and Reporting Requirements

Type	**Proposed Requirement**
Construction and Operation	Install, operate and maintain no more than two (2) Low-Emission Dehydrators that each meet specifications set forth in an Appendix to the permit, which is reproduced from the CD and that means a dehydration unit that: • Incorporates an integral vapor recovery function such that the dehydrator cannot operate independent of the vapor recovery function; • Either returns the captured vapors to the inlet of the facility where the dehydrator is located or routes the captured vapors to the facility's fuel gas supply header; and • Is designed and operated to emit less than 1.0 ton of VOC in any consecutive 12-month period, inclusive of VOC emissions from the reboiler burner.
Recordkeeping	Keep records of all manufacturer specifications and all required inspections and repairs.
Reporting	Submit a summary of all inspections and repairs conducted in each annual report to the EPA.

The proposed emission restrictions will result in a total of 1.0 tpy of VOC from each of the two (2) Low-Emission Dehydrators. These controlled emissions are based on the dehydrators operating a maximum of 8,760 hours in a year, at a maximum capacity of 170 MMscfd, and as certified "Low-Emission Dehydrators."

B. 4SLB Natural Gas-Fired Compressor Engines and Controls

The Antelope Flats and Sand Wash Compressor Stations operate seven (7) natural gas-fired 4SLB RICE and the primary form of emission control for natural gas-fired lean-burn RICE is catalytic control systems, most commonly systems that use oxidation catalysts. Oxidation catalyst control systems are effective for control of CO, VOC and formaldehyde. These catalysts

do not typically control NOx emissions. However, lean-burn engines are designed to operate with more dilute natural gas streams (a higher air-to-fuel ratio) than rich-burn engines. Because they operate on more dilute natural gas streams, lean-burn engines also operate at lower combustion temperatures producing less NO_X emissions than rich-burn engines.

The CD contains requirements to control these seven (7) engines using oxidation catalyst control systems capable of 93% CO control efficiency when operating at 90% load or higher. In addition to the conditions proposed in this MNSR permit, three (3) of these engines are subject to emissions control requirements under NSPS JJJJ and four (4) of these engines are subject to operation and maintenance requirements for area sources under NESHAP ZZZZ. Anadarko is requesting to incorporate the engine requirements from the CD into this MNSR permit to provide legal and practical enforceability after the CD is terminated.

Based on our review of Anadarko's permit application, we are proposing the construction, operation, control, testing, recordkeeping and reporting requirements in Table 4 for the seven (7) engines, that are consistent with the requirements in the CD.

Table 4. Proposed Engine Construction, Operation, Emissions, Testing, Monitoring, Recordkeeping and Reporting Requirements

Type	**Proposed Requirement**
Construction, Control and Operation	Install, continuously operate and maintain a catalytic control system on each engine capable of reducing emissions of CO by at least 93.0% when the engine is operating at 90% load or higher. Follow engine and control manufacturer recommended maintenance schedules and procedures or equivalent procedures developed by the vendor or Permittee, to ensure optimum engine and control performance such that each engine meets the CO control efficiency requirement.
Performance Testing	Initial performance testing for compliance with the CO control efficiency within 60 days after achieving the maximum production rate at which the facility will be operated, but no later than 180 days after initial startup, including initial startup for engines that are rebuilt or replaced. Semiannual subsequent performance testing. Performance tests shall be conducted using a portable analyzer to measure oxygen (O_2) and CO according to Carbon Monoxide Control Efficiency Portable Analyzer Monitoring Protocol (included as an

	appendix to the proposed MNSR permit, copied from Appendix F of the CD).
Recordkeeping	Keep records of: all manufacturer and/or vendor specifications for each engine, catalytic control system and portable analyzer; all calibration and maintenance conducted for each engine, catalytic control system and portable analyzer; all required performance tests; all engine rebuilds and replacements; and all deviations of permit conditions (including corrective actions and timeframe for return to compliance).
Reporting	Submit all initial performance test reports to the EPA within 60 days of completing the test. Include a summary of all maintenance conducted, corrective actions, subsequent semi-annual testing and all deviations from permit conditions (including corrective actions and timeframe for return to compliance) in each required annual report to the EPA.

These proposed CO control efficiency requirement and operational requirements will result in a facility-wide PTE of 225.9 tpy for CO emissions. The potential controlled emissions are based on the engines operating a maximum of 8,760 hours in a year and at the specified maximum horsepower ratings and accounting for catalytic control system manufacturer guaranteed CO control efficiencies of 93%.

C. Pneumatic Controllers

The CD contains a requirement that all pneumatic controllers be operated using instrument air or low-bleed controllers. Therefore, we are proposing such a condition in the permit.

IV. Air Quality Review

The MNSR regulations at 40 CFR 49.154(d) require that an Air Quality Impact Assessment (AQIA) modeling analysis be performed if there is reason to be concerned that new construction would cause or contribute to a National Ambient Air Quality Standard (NAAQS) or PSD increment violation. If an AQIA reveals that the proposed construction could cause or contribute to a NAAQS or PSD increment violation, such impacts must be addressed before a pre-construction permit can be issued.

The emissions at this existing facility will not be increasing due to this permit action and the emissions will continue to be well controlled at all times. In addition, this permit action does not authorize the construction of any new emission sources, or emission increases from existing units, nor does it otherwise authorize any other physical modifications to the facility or its operations and the substantive requirements of the CD (emission controls and reductions) have already been fulfilled at this facility. In

short, this action will have no adverse air quality impacts; therefore, we have determined that an AQIA modeling analysis is not required for this action.

V. Tribal Consultations and Communications

We offer tribal government leaders an opportunity to consult on major and certain synthetic minor permit actions. We ask the tribal government leaders to respond to our offer to consult within 30 days of receiving the offer. We offered the Chairperson of the Ute Tribe an opportunity to consult on this permit action via letter dated September 25, 2012. To date, the EPA has not received a request for such consultation.

All minor source applications (synthetic minor, minor modification to an existing facility, new true minor and general permit) are submitted to both the tribe and the EPA per the application instructions (see https://www.epa.gov/caa-permitting/tribal-nsr-permits-region-8). The tribe has 10 business days from the receipt of the application to communicate to the EPA any preliminary questions and comments on the application. In the event an AQIA is triggered, we email a copy of that document to the tribe within 5 business days from the date that we receive it.

Additionally, we notify the tribe of the public comment period for the proposed permit and provide copies of the notice of public comment opportunity to post in various locations of their choosing on the Reservation. We also notify the tribe of the issuance of the final permit.

VI. Environmental Justice

On February 11, 1994, the President issued Executive Order 12898, entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." The Executive Order calls on each federal agency to make environmental justice a part of its mission by “identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations.”

The EPA defines “Environmental Justice” to include meaningful involvement of all people regardless of race, color, national origin or income with respect to the development, implementation and enforcement of environmental laws, regulations and polices. The EPA’s goal is to address the needs of overburdened populations or communities to participate in the permitting process. *Overburdened* is used to describe the minority, low-income, tribal and indigenous populations or communities in the United States that potentially experience disproportionate environmental harms and risks due to exposures or cumulative impacts or greater vulnerability to environmental hazards.

This discussion describes our assessment of the potential environmental impacts to potentially overburdened communities in connection with issuing this permit in Uintah County, Utah, within the exterior boundaries of the Uintah and Ouray Indian Reservation, and describes our efforts at meaningful public involvement in the permit issuance process.

A. Environmental Impacts to Potentially Overburdened Communities

This permit action would not authorize the construction of any new air emission sources, or air emission increases from existing units, nor would it otherwise authorize any other physical modifications to the associated facility or its operations. The air emissions at the existing facility

will not increase due to the associated action and the emissions will continue to be well controlled at all times. This action will have no adverse air quality impacts.

Furthermore, the permit would contain a provision stating, "*The permitted source shall not cause or contribute to a National Ambient Air Quality Standard violation or a PSD increment violation.*" Noncompliance with this permit provision is a violation of the permit and is grounds for enforcement action and for permit termination or revocation. As a result, we conclude that issuance of the aforementioned permit will not have disproportionately high or adverse human health effects on any communities in the vicinity of the Uintah and Ouray Indian Reservation.

B. Enhanced Public Participation

Given the presence of potentially overburdened communities in the vicinity of the facility, we are providing an enhanced public participation process for this permit.

1. Interested parties can subscribe to the EPA email list that notifies them of public comment opportunities on the Uintah and Ouray Indian Reservation for proposed air pollution control permits via email at https://www.epa.gov/caa-permitting/caa-permit-public-comment-opportunities-region-8.

2. All minor source applications (synthetic minor, modification to an existing facility, new true minor or general permit) are submitted to both the tribe and the EPA per the application instructions (see https://www.epa.gov/caa-permitting/tribal-nsr-permits-region-8).

3. We ask that the tribe communicate to the EPA any preliminary questions and comments on the application within 10 business days of receiving it.

4. In the event an AQIA is triggered, we email a copy of that document to the tribe within 5 business days from the date we receive it.

5. We notify the tribe of the public comment period for the proposed permit and provide copies of the notice of public comment opportunity to post in various locations of their choosing on the Reservation. We also notify the tribe of the issuance of the final permit.

6. We offer the tribal government leaders an opportunity to consult on major and certain synthetic minor proposed permit actions. The tribal government leaders are asked to respond to the EPA's offer to consult within 30 days of receiving the letter.

VII. Authority

Requirements under 40 CFR part 49 to obtain a permit apply to new and modified minor stationary sources, and minor modifications at existing major stationary sources ("major" as defined in 40 CFR 52.21). In addition, the MNSR Permit Program provides a mechanism for an otherwise major stationary source to voluntarily accept restrictions on its potential to emit to become a synthetic minor source. We are charged with direct implementation of these provisions where there is no approved Tribal implementation plan for implementation of the MNSR regulations. Pursuant to Section 301(d)(4) of the CAA (42 U.S.C. Section 7601(d)), we are authorized to implement the MNSR regulations at 40 CFR part 49 in Indian country. The Antelope Flats and Sand Wash Compressor Stations with South

Central Tank Battery is located on Indian country lands within the exterior boundaries of the Uintah and Ouray Indian Reservation in Utah. The exact location is Latitude 39.995703N, Longitude -109.4683111W, in Uintah County, Utah.

VIII. Public Notice and Comment, Hearing and Appeals

A. Public Comment Period

In accordance with 40 CFR 49.157, we must provide public notice and a 30-day public comment period to ensure that the affected community and the general public have reasonable access to the application and proposed permit information. The application, the proposed permit, this technical support document and all supporting materials for the proposed permit are available at:

Ute Indian Tribe
Energy and Minerals Department
P.O. Box 70
988 South 7500 East, Annex Building
Fort Duchesne, Utah 84026
Contact: Minnie Grant, Air Coordinator, 435-725-4900 or minnieg@utetribe.com

and

U.S. EPA
Region 8 Air Program Office
1595 Wynkoop Street (8P-AR)
Denver, Colorado 80202-1129
Contact: Claudia Smith, Environmental Scientist, 303-312-6520 or smith.claudia@epa.gov

All documents are available for review at our office Monday through Friday from 8:00 a.m. to 4:00 p.m. (excluding Federal holidays). Additionally, the proposed permit and technical support document can be reviewed on our website at: https://www.epa.gov/caa-permitting/caa-permit-public-comment-opportunities-region-8.

Any person may submit written comments on the proposed permit and may request a public hearing during the public comment period. These comments must raise any reasonably ascertainable issues with supporting arguments by the close of the public comment period (including any public hearing). Comments may be sent to the EPA address above, or sent via an email to r8airpermitting@epa.gov, with the topic "Comments on SMNSR Permit for the Anadarko Antelope Flats/Sand Wash Compressor Station with South Central Tank Battery".

B. Public Hearing

A request for a public hearing must be in writing and must state the nature of the issues proposed to be raised at the hearing. We will hold a hearing whenever there is, on the basis of requests, a significant degree of public interest in a proposed permit. We may also hold a public hearing at our discretion whenever, for instance, such a hearing might clarify one or more issues involved in the permit decision.

C. Final Permit Action

In accordance with 40 CFR 49.159, a final permit becomes effective 30 days after permit issuance, unless: (1) a later effective date is specified in the permit; (2) appeal of the final permit is made as detailed in the next section; or (3) we may make the permit effective immediately upon issuance if no comments resulted in a change or denial of the proposed permit. We will send notice of the final permit action to any individual who commented on the proposed permit during the public comment period. In addition, the source will be added to a list of final permit actions which is posted on our website at: https://www.epa.gov/caa-permitting/caa-permits-issued-epa-region-8. Anyone may request a copy of the final permit at any time by contacting the Tribal Air Permit Program at (800) 227–8917 or sending an email to r8airpermitting@epa.gov.

D. Appeals to the Environmental Appeals Board

In accordance with 40 CFR 49.159, within 30 days after a final permit decision has been issued, any person who filed comments on the proposed permit or participated in the public hearing may petition the Environmental Appeals Board (EAB) to review any condition of the permit decision. The 30-day period within which a person may request review under this section begins when we have fulfilled the notice requirements for the final permit decision. Motions to reconsider a final order by the EAB must be filed within 10 days after service of the final order. A petition to the EAB is under Section 307(b) of the CAA, a prerequisite to seeking judicial review of the final agency action. For purposes of judicial review, final agency action occurs when we issue or deny a final permit and agency review procedures are exhausted.

Smith, Claudia

From: Smith, Claudia
Sent: Tuesday, June 06, 2017 4:51 PM
To: shon.rhoton@andarko.com
Cc: Bruce; minnieg@utetribe.com; Fallon, Gail; Morales, Monica; Natalie.Ohlhausen@anadarko.com; Schwartz, Colin
Subject: CORRECTION: Proposed Synthetic Minor NSR Permit for Antelope Flats and Sand Wash Compressor Stations with SCTB
Attachments: Anadarko Antelope Flats-Sand Wash-SCTB Bulletin Board Notice.pdf; Anadarko Antelope Flats-Sand Wash-SCTB Proposed SMNSR Permit-TSD.pdf

(Please note corrected public comment period dates and corrected PDF attachments – Disregard email sent by Colin Schwartz on May 31, 2017)

Mr. Rhoton,

I have attached the requested proposed permit, the accompanying technical support document, and the bulletin board notice for the Antelope Flats and Sand Wash Compressor Stations with SCTB. We will also be posting the application, proposed permit, technical support document, and other supporting information in PDF format on our website at http://www2.epa.gov/caa-permitting/caa-permit-public-comment-opportunities-region-8 by the start of the public comment period.

In accordance with the regulations at 40 CFR 49.157, we are providing a 30-day period from June 12, 2017 to July 13, 2017 for public comment on this proposed permit. Comments must be received by 5:00pm MDT July 13, 2017, to be considered in the issuance of the final permit.

Please submit any written comments you may have concerning the terms and conditions of this permit. You can send them directly to me at schwartz.colin@epa.gov, and either smith.claudia@epa.gov or r8airpermitting@epa.gov. Should the EPA not accept any or all of these comments, you will be notified in writing and will be provided with the reasons for not accepting them.

Thank you,

Colin C. Schwartz
Environmental Scientist
Air Permits Division
US EPA Region 8- Denver, CO
303-312-6043

Smith, Claudia

From: Schwartz, Colin
Sent: Wednesday, May 31, 2017 10:16 AM
To: shon.rhoton@andarko.com
Cc: Bruce; minnieg@utetribe.com; Fallon, Gail; Morales, Monica; Smith, Claudia; Natalie.Ohlhausen@anadarko.com
Subject: Proposed Synthetic Minor NSR Permit for Antelope Flats and Sand Wash Compressor Stations with SCTB
Attachments: Anadarko Antelope Flats SCTB Proposed SMNSR Permit.pdf; Anadarko Antelope Flats SCTB Proposed TSD.pdf; Anadarko Antelope Flats SCTB Proposed Public Notice.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Mr. Rhoton,

I have attached the requested proposed permit, the accompanying technical support document, and the bulletin board notice for the Antelope Flats and Sand Wash Compressor Stations with SCTB. We will also be posting the application, proposed permit, technical support document, and other supporting information in PDF format on our website at http://www2.epa.gov/caa-permitting/caa-permit-public-comment-opportunities-region-8 by the start of the public comment period.

In accordance with the regulations at 40 CFR 49.157, we are providing a 30-day period from June 12, 2015 to July 13, 2015 for public comment on this proposed permit. Comments must be received by 5:00pm MDT July 13, 2015, to be considered in the issuance of the final permit.

Please submit any written comments you may have concerning the terms and conditions of this permit. You can send them directly to me at schwartz.colin@epa.gov, and either smith.claudia@epa.gov or r8airpermitting@epa.gov. Should the EPA not accept any or all of these comments, you will be notified in writing and will be provided with the reasons for not accepting them.

Thank you,

Colin C. Schwartz
Environmental Scientist
Air Permits Division
US EPA Region 8- Denver, CO
303-312-6043

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
Denver, CO 80202-1129
Phone 800-227-8917
www.epa.gov/region08

JUN 05 2017

Ref: 8P-AR

Ms. Minnie Grant
Air Coordinator, Energy, Minerals, & Air
Energy and Minerals Department, Ute Indian Tribe
P.O. Box 70
Fort Duchesne, Utah 84026

Dear Ms. Grant:

The U.S. Environmental Protection Agency Region 8 is proposing to issue a synthetic minor permit for the Anadarko Uintah Midstream, LLC, Cottonwood Wash Compressor Station on the Uintah and Ouray Indian Reservation. As requested by Anadarko, this permit would incorporate enforceable requirements for the installation and operation of two low-emission tri-ethylene glycol (TEG) dehydration systems for control of volatile organic compound emissions. Anadarko also has requested enforceable carbon monoxide emission control requirements for the seven 4-stroke lean-burn compressor engines using catalytic emissions control systems. Lastly, Anadarko requested enforceable requirements to install and operate only instrument air-driven or low-bleed pneumatic controllers. This permit is only intended to incorporate requested emission limits and provisions from the permit application for existing emissions units operating at the facility.

A public comment period for the proposed permit will begin on June 12, 2017, and end on July 13, 2017.

We have enclosed a CD and paper copy containing the proposed permit and supporting documentation, and we ask that you please make this material available for public review until the end of the public comment period. In addition, we have provided copies of the bulletin board public notice announcement and would appreciate it if you could post this announcement in prominent locations in your area. All of these documents will also be available for review in electronic format on our website at: https://www.epa.gov/caa-permitting/caa-permit-public-comment-opportunities-region-8.

Thank you for your assistance in this matter. Should you have any questions regarding our request you may contact me at (303) 312-6043.

Sincerely,

Colin Schwartz
Air Permit Engineer

Enclosures

Cc (w/o enclosures):
Bruce Pargeets, Director, Energy, Minerals, and Air, Ute Indian Tribe

MEMO TO FILE

DATE: May 8, 2017

SUBJECT: Uintah and Ouray Indian Reservation, Antelope Flats and Sand Wash Compressor Stations with South Central Tank Battery; Anadarko Uintah Midstream, LLC., Environmental Justice

FROM: Colin Schwartz, EPA Region 8 Air Program

TO: Source Files:
205c AirTribal, UO, Anadarko Uintah Midstream, LLC. Antelope Flats-Sand Wash South Central Tank Battery
SMNSR-UO-000027-2012.001, 9/6/2012
FRED # 98581

On February 11, 1994, the President issued Executive Order 12898, entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." The Executive Order calls on each federal agency to make environmental justice a part of its mission by "identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations."

The EPA defines "Environmental Justice" as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and polices. The EPA's goal with respect to Environmental Justice in permitting is to enable overburdened communities to have full and meaningful access to the permitting process and to develop permits that address environmental justice issues to the greatest extent practicable under existing environmental laws. *Overburdened* is used to describe the minority, low-income, tribal and indigenous populations or communities in the United States that potentially experience disproportionate environmental harms and risks as a result of greater vulnerability to environmental hazards.

This discussion describes our assessment of the potential environmental impacts to overburdened communities in connection with issuing this permit in Uintah County, Utah, within the exterior boundaries of the Uintah and Ouray Indian Reservation, and describes our efforts at meaningful public involvement in the permit issuance process.

As described in the following sections of this memorandum, we conclude that issuance of the aforementioned permit is not expected to have disproportionately high or adverse human health effects on overburdened or any communities in the vicinity of the facility.

Permit Request

The EPA received an application from Anadarko Uintah Midstream, LLC (Anadarko for a synthetic minor permit for the existing Antelope Flats and Sand Wash Compressor Stations with

South Central Tank Battery in accordance with the requirements of the Tribal Minor New Source Review (MNSR) Permit Program at 40 CFR Part 49.

This permit would not authorize the construction of any new emission sources, or emission increases from existing units, nor would it otherwise authorize any other physical modifications to the facility or its operations. This permit is only intended to incorporate required and requested enforceable emission limits and operational restrictions from a March 27, 2008, Federal Consent Decree (CD) between the United States of America (Plaintiff), and the State of Colorado, the Rocky Mountain Clean Air Action and the Natural Resources Defense Council (Plaintiff-Intervenors), and Kerr-McGee Corporation (Civil Action No. 07-CV-01034-EWN-KMT), and the April 3, 2017 synthetic MNSR application. Anadarko has requested legally and practically enforceable requirements for the installation and operation of two (2) low-emission tri-ethylene glycol (TEG) dehydration systems for dehydrating gas compressed into a high pressure pipeline, consistent with the CD. Anadarko also requested enforceable requirements for installation and operation of a catalytic control system on seven (7) natural gas-fired 4-stroke lean-burn (4SLB) reciprocating internal combustion engines (used for natural gas compression at the facility), including associated carbon monoxide (CO) control efficiency requirements, consistent with the CD. Lastly, Anadarko requested enforceable requirements to install and operate only low-bleed or instrument air-driven pneumatic controllers, consistent with the CD.

Upon compliance with this permit, Anadarko will have legally and practically enforceable restrictions on emissions that can be used when determining the applicability of other CAA permitting requirements, such as under the Prevention of Significant Deterioration Permit Program at 40 CFR Part 52 and the Title V Operating Permit Program at 40 CFR Part 71. The EPA has determined that issuance of this MNSR permit will not contribute to National Ambient Air Quality Standards (NAAQS) violations, or have potentially adverse effects on ambient air quality.

The facility is located at:

Sec 12 T9S R22E
39.995703N, Longitude -109.4683111W

Air Quality Review

The MNSR regulations at 40 CFR 49.154(d) require that an Air Quality Impact Assessment (AQIA) modeling analysis be performed if there is reason to be concerned that new construction would cause or contribute to a National Ambient Air Quality Standard (NAAQS) or PSD increment violation. If an AQIA reveals that the proposed construction could cause or contribute to a NAAQS or PSD increment violation, such impacts must be addressed before a pre-construction permit can be issued. Because the permit actions do not authorize the construction of any new emission sources, or emission increases from existing units we have determined that an AQIA modeling analysis is not required for this action.

For purposes of Executive Order 12898 on environmental justice, the EPA has recognized that compliance with the NAAQS is “emblematic of achieving a level of public health protection

that, based on the level of protection afforded by a primary NAAQS, demonstrates that minority or low-income populations will not experience disproportionately high and adverse human health or environmental effects due to the exposure to relevant criteria pollutants." *In re Shell Gulf of Mexico, Inc. & Shell Offshore, Inc.*, 15 E.A.D., slip op. at 74 (EAB 2010). This is because the NAAQS are health-based standards, designed to protect public health with an adequate margin of safety, including sensitive populations such as children, the elderly, and asthmatics.

The EPA has determined that issuance of this MNSR permit will not contribute to National Ambient Air Quality Standards (NAAQS) violations, or have potentially adverse effects on ambient air quality.

Environmental Impacts to Potentially Overburdened Communities

This permit action would not authorize the construction of any new air emission sources, or air emission increases from existing units, nor does it otherwise authorize any other physical modifications to the associated facility or its operations. The air emissions at the existing facility will not increase due to the associated action.

Furthermore, the permit would contain a provision stating, "*this MNSR permit will not contribute to National Ambient Air Quality Standards violations, or have potentially adverse effects on ambient air quality.*" Noncompliance with this permit provision would be a violation of the permit and would be grounds for enforcement action and for permit termination or revocation. As a result, we conclude that issuance of the aforementioned permit will not have disproportionately high or adverse human health effects on any communities in the vicinity of the Uintah and Ouray Indian Reservation.

Tribal Consultation and Enhanced Public Participation

Given the presence of potentially overburdened communities in the vicinity of the facility, we are providing an enhanced public participation process for this permit.

1. Interested parties can subscribe to an EPA email list that notifies them of public comment opportunities on the Uintah and Ouray Indian Reservation for proposed air pollution control permits via email at https://www.epa.gov/caa-permitting/caa-permit-public-comment-opportunities-region-8.

2. All minor source applications (synthetic minor, modification to an existing facility, new true minor or general permit) are submitted to both the Tribe and us per the application instructions (see https://www.epa.gov/caa-permitting/tribal-nsr-permits-region-8).

3. The Tribe is asked to respond within 10 business days to us with questions and comments on the application.

4. In the event an AQIA is triggered, we email a copy of that document to the Tribe within 5 business days from the date we receive it.

5. We notify the Tribe of the public comment period for the proposed permit and provide copies of the notice of public comment opportunity to post in various locations of their choosing on the Reservation. We also notify the Tribe of the issuance of the final permit.

MEMO TO FILE

DATE: May 8, 2017

SUBJECT: Uintah and Ouray Indian Reservation, Antelope Flats and Sand Wash Compressor Stations with South Central Tank Battery; Anadarko Uintah Midstream, LLC., Endangered Species Act

FROM: Colin Schwartz, EPA Region 8 Air Program

TO: Source Files:
205c AirTribal, UO, Anadarko Uintah Midstream, LLC. Antelope Flats-Sand Wash South Central Tank Battery
SMNSR-UO-000027-2012.001, 9/6/2012
FRED # 98581

Pursuant to Section 7 of the Endangered Species Act (ESA), 16 U.S.C. §1536, and its implementing regulations at 50 CFR, part 402, the EPA is required to ensure that any action authorized, funded, or carried out by the Agency is not likely to jeopardize the continued existence of any Federally-listed threatened or endangered species (TES) or result in the destruction or adverse modification of such species' designated critical habitat. Under ESA, those agencies that authorize, fund, or carry out the federal action are commonly known as "action agencies." If an action agency determines that its federal action "may affect" listed species or critical habitat, it must consult with the U.S. Fish and Wildlife Service (FWS). If an action agency determines that the federal action will have no effect on listed species or critical habitat, the agency will make a "no effect" determination. In that case, the action agency does not initiate consultation with the FWS and its obligations under Section 7 are complete.

In complying with its duty under ESA, the EPA, as the action agency, examined the potential effects on listed species and designated critical habitat relating to issuing this Clean Air Act (CAA) synthetic minor New Source Review permit in Uintah County, Utah, on Indian country lands within the Uintah and Ouray Indian Reservation.

This memorandum describes EPA's efforts to assess potential effects on TES in connection with issuing this Clean Air Act (CAA) synthetic minor New Source Review permit in Uintah County, Utah, on Indian country lands within the Uintah and Ouray Indian Reservation. As explained further below, EPA has concluded that the proposed permit action will have "*No effect"* on listed TES or designated critical habitat.

Permit Request

The EPA received an application from Anadarko Uintah Midstream, LLC (Anadarko) updating the applications to their synthetic minor permit for the existing Antelope Flats and Sand Wash Compressor Stations with South Central Tank Battery in accordance with the requirements of the Tribal Minor New Source Review (MNSR) Permit Program at 40 CFR Part 49.

This permit does not authorize the construction of any new emission sources, or emission increases from existing units, nor does it otherwise authorize any other physical modifications to the facility or its operations. This permit is only intended to incorporate required and requested enforceable emission limits and operational restrictions from a March 27, 2008, Federal Consent Decree (CD) between the United States of America (Plaintiff), and the State of Colorado, the Rocky Mountain Clean Air Action and the Natural Resources Defense Council (Plaintiff-Intervenors), and Kerr-McGee Corporation (Civil Action No. 07-CV-01034-EWN-KMT), and the April 3, 2017 synthetic MNSR application. Anadarko has requested legally and practically enforceable requirements for the installation and operation of two (2) low-emission tri-ethylene glycol (TEG) dehydration systems for dehydrating gas compressed into a high pressure pipeline, consistent with the CD. Anadarko also requested enforceable requirements for installation and operation of a catalytic control system and air-to-fuel ratio (AFR) controls on seven (7) natural gas-fired 4-stroke lean-burn (4SLB) reciprocating internal combustion engines (used for natural gas compression at the facility), including associated carbon monoxide (CO) control efficiency requirements, consistent with the CD. Lastly, Anadarko requested enforceable requirements to install and operate only low-bleed or instrument air-driven pneumatic controllers, consistent with the CD.

Upon compliance with this permit, Anadarko will have legally and practically enforceable restrictions on emissions that can be used when determining the applicability of other CAA permitting requirements, such as under the Prevention of Significant Deterioration Permit Program at 40 CFR Part 52 and the Title V Operating Permit Program at 40 CFR Part 71. The EPA has determined that issuance of this MNSR permit will not contribute to National Ambient Air Quality Standards (NAAQS) violations, or have potentially adverse effects on ambient air quality.

The facility is located at:

Sec 27 T9S R21E
Latitude 40.009722, Longitude -109.543889

Conclusion

The EPA has concluded that the proposed synthetic minor NSR permit action will have "*No effect"* on listed TES or designated critical habitat. This proposed permit action does not authorize the construction of any new emission sources, or emission increases from existing units, nor does it otherwise authorize any other physical modifications to the associated facility or its operations. The emissions, approved at present, from the existing facility will not increase due to the associated permit action. Because the EPA has determined that the federal action will have no effect on TES or designated critical habitat, the agency has made a *"No effect"* determination. Therefore, the EPA did not initiate consultation with the FWS and our obligations under Section 7 are complete.

MEMO TO FILE

DATE: May 8, 2017

SUBJECT: Uintah and Ouray Indian Reservation, Antelope Flats and Sand Wash Compressor Stations with South Central Tank Battery; Anadarko Uintah Midstream, LLC., National Historic Preservation Act

FROM: Colin Schwartz, EPA Region 8 Air Program

TO: Source Files:
205c AirTribal, UO, Anadarko Uintah Midstream, LLC. Antelope Flats-Sand Wash South Central Tank Battery
SMNSR-UO-000027-2012.001, 9/6/2012
FRED # 98581

Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment with regard to such undertakings. Under the ACHP's implementing regulations at 36 C.F.R. Part 800, Section 106 consultation is generally with state and tribal historic preservation officials in the first instance, with opportunities for the ACHP to become directly involved in certain cases. An "undertaking" is "a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; and those requiring a Federal permit, license or approval." 36 C.F.R. § 800.16(y).

Under the NHPA Section 106 implementing regulations, if an undertaking is a type of activity that has the potential to cause effects on historic properties, assuming any are present, then federal agencies consult with relevant historic preservation partners to determine the area of potential effect (APE) of the undertaking, to identify historic properties that may exist in that area, and to assess and address any adverse effects that may be caused on historic properties by the undertaking. If an undertaking is a type of activity that does not have the potential to cause effects on historic properties, the federal agency has no further obligations. 36 C.F.R. § 800.3(a)(1).

This memorandum describes EPA's efforts to assess potential effects on historic properties in connection with issuing this Clean Air Act (CAA) synthetic minor New Source Review permit in Uintah County, Utah, on Indian country lands within the Uintah and Ouray Indian Reservation. As explained further below, EPA is finding that the proposed action does not have the potential to cause effects on historic properties, even assuming such historic properties are present.

Permit Request

The EPA received an application from Anadarko Uintah Midstream, LLC (Anadarko) for a synthetic minor permit for the existing Antelope Flats and Sand Wash Compressor Stations with South Central

Tank Battery in accordance with the requirements of the Tribal Minor New Source Review (MNSR) Permit Program at 40 CFR Part 49.

This permit does not authorize the construction of any new emission sources, or emission increases from existing units, nor does it otherwise authorize any other physical modifications to the facility or its operations. This permit is only intended to incorporate required and requested enforceable emission limits and operational restrictions from a March 27, 2008, Federal Consent Decree (CD) between the United States of America (Plaintiff), and the State of Colorado, the Rocky Mountain Clean Air Action and the Natural Resources Defense Council (Plaintiff-Intervenors), and Kerr-McGee Corporation (Civil Action No. 07-CV-01034-EWN-KMT), and the April 3, 2017 synthetic MNSR application. Anadarko has requested legally and practically enforceable requirements for the installation and operation of two (2) low-emission tri-ethylene glycol (TEG) dehydration systems for dehydrating gas compressed into a high pressure pipeline, consistent with the CD. Anadarko also requested enforceable requirements for installation and operation of a catalytic control system and air-to-fuel ratio (AFR) controls on seven (7) natural gas-fired 4-stroke lean-burn (4SLB) reciprocating internal combustion engines (used for natural gas compression at the facility), including associated carbon monoxide (CO) control efficiency requirements, consistent with the CD. Lastly, Anadarko requested enforceable requirements to install and operate only low-bleed or instrument air-driven pneumatic controllers, consistent with the CD.

Upon compliance with this permit, Anadarko will have legally and practically enforceable restrictions on emissions that can be used when determining the applicability of other CAA permitting requirements, such as under the Prevention of Significant Deterioration Permit Program at 40 CFR Part 52 and the Title V Operating Permit Program at 40 CFR Part 71. The EPA has determined that issuance of this MNSR permit will not contribute to National Ambient Air Quality Standards (NAAQS) violations, or have potentially adverse effects on ambient air quality.

The facility is located at:

Sec 27 T9S R21E
Latitude 40.009722, Longitude -109.543889

Finding of No Historic Properties Affected

The EPA has reviewed the proposed actions for potential impacts on historic properties. Because the activities authorized by the EPA permit does not authorize the construction of any new emission sources, or emission increases from existing units, nor does it otherwise authorize any other physical modifications to the facility or its operations, the Agency finds that this permit action will have no effect on historic properties, even assuming any are present.

State and Tribal Consultation

Because this undertaking is a type of activity that does not have the potential to cause effects on historic properties, the EPA has no further obligations under Section 106 of the National Historic Preservation Act or 36 C.F.R. part 800.

SMNSR-UO-000027-2012.001
Synthetic Minor NSR Permit
Replacement Application
(updated)

Anadarko Uintah Midstream LLC
P.O. Box 173779, Denver, Colorado 80217-3779
720-929-6000 Fax 720-929-7000

March 30, 2017

Sent Via Certified Mail No.: 7014 3490 0001 8054 0695

Ms. Claudia Smith
U.S. EPA, Region 8
1595 Wynkoop Street, 8P-AR
Denver, CO 80202-1129

RE: Synthetic Minor NSR Permit Application under Part 49
Antelope Flats / Sand Wash Compressor Stations / South Central Tank Battery

Dear Ms. Smith:

Anadarko Uintah Midstream LLC (Anadarko) submitted on November 7, 2016 a revised permit application under Part 49 Minor NSR rules for the Antelope Flats / Sand Wash Compressor Stations / South Central Tank Battery in Uintah County, Utah. The revised application has been updated. Therefore, Anadarko Uintah Midstream LLC is submitting the attached application to reflect these changes. Please replace previously submitted information with this application. Anadarko is submitting this minor source application to establish federally enforceable limits as required by the Civil Action No. 07–CV–01034–EWN–KMT (KMG Consent Decree).

The attached application contains the following:

Appendix A: EPA Form New
Appendix B: EPA Form SYNMIN
Appendix C: Process Description, Flow Diagram, and Plot Plan
Appendix D: Emission Unit and Emission Control Descriptions
Appendix E: Emission Summary
Appendix F: Detailed Emission Calculations
Appendix G: Ambient Air Quality Analysis
Appendix H: Regulatory Analysis

Sincerely,

Anadarko Uintah Midstream LLC

Chad Schlichtemeier
HSE Manager

Enclosures

Appendix A

Form NEW

(Application for New Construction)

OMB Control No. 2060-0003
Approval expires 04/30/2012

United States Environmental Protection Agency Program Address Phone Fax Web address	*Reviewing Authority* *Program* *Address* *Phone* *Fax* *Web address*

FEDERAL MINOR NEW SOURCE REVIEW PROGRAM IN INDIAN COUNTRY

Application for New Construction
(Form NEW)

Please check all that apply to show how you are using this form:

- ☐ **Proposed Construction of a New Source**
- ☐ **Proposed Construction of New Equipment at an Existing Source**
- ☐ **Proposed Modification of an Existing Source**
- ☒ **Other – Please Explain**

Existing Source operating under Consent Decree, submitting an application for a minor source permit under Part 49.

Please submit information to:

[Reviewing Authority
Address
Phone]

A. GENERAL SOURCE INFORMATION

1. (a) **Company Name** Anadarko Uintah Midstream LLC (b) **Operator Name** Anadarko Uintah Midstream LLC	2. **Source Name** Antelope Flats and Sand Wash Compressor Stations with South Central Tank Battery
3. Type of Operation Nat.Gas Compression & Transmission	4. Portable Source? ☐ Yes ☒ No 5. Temporary Source? ☐ Yes ☒ No
6. NAICS Code	7. SIC Code 1311
8. Physical Address (home base for portable sources)	

9. Reservation*	10. County*	11a. Latitude*	11b. Longitude*
Uintah and Ouray	Uintah	39.995703° N	109.4683111° W
12a. Quarter Quarter Section*	**12b. Section***	**12c. Township***	**12d. Range***
SE NW	12	9S	22E

*Provide all proposed locations of operation for portable sources

B. PREVIOUS PERMIT ACTIONS (Provide information in this format for each permit that has been issued to this source. Provide as an attachment if additional space is necessary)

Source Name on the Permit
Permit Number (xx-xxx-xxxxx-xxxx.xx)
Date of the Permit Action

Source Name on the Permit
Permit Number (xx-xxx-xxxxx-xxxx.xx)
Date of the Permit Action

Source Name on the Permit
Permit Number (xx-xxx-xxxxx-xxxx.xx)
Date of the Permit Action

Source Name on the Permit
Permit Number (xx-xxx-xxxxx-xxxx.xx)
Date of the Permit Action

Source Name on the Permit
Permit Number (xx-xxx-xxxxx-xxxx.xx)
Date of the Permit Action

C. CONTACT INFORMATION

Company Contact Shon Rhoton	Title Midstream Operations Manager
Mailing Address P.O.Box 173779, Denver, CO 80202-3779	
Email Address Shon.Rhoton@anadarko.com	
Telephone Number 720-929-3236	Facsimile Number
Operator Contact (if different from company contact) Andy Zeller	Title Plant Foreman
Mailing Address	
Email Address Andy.Zeller@anadarko.com	
Telephone Number 435-781-7001	Facsimile Number
Source Contact Natalie Ohlhausen	Title Sr. HSE Representative
Mailing Address P.O.Box 173779, Denver, CO 80202-3779	
Email Address Natalie.Ohlhausen@Anadarko.com	
Telephone Number 720-929-6498	Facsimile Number
Compliance Contact Same as Source Contact	Title
Mailing Address	
Email Address	
Telephone Number	Facsimile Number

D. ATTACHMENTS

Include all of the following information (see the attached instructions)

☒ **FORM SYNMIN** - New Source Review Synthetic Minor Limit Request Form, if synthetic minor limits are being requested.

☒ Narrative description of the proposed production processes. This description should follow the flow of the process flow diagram to be submitted with this application.

☒ Process flow chart identifying all proposed processing, combustion, handling, storage, and emission control equipment.

☒ A list and descriptions of all proposed emission units and air pollution-generating activities.

☒ Type and quantity of fuels, including sulfur content of fuels, proposed to be used on a daily, annual and maximum hourly basis.

☒ Type and quantity of raw materials used or final product produced proposed to be used on a daily, annual and maximum hourly basis.

☒ Proposed operating schedule, including number of hours per day, number of days per week and number of weeks per year.

☒ A list and description of all proposed emission controls, control efficiencies, emission limits, and monitoring for each emission unit and air pollution generating activity.

☒ **Criteria Pollutant Emissions -** Estimates of Current Actual Emissions, Current Allowable Emissions, Post-Change Uncontrolled Emissions, and Post-Change Allowable Emissions for the following air pollutants: particulate matter, PM_{10}, $PM_{2.5}$, sulfur oxides (SOx), nitrogen oxides (NOx), carbon monoxide (CO), volatile organic compound (VOC), lead (Pb) and lead compounds, fluorides (gaseous and particulate), sulfuric acid mist (H_2SO_4), hydrogen sulfide (H_2S), total reduced sulfur (TRS) and reduced sulfur compounds, including all calculations for the estimates.

These estimates are to be made for each emission unit, emission generating activity, and the project/source in total.

☒ **Modeling – Air Quality Impact Analysis (AQIA)**

☐ **ESA (Endangered Species Act)**

☐ **NHPA (National Historic Preservation Act)**

E. TABLE OF ESTIMATED EMISSIONS

The following tables provide the total emissions in tons/year for all pollutants from the calculations required in Section D of this form, as appropriate for the use specified at the top of the form.

E(i) – Proposed New Source

Pollutant	Potential Emissions (tpy)	Proposed Allowable Emissions (tpy)	
PM			PM - Particulate Matter PM_{10} - Particulate Matter less than 10 microns in size $PM_{2.5}$ - Particulate Matter less than 2.5 microns in size SOx - Sulfur Oxides NOx - Nitrogen Oxides CO - Carbon Monoxide VOC - Volatile Organic Compound Pb - Lead and lead compounds Fluorides - Gaseous and particulates H_2SO_4 - Sulfuric Acid Mist H_2S - Hydrogen Sulfide TRS - Total Reduced Sulfur RSC - Reduced Sulfur Compounds
PM_{10}			
$PM_{2.5}$			
SO_x			
NO_x		246.5	
CO		225.9	
VOC		157.0	
~~Pb~~ CO2e		51506	
Fluorides			
H_2SO_4			
H_2S			
TRS			
RSC			

Emissions calculations must include fugitive emissions if the source is one the following listed sources, pursuant to CAA Section 302(j):

(a) Coal cleaning plants (with thermal dryers);
(b) Kraft pulp mills;
(c) Portland cement plants;
(d) Primary zinc smelters;
(e) Iron and steel mills;
(f) Primary aluminum ore reduction plants;
(g) Primary copper smelters;
(h) Municipal incinerators capable of charging more than 250 tons of refuse per day;
(i) Hydrofluoric, sulfuric, or nitric acid plants;
(j) Petroleum refineries;
(k) Lime plants;
(l) Phosphate rock processing plants;
(m) Coke oven batteries;
(n) Sulfur recovery plants;
(o) Carbon black plants (furnace process);
(p) Primary lead smelters;
(q) Fuel conversion plants;
(r) Sintering plants;
(s) Secondary metal production plants;
(t) Chemical process plants
(u) Fossil-fuel boilers (or combination thereof) totaling more than 250 million British thermal units per hour heat input;
(v) Petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels;
(w) Taconite ore processing plants;
(x) Glass fiber processing plants;
(y) Charcoal production plants;
(z) Fossil fuel-fired steam electric plants of more that 250 million British thermal units per hour heat input, and
(aa) Any other stationary source category which, as of August 7, 1980, is being regulated under section 111 or 112 of the Act.

E(ii) – Proposed New Construction at an Existing Source or Modification of an Existing Source

Pollutant	Current Actual Emissions (tpy)	Current Allowable Emissions (tpy)	Post-Change Potential Emissions (tpy)	Post-Change Allowable Emissions (tpy)
PM				
PM_{10}				
$PM_{2.5}$				
SO_x				
NO_x				
CO				
VOC				
Pb				
Fluorides				
H_2SO_4				
H_2S				
TRS				
RSC				

PM - Particulate Matter
PM_{10} - Particulate Matter less than 10 microns in size
$PM_{2.5}$ - Particulate Matter less than 2.5 microns in size
SOx - Sulfur Oxides
NOx - Nitrogen Oxides
CO - Carbon Monoxide
VOC - Volatile Organic Compound
Pb - Lead and lead compounds
Fluorides - Gaseous and particulates
H_2SO_4 - Sulfuric Acid Mist
H_2S - Hydrogen Sulfide
TRS - Total Reduced Sulfur
RSC - Reduced Sulfur Compounds

[Disclaimers] The public reporting and recordkeeping burden for this collection of information is estimated to average 20 hours per response, unless a modeling analysis is required. If a modeling analysis is required, the public reporting and recordkeeping burden for this collection of information is estimated to average 60 hours per response .Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

Appendix B

Form SYNMIN

(Application for Synthetic Minor Limit)

OMB Control No. 2060-0003
Approval expires 04/30/2012

United States Environmental Protection Agency Program Address Phone Fax Web address	*Reviewing Authority* *Program* *Address* *Phone* *Fax* *Web address*

FEDERAL MINOR NEW SOURCE REVIEW PROGRAM IN INDIAN COUNTRY

Application For Synthetic Minor Limit

(Form SYNMIN)

Please submit information to:

[Reviewing Authority
Address
Phone]

A. GENERAL INFORMATION

Company Name	**Source Name**	
Anadarko Uintah Midstream LLC	Antelope Flats/Sand Wash Comp.Stations	
Company Contact or Owner Name		Title
Shon Rhoton		Midstream Operations Manager
Mailing Address		
P.O.Box 173779, Denver, CO 80202-3779		
Email Address		
Shon.Rhoton@anadarko.com		
Telephone Number	Facsimile Number	
720-929-3236		

B. ATTACHMENTS

For each criteria air pollutant, hazardous air pollutant and for all emission units and air pollutant-generating activities to be covered by a limitation, include the following:

☒ **Item 1** - The proposed limitation and a description of its effect on current actual, allowable and the potential to emit.
☒ **Item 2** - The proposed testing, monitoring, recordkeeping, and reporting requirements to be used to demonstrate and assure compliance with the proposed limitation.
☐
☒ **Item 3** - A description of estimated efficiency of air pollution control equipment under present or anticipated operating conditions, including documentation of the manufacturer specifications and guarantees.
☐
☒ **Item 4** - Estimates of the Post-Change Allowable Emissions that would result from compliance with the proposed limitation, including all calculations for the estimates.
☒ **Item 5** – Estimates of the potential emissions of Greenhouse Gas (GHG) pollutants:

Appendix C

Process Description, Flow Diagram, and Plot Plan

Facility Description and History

The Antelope Flats facility, which is located in Indian Land, was constructed as a compressor station by Kerr-McGee Gathering LLC in May of 2007. During the original construction, two 1,340-hp Caterpillar G3516 TALE engines (ATF 1 & ATF 2), one 5.0 MMBtu/hr heater (HTR 1), two 400-bbl produced water tanks and one 400-bbl gun barrel (IE) were installed. The facility-wide PTE was 41.6 tpy of NO_x, 5.5 tpy of CO, 12.7 tpy of VOC and 3.5 tpy of HAPs.

The Sand Wash facility, which is located in Indian Land and in close proximity to the Antelope Flats facility, was constructed as a compressor station by Kerr-McGee Gathering LLC in 2007. During the original construction one low emissions TEG dehydration unit was installed (DEHY 1). On June 26, 2008, one 1,340-hp Caterpillar G3516 TALE engine (SND 1) was installed at the Sand Wash Compressor Station. The combined Sand Wash and Antelope Flats facilities estimated PTE was 61.0 tpy of NO_x, 7.2 tpy of CO, 16.3 tpy of VOC and 4.9 tpy of HAPs.

On April 2 and on June 9, 2009, one Caterpillar 1,340-hp G3516 LE engine (ATF 3) and one 2,370-hp Caterpillar G3608 TALE engine (ATF 4) were constructed at the Antelope Flats facility. During that year, Kerr-McGee Gathering LLC delegated authority to operate the facility to its sister company Anadarko Uintah Midstream LLC. The commingled Antelope Flats and Sand Wash PTE was 96.4 tpy of NO_x, 12.9 tpy of CO, 36.6 tpy of VOC and 9.1 tpy of HAPs

The Antelope Flats facility continued its expansion in 2010 with the installation of one 2,370-hp Caterpillar G3608 TALE engine (ATF 5) on May 17, 2010. A second low emissions TEG dehydrator (DEHY 2) was installed at the Sand Wash facility on August 20, 2010. The commingled facility became a major source with the installation of ATF 5 (potential to emit greater that 100 tpy for NOx). The estimated PTE was 107.8 tpy of NO_x, 17.3 tpy of CO, 53.2 tpy of VOC and 11.6 tpy of HAPs.

A third 2,370-hp Caterpillar G3608 TALE engine was installed on December 28, 2010. An initial Part 71 permit application was submitted on May 16, 2011 for this facility.

Below is the equipment list at the facility:

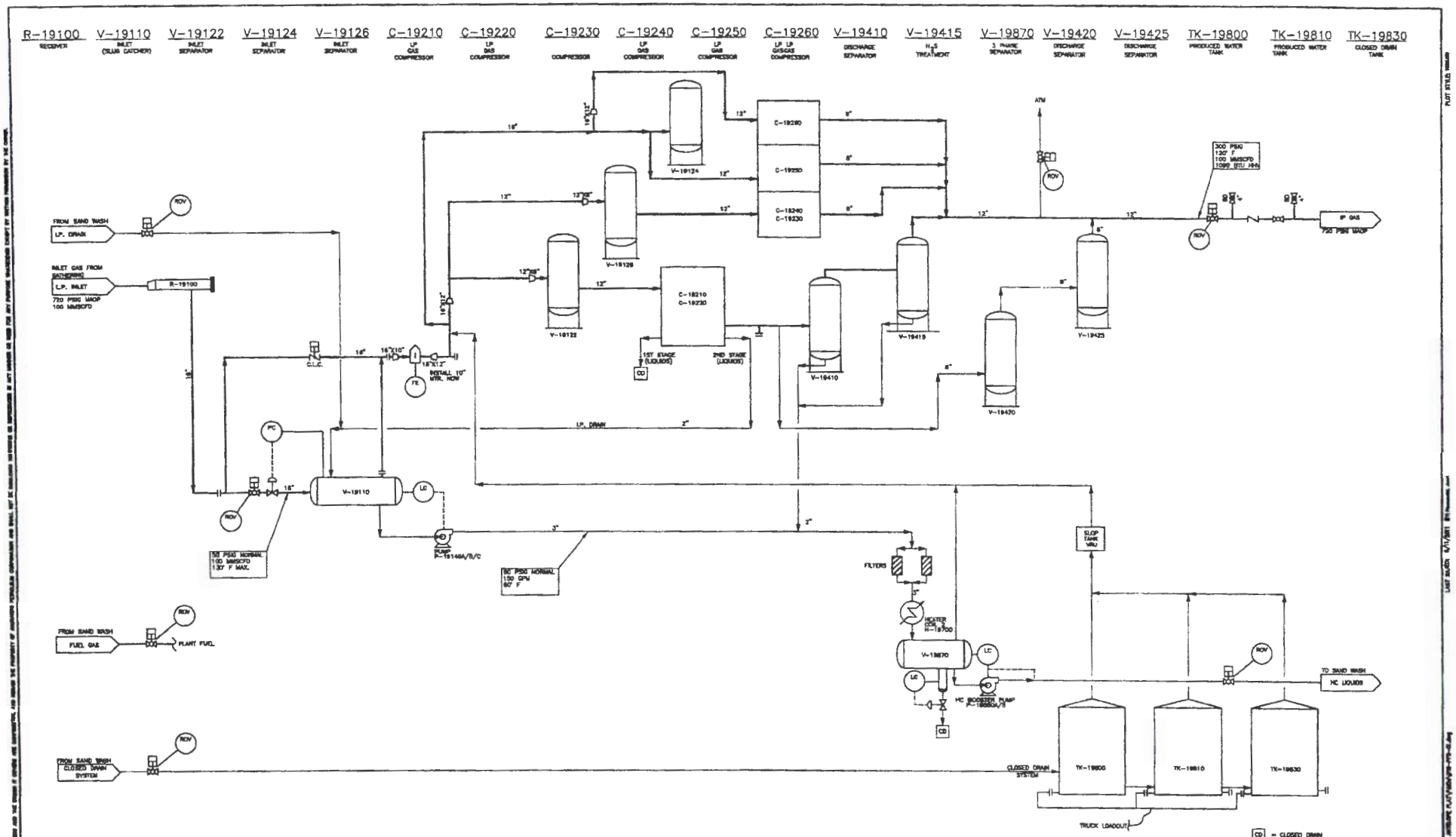
Unit	Description	Control Equipment
ATF 1	1340 hp Caterpillar G3516 TALE Engine, S/N: 4EK04687	Oxidation Catalyst/AFR
ATF 2	1340 hp Caterpillar G3516 TALE Engine, S/N: WPW00294	Oxidation Catalyst/AFR
ATF 3	1340 hp Caterpillar G3516 TALE Engine, S/N: WPW01970	Oxidation Catalyst/AFR
ATF 4	2370 hp Caterpillar G3608 TALE Engine, S/N: BEN00394	Oxidation Catalyst/AFR
ATF 5	2370 hp Caterpillar G3608 TALE Engine, S/N: BEN00614	Oxidation Catalyst/AFR
ATF 6	2370 hp Caterpillar G3608 TALE Engine, S/N: BEN00585	Oxidation Catalyst/AFR
SNW 1	1340 hp Caterpillar G3516 TALE Engine, S/N: 4EK03157	Oxidation Catalyst/AFR
DEHY 1	70 MMscfd Low Emissions TEG Dehy	None
DEHY 2	100 MMscfd Low Emissions TEG Dehy	None
HTR 1	2 - 2.5 MMBtu/hr Burners	None
HTR 2	2.0 MMBtu/hr Heater	None
HTR 3	1.2 MMBtu/hr Heater	None
FUG	Fugitives Emissions	None
SFR 1-8	8 H2S Treatment Tanks	N/A
AF Tanks	3 - 400 barrels each Condensate Tanks at Antelope Flats	None
SC Tanks	2 - 750 bbl, 6 - 650 bbl, 4 - 500 bbl Condensate / Produced Water Tanks	None
Flare	24" Enclosed Flare	N/A
Pigging	Pigging Operations	N/A
SC Loadout	Condensate Loadout @ South Central Tank Battery	None

Process Description

The Antelope Flats compressor station collects gas and liquid from the field and compresses the gas into an intermediate pressure pipeline. The liquid is further separated into condensate and produced water. The condensate is sent to the discharge of the Sand Wash facility to be transferred into the high pressured pipeline. The produced water is stored onsite in atmospheric tanks. Antelope Flats also handles fluids received from the Sand Wash Compressor Station.

The Sand Wash facility collects natural gas from the intermediate pipeline and compresses it into a high pressure pipeline. The gas is dehydrated using low-emission dehydrators and compressed into the high pressure pipeline. All of the liquid that condenses at Sand Wash is transferred to Antelope Flats.

Pigging operations are also at the compressor stations.



NOTES

REFERENCE DRAWINGS		
DWG. NO.	TITLE	

REVISIONS					
NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE
1	PROCESS UPDATE	Engin	Engin	Engin	12/11/06
2	ISSUED FOR CONSTRUCTION	Engin	Engin	Engin	12/11/06

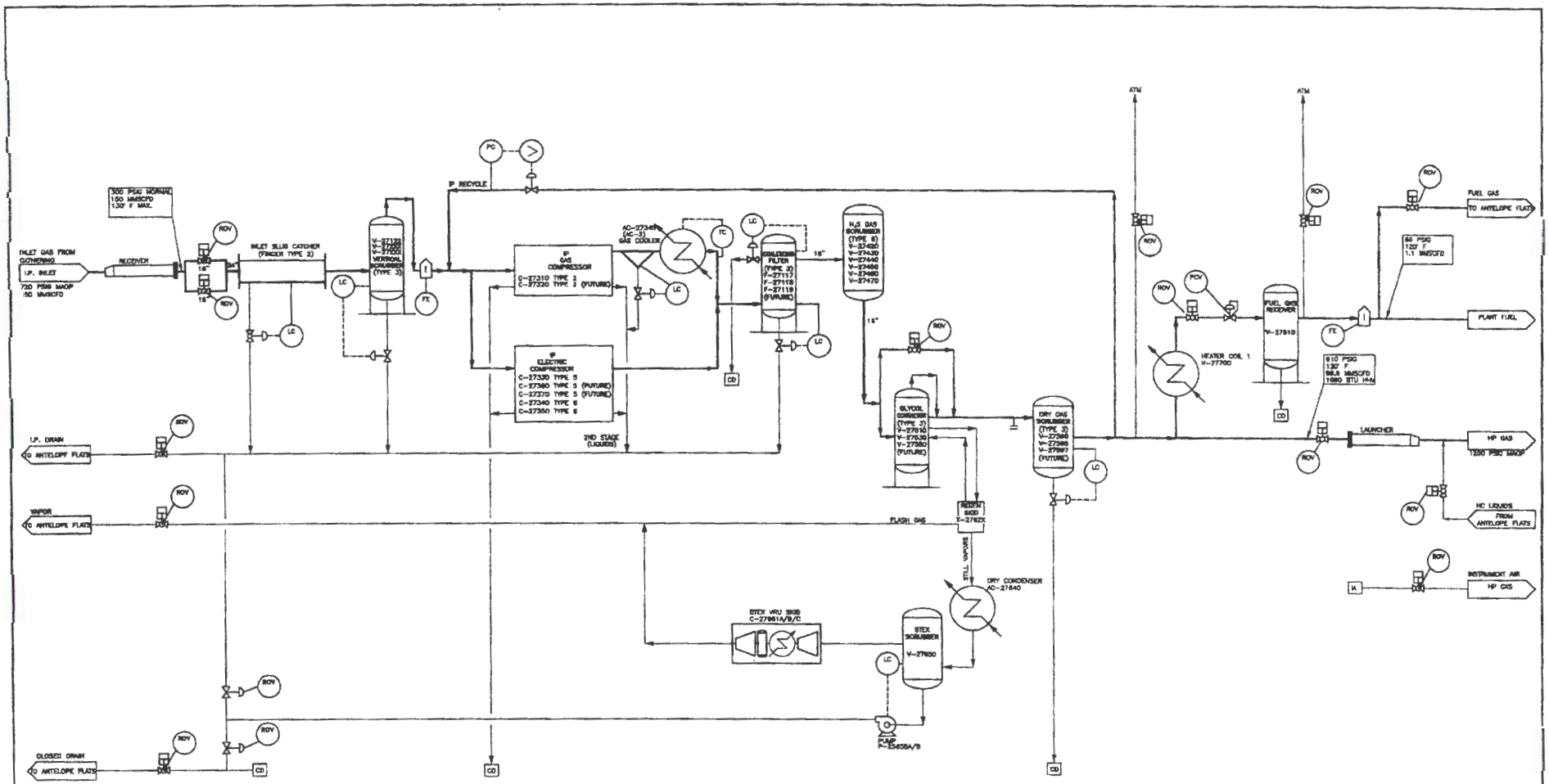
Anadarko

Uintah Midstream, LLC

ANTELOPE FLAT COMPRESSOR STATION

PROCESS FLOW DIAGRAM

DRAWN BY: MHL	CREATION DATE: 12/11/06	AFE No.: 68053
APPROVED: --	APPR. DATE:	
SCALE:	DWG. No.: U19-PFD-01	SHEET No.:



	DESCRIPTION	DATE	BY	CHK'D	ENG	DISC	PM
4	PROCESS UPDATE	05/10/11	JDP	JES	DB	DB	
3	AS BUILT	6/15/08	JAC				
2	REVISED ANTELOPE FLATS COMMUNITIONS	6/22/07	MAC				
1	REISSUED FOR CONSTRUCTION	7/20/07	RCL				
0	ISSUED FOR CONSTRUCTION	3/27/07	CSM				

DISCIPLINE	REVIEWED	DATE
PROCESS		
MECHANICAL		
PIPING		
ELECTRICAL		
I & C		
CIVIL/STRUCTURAL		
PROJECT		

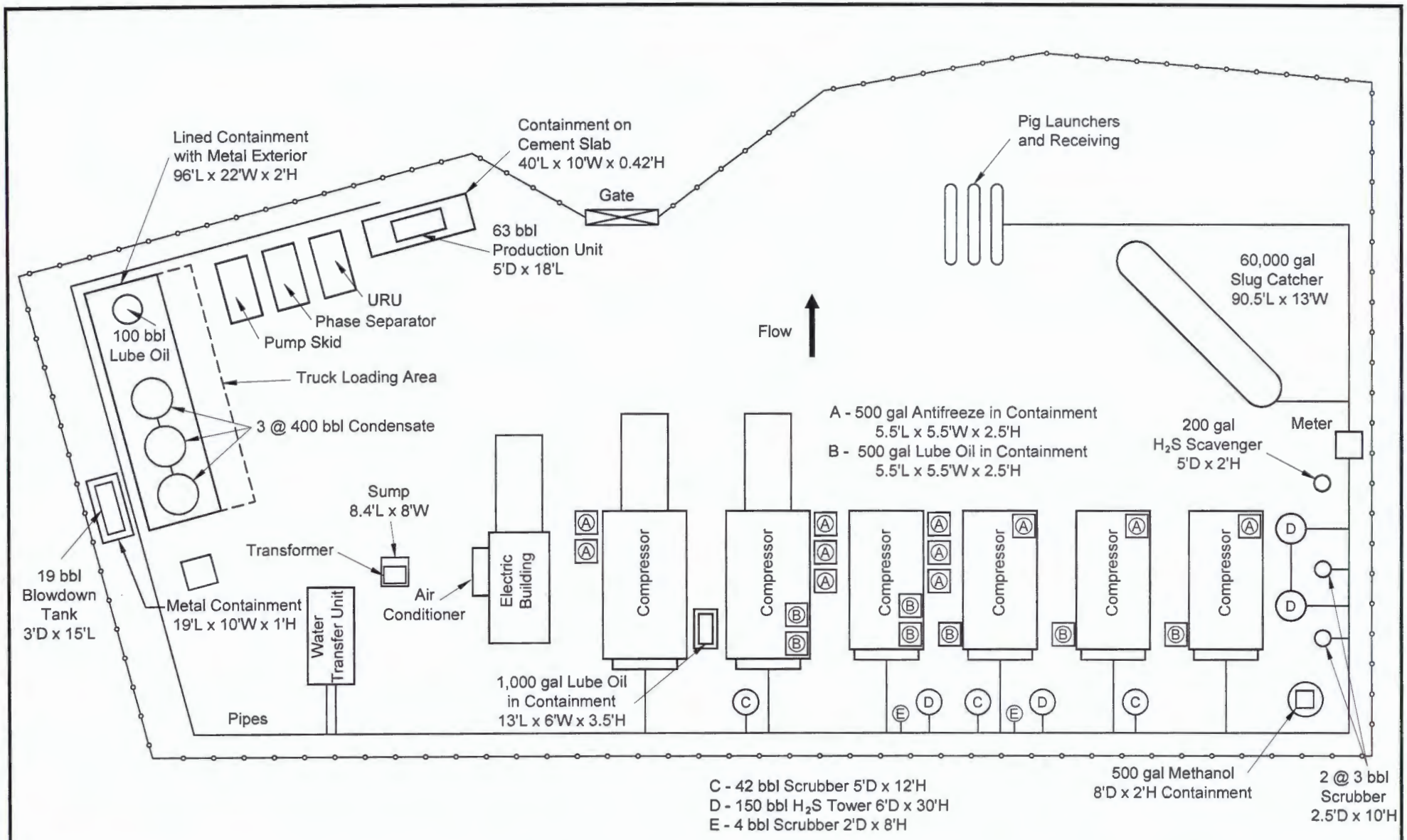
NO.	DESCRIPTION

Anadarko
Uintah Midstream, LLC

SAND WASH COMPRESSOR STATION
PROCESS FLOW DIAGRAM

CLIENT No.:	CLIENT APPR.:	APPR. DATE:
REV No.: 08978	SCALE: NONE	CREATION DATE: 8/18/08
DRAWN BY: MB	DWG. No.: U27-PFD-01	SHEET No. OF 1

PLT SCALE:



Explanation:

- Fencing
- bbl Barrel
- gal Gallon
- Estimated Water Flow Direction

NORTH

Anadarko Petroleum Corporation

Anadarko Petroleum Corporation
Antelope Flat Compressor Station
SPCC Plan - November 2013

Date: November 12, 2013

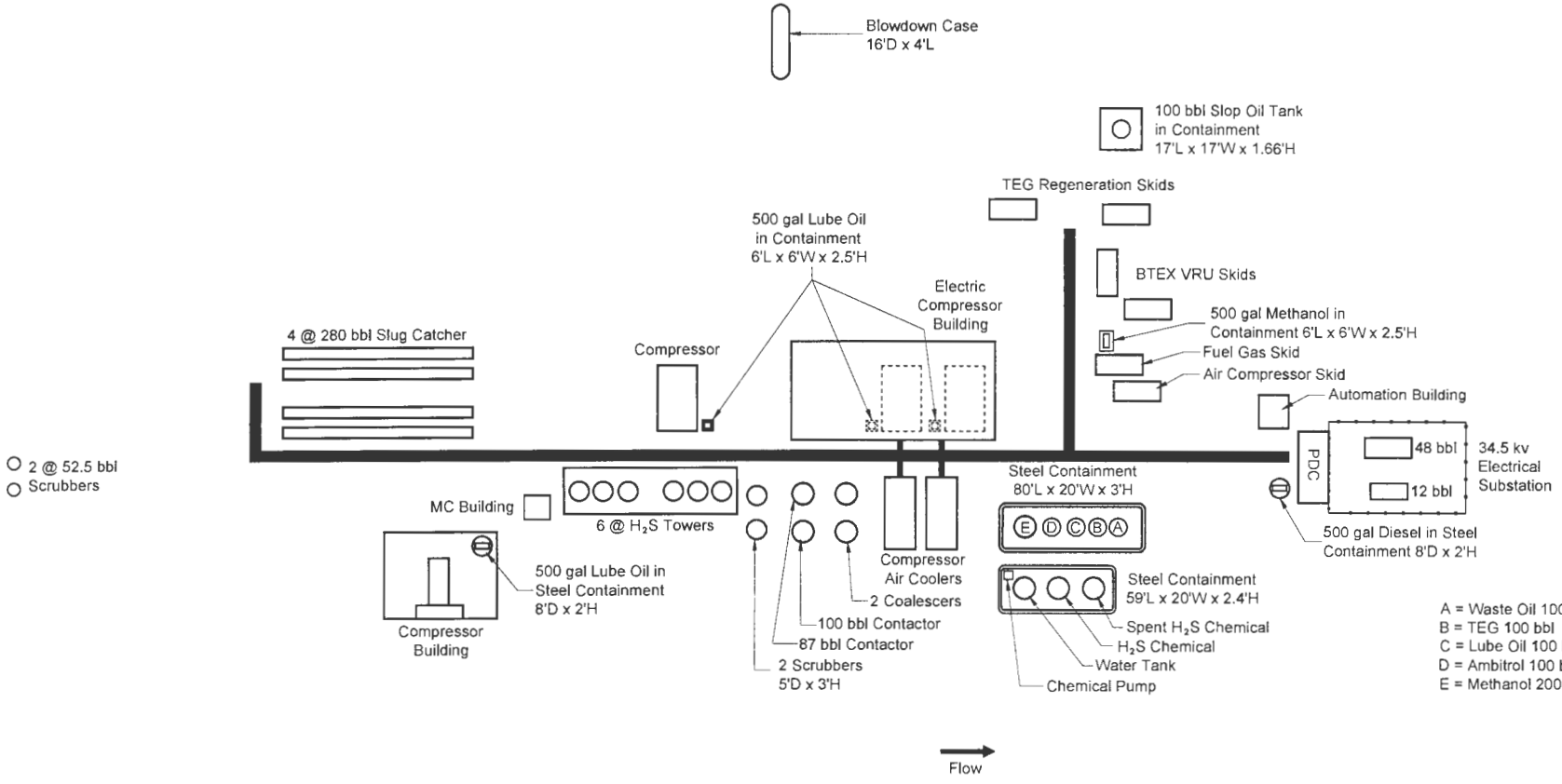
Scale: Not to Scale

SENW Sec 32
TWN 9S - RNG 22E

Notes

Equipment connections are shown for process direction only and are not a reflection of as-piped conditions in the field.

InterTech E&E, LLC
dstone@cbmainc.com
M:\Projects\Anadarko\Vernal\DWG\Antelope Flat Compressor Station 20131112.dwg



The site piping drawings are referenced as part of this SPCC Plan because the site piping is very complex.

Explanation:
Pipe Racks
Fencing
bbl Barrel
gal Gallon
Estimated Water Flow Direction
NORTH

Anadarko Petroleum Corporation
Sand Wash Compressor Station
SPCC Plan - November 2013

Date: November 13, 2013
Scale: Not to Scale

NENW Sec 32
TWN 9S - RNG 22E

Notes
Equipment connections are shown for process direction only and are not a reflection of as-piped conditions in the field.

InterTech

InterTech E&E, LLC
dstone@cbmainc.com
M:\Projects\Anadarko\Verna\DWG\Sand_Wash_Compressor_Station_20131113.dwg

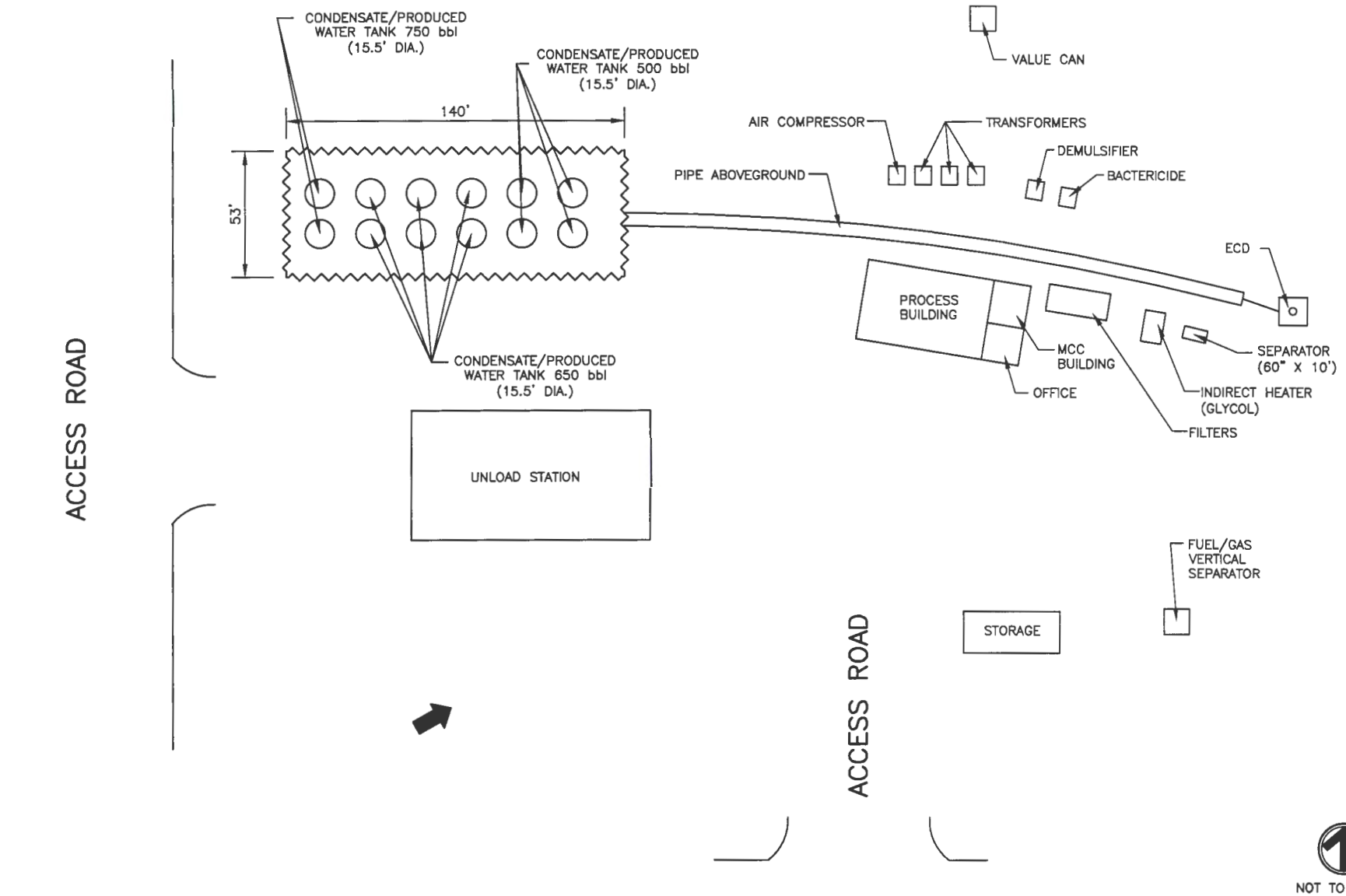


FIGURE 1
SITE MAP
SOUTH CENTRAL BATTERY
NWNW 32-T9S-R22E
UINTAH COUNTY, UTAH
KERR-McGEE OIL & GAS ONSHORE LP

SC/0142-1123502

Appendix D

Emission Unit and Emission Control Descriptions

Emission Control Description

Engines

All the existing engines at this site are four stroke lean burn engines fueled by field gas. These engines are equipped with oxidation catalysts to control emissions.

Maintenance shall be performed routinely per vendor recommendations or the facility's maintenance plan. The components shall be serviced or replaced as needed.

Dehydrators

The two dehydrators (DEHY 1 & DEHY 2) are low emission dehydrators with emissions of less than 1.0 tpy of VOC. No further emission controls are required on these units.

Tank Battery

The Tank Battery (SC Tanks) has an enclosed flare installed. Anadarko is not claiming any credit for the control of VOCs or HAPs.

Per the Kerr-McGee ("KMG") Consent Decree, existing and new RICE in the Uinta Basin at HAP minor sources shall be lean-burn or achieve comparable emission reductions, and be equipped with catalyst controls ***(paragraphs 40 and 49)***. A control efficiency of 93% is required for these new and existing RICEs as per the KMG Consent Decree ***(paragraphs 41 and 50).*** Based on these federally enforceable requirements, the Antelope Flats and Sand Wash Compressor Stations is a true minor for all pollutants. Therefore AUM is only requesting the conditions of the consent decree be incorporated into a permit for this facility.

CO Emissions:

- Proposed Limit

  AUM is proposing the PTE for CO for all engines at the facility with a nameplate rating of 500 hp or greater shall be limited by the requirement that emissions be controlled by catalysts which meet a destruction efficiency for CO of 93% when each engine is operating at a 90% load or higher.

- Proposed testing:
  - Initial testing:
    - Swap-out, and Like-kind Replacement Engines
      - Initial compliance test shall be conducted within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup.
      - If the catalyst fails to meet the required 93% destruction efficiency, appropriate steps shall be taken to correct the deficiency and retest the catalyst within 30 days after the initial test.

  - Ongoing Testing:
    - All Units

      Existing engines currently follow a semi-annual testing schedule per the KMG Consent Decree.

  - Test Methods:
    - Attached Appendix F to the Consent Decree (Carbon Monoxide Control Efficiency Portable Analyzer Monitoring Protocol) will be used to measure the O_2 and CO concentrations at the inlet (pre-catalyst) and outlet (post-catalyst) of the control device using a portable analyzer. Other approved methods, not listed above, can also be used for O_2 and CO analysis.
    - Determine the control efficiency based on the pre- and post-catalyst CO measurements.
    - Conduct one (1) test run for each performance test required. Each test run must last at least 21 minutes

- Reporting Requirements – All Engines

  - Test reports shall be submitted within 60 days after each initial catalyst performance test is conducted.

- Test reports for all subsequent semi-annual catalyst performance tests shall be submitted by no later than March 1 of each year for the preceding calendar year.

- Operation and Maintenance Requirements – All Engines

  - The permittee shall operate and maintain each RICE and oxidation catalyst according to the catalyst manufacturer's written instructions or procedures necessary to achieve the emission reductions specified above.

Formaldehyde Emissions:

- This facility is a not major source of HAPs and is therefore not subject to the major source requirements of NESHAP Subpart ZZZZ. Therefore, no limits are being requested.

NOx Emissions:

- NOx emission is based off manufacturer's information. For the 3500 and 3600 series engines an emission factor of 2.0 g/hp-hr is used. Total facility NOx emissions are below the PSD threshold and, therefore, no engine emissions limits are being requested.

VOC Emissions:

- Caterpillar engines
  - Uncontrolled emissions are based on manufacturer's information and no VOC emission reductions are being claimed from the controls of the engines. Since uncontrolled emissions are below the PSD threshold, no engine emissions limits are being requested.

- Condensate / Produced Water Tanks
  - The tanks at South Central tank battery collect condensate/produced water and is installed with an enclosed flare for emission control. Anadarko Uintah Midstream is not claiming any credit for VOCs or HAPs reduction; these tanks are represented in the application as uncontrolled.

- Low-Emission Dehydrators.
  - Permit Limit:
    - All new and existing glycol dehydration units shall meet the following requirements.
      - "Low-Emission Dehydrator shall meet the specifications set forth in Appendix C (attached) and shall mean a dehydration unit that:
        - Incorporates an integral vapor recovery function such that the dehydrator cannot operate independent of the vapor recovery function;
        - Either returns the captured vapors to the inlet of the facility where such dehydrator is located or routes the captured vapors to that facility's fuel gas supply header; and

- Has a PTE less than 1.0 TPY of VOCs, inclusive of VOC emissions from the reboiler burner.

- Existing Units
  - Attached Appendix C to the Consent Decree documents Low Emission Dehydrator specifications to ensure the existing units meet the requirements above.

- Reporting
  - Written notification to EPA within 60 Days of each installation of a new Low-Emission Dehydrator, and include a description of the equipment installed and a certification that the Low-Emission Dehydrator meets the criteria set forth in this permit. The certification shall be signed by a Responsible Official or by a delegated employee representative, unless otherwise required by applicable statute or regulation. All reports and submissions shall include the following certification:

    > I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete.

- Recordkeeping
  - Shall maintain records and information adequate to demonstrate its compliance with the requirements of this permit for five years.

- Pneumatic Controllers
  - Permit Limit:
    - All pneumatic controllers shall be operated on instrument air or shall be low-bleed or no-bleed gas operated pneumatic controllers.

Attachment - CD Appendix F

Carbon Monoxide Control Efficiency
Portable Analyzer Monitoring Protocol

APPENDIX F

to the

Consent Decree

in the matter of

United States of America and the State of Colorado v. Kerr-McGee Corporation

CARBON MONOXIDE CONTROL EFFICIENCY PORTABLE ANALYZER MONITORING PROTOCOL

Determination of Carbon Monoxide Control Efficiency from Controlled Natural Gas-Fired Reciprocating Engines Located in the Uinta Basin

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OVERVIEW AND PURPOSE

Kerr-McGee has agreed to conduct portable analyzer testing for carbon monoxide ("CO") on certain reciprocating internal combustion engines ("RICE") located in the Uinta Basin that are controlled with oxidation catalysts as part of a settlement of alleged Clean Air Act violations with the United States and the State of Colorado. The terms of that settlement will be memorialized in a consent decree to be entered by the United States District Court for the District of Colorado to be styled *United States of America and the State of Colorado v. Kerr-McGee Corporation* (hereafter the "Consent Decree"). As required in the Consent Decree at Section IV.D., Kerr-McGee will conduct portable analyzer testing on certain RICE located in the Uinta Basin that will be controlled with oxidation catalysts.

1. APPLICABILITY AND PRINCIPLE

1.1 Applicability. This protocol was prepared to be implemented by Kerr-McGee Oil and Gas Onshore LP, Westport Field Services LLC and/or certain of their corporate affiliates ("Kerr-McGee") will monitor carbon monoxide (CO) and oxygen (O_2) concentrations from controlled natural gas-fired reciprocating engines using portable analyzers with electrochemical cells.

1.2 Principle. A gas sample is continuously extracted from a stack and conveyed to a portable analyzer for determination of CO and O_2 gas concentrations using electrochemical cells. Analyzer design specifications, performance specifications, and test procedures are provided to ensure reliable data. Additions to or modifications of vendor-supplied analyzers (e.g. heated sample line, flow meters, etc.) may be required to meet the design specifications of this test method.

2. RANGE AND SENSITIVITY

2.1 Analytical Range. The analytical range for each gas component is determined by the electrochemical cell design. A portion of the analytical range is selected to be the nominal range by choosing a span gas concentration near the flue gas concentrations or permitted emission level in accordance with Sections 2.1.1 and 2.1.2.

2.1.1 CO Span Gas. Choose a CO span gas such that the concentration is approximately 1.25 times average expected pre-catalyst stack gas reading.

2.1.2 O_2 Span Gas. The O_2 span gas shall be dry ambient air at 20.9% O_2.

2.1.2 NO Span Gas. The NO span gas shall be approximately 250 ppm.

3. DEFINITIONS

3.1 Measurement System. The total equipment required for the determination of gas concentration. The measurement system consists of the following major subsystems:

3.1.1 Sample Interface. That portion of a system used for one or more of the following: sample acquisition, sample transport, sample conditioning, or protection of the electrochemical cells from particulate matter and condensed moisture.

3.1.2 External Interference Gas Scrubber. A tube filled with scrubbing agent used to remove interfering compounds upstream of some electrochemical cells.

3.1.3 Electrochemical (EC) Cell. The portion of the system that senses the gas to be measured and generates an output proportional to its concentration. Any cell that uses diffusion-limited oxidation and reduction reactions to produce an electrical potential between a sensing electrode and a counter electrode.

3.1.4 Data Recorder. It is recommended that the analyzers be equipped with a strip chart recorder, computer, or digital recorder for recording measurement data. However, the operator may record the test results manually in accordance with the requirements of Section 7.4.

3.2 Nominal Range. The range of concentrations over which each cell is operated (25 to 125 percent of span gas value). Several nominal ranges may be used for any given cell as long as the linearity and stability check results remain within specification.

3.3 Span Gas. The high level concentration gas chosen for each nominal range.

3.4 Zero Calibration Error. For the CO channel, the absolute value of the difference, expressed as a percent of the span gas, between the gas concentration exhibited by the gas analyzer when a zero level calibration gas is introduced to the analyzer and the known concentration of the zero level

calibration gas. For the O_2 channel, the difference, expressed as percent O_2, between the gas concentration exhibited by the gas analyzer when a zero level calibration gas is introduced to the analyzer and the known concentration of the zero level calibration gas.

3.5 Span Calibration Error. For the CO channel, the absolute value of the difference, expressed as a percent of the span gas, between the gas concentration exhibited by the gas analyzer when a span gas is introduced to the analyzer and the known concentration of the span gas. For the O_2 channel, the difference, expressed as percent O_2, between the gas concentration exhibited by the gas analyzer when a span gas is introduced to the analyzer and the known concentration of the span gas.

3.6 Response Time. The amount of time required for the measurement system to display 95 percent of a step change in the CO gas concentration on the data recorder.

3.7 Linearity Check. A method of demonstrating the ability of a gas analyzer to respond consistently over a range of gas concentrations.

3.8 Stability Check. A method of demonstrating an electrochemical cell operated over a given nominal range provides a stable response and is not significantly affected by prolonged exposure to the analyte.

3.9 Stability Time. As determined during the stability check; the elapsed time from the start of the gas injection until a stable reading has been achieved.

3.10 Test. The collection of emissions data consisting of two consecutive 21 minute sampling periods, 21 minutes pre-catalyst and 21 minutes post catalyst, from each source.

4. MEASUREMENT SYSTEM PERFORMANCE SPECIFICATIONS

4.1 Zero Calibration Error. Less than or equal to ±3 percent of the span gas value for CO channels and less than or equal to ±0.3 percent O_2 for the O_2 channel.

4.2 Span Calibration Error. Less than or equal to ±5 percent of the span gas value for CO channels and less than or equal to ±0.5 percent O_2 for the O_2 channel.

4.3 Linearity. For the zero, mid-level, and span gases, the absolute value of the difference, expressed as a percent of the span gas, between the gas value and the analyzer response shall not be greater than 2.5 percent for the CO cell.

4.4 Stability Check Response. The analyzer responses to CO span gases shall not vary more than 3.0 percent of span gas value over a 30-minute period or more than 2.0 percent of the span gas value over a 15-minute period.

4.5 CO Measurement, Hydrogen (H_2) Compensation. It is recommended that CO measurements be performed using a hydrogen-compensated EC cell since CO-measuring EC cells can experience significant reaction to the presence of H_2 in the gas stream. Sampling systems equipped with a scrubbing agent prior to the CO cell to remove H_2 interferent gases may also be used.

5. APPARATUS AND REAGENTS

5.1 Measurement System. Use any measurement system that meets the performance and design specifications in Sections 4 and 5 of this method. The sampling system shall maintain the gas sample at a temperature above the dew point up to the moisture removal system. The sample conditioning system shall be designed so there are no entrained water droplets in the gas sample when it contacts the electrochemical cells. A schematic of an acceptable measurement system is shown in Figure 1. The essential components of the measurement system are described below:

5.1.1 Sample Probe. Glass, stainless steel, or other nonreactive material, of sufficient length to sample per the requirements of Section 7. If necessary to prevent condensation, the sampling probe shall be heated.

5.1.2 Heated Sample Line. Heated (sufficient to prevent condensation) nonreactive tubing such as teflon, stainless steel, glass, etc. to transport the sample gas to the moisture removal system. (Includes any particulate filters prior to the moisture removal system.)

5.1.3 Sample Transport Lines. Nonreactive tubing such as teflon, stainless steel, glass, etc. to transport the sample from the moisture removal system to the sample pump, sample flow rate control, and electrochemical cells.

5.1.4 Calibration Assembly. A tee fitting to attach to the probe tip or where the probe attaches to the sample line for introducing calibration gases at ambient pressure during the calibration error checks. The vented end of the tee should have a flow indicator to ensure sufficient calibration gas flow. Alternatively use any other method that introduces calibration gases at the probe at atmospheric pressure.

5.1.5 Moisture Removal System. A chilled condenser or similar device (e.g., permeation dryer) to remove condensate continuously from the sample gas while maintaining minimal contact between the condensate and the sample gas.

5.1.6 Particulate Filter. Filters at the probe or the inlet or outlet of the moisture removal system and inlet of the analyzer may be used to prevent accumulation of particulate material in the measurement system and extend the useful life of the components. All filters shall be fabricated of materials that are nonreactive to the gas being sampled.

5.1.7 Sample Pump. A leak-free pump to pull the sample gas through the system at a flow rate sufficient to minimize the response time of the measurement system. The pump may be constructed of any material that is nonreactive to the gas being sampled.

5.1.8 Sample Flow Rate Control. A sample flow rate control valve and rotameter, or equivalent, to maintain a constant sampling rate within 10 percent during sampling and calibration error checks. The components shall be fabricated of materials that are nonreactive to the gas being sampled.

5.1.9 Gas Analyzer. A device containing electrochemical cells to determine the CO and O_2 concentrations in the sample gas stream. The analyzer shall meet the applicable performance specifications of Section 4. A means of controlling the analyzer flow rate and a device for determining proper sample flow rate (e.g., precision rotameter, pressure gauge downstream of all flow controls, etc.) shall be provided at the analyzer.

5.1.10 Data Recorder. A strip chart recorder, computer, or digital recorder, for recording measurement data. The data recorder resolution (i.e., readability) shall be at least 1 ppm for CO and 0.1 percent O_2 for O_2; and one degree (C or F) for temperature.

5.1.11 External Interference Gas Scrubber. Used by some analyzers to remove interfering compounds upstream of a CO electrochemical cell. The scrubbing agent should be visible and should have a means of determining when the agent is exhausted (e.g., color indication).

5.2 Calibration Gases. Both the CO and NO calibration gases for the gas analyzer shall be CO or

NO in nitrogen.

5.2.1 Span Gases. Used for calibration error, linearity, and interference checks of each nominal range of each cell. Select concentrations according to procedures in Section 2.1.1. Clean dry air may be used as the span gas for the O_2 cell as specified in Section 2.1.2.

5.2.2 Mid-Level Gases. Select concentrations that are 40-60 percent of the span gas concentrations.

5.2.3 Zero Gas. Concentration of less than 0.25 percent of the span gas for each component. Ambient air may be used in a well ventilated area for the CO.

6. MEASUREMENT SYSTEM PERFORMANCE CHECK PROCEDURES. Perform the following procedures before the measurement of emissions under Section 7.

6.1 Calibration Gas Concentration Certification. For the mid-level and span cylinder gases, use calibration gases certified according to EPA Protocol 1 procedures. Calibration gases must meet the criteria under 40 CFR 60, Appendix F, Section 5.1.2 (3). Expired Protocol 1 gases may be recertified using the applicable reference methods.

6.2 Linearity Check. Conduct the following procedure once for each nominal range to be used on each electrochemical cell. After a linearity check is completed, it remains valid for seven consecutive calendar days. After the seven calendar day period has elapsed, the linearity check must be reaccomplished. Additionally, reaccomplish the linearity check if the cell is replaced.

6.2.1 Linearity Check Gases. For the CO cell obtain the following gases: zero (0-0.25 percent of nominal range), mid-level (40-60 percent of span gas concentration), and span gas (selected according to Section 2.1).

6.2.2 Linearity Check Procedure. If the analyzer uses an external interference gas scrubber with a color indicator, using the analyzer manufacturer's recommended procedure, verify the scrubbing agent is not depleted. After calibrating the analyzer with zero and span gases, inject the zero, mid-level, and span gases appropriate for each nominal range to be used on each cell. Gases need not be injected through the entire sample handling system. Purge the analyzer briefly with ambient air between gas injections. For each gas injection, verify the flow rate is constant and the analyzer responses have stabilized before recording the responses on Form A.

6.3 Stability Check. Conduct the following procedure once for the maximum nominal range to be used on each electrochemical cell. After a stability check is completed, it remains valid for seven consecutive calendar days. After the seven calendar day period has elapsed, the stability check must be reaccomplished. Additionally, reaccomplish the stability check if the CO cell is replaced.

6.3.1 Stability Check Procedure. Inject the CO span gas for the maximum nominal range to be used during the emission testing into the analyzer and record the analyzer response at least once per minute until the conclusion of the stability check. One-minute average values may be used instead of instantaneous readings. After the analyzer response has stabilized, continue to flow the span gas for at least a 30-minute stability check period. Make no adjustments to the analyzer during the stability check except to maintain constant flow. Record the stability time as the number of minutes elapsed between the start of the gas injection and the start of the 30-minute stability check period. As an alternative, if the concentration reaches a peak value within five minutes, you may choose to record the data for at least a 15-minute stability check period following the peak.

6.3.2 Stability Check Calculations. Determine the highest and lowest CO concentrations recorded during the 30-minute period and record the results on Form B. The absolute value of the difference between the maximum and minimum values recorded during the 30-minute period must be less than 3.0 percent of the span gas concentration. Alternatively, record stability check data in the same manner for the 15-minute period following the peak concentration. The difference between the maximum and minimum values for the 15-minute period must be less than 2.0 percent of the span gas concentration.

6.4 Interference Check. Conduct the following procedure once for the average anticipated NO stack gas concentration as reported by the manufacuture (250 ppm for Caterpillar lean burns). After a interference check is completed, this value will be utilized for interference calculations for the next 7 calendar days. After the seven calendar day period has elapsed, the interference check must be reaccomplished.

6.4.1 Interference Check Procedure. Inject the 250 ppm NO span gas for the into the analyzer and record the analyzer response at least once per minute until the conclusion of the interference check. One-minute average values may be used instead of instantaneous readings. After the analyzer response has stabilized, continue to flow the span gas for at least a 15-minute period. Make no adjustments to the analyzer during the stability check except to maintain constant flow. Record the CO cell response to this NO calibration gas.

7. EMISSION TEST PROCEDURES.

Prior to performing the following emission test procedures, calibrate/challenge all electrochemical cells in the analyzer in accordance with the manufacturer's instructions.

7.1. Pre/Post-Catalyst Sampling. Select both a pre-catalyst and post catalyst sampling site that will provide continuous uninterrupted exhaust gas flow.

7.2 Warm Up Period. Assemble the sampling system and allow the analyzer and sample interface to warm up and adjust to ambient temperature at the location where the stack measurements will take place.

7.3 Pretest Calibration Error Check. Conduct a zero and span calibration error check before testing each new facility. Conduct the calibration error check near the sampling location just prior to the start of the first emissions test.

7.3.1 Scrubber Inspection. For analyzers that use an external interference gas scrubber tube, inspect the condition of the scrubbing agent and ensure it will not be exhausted during sampling. If scrubbing agents are recommended by the manufacturer, they should be in place during all sampling, calibration and performance checks.

7.3.2 Zero and Span Procedures. Inject the zero and span gases using the calibration assembly. Ensure the calibration gases flow through all parts of the sample interface. During this check, make no adjustments to the system except those necessary to achieve the correct calibration gas flow rate at the analyzer. Set the analyzer flow rate to the value recommended by the analyzer manufacturer. Allow each reading to stabilize before recording the result on Form C. The time allowed for the span gas to stabilize shall be no less than the stability time noted during the stability check. After achieving a stable response, disconnect the gas and briefly purge with ambient air.

7.3.3 Response Time Determination. Determine the CO response time by observing the time required to respond to 95 percent of a step change in the analyzer response for both the zero and span

gases. Note the longer of the two times as the response time.

7.3.4 Failed Pretest Calibration Error Check. If the zero and span calibration error check results are not within the specifications in Section 4, take corrective action and repeat the calibration error check until acceptable performance is achieved.

7.4 Sample Collection. Position the sampling probe at the pre-catalyst sample point and begin sampling at the same rate used during the calibration error check. Maintain constant rate sampling (± 10 percent of the analyzer flow rate value used in Section 7.3.2) during the entire test. The concentration data must be recorded either (1) at least once each minute, or (2) as a block average for the test using values sampled at least once each minute. Repeat this procedure from the post-catalyst sampling location. Two consecutive 21 minute samples, one pre-catalyst and one post catalyst, shall be considered a test for each source

7.5 Re-Zero. At least once every four hours, recalibrate the analyzer at the zero level according to the manufacturer's instructions and conduct a pretest calibration error check before resuming sampling. If the analyzer is capable of reporting negative concentration data (at least 5 percent of the span gas below zero), then the tester is not required to re-zero the analyzer.

8. DATA COLLECTION. This section summarizes the data collection requirements for this protocol.

8.1 Linearity Check Data. Using Form A, record the analyzer responses in ppm for CO, and percent O_2 for the zero, mid-level, and span gases injected during the linearity check under Section 6.2.2.

8.2 Stability Check Data. Record the analyzer response in pmm for CO at least once per minute during the stability check under Section 6.3.1. One-minute average values may be used instead of instantaneous readings. Record the stability time as the number of minutes elapsed between the start of the gas injection and the start of the 30-minute stability check period. If the concentration reaches a peak value within five minutes of the gas injection, you may choose to record the data for at least a 15-minute stability check period following the peak. Use the information recorded to determine the analyzer stability under Section 6.3.2.

8.3 Pretest Calibration Error Check Data. On Form C, record the analyzer responses to the zero and span gases for CO and O_2 injected prior to testing each new source. Record the calibration zero and span gas concentrations for CO and O_2. For CO, record the absolute difference between the analyzer response and the calibration gas concentration, divide by the span gas concentration, and multiply by 100 to obtain the percent of span. For O_2, record the absolute value of the difference between the analyzer response and the O_2 calibration gas concentration. Record whether the calibration is valid by comparing the percent of span or difference between the calibration gas concentration and analyzer O_2 response, as applicable, with the specifications under Section 4.1 for the zero calibrations and Section 4.2 for the span calibrations. Record the response times for the CO zero and span gases as described under Section 7.3.3. Select the longer of the two times as the response time for that pollutant.

8.4 Test Data. On Form D-1 record the source operating parameters during the test. Record the test start and end times. From the analyzer responses recorded each minute during the test, obtain the average flue gas concentration of each pollutant.

9. CONTROL EFFICIENCY CALCULATIONS

9.1 Control Efficiency Calculations. CO control efficiencies will be calculated using the following calculation:

$$\%\ Control = \frac{(C_{pre} - C_{post})}{C_{pre}} \times 100$$

where: % control = actual control efficiency of the oxidation catalyst
C_{Pre} = stack gas concentration at the pre-catalyst sampling location (ppm)
C_{post} = stack gas concentration at the post-catalyst sampling location (ppm)

9.2 Interference Check. Utilize the data collected in Section 6.3.4 and the average pre-catalyst CO emission concentrations to calculate interference responses (I_{CO}) for the CO cell. If an interference response exceeds 5 percent, all emission test results since the last successful interference test for that compound are invalid.

9.2.1 CO Interference Calculation.

$$I_{CO} = [(\frac{R_{CO\text{-}NO}}{C_{NOG}})(\frac{C_{NOS}}{C_{COS}})]x100$$

where:
I_{CO} = CO interference response (percent)
$R_{CO\text{-}NO}$ = CO response to NO span gas (ppm CO)
C_{NOG} = concentration of NO span gas (ppm NO)
C_{NOS} = Anticipated concentration of NO in stack gas (250 ppm NO)
C_{COS} = concentration of CO in stack gas (ppm CO)

10. REPORTING REQUIREMENTS AND RECORD KEEPING REQUIREMENTS

Test reports shall be submitted to the Environmental Protection Agency (EPA), as required by Section IV C of Consent Decree, within thirty (30) days of completing the test. A separate test report shall be submitted for each facility where an emission source was tested and, at a minimum, the following information shall be included:

- **Form A, Linearity/Interference Check Data Sheet,** Submit the linearity check as required by Section 6.2 for the nominal range tested.
- **Form B, Stability Check Data Sheet,** Submit the stability check as required by Section 6.4 for the nominal range tested.
- **Form C, Calibration Error Check Data Sheet**
- **Form D-1,** Submit the appropriate test results form.

Records pertaining to the information above and supporting documentation shall be kept for five (5) years and made available upon request by EPA. Additionally, if the source is equipped with a fuel meter, records of all maintenance and calibrations of the fuel meter shall be kept for five (5) years from the date of the last maintenance or calibration.

Form A

Linearity/Interference Check Data Sheet

Date:_____

Analyst:_____

Analyzer Manufacturer/Model #:_____

Analyzer Serial #:_____

Pollutant		Calibration Gas Concentration (ppm)	Analyzer Response (ppm CO)	Analyzer Response % O_2	Absolute Difference (ppm)	Percent of Span	Linearity Valid (Yes or No)
CO	Zero						
	Mid						
	Span						
NO	Span						

Form B
Stability Check Data Sheet

Date:_____ **Analyst:**_____
Analyzer Manufacturer/Model #:_____

Analyzer Serial #:_____

Pollutant: CO Span Gas Concentration (ppm):_____

STABILITY CHECK					
Elapsed Time (Minutes)	Analyzer Response	Elapsed Time (Continued)	Analyzer Response	Elapsed Time (Continued)	Analyzer Response
1		17		33	
2		18		34	
3		19		35	
4		20		36	
5		21		37	
6		22		38	
7		23		39	
8		24		40	
9		25		41	
10		26		42	
11		27		43	
12		28		44	
13		29		45	
14		30		46	
15		31		47	
16		32		48	

For 30-minute Stability Check Period:

Maximum Concentration (ppm): _____ **Minimum Concentration (ppm):** _____

For 15-minute Stability Check Period:

Maximum Concentration (ppm): _____ **Minimum Concentration (ppm):** _____

Maximum Deviation = 100*(Max. Conc. - Min. Conc.)/Span Gas Conc. = _____ **percent**

Stability Time (minutes): _____

Form C
Calibration Error Check Data Sheet

Company:_____ **Facility:**_____

Source Tested:_____ **Date:**_____

Analyst:_____ **Analyzer Serial #:**_____

Analyzer Manufacturer/Model #:_____

PRETEST CALIBRATION ERROR CHECK								
			A	B	|A-B|	|A-B|/SG*100		
		Pump Flow Rate (Indicate Units)	Analyzer Reading (Indicate Units)	Calibration Gas Concentration (Indicate Units)	Absolute Difference (Indicate Units)	Percent of Span Note 1	Calibration Valid (Yes or No)	Response Time (Minutes)
CO	Zero							
	Span							
O_2	Zero							
	Span							

SG = Span Gas

Form D-1
Reciprocating Engine Test Results

Company:_____ **Facility:**_____

Source Tested:_____ **Date:**_____

Source Manufacturer/Model #:_____

Site-rated Horsepower:_____ **Source Serial #:**_____

Type of Emission Control:_____

Analyst:_____ **Analyzer Serial #:**_____

Analyzer Manufacturer/Model #:_____

Operating Conditions

Source operating at 90 percent or greater site-rated horsepower during testing? yes no

Engine Tested Horsepower (hp)	Engine RPM	Engine Fuel Consumption (Indicate Units)	Fuel Heat Content (Btu/cf)	Engine Specific Fuel Consumption (Btu/hp-hr)[1]

[1] As reported by the Manufacturer

Test Results

Test Start Time:_____ Test End Time:_____

O_2	CO				
Avg. Tested O_2 %	Avg. Pre-Catalyst CO ppm	Avg. Post-Catalyst CO ppm	Tested CO Reduction (%)	Required CO Reduction (%)	CO Interference Response (I_{CO}, %):
				93%	

I certify to the best of my knowledge the test results are accurate and representative of the emissions from this source.

_____ _____

Print Name **Signature**

APPENDIX C

to the

Consent Decree

in the matter of

United States of America and the State of Colorado v. Kerr-McGee Corporation

LOW-EMISSION DEHYDRATOR SPECIFICATIONS

Overview and Purpose

Kerr-McGee has agreed to employ "Low-Emission Dehydrator" technology at its existing and planned facilities in the Uinta Basin as part of the settlement of alleged Clean Air Act violations with the United States and the State of Colorado. The terms of that settlement will be memorialized in a consent decree to be entered by the United States District Court for the District of Colorado to be styled *United States of America and the State of Colorado v. Kerr-McGee Corporation* (hereafter the "Consent Decree"). As required in the Consent Decree at Section IV.A., this Appendix C includes:

> (a) a description of physical electrical hard-wiring between the vapor recovery unit ("VRU") compressor(s) and the glycol circulation pumps employed or to be employed, so that if the VRU compressor(s) go down then the glycol circulation pump(s) also shut down, thereby halting the circulation of glycol through the wet gas, as well as the emissions associated with the regeneration of the glycol;
>
> (b) a description of a second level of protection (redundancy) incorporated into a Programmable Logic Controller that uses instrumentation to shut down the glycol dehydration system in the event all VRU compressor(s) go down; and
>
> (c) a description of any third level of protection and discussion of how the non-condensible gases from glycol dehydrator operation shall be piped exclusively to the station inlet or fuel system for use as fuel and is not used for blanket gas in storage tanks or otherwise vented.

Background

Natural gas often contains water vapor at the wellhead which must be removed to avoid pipeline corrosion and solid hydrate formation. Glycol dehydration is the most widely used natural gas dehumidification process. In a glycol dehydration system, dry triethylene glycol ("TEG") or ethylene glycol ("EG") is contacted with wet natural gas. The glycol absorbs water from the natural gas, but also absorbs hydrocarbons including volatile organic compounds ("VOCs") and certain hazardous air pollutants ("HAPs"). Pumps circulate the glycol from a low-pressure distillation column for regeneration back to high pressure in order to contact with the high pressure wet gas. As the wet glycol pressure is reduced prior to distillation, much of the absorbed hydrocarbon is released, including some of the VOCs and HAPs. A flash tank is typically utilized to separate these vapors at a pressure where they can be utilized for fuel. Distillation removes the absorbed water along with any remaining hydrocarbon, including VOCs and HAPs, from the glycol to the still column vent as overhead vapor. Conventional dehydrator still columns often emit the non-condensable portion of this overhead vapor directly to the atmosphere, or to a combustion device such as a thermal oxidizer or reboiler burner.

Kerr-McGee currently utilizes low-emission glycol dehydrators at its facilities in the Uinta Basin. These units capture the non-condensable portion of still vent and flash tank vapors and recompress the vapor with reciprocating or scroll compressors that route the

vapor to the station inlet as natural gas product, to fuel lines for power generation turbines or to the station fuel system. They also employ electric glycol circulation pumps, and except for the recompression of non-condensable vapors, resemble conventional glycol dehydrators in their configuration. See Figure 1.

To insure that the non-condensable vapor compression system is fully integrated into dehydrator operation such that the units cannot be disabled so as to operate while venting to the atmosphere, each unit;

a. incorporates an integral vapor recovery function that prevents the dehydrator from operating independent of the vapor recovery function;
b. either returns the captured vapors to the inlet of the facility where each glycol dehydrator is located or routes the captured vapors to that facility's fuel gas supply header; and
c. thereby emits no more than 1.0 ton per year of VOCs.

Description of Interlocks

The low-emission glycol dehydrators have at least three (3) levels of protection to prevent emissions from occurring.

(a) Physical electrical hard-wiring between the vapor recovery unit (VRU) compressor(s) and the glycol circulation pumps ensures that if the VRU compressor(s) goes down, the glycol pump(s) also shut down, thereby halting the circulation of glycol through the wet gas as well as the emissions associated with the regeneration of glycol. More specifically:

1. Loss of station power interrupts the 480 volt power to the glycol pump(s) circulating glycol through the contactor.
2. Loss of 24 volt power to a relay interrupts the 480 volt power to the glycol pump(s) circulating glycol through the contactor. The 24 volt power is wired in parallel through the run status contacts of each VRU compressor in a specific service. If all VRU compressors in each specific service are shutdown, the 24 volt power is interrupted. There is at least one spare VRU compressor in standby mode for each specific service at existing Uinta Basin facilities engaged in gas dehydration. Non-condensable gas from VRU compressor discharge always has an outlet because if the station inlet pressure rises to a level greater than VRU compressor output, the flash tank vapors automatically go through a back pressure regulator to the fuel gas system until gathering pressure is reduced.
3. If the glycol still column/reboiler pressure rises above pressure set points, the 24 volt power to a relay is interrupted. The unpowered relay interrupts the 480 volt power to the glycol pump(s) circulating glycol to the contactor. If one of the glycol still VRU compressors is running but not compressing vapors, the pressure switch will detect the pressure rise in the still and shutdown the glycol circulating pump(s).

4. The operation of at least one of the VRU compressors is required to complete the electrical circuit and allow one of the glycol circulation pumps to operate.
5. There is a 10 second time delay switch installed in the physical electrical circuit that must time out before the glycol circulating pump(s) shut down for causes 2 and 3 above. This allows for switching of compressors and helps to prevent false shutdowns.
6. Everything is hard wired and does not depend on any type of controller.

(b) A second level of protection redundancy has been incorporated by utilizing the station Programmable Logic Controller (PLC) to shut down the dehydration system in the event the VRU compressor(s) go down.

1. A PLC timer will start counting when none of the VRU compressor(s) are in operation. When the timer times out, the PLC will not allow the regenerator system to be in run status.

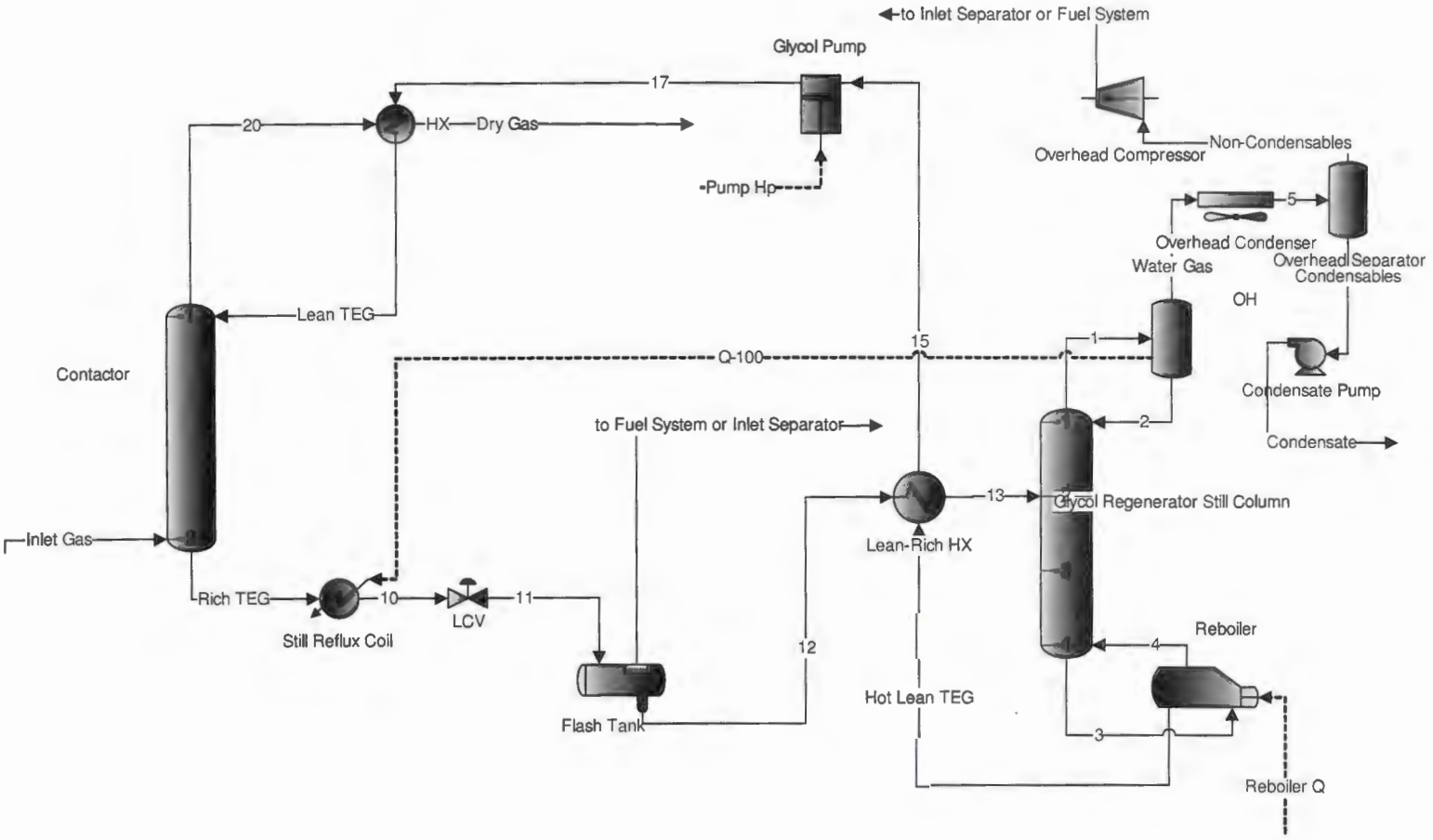
(c) A third level of protection is the routing of non-condensables directly to combustion devices in the stations that utilize micro-turbine electrical generators or central heat medium systems.

1. The non-condensable regenerator overhead vapors are routed to the inlet of each station or used as fuel. In instances where the inlet pressure rises above VRU compressor outlet pressures, a regulator opens allowing the VRU-compressed vapors to be discharged into the fuel system, where they are used throughout the station.
2. In Kerr-McGee's planned electrified compressor stations, liquids that condense at the compression stations, including those condensed from the glycol still overhead vapors, will be contained at pressure, separated from any water and pumped downstream into the high pressure gathering system. This process change will eliminate atmospheric storage of hydrocarbon liquids at such facilities.

Conclusion

Kerr-McGee's adherence to these specifications shall satisfy its commitment in the Consent Decree to utilize low-emission dehydrator technology in its existing and planned Uinta Basin operations.

Figure 1: Kerr-McGee Low-Emission Dehydrator Schematic



Appendix E

Emission Summary

Antelope Flats / Sand Wash Compressor Station & South Central Tank Battery
Total Facility Emissions

PTE Emissions (TPY)															
Unit ID	Description	HR/YR	NOx	CO	VOC	PM10	CO2e	CH2O	Acetaldehyde	Benzene	Toluene	Ethylbenzene	n-Hexane	Acrolein	HAPS TOT
ATF 1	G3516 TALE	8760	25.9	19.7	4.3	0.00	5018.9	0.9	0.4	0.02	-		-	0.2	1.5
ATF 2	G3516 TALE	8760	25.9	19.7	4.3	0.00	5018.9	0.9	0.4	0.02	-		-	0.2	1.5
ATF 3	G3516 TALE	8760	25.9	19.7	4.3	0.00	5018.9	0.9	0.4	0.02	-		-	0.2	1.5
ATF 4	G3608 TALE	8760	45.8	45.8	22.9	0.01	7950.8	1.6	0.6	0.03	-		-	0.4	2.6
ATF 5	G3608 TALE	8760	45.8	45.8	22.9	0.01	7950.8	1.6	0.6	0.03	-		-	0.4	2.6
ATF 6	G3608 TALE	8760	45.8	45.8	22.9	0.01	7950.8	1.6	0.6	0.03	-		-	0.4	2.6
SNW 1	G3516 TALE	8760	25.9	19.7	4.3	0.00	5018.9	0.9	0.4	0.02	-		-	0.2	1.5
DEHY 1	Low Emissions TEG Dehy	8760	-	-	1.0	-		-	-	-	-		-	-	0.0
DEHY 2	Low Emissions TEG Dehy	8760	-	-	1.0	-		-	-	-	-		-	-	0.0
HTR 1	Heater 1	8760	2.7	2.0	0.0	-	3203.0	0.0	-	-	-		-	-	0.0
HTR 2	Heater 2	8760	1.1	0.8	0.0	-	1281.2	0.0	-	-	-		-	-	0.0
HTR 3	Heater 3	8760	0.7	0.5	0.0	-	768.7	0.0	-	-	-		-	-	0.0
AF Tanks	Condensate Tanks	8760	-	-	27.6	-	274.9	-	-	0.40	0.30	0.01	3.30	-	4.0
SC Tanks	Condensate / Produced Water Tanks	8760	-	-	7.5	-	2049.9	-	-	-	-	-	-	-	
SC Load	Condensate Loadout	8760	-	-	18.3	-	-	-	-	-	-	-	-	-	
Flare	24" Flare	8760	1.2	6.5											
FUG	Fugitives Emissions	8760	-	-	15.5	-	-	-	-	-	-		-	-	1.2
PGO	Pigging Operations	-			0.4										
Total			**246.5**	**225.9**	**157.0**	**0.0**	**51506**	**8.4**	**3.2**	**0.6**	**0.3**	**0.0**	**3.3**	**2.0**	**19.0**

Appendix F

Detailed Emission Calculations

Antelope Flats/Sand Wash Compressor Station - South Central Plant Basin

Engine Detail Sheet

Elevation: 5022 ft asl

Source ID Number	**ATF 1**		
Source Description	4-Cycle Lean Burn		
Engine Usage	Compressor Engine		
Engine Make	Caterpillar	Potential operation	8760 hr/yr
Engine Model	G3516 TALE		
Serial Number	4EK04687	Manufacture Date	7/6/2005
Installation Date	5/17/2007	Potential fuel usage	83.5 MMscf/yr
Emission Controls	Lean Burn		9527 scf/hr
	Oxidation Catalyst/AFR		

Engine Rating	1340 BHP
Fuel Heating Value	1041.0 Btu/scf
Heat Rate	9.92 MMBtu/hr
Engine Heat Rate	7401 Btu/hp-hr

Uncontrolled Emissions

Pollutant	Emission Factor		Rating	Operating Hrs	Estimated Emissions		Source of Emission
	(lb/MMBtu)	(g/hp-hr)	(hp)	(hrs/yr)	(lb/hr)	(tpy)	Factor
NOx	0.60	2.00	1340	8760	5.91	**25.9**	Manuf. Data
CO	6.46	21.7	1340	8760	64.11	**280.8**	Manuf. Data
VOC	0.10	0.33	1340	8760	0.97	**4.3**	Manuf. Data
SOx	5.88E-04	0.002	1340	8760	0.01	**0.0**	AP-42, Table 3.2-2
PM10	7.71E-05	0.0003	1340	8760	0.00	**0.00**	AP-42, Table 3.2-2
CO2e	115.5	388	1340	8760	1145.9	**5018.93**	GHG Subpart C Calc.
HAPs							
HCHO	0.09	0.29	1340	8760	0.86	**3.8**	Manuf. Data
Benzene	4.40E-04	0.0015	1340	8760	0.00	**0.0**	AP-42, Table 3.2-2
Acrolein	5.14E-03	0.0173	1340	8760	0.05	**0.2**	AP-42, Table 3.2-2
Acetaldehyde	8.36E-03	0.0281	1340	8760	0.08	**0.4**	AP-42, Table 3.2-2

PTE Emissions

Pollutant	Emission Factor		Rating	Operating Hrs	Estimated Emissions		Source of Emission
	(lb/MMBtu)	(g/hp-hr)	(hp)	(hrs/yr)	(lb/hr)	(tpy)	Factor
NOx	0.60	2.00	1340	8760	5.91	**25.9**	Manuf. Data
CO*	0.45	1.52	1340	8760	4.49	**19.7**	Manuf. Data
VOC	0.10	0.33	1340	8760	0.97	**4.3**	Manuf. Data
SOx	5.88E-04	0.002	1340	8760	0.01	**0.0**	AP-42, Table 3.2-2
PM10	7.71E-05	0.0003	1340	8760	0.00	**0.0**	AP-42, Table 3.2-2
CO2e	115.5	388	1340	8760	1145.9	**5018.93**	GHG Subpart C Calc.
HAPs							
HCHO*	0.02	0.07	1340	8760	0.21	**0.9**	Manuf. Control Data
Benzene	4.40E-04	0.0015	1340	8760	0.00	**0.0**	AP-42, Table 3.2-2
Acrolein	5.14E-03	0.0173	1340	8760	0.05	**0.2**	AP-42, Table 3.2-2
Acetaldehyde	8.36E-03	0.0281	1340	8760	0.08	**0.4**	AP-42, Table 3.2-2

***CO: 93% Control Efficiency; Formaldehyde: 76% Control Efficiency**

Engine Detail Sheet

Elevation: 5022 ft asl

Source ID Number	**ATF 2**		
Source Description	4-Cycle Lean Burn		
Engine Usage	Compressor Engine		
Engine Make	Caterpillar	Potential operation	8760 hr/yr
Engine Model	G3516 TALE		
Serial Number	WPW00294	Manufacture Date	7/10/2006
Installation Date	5/17/2007	Potential fuel usage	83.5 MMscf/yr
Emission Controls	Lean Burn		9527 scf/hr
	Oxidation Catalyst/AFR		

Engine Rating	1340 BHP
Fuel Heating Value	1041.0 Btu/scf
Heat Rate	9.92 MMBtu/hr
Engine Heat Rate	7401 Btu/hp-hr

Uncontrolled Emissions

Pollutant	Emission Factor		Rating	Operating Hrs	Estimated Emissions		Source of Emission
	(lb/MMBtu)	(g/hp-hr)	(hp)	(hrs/yr)	(lb/hr)	(tpy)	Factor
NOx	0.60	2.00	1340	8760	5.91	**25.9**	Manuf. Data
CO	6.46	21.7	1340	8760	64.11	**280.8**	Manuf. Data
VOC	0.10	0.33	1340	8760	0.97	**4.3**	Manuf. Data
SOx	5.88E-04	0.002	1340	8760	0.01	**0.0**	AP-42, Table 3.2-2
PM10	7.71E-05	0.0003	1340	8760	0.00	**0.0**	AP-42, Table 3.2-2
CO2e	115.5	388	1340	8760	1145.9	**5018.93**	GHG Subpart C Calc.
HAPs							
HCHO	0.09	0.29	1340	8760	0.86	**3.8**	Manuf. Data
Benzene	4.40E-04	0.0015	1340	8760	0.00	**0.0**	AP-42, Table 3.2-2
Acrolein	5.14E-03	0.0173	1340	8760	0.05	**0.2**	AP-42, Table 3.2-2
Acetaldehyde	8.36E-03	0.0281	1340	8760	0.08	**0.4**	AP-42, Table 3.2-2

PTE Emissions

Pollutant	Emission Factor		Rating	Operating Hrs	Estimated Emissions		Source of Emission
	(lb/MMBtu)	(g/hp-hr)	(hp)	(hrs/yr)	(lb/hr)	(tpy)	Factor
NOx	0.60	2.00	1340	8760	5.91	**25.9**	Manuf. Data
CO*	0.45	1.52	1340	8760	4.49	**19.7**	Manuf. Control Data
VOC	0.10	0.33	1340	8760	0.97	**4.3**	Manuf. Data
SOx	5.88E-04	0.002	1340	8760	0.01	**0.0**	AP-42, Table 3.2-2
PM10	7.71E-05	0.0003	1340	8760	0.00	**0.0**	AP-42, Table 3.2-2
CO2e	115.5	388	1340	8760	1145.9	**5018.93**	GHG Subpart C Calc.
HAPs							
HCHO*	0.02	0.07	1340	8760	0.21	**0.9**	Manuf. Control Data
Benzene	4.40E-04	0.0015	1340	8760	0.00	**0.0**	AP-42, Table 3.2-2
Acrolein	5.14E-03	0.0173	1340	8760	0.05	**0.2**	AP-42, Table 3.2-2
Acetaldehyde	8.36E-03	0.0281	1340	8760	0.08	**0.4**	AP-42, Table 3.2-2

***CO: 93% Control Efficiency; Formaldehyde: 76% Control Efficiency**

Antelope Flats / Sand Wash Compressor Station / South Central Tank Battery

Engine Detail Sheet

Elevation: 5022 ft asl

Source ID Number	**ATF 3**		
Source Description	4-Cycle Lean Burn		
Engine Usage	Compressor Engine		
Engine Make	Caterpillar	Potential operation	8760 hr/yr
Engine Model	G3516 TALE		
Serial Number	WPW01970	Manufacture Date	6/25/2008
Installation Date	4/2/2009	Potential fuel usage	83.5 MMscf/yr
Emission Controls	Lean Burn		9527 scf/hr
	Oxidation Catalyst/AFR		

Engine Rating	1340	BHP
Fuel Heating Value	1041.0	Btu/scf
Heat Rate	9.92	MMBtu/hr
Engine Heat Rate	7401	Btu/hp-hr

Uncontrolled Emissions

Pollutant	Emission Factor		Rating	Operating Hrs	Estimated Emissions		Source of Emission
	(lb/MMBtu)	(g/hp-hr)	(hp)	(hrs/yr)	(lb/hr)	(tpy)	Factor
NOx	0.60	2.00	1340	8760	5.91	**25.9**	Manuf. Data
CO	6.46	21.7	1340	8760	64.11	**280.8**	Manuf. Data
VOC	0.10	0.33	1340	8760	0.97	**4.3**	Manuf. Data
SOx	5.88E-04	0.002	1340	8760	0.01	**0.0**	AP-42, Table 3.2-2
PM10	7.71E-05	0.0003	1340	8760	0.00	**0.0**	AP-42, Table 3.2-2
CO2e	115.5	388	1340	8760	1145.9	**5018.93**	GHG Subpart C Calc
HAPs							
HCHO	0.09	0.29	1340	8760	0.86	**3.8**	Manuf. Data
Benzene	4.40E-04	0.0015	1340	8760	0.00	**0.0**	AP-42, Table 3.2-2
Acrolein	5.14E-03	0.0173	1340	8760	0.05	**0.2**	AP-42, Table 3.2-2
Acetaldehyde	8.36E-03	0.0281	1340	8760	0.08	**0.4**	AP-42, Table 3.2-2

PTE Emissions

Pollutant	Emission Factor		Rating	Operating Hrs	Estimated Emissions		Source of Emission
	(lb/MMBtu)	(g/hp-hr)	(hp)	(hrs/yr)	(lb/hr)	(tpy)	Factor
NOx	0.60	2.00	1340	8760	5.91	**25.9**	Manuf. Data
CO*	0.45	1.52	1340	8760	4.49	**19.7**	Manuf. Control Data
VOC	0.10	0.33	1340	8760	0.97	**4.3**	Manuf. Data
SOx	5.88E-04	0.002	1340	8760	0.01	**0.0**	AP-42, Table 3.2-2
PM10	7.71E-05	0.0003	1340	8760	0.00	**0.0**	AP-42, Table 3.2-2
CO2e	115.5	388	1340	8760	1145.9	**5018.93**	GHG Subpart C Calc
HAPs							
HCHO*	0.02	0.07	1340	8760	0.21	**0.9**	Manuf. Control Data
Benzene	4.40E-04	0.0015	1340	8760	0.00	**0.0**	AP-42, Table 3.2-2
Acrolein	5.14E-03	0.0173	1340	8760	0.05	**0.2**	AP-42, Table 3.2-2
Acetaldehyde	8.36E-03	0.0281	1340	8760	0.08	**0.4**	AP-42, Table 3.2-2

***CO: 93% Control Efficiency; Formaldehyde: 76% Control Efficiency**

Antelope Flats / Sand Wash Compressor Station & South Central Tank Battery

Engine Detail Sheet

Elevation: 5022 ft asl

Source ID Number	**ATF 4**		
Source Description	4-Cycle Lean Burn		
Engine Usage	Compressor Engine		
Engine Make	Caterpillar	Potential operation	8760 hr/yr
Engine Model	G3608 TALE		
Serial Number	BEN00394	Manufacture Date	6/12/2007
Installation Date	6/9/2009	Potential fuel usage	132.2 MMscf/yr
Emission Controls	Lean Burn		15092 scf/hr
	Oxidation Catalyst/AFR		

Engine Rating	2370 BHP
Fuel Heating Value	1041.0 Btu/scf
Heat Rate	15.7 MMBtu/hr
Engine Heat Rate	6629 Btu/hp-hr

Uncontrolled Emissions

Pollutant	Emission Factor		Rating	Operating Hrs	Estimated Emissions		Source of Emission
	(lb/MMBtu)	(g/hp-hr)	(hp)	(hrs/yr)	(lb/hr)	(tpy)	Factor
NOx	0.67	2.00	2370	8760	10.45	**45.8**	Manuf. Data
CO	9.51	28.6	2370	8760	149.43	**654.5**	Manuf. Data
VOC	0.33	1.00	2370	8760	5.22	**22.9**	Manuf. Data
SOx	5.88E-04	0.002	2370	8760	0.01	**0.0**	AP-42, Table 3.2-2
PM10	7.71E-05	0.0002	2370	8760	0.00	**0.0**	AP-42, Table 3.2-2
CO2e	115.5	347	2370	8760	1815.3	**7950.82**	GHG Subpart C Calc.
HAPs							
HCHO	0.10	0.29	2370	8760	1.52	**6.6**	Manuf. Data
Benzene	4.40E-04	0.0013	2370	8760	0.01	**0.0**	AP-42, Table 3.2-2
Acrolein	5.14E-03	0.0155	2370	8760	0.08	**0.4**	AP-42, Table 3.2-2
Acetaldehyde	8.36E-03	0.0251	2370	8760	0.13	**0.6**	AP-42, Table 3.2-2

PTE Emissions

Pollutant	Emission Factor		Rating	Operating Hrs	Estimated Emissions		Source of Emission
	(lb/MMBtu)	(g/hp-hr)	(hp)	(hrs/yr)	(lb/hr)	(tpy)	Factor
NOx	0.67	2.00	2370	8760	10.45	**45.8**	Manuf. Data
CO*	0.67	2.00	2370	8760	10.46	**45.8**	Manuf. Control Data
VOC*	0.33	1.00	2370	8760	5.22	**22.9**	Manuf. Data
SOx	5.88E-04	0.002	2370	8760	0.01	**0.0**	AP-42, Table 3.2-2
PM10	7.71E-05	0.0002	2370	8760	0.00	**0.0**	AP-42, Table 3.2-2
CO2e	115.5	347	2370	8760	1815.3	**7950.82**	GHG Subpart C Calc.
HAPs							
HCHO*	0.02	0.07	2370	8760	0.36	**1.6**	Manuf. Control Data
Benzene	4.40E-04	0.0013	2370	8760	0.01	**0.0**	AP-42, Table 3.2-2
Acrolein	5.14E-03	0.0155	2370	8760	0.08	**0.4**	AP-42, Table 3.2-2
Acetaldehyde	8.36E-03	0.0251	2370	8760	0.13	**0.6**	AP-42, Table 3.2-2

***CO: 93% Control Efficiency; Formaldehyde: 76% Control Efficiency**

Antelope Ridge Natural Gas Compressor Station - South Central Unit Two

Engine Detail Sheet

Elevation: 5022 ft asl

Source ID Number	**ATF 5**		
Source Description	4-Cycle Lean Burn		
Engine Usage	Compressor Engine		
Engine Make	Caterpillar	Potential operation	8760 hr/yr
Engine Model	G3608 TALE		
Serial Number	BEN00614	Manufacture Date	8/17/2009
Installation Date	5/17/2010	Potential fuel usage	132.2 MMscf/yr
Emission Controls	Lean Burn		15,092 scf/hr
	Oxidation Catalyst/AFR		

Engine Rating	2370 BHP
Fuel Heating Value	1041.0 Btu/scf
Heat Rate	15.7 MMBtu/hr
Engine Heat Rate	6629 Btu/hp-hr

Uncontrolled Emissions

Pollutant	Emission Factor		Rating	Operating Hrs	Estimated Emissions		Source of Emission
	(lb/MMBtu)	(g/hp-hr)	(hp)	(hrs/yr)	(lb/hr)	(tpy)	Factor
NOx	0.67	2.00	2370	8760	10.45	**45.8**	Manuf. Data
CO	9.51	28.6	2370	8760	149.43	**654.5**	Manuf. Data
VOC	0.33	1.00	2370	8760	5.22	**22.9**	Manuf. Data
SOx	5.88E-04	0.002	2370	8760	0.01	**0.0**	AP-42, Table 3.2-2
PM10	7.71E-05	0.0002	2370	8760	0.00	**0.0**	AP-42, Table 3.2-2
CO2e	115.5	347	2370	8760	1815.3	**7950.82**	GHG Subpart C Calc.
HAPs							
HCHO	0.10	0.29	2370	8760	1.52	**6.6**	Manuf. Data
Benzene	4.40E-04	0.0013	2370	8760	0.01	**0.0**	AP-42, Table 3.2-2
Acrolein	5.14E-03	0.0155	2370	8760	0.08	**0.4**	AP-42, Table 3.2-2
Acetaldehyde	8.36E-03	0.0251	2370	8760	0.13	**0.6**	AP-42, Table 3.2-2

PTE Emissions

Pollutant	Emission Factor		Rating	Operating Hrs	Estimated Emissions		Source of Emission
	(lb/MMBtu)	(g/hp-hr)	(hp)	(hrs/yr)	(lb/hr)	(tpy)	Factor
NOx	0.67	2.00	2370	8760	10.45	**45.8**	Manuf. Data
CO*	0.67	2.00	2370	8760	10.46	**45.8**	Manuf. Control Data
VOC	0.33	1.00	2370	8760	5.22	**22.9**	Manuf. Data
SOx	5.88E-04	0.002	2370	8760	0.01	**0.0**	AP-42, Table 3.2-2
PM10	7.71E-05	0.0002	2370	8760	0.00	**0.0**	AP-42, Table 3.2-2
CO2e	115.5	347	2370	8760	1815.3	**7950.82**	GHG Subpart C Calc.
HAPs							
HCHO*	0.02	0.07	2370	8760	0.36	**1.6**	Manuf. Control Data
Benzene	4.40E-04	0.0013	2370	8760	0.01	**0.0**	AP-42, Table 3.2-2
Acrolein	5.14E-03	0.0155	2370	8760	0.08	**0.4**	AP-42, Table 3.2-2
Acetaldehyde	8.36E-03	0.0251	2370	8760	0.13	**0.6**	AP-42, Table 3.2-2

***CO: 93% Control Efficiency; Formaldehyde: 76% Control Efficiency**

Engine Detail Sheet

Elevation: 5022 ft asl

Source ID Number	**ATF 6**		
Source Description	4-Cycle Lean Burn		
Engine Usage	Compressor Engine		
Engine Make	Caterpillar	Potential operation	8760 hr/yr
Engine Model	G3608 TALE		
Serial Number	BEN00585	Manufacture Date	5/18/2009
Installation Date	12/28/2010	Potential fuel usage	132.2 MMscf/yr
Emission Controls	Lean Burn Oxidation Catalyst/AFR		15,092 scf/hr

Engine Rating	2370 BHP
Fuel Heating Value	1041.0 Btu/scf
Heat Rate	15.7 MMBtu/hr
Engine Heat Rate	6629 Btu/hp-hr

Uncontrolled Emissions

Pollutant	Emission Factor		Rating	Operating Hrs	Estimated Emissions		Source of Emission
	(lb/MMBtu)	(g/hp-hr)	(hp)	(hrs/yr)	(lb/hr)	(tpy)	Factor
NOx	0.67	2.00	2370	8760	10.45	**45.8**	Manuf. Data
CO	9.51	28.6	2370	8760	149.43	**654.5**	Manuf. Data
VOC	0.33	1.00	2370	8760	5.22	**22.9**	Manuf. Data
SOx	5.88E-04	0.002	2370	8760	0.01	**0.0**	AP-42, Table 3.2-2
PM10	7.71E-05	0.0002	2370	8760	0.00	**0.0**	AP-42, Table 3.2-2
CO2e	115.5	347	2370	8760	1815.3	**7950.82**	GHG Subpart C Calc
HAPs							
HCHO	0.10	0.29	2370	8760	1.52	**6.6**	Manuf. Data
Benzene	4.40E-04	0.0013	2370	8760	0.01	**0.0**	AP-42, Table 3.2-2
Acrolein	5.14E-03	0.0155	2370	8760	0.08	**0.4**	AP-42, Table 3.2-2
Acetaldehyde	8.36E-03	0.0251	2370	8760	0.13	**0.6**	AP-42, Table 3.2-2

PTE Emissions

Pollutant	Emission Factor		Rating	Operating Hrs	Estimated Emissions		Source of Emission
	(lb/MMBtu)	(g/hp-hr)	(hp)	(hrs/yr)	(lb/hr)	(tpy)	Factor
NOx	0.67	2.00	2370	8760	10.45	**45.8**	Manuf. Data
CO*	0.67	2.00	2370	8760	10.46	**45.8**	Manuf. Control Data
VOC	0.33	1.00	2370	8760	5.22	**22.9**	Manuf. Data
SOx	5.88E-04	0.002	2370	8760	0.01	**0.0**	AP-42, Table 3.2-2
PM10	7.71E-05	0.0002	2370	8760	0.00	**0.0**	AP-42, Table 3.2-2
CO2e	115.5	347	2370	8760	1815.3	**7950.82**	GHG Subpart C Calc
HAPs							
HCHO*	0.02	0.07	2370	8760	0.36	**1.6**	Manuf. Control Data
Benzene	4.40E-04	0.0013	2370	8760	0.01	**0.0**	AP-42, Table 3.2-2
Acrolein	5.14E-03	0.0155	2370	8760	0.08	**0.4**	AP-42, Table 3.2-2
Acetaldehyde	8.36E-03	0.0251	2370	8760	0.13	**0.6**	AP-42, Table 3.2-2

***CO: 93% Control Efficiency; Formaldehyde: 76% Control Efficiency**

Antelope Flats / Sandy Air Compression Station / South Central Unit Build

Engine Detail Sheet

Elevation: ft asl

Source ID Number	**SNW 1**		
Source Description	4-Cycle Lean Burn		
Engine Usage	Compressor Engine		
Engine Make	Caterpillar	Potential operation	8760 hr/yr
Engine Model	G3516 TALE		
Serial Number	4EK03158	Manufacture Date	6/15/2001
Installation Date	7/17/2014 (replacement)	Potential fuel usage	83.5 MMscf/yr
Emission Controls	Lean Burn		9527 scf/hr
	Oxidation Catalyst/AFR		

Engine Rating	1340 BHP
Fuel Heating Value	1041.0 Btu/scf
Heat Rate	9.92 MMBtu/hr
Engine Heat Rate	7401 Btu/hp-hr

Uncontrolled Emissions

Pollutant	Emission Factor		Rating	Operating Hrs	Estimated Emissions		Source of Emission
	(lb/MMBtu)	(g/hp-hr)	(hp)	(hrs/yr)	(lb/hr)	(tpy)	Factor
NOx	0.60	2.00	1340	8760	5.91	**25.9**	Manuf. Data
CO	6.46	21.7	1340	8760	64.11	**280.8**	Manuf. Data
VOC	0.10	0.33	1340	8760	0.97	**4.3**	Manuf. Data
SOx	5.88E-04	0.002	1340	8760	0.01	**0.0**	AP-42, Table 3.2-2
PM10	7.71E-05	0.0003	1340	8760	0.00	**0.0**	AP-42, Table 3.2-2
CO2e	115.5	388	1340	8760	1145.9	**5018.93**	GHG Subpart C Calc
HAPs							
HCHO	0.09	0.29	1340	8760	0.86	**3.8**	Manuf. Data
Benzene	4.40E-04	0.0015	1340	8760	0.00	**0.0**	AP-42, Table 3.2-2
Acrolein	5.14E-03	0.0173	1340	8760	0.05	**0.2**	AP-42, Table 3.2-2
Acetaldehyde	8.36E-03	0.0281	1340	8760	0.08	**0.4**	AP-42, Table 3.2-2

PTE Emissions

Pollutant	Emission Factor		Rating	Operating Hrs	Estimated Emissions		Source of Emission
	(lb/MMBtu)	(g/hp-hr)	(hp)	(hrs/yr)	(lb/hr)	(tpy)	Factor
NOx	0.60	2.00	1340	8760	5.91	**25.9**	Manuf. Data
CO*	0.45	1.52	1340	8760	4.49	**19.7**	Manuf. Control Data
VOC	0.10	0.33	1340	8760	0.97	**4.3**	Manuf. Data
SOx	5.88E-04	0.002	1340	8760	0.01	**0.0**	AP-42, Table 3.2-2
PM10	7.71E-05	0.0003	1340	8760	0.00	**0.0**	AP-42, Table 3.2-2
CO2e	115.5	388	1340	8760	1145.9	**5018.93**	GHG Subpart C Calc
HAPs							
HCHO*	0.02	0.07	1340	8760	0.21	**0.9**	Manuf. Control Data
Benzene	4.40E-04	0.0015	1340	8760	0.00	**0.0**	AP-42, Table 3.2-2
Acrolein	5.14E-03	0.0173	1340	8760	0.05	**0.2**	AP-42, Table 3.2-2
Acetaldehyde	8.36E-03	0.0281	1340	8760	0.08	**0.4**	AP-42, Table 3.2-2

***CO: 93% Control Efficiency; Formaldehyde: 76% Control Efficiency**

Antelope Flats / Sand Wash Compressor Station & South Central Tank Battery
Dehy Vent Detail Sheet

			Elevation:	ft asl
Source ID Number	DEHY 1	Source Location Zone: 13		
Source Description	70 MMSCFD TEG Dehydrator		UTME:	
Equipment Usage	Glycol Dehydrator		UTMN:	
Equipment Make		Potential operation		8760 hr/yr
Equipment Model				
Serial Number				
Date in Service	Dehy-1 2007			
Emission Controls	Low Emissions TEG Dehy			
Equipment Configuration	TEG			
Permit Status	TBD			

GRI Glycalc Inputs

Annual Hrs of Operation	8760	(<= 8760 hr/yr)
Type of Glycol Used	TEG	(EG, TEG, DEG)
Wet Gas Temperature	80	deg F
Wet Gas Pressure	600	psig
Wet Gas Water Content	Saturated	lb H20/MMscf or Saturated
Dry Gas Flow Rate	70	MMscf/day
Dry Gas Water Content	7	lb H20/MMscf (or # absorber stages)
Glycol Recirc.	5	gal / # water
Pump Type	Electric	Electric / Gas @ 1.5% H20 -- Default
Gas Pump Volume Ratio	N/A	acfm gas / gpm glycol
Flash Tank Present?	Y	(Y/N)
Flash Tank Temperature	160	deg F
Flash Tank Pressure	130	psig
Flash Tank Control	Recycle	
Stripping Gas Used	Dry Gas	(None, Dry Gas, Flash Gas, Nitrogen)
Stripping Gas Flow Rate	25	scfm
Condenser Present?	Y	
Condenser Temperature	140	
Condenser Pressure	Atm	

Gas Analyses from July 2008 (3rd Qtr)

Component	Wet Gas (% Vol.)
Helium	0.005
Carbon Dioxide	0.591
Hydrogen Sulfide	ND
Nitrogen	0.167
Methane	91.57
Ethane	4.425
Propane	1.626
Isobutane	0.335
n-Butane	0.432
Isopentane	0.180
n-Pentane	0.151
Cyclopentane	0.009
n-Hexane	0.073
Cyclohexane	0.043
Other Hexanes	0.131
Heptanes	0.095
Methylcyclohexane	0.062
2,2,4-Trimethylpentane	0
Benzene	0.017
Toluene	0.021
Ethylbenzene	0.001
Xylenes	0.008
C8+ Heavies	0.058
Total	100

Antelope Flats / Sand Wash Compressor Station & South Central Tank Battery
Dehy Vent Detail Sheet

			Elevation:	ft asl
Source ID Number	DEHY 2	Source Location Zone: 13		
Source Description	100 MMSCFD TEG Dehydrator		UTME:	
Equipment Usage	Glycol Dehydrator		UTMN:	
Equipment Make		Potential operation		8760 hr/yr
Equipment Model				
Serial Number				
Date in Service	Dehy-2 8/20/2010			
Emission Controls	Low Emissions TEG Dehy			
Equipment Configuration	TEG			
Permit Status	TBD			

GRI Glycalc Inputs

Annual Hrs of Operation	8760	(<= 8760 hr/yr)
Type of Glycol Used	TEG	(EG, TEG, DEG)
Wet Gas Temperature	80	deg F
Wet Gas Pressure	600	psig
Wet Gas Water Content	Saturated	lb H20/MMscf or Saturated
Dry Gas Flow Rate	100	MMscf/day
Dry Gas Water Content	7	lb H20/MMscf (or # absorber stages)
Glycol Recirc.	5	gal / # water
Pump Type	Electric	Electric / Gas @ 1.5% H20 -- Default
Gas Pump Volume Ratio	N/A	acfm gas / gpm glycol
Flash Tank Present?	Y	(Y/N)
Flash Tank Temperature	160	deg F
Flash Tank Pressure	130	psig
Flash Tank Control	Recycle	
Stripping Gas Used	Dry Gas	(None, Dry Gas, Flash Gas, Nitrogen)
Stripping Gas Flow Rate	25	scfm
Condenser Present?	Y	
Condenser Temperature	140	
Condenser Pressure	Atm	

Gas Analyses from July 2008 (3rd Qtr)

Component	Wet Gas (% Vol.)
Helium	0.005
Carbon Dioxide	0.591
Hydrogen Sulfide	ND
Nitrogen	0.167
Methane	91.57
Ethane	4.425
Propane	1.626
Isobutane	0.335
n-Butane	0.432
Isopentane	0.180
n-Pentane	0.151
Cyclopentane	0.009
n-Hexane	0.073
Cyclohexane	0.043
Other Hexanes	0.131
Heptanes	0.095
Methylcyclohexane	0.062
2,2,4-Trimethylpentane	0
Benzene	0.017
Toluene	0.021
Ethylbenzene	0.001
Xylenes	0.008
C8+ Heavies	0.058
Total	100

Antelope Flats / Sand Wash Compressor Station & South Central Tank Battery
Heater Emission Calculation Sheet

Heater Data

ID	HTR 1	
Description	Heater 1	
Nameplate Rating:	5.00	(MMBtu/hr) 2- 2.5 MMBtu/hr Burners
Efficiency:	0.80	(decimal)
Heat Input:	6.25	(MMBtu/hr)
Potential Fuel Usage	42.1	MMScf/yr
Operation:	8760	(hr/yr)
Fuel Heat Value:	1041.0	(Btu/scf)
VOC Wt Fraction:	0.15	(decimal, VOC weight fraction of the fuel gas)

Emission Factors

	NO_X	CO	TOC	CH_2O
lb/MMscf	100	84	11	0.075
Adjusted lb/MMscf *	102.1	76.0	11.2	0.08
lb/MMBtu	0.100	0.075	0.011	0.000

* Emission factor conversion based on footnote "a" of AP-42 Table 1.4-1 to convert from 1,020 Btu/scf to the above Fuel Heat Value in units of Btu/scf.

Emission Calculations

NO_X		CO		VOC		CH_2O	
(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
0.63	**2.7**	0.47	**2.0**	0.00	**0.0**	0.00	**0.0**

CO2e Emission Calculations

Conversions:

1 Metric Ton = 2204.62 lbs
1 kg = 0.001 metric tons

Pollutant	kg/mmbtu	metric ton	tpy
CO_2	53.02	2,903	3,199.84
CH_4	0.001	0	0.06
N_2O	0.0001	0	0.01
		CO_{2e} =	3,203

$CO_{2e} = CO_2 + (CH_4 * 21) + (N_2O * 310)$

Antelope Flats / Sand Wash Compressor Station & South Central Tank Battery
Heater Emission Calculation Sheet
Insignificant Source

Heater Data

ID	HTR 2	
Description	Heater 2	
Nameplate Rating:	2.00	(MMBtu/hr)
Efficiency:	0.80	(decimal)
Heat Input:	2.50	(MMBtu/hr)
Potential Fuel Usage	16.8	MMScf/yr
Operation:	8760	(hr/yr)
Fuel Heat Value:	1041.0	(Btu/scf)
VOC Wt Fraction:	0.15	(decimal, VOC weight fraction of the fuel gas)

Emission Factors

	NO_X	CO	TOC	CH_2O
lb/MMscf	100	84	11	0.075
Adjusted lb/MMscf *	102.1	76.0	11.2	0.08
lb/MMBtu	0.100	0.075	0.011	0.000

* Emission factor conversion based on footnote "a" of AP-42 Table 1.4-1 to convert from 1,020 Btu/scf to the above Fuel Heat Value in units of Btu/scf.

Emission Calculations

NO_X		CO		VOC		CH_2O	
(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
0.25	**1.10**	0.19	**0.82**	0.00	**0.00**	0.00	**0.00**

CO2e Emission Calculations

Conversions:

1 Metric Ton = 2204.62 lbs
1 kg = 0.001 metric tons

Pollutant	kg/mmbtu	metric ton	tpy
CO_2	53.02	1,161	1,279.93
CH_4	0.001	0	0.02
N_2O	0.0001	0	0.00
		CO_{2e} =	1,281

$CO_{2e} = CO_2 + (CH_4 * 21) + (N_2O * 310)$

Antelope Flats / Sand Wash Compressor Station & South Central Tank Battery
Heater Emission Calculation Sheet
Insignificant Source

Heater Data

ID	HTR 3	
Description	Heater 3	
Nameplate Rating:	1.20	(MMBtu/hr)
Efficiency:	0.80	(decimal)
Heat Input:	1.50	(MMBtu/hr)
Potential Fuel Usage	10.1	MMScf/yr
Operation:	8760	(hr/yr)
Fuel Heat Value:	1041.0	(Btu/scf)
VOC Wt Fraction:	0.15	(decimal, VOC weight fraction of the fuel gas)

Emission Factors

	NO_X	CO	TOC	CH_2O
lb/MMscf	100	84	11	0.075
Adjusted lb/MMscf *	102.1	76.0	11.2	0.08
lb/MMBtu	0.100	0.075	0.011	0.000

* Emission factor conversion based on footnote "a" of AP-42 Table 1.4-1 to convert from 1,020 Btu/scf to the above Fuel Heat Value in units of Btu/scf.

Emission Calculations

NO_X		CO		VOC		CH_2O	
(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
0.15	**0.66**	0.11	**0.49**	0.00	**0.00**	0.00	**0.00**

CO2e Emission Calculations

Conversions:

1 Metric Ton = 2204.62 lbs
1 kg = 0.001 metric tons

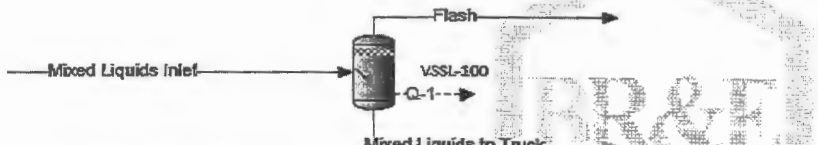
Pollutant	kg/mmbtu	metric ton	tpy
CO_2	53.02	697	767.96
CH_4	0.001	0	0.01
N_2O	0.0001	0	0.00
		CO_{2e} =	769

$CO_{2e} = CO_2 + (CH_4 * 21) + (N_2O * 310)$

Names	Units	Flash
Carbon Dioxide(Mass Flow)	ton/yr	1.9
Methane(Mass Flow)	ton/yr	13
Benzene(Mass Flow)	ton/yr	0.4
Toluene(Mass Flow)	ton/yr	0.3
Ethylbenzene(Mass Flow)	ton/yr	0.012
p-Xylene(Mass Flow)	ton/yr	0.054
n-Hexane(Mass Flow)	ton/yr	3.3

Annual tank loss calculations for "Mixed Liquids Inlet".
Flashing losses are 27.54 ton/yr.
* Only Non-Exempt VOC are reported.

Tank-



Names	Units	Mixed Liquids Inlet	Flash	Mixed Liquids to Truck
Carbon Dioxide(Mole Fraction)	%	0.0073	2.7	0.0015
Nitrogen(Mole Fraction)	%	7.7e-05	0.036	6e-07
Methane(Mole Fraction)	%	0.12	54	0.0024
Ethane(Mole Fraction)	%	0.025	11	0.0021
Propane(Mole Fraction)	%	0.028	10	0.0064
i-Butane(Mole Fraction)	%	0.013	3.5	0.0058
n-Butane(Mole Fraction)	%	0.026	5.7	0.014
i-Pentane(Mole Fraction)	%	0.024	2.8	0.018
n-Pentane(Mole Fraction)	%	0.026	2.5	0.022
Heptane(Mole Fraction)	%	0.1	0.9	0.1
n-Octane(Mole Fraction)	%	0.083	0.21	0.083
Nonane(Mole Fraction)	%	0.013	0.0094	0.013
C10 +(Mole Fraction)	%			
Benzene(Mole Fraction)	%	0.014	0.33	0.013
Toluene(Mole Fraction)	%	0.028	0.21	0.028
Ethylbenzene(Mole Fraction)	%	0.0033	0.0075	0.0033
p-Xylene(Mole Fraction)	%	0.014	0.033	0.014
n-Hexane(Mole Fraction)	%	0.088	2.4	0.083
Liquid Volumetric Flow	bbl/d	267.85	720.15	215.95

Annual tank loss calculations for "Mixed Liquids Inlet".
Total working and breathing losses from the Vertical Cylinder are 0.01591 ton/yr.
Loading losses are 0.02575 ton/yr of loaded liquid.
* Only Non-Exempt VOC are reported.

Tank

Pigging Emissions Estimates		
Pigging Days =	365	days
Estimated VOC Rate =	0.10	lb/hr
VOC Emissions =	**0.44**	**ton/yr**

Antelope Flats / Sand Wash Compressor Station & South Central Tank Battery
Flare Detail Sheet

Source ID Number	**Flare**	Source Location	Zone:	
Source Description	Flare		UTME:	
Equipment Usage			UTMN:	
Equipment Make				
Equipment Model		Potential operation	8760	hr/yr
Serial Number				
Date in Service		Potential fuel usage	1.40	MMscf/yr
Equipment Configuration			160.1	scf/hr

Pilot Fuel Heating Value	1041	Btu/scf
Fuel Heat Rating	4.0	Mmbtu/hr

Potential Emissions

Pollutant	Emission Factor (lb/MMBtu)	Hrs of Operation (hrs/yr)	Estimated Emissions (lb/hr)	(tpy)	(lb/yr)	Source of Emission Factors
NOx	0.068	8760	0.27	1.19	2382.7	AP-42 Table 13.5-1
CO	0.37	8760	1.48	6.48	12964.8	AP-42 Table 13.5-1

CO2e Emission Calculations

Conversions:

1 Metric Ton =	2204.62	lbs
1 kg =	0.001	metric tons

Pollutant	kg/mmbtu	metric ton	tpy
CO_2	53.02	1,858	2,048
CH_4	0.001	0	0
N_2O	0.0001	0	0
		CO_{2e} =	2,050

$CO_{2e} = CO_2 + (CH_4 * 21) + (N_2O * 310)$

GHG emission factors from '40 CFR 98 Table C-1, C-2.

Antelope Flats / Sand Wash Compressor Station & South Central Tank Battery

Source ID Number	L-1	
Source Description	Condensate Loadout @ South Central Tank Battery	
Source Usage	Condensate Loadout	
Potential operation	8760 hr/yr	Potential Operation

Potential Emissions

VOC	18.28 tpy	See calculation below
HAP	0.88 tpy	Percent of VOC from liquid analysis

Gas Analysis

Estimated Fugitive Emissions - Potential (see AP-42 Section 4.4)

API Gravity at Sales Temp	66		From Liquid Analysis
Reid Vapor Pressure	8.306		From Liquid Analysis
True Vapor Pressure, Pva @ T	4.8	psia	Figure 7.1-13a of AP-42
Molecular Weight of Vapors, MW	68.00	lb/lb-mol	From Gas Analysis
Average Sales Temperature, T	51.98	F	
	511.65	R	
Saturation Factor	0.6		Dedicated service
Efficiency of controlled loading (%)	0.0%		
Annual throughput, v	7,665.0	1000 gallons	
Loading losses, L @ tank	4.77	lb/1000 gallons	
L = 12.46 S P MW / T (1-eff)			
Annual losses @ tank, L*v	36,556	lb/yr	**18.28 tpy**

Hazardous Air Pollutant Speciation

Component	Mole %	AP Emissions (tp	Source of Emissions
Benzene	0.4684%	0.086	Speciated based on percent in TK-1601 vapor emissions
Toluene	0.4379%	0.080	
Ethylbenzene	0.0118%	0.002	
Xylenes	0.0971%	0.018	
n-Hexane	3.6810%	0.673	
2,2,3-Trimethylpentane	0.1269%	0.023	
TOTAL		**0.882**	

Component Source Counts for Gas Plant/Compressor Station Units

Equipment Type	Compressor	Separator	Condensate Tank	TEG Unit	DEA Unit	C3 Refrig Skid	Expan Demeth	Mole Sieve System	Flare
For this facility, Number of Units									
Valves - Inlet Gas	40	6	4	75	15	40	40	25	8
Valves - Liquid	5	4	6	20	60	35	35	0	2
Relief Valves	2	2	2	4	4	6	6	4	2
Pump Seals - Liquid	0	0	2	4	4	0	0	0	0
Flanges/Connectors - Inlet Gas	150	50	50	250	250	250	250	100	75
Flanges/Connectors - Liquid	10	10	10	20	20	20	20	20	10
Compressor Seals	4	0	0	0	0	6	0	0	0

Fugitives

Equipment Type	Emission Factor (lb/hr/ source)	Source Count *	% VOC C3+	%HAP	VOC Emission Rate (lb/hr)	HAP Emission Rate (lb/hr)	HAP Emission Rate (tpy)	VOC Emission Rate (tpy)
Valves - Inlet Gas	0.00992	570	11.40%	0.12%	0.645	0.007	0.030	2.82
Valves - Liquid	0.00550	215	100.00%	11.40%	1.183	0.135	0.590	5.18
Relief Valves	0.01940	78	11.40%	0.12%	0.173	0.002	0.008	0.76
Pump Seals - Liquid	0.02866	38	100.00%	11.40%	1.089	0.124	0.544	4.77
Flanges/Connectors - Inlet Gas	0.00086	2975	11.40%	0.12%	0.292	0.003	0.013	1.28
Flanges/Connectors - Liquid	0.00024	390	100.00%	11.40%	0.094	0.011	0.047	0.41
Compressor Seals	0.01940	28	11.40%	0.12%	0.062	0.001	0.003	0.27
Total					3.536	0.282	1.23	15.49

* Source counts estimated from similar facilities. These counts are not actuals.

Source: EPA Protocol for Equipment Leak Emission Estimates, November, 1995, EPA-453/R-95-017

Appendix G

Ambient Air Quality Analysis

Air Quality Impact Qualitative Analysis

There are two ambient air quality monitors within the Basin that monitor ozone and nitrogen dioxide (NO2). Results of the two monitors (Site ID 49-047-2002 – near Redwash and Site ID 49-047-2003 – near Ouray) are summarized below:

SITE ID #	YEAR	POLLUTANT	1st MAX	2nd MAX	3rd MAX	4th MAX
49-047-2002	2009	NO2 – 1-hr	19	16		
	2010	NO2 – 1-hr	55	41		
	2009	O3 – 1-hr	63	62	61	60
	2010	O3 – 1-hr	120	114	111	108
	2009	O3 – 8-hr	60	58	58	56
	2010	O3 – 8-hr	105	103	99	88
49-047-2003	2009	NO2 – 1-hr	12	10		
	2010	NO2 – 1-hr	56	40		
	2009	O3 – 1-hr	66	66	62	62
	2010	O3 – 1-hr	139	131	131	130
	2009	O3 – 8-hr	61	60	57	57
	2010	O3 – 8-hr	123	122	122	117

***concentrations are in ppb**

The monitoring data suggests that the area is of lesser concern for NO2 emissions since the highest recorded concentration in the two monitoring years was just slightly above 50% of the standard. While the table does not show the annual NO_2 monitoring values, they are well below the standard. This facility has been operating since 1996, and therefore the associated emissions should already be represented in the existing monitoring data.

The monitoring data does show elevated ozone concentrations in 2010. While there is concern with the winter time ozone issues, the area is listed as unclassifiable. Again, this facility has been operating since 1996, and therefore the associated emissions should already be represented in the existing monitoring data.

Environmental Impact Statement: In March of 2012 the Final Environmental Impact Statement (FEIS) for the Greater Natural Buttes area was completed and modeling was done as part of the EIS. While this is not a regulatory modeling exercise, it does give an indication of the air quality in the area. NO2, SO2 and summertime O3 were modeled. Attached is the air quality excerpt out the FEIS. The modeling indicates compliance with all NAAQS and increment standards. The modeled concentrations indicate compliance with the ozone standard during the summer months

4.0 Environmental Impacts

This chapter presents discussions of the environmental impacts associated with the Proposed Action and the alternatives presented in Chapter 2.0. Disturbance comparisons for these alternatives are presented in **Table 2.10-1**, thus providing the reviewers and the decision maker a side-by-side comparison of the potential alternatives for each key resource topic. Analysis of environmental impacts in this chapter is confined to that associated with new disturbances for each alternative. To estimate the total impacts for each action alternative, the impacts for the No Action Alternative must be added to the impacts for each alternative. Many of the effects identified as a result of oil and gas development occurring under the No Action Alternative also would occur under expanded oil and gas activities associated with implementation of the Proposed Action or other action alternatives. Differences among the action alternatives generally would be in the degree or level of effects. Expansion of the existing oil and gas field would create effects that overlap or combine with those occurring under the No Action Alternative. These effects are analyzed in detail in Chapter 5.0, Cumulative Effects.

It should be noted that final well siting and associated site-specific effects would be determined in detail during the APD phase of the permitting process. Under this process, each well would undergo additional biological, cultural, and paleontological evaluation prior to construction, as directed by the BLM (Section 2.3, Management Common to All Alternatives). Additional site-specific mitigation requirements also may be added at that time. The environmental impacts identified in this EIS are based on general well locations as discussed in Chapter 2.0 of this document.

Planned natural gas developments in the GNBPA under the No Action Alternative are described in previously approved NEPA documents identified in Section 2.4.1. As of October 2007, there were 1,102 undrilled wells within the GNBPA that have been described in approved NEPA decision documents or identified in the UDOGM database. As of October 2007, UDOGM data indicated that 584 federal wells, 192 State of Utah wells, 9 wells on Indian lands, and 9 wells on private lands had approved APDs or were actively drilling within the GNBPA.

4.1 Air Quality

The purpose of the air quality analysis was to assess local and regional air quality impacts from current and future reasonably foreseeable development in the Uinta Basin Region, in conjunction with the proposed project. The general approach was to develop an emissions inventory for a "project base year" (defined below) to tabulate emissions and conduct modeling.

The air quality analysis incorporated the planned development and a prepared set of emissions data for project modeling, including project development alternatives and reasonably foreseeable development as discussed below. Those emissions data were incorporated into the modeling system for the project base year, and used to predict potential impacts on visibility, acid deposition, and air quality, including ozone. The analysis identifies potential impacts on resources evaluated, and characterizes the major source or source groups that contribute to those impacts.

The 2006 emissions data was used as the basis for comparing emissions and impacts for the base year. This selection was made to coincide with the 2006 Western Regional Air Partnership (WRAP) Phase III emissions inventory for the Uinta and Piceance basins, which was developed by a collection of government and industry stakeholders for ozone modeling in the same area. As such, these data serve as the best available data for base year emissions and comparisons.

Emissions of criteria pollutants and source characteristics for the proposed project alternatives were based on project data provided by KMG. To support the modeling effort, emissions scenarios were developed for the base year and 3 forecast years and included reasonably foreseeable development, the proposed project, and maximum production. Emissions inventories were developed for each of the following scenarios:

- 2006 Baseline – 2006 base year actual emissions;
- 2018 Projected Baseline – 2018 projected emissions without the proposed project;
- 2017 Proposed Action Alternative – 2018 Projected Baseline emissions with project emissions from the proposed alternative in 2017; and
- 2026 Optimal Recovery Alternative – 2018 Projected Baseline emissions with project emissions from the maximum recovery development alternative in 2026.

The 2018 Projected Baseline essentially is the No Action Alternative, but also includes non-project emissions. The Resource Protection Alternative focuses on minimizing land disturbance for the installation and operation of wells and other support facilities. From an air emissions perspective, ambient impacts from the Resource Protection Alternative are well-characterized by the impacts from the Proposed Action. For that reason, the Resource Protection Alternative was not modeled as a separate evaluation.

The 2018 Projected Baseline was used as the baseline for the Optimal Recovery Alternative, though peak production under this alternative is anticipated in 2026. This approach provides a consistent basis of comparison between the alternatives and reduces uncertainty in baseline emissions from projecting development beyond the WRAP inventory time horizon.

The 2018 Projected Baseline does not include estimates of emissions from existing evaporation ponds in the GNBPA. However, the emissions from these ponds are conservatively estimated to be 45 tpy VOC and 39 tpy HAP. The estimated VOC levels for the evaporation ponds are less than 0.1 percent of the VOC emissions for the projected baseline emissions used in ozone modeling (see Appendix G).

GHGs are produced and emitted by various sources during phases of oil and gas exploration, well development, and production. The primary sources of GHGs associated with oil and gas exploration and production are CO_2, N_2O, and CH_4. In addition, volatile organic compounds (VOCs) are a typical source of

emissions associated with oil and gas exploration and production. Under specific environmental conditions, N_2O and VOCs form ozone, which also is considered a GHG.

Climate change analyses are comprised of several factors including, but not limited to, GHGs, land use management practices, and the albedo effect. While emissions from oil and gas activities may contribute to the effects of climate change to some extent, it currently is not possible to associate any of these particular actions with the creation of any specific climate-related environmental effects. The tools necessary to quantify climatic impacts presently are unavailable. As a consequence, impact assessment of specific effects of anthropogenic activities cannot be determined. Additionally, specific levels of significance have not yet been established. Therefore, climate change analysis for the purpose of this document ***focuses on*** accounting and disclosing of GHG emissions that may contribute to climate change ***(see Section 3.1.3.7 for text acknowledging related potential impacts)***.

Emissions Data Development

Emissions data for the Proposed Action and the Optimal Recovery Alternative were developed from available emission factors, analytical data, applicable ***ACEPMs (Appendix A)***, applicant-provided equipment specifications, and anticipated activity levels. Emission rates were developed for the criteria pollutants and for selected HAPs. A summary of criteria pollutant emissions from stationary sources in the Uinta Basin is provided in **Table 4.1-1**, and the project-related increases in the major components of HAPs for the Proposed Action and Optimal Recovery Alternative are provided in **Table 4.1-2**. Emissions for a full list of HAPs were reviewed, but only those with the greatest emissions in relation to health effects were evaluated. A summary of emission calculation methods for each source type and pollutant is shown in **Table 4.1-3**.

Table 4.1-1 Summary of Criteria Pollutant Emissions for Each Scenario

Criteria Pollutant	Emissions (tpy)					
	2006 Baseline	2018 Projected Baseline	2017 Proposed Action		2026 Optimal Recovery Alternative	
			Project	Total	Project	Total
NO_X	10,754	10,138	2,***213***	12,***351***	4,946	15,084
CO	7,800	9,732	1,***300***	**11,032**	2,994	12,726
SO_2	391	30	25	55	78	108
PM_{10}	592	565	***1,011***	1,***576***	2,658	3,223
VOC	70,226	184,262	6,***617***	190,***879***	24,976	209,238

Source: Air Quality Technical Support Document (**Appendix G**).

Table 4.1-2 Summary of Potential Increases in Emissions of HAPs for Project-related Alternatives

Pollutant	Potential HAP Increase (tpy)	
	Proposed Action Alternative	Optimal Recovery Alternative
Benzene	67.***0***	255.2
Toluene	17***2.4***	662.1
Ethyl Benzene	12.7	48.5
Xylenes	18***5.7***	714.1
Formaldehyde	***71.3***	156.5
n-Hexane	19***4.9***	748.5

Source: Air Quality Technical Support Document (**Appendix G**).

Table 4.1-3 Summary of Emissions Calculation Methods by Source Type and Pollutant

Source Type	Pollutant	Emissions Calculation Methodology
Drill Rig Engines	NO_X	40 CFR 1039.101 ***Tier 2 – Near-field Impact Analysis*** ***Tier 4 – Near-field Impact Analysis and Regional Emissions***
	CO	
	VOC	
	$PM/PM_{10}/PM_{2.5}$	
	SO_2	Mass balance of fuel sulfur (15 ppm weight [ppmw] fuel sulfur)
	HAP	National Mobile Inventory Model Database (USEPA 2005)
Drill Rig Boilers	All	USEPA AP-42 Volume I: Stationary Sources *Chapter 1.3* (USEPA 1998***b***)
Drilling and Completion Traffic	NO_X	USEPA AP-42 Volume II: Mobile Sources (USEPA 1995a)
	CO	
	VOC	
	$PM_{10}/PM_{2.5}$	USEPA AP-42 Volume I *Chapter 13.2.2* (USEPA 2006) and USEPA AP-42 Volume II: Mobile Sources (USEPA 1995a)
	SO_2	USEPA AP-42 Volume II: Mobile Sources (USEPA 1995a)
Condensate Flashing	VOC	American Petroleum Institute ***(API)*** E&P Tanks v2.0 based on Analysis of Condensate
	HAP	
Separator Heaters	NO_X	USEPA AP-42 Volume I: Stationary Sources *Chapter 1.4* (USEPA 1998**c**)
	CO	
	VOC	
	$PM/PM_{10}/PM_{2.5}$	
	SO_2	Mass balance of fuel sulfur [20 ppmw fuel sulfur]
	HAP	USEPA AP-42 Volume I: Stationary Sources *Chapter 1.4* (USEPA 1998**c**)
Production Well Fugitives	VOC	USEPA Protocol for Equipment Leak Estimates (USEPA 1995b)
	HAP	Mass fraction of VOC based on Analysis of Condensate
Production Traffic	NO_X	USEPA AP-42 Volume II: Mobile Sources (USEPA 1995a)
	CO	
	VOC	
	$PM_{10}/PM_{2.5}$	USEPA AP-42 Volume I *Chapter 13.2.2* (USEPA 2006) and USEPA AP-42 Volume II: Mobile Sources (USEPA 1995a)
	SO_2	USEPA AP-42 Volume II: Mobile Sources (USEPA 1995a)
Produced Water Tank Batteries	VOC	TANKS 4.09 based on Analysis of Condensate
	HAP	Mass Fraction of VOC based on Analysis of Condensate
Gas-fired Compression Engines	NO_X	Engine Manufacturer Specifications
	CO	
	VOC	
	$PM_{10}/PM_{2.5}$	USEPA AP-42 Volume I: Stationary Sources *Chapter 3.2* (USEPA 2000)
	SO_2	Mass balance of fuel sulfur [20 ppmw fuel sulfur]
	HAP	USEPA AP-42 Volume I: Stationary Sources *Chapter 3.2* (USEPA 2000)

Source: Air Quality Technical Support Document (**Appendix G**).

The air quality model AERMOD was used to evaluate impacts on air quality in the near-field. Several scenarios, including various well spacing and drill density plans, were evaluated to determine their projected impacts on the near-field. A square mile area was used to characterize the scenario sources arrangement, and impacts were calculated within that area and at the boundary of the square mile area. For drilling operations, it was assumed that ***up to four*** drill rig***s*** would operate in this area at any one time. ***Annual impacts from drilling operations were based on the assumption that 64 wells could be drilled in a square mile to accommodate the proposed 10-acre downhole spacing.*** For operations, the source arrangement depicted wells located on a 10-, 20-, and 40-acre spacing. For compression, a single compressor station was sited in the area and impacts were calculated in the near-field.

The CALPUFF modeling system was used to estimate impacts on visibility (regional haze), air quality, and acid deposition in areas 50 kilometers (km) or more from the development area. The Models-3 Community Multiscale Air Quality (CMAQ) model was used to evaluate impacts on ambient air ozone in the region.

An inventory of actual emissions developed specifically for this analysis were input to the AERMOD and CALPUFF models to analyze compliance with the NAAQS and evaluate impacts to regional haze, acid deposition, and acid neutralizing capacity at sensitive lakes in Class I areas. Comparison of impacts to PSD increments is provided for informational purposes only; this study does not represent a PSD increment-consumption analysis. The inventory for the CMAQ ozone modeling utilized actual project base year emissions along with emissions from other sources (i.e., electric generation, motor vehicles, and biogenics).

The CAA lists HAPs that could be emitted during project operations: primarily BTEX (benzene, toluene, ethyl benzene, and xylene) from the well dehydrators and formaldehyde from the pipeline compressor engines. Control of these and other HAPs would be achieved through compliance with applicable MACT standards. HAP emissions for each activity were developed on a per unit basis and were based on approved emissions factors, mass balance, or process simulation, where appropriate. Site-specific supporting information such as operation schedules, equipment specification, and physical and chemical properties of fuel and materials were used to develop the emissions inventory for the various alternatives. Where site-specific information was not available, the analysis used published references or assumptions based on professional experience as described in the Technical Support Document (**Appendix G**).

NESHAP and MACT regulations for oil and natural gas production facilities include provisions for ethylene glycol dehydrators and vents, storage vessels with flash emissions, and ancillary equipment. Under these provisions, any source that emits or has the potential to emit 10 tpy or more of any HAP is considered a major source; would require an operating permit under Title V of the CAA; and must install and operate control equipment to control air emissions. Under these same provisions, glycol dehydration units emitting less than 1 tpy benzene are considered "small," and would not require controls under MACT rules.

Ambient air concentrations of HAPs were determined based on these emissions rates using the same AERMOD model scenarios used for near-field criteria pollutant analysis. These ambient concentrations were compared to the USEPA Toxic Screening Levels (TSLs) to determine if any adverse impact would be predicted from project-related source emissions.

Based on the minimal content of hydrogen sulfide (H_2S) in the natural gas found in the GNBPA, potential H_2S impacts would be negligible. However, should H_2S be encountered, operations on federal or Indian leases would be regulated by Onshore Oil and Gas Order No. 6 (Hydrogen Sulfide Operations). This order requires monitoring of H_2S beginning at levels of 10 ppm at each drilling well (40 CFR part 63, subpart HH §63.760[b][1] through [4]; and 40 CFR part 63, subpart A of the General Provisions, effective June 17, 1999). Should H_2S levels increase, specific drilling and production equipment, along with drilling and public protection plans, would be required ***under Onshore Order No. 6 in zones where H_2S can reasonably be expected to be present at concentrations of 100 ppm or more.***

The analysis was based on several conservative assumptions, including:

- Maximum measured and/or estimated background criteria air pollutant concentrations were assumed to occur at all locations in the region throughout the life of the project.
- All existing emissions sources were assumed to operate at their reasonably foreseeable emission rates simultaneously throughout the life of the project. Given the number of sources included in this analysis, the probability of such a scenario actually occurring over an entire year (or even 24 hours) is small. While this assumption is typically used in modeling analyses, the resulting predicted impacts would be overstated.
- For the near-field modeling, total predicted short-term air pollutant impact concentrations were assumed to be the sum of the first maximum background concentration, plus the maximum modeled

concentrations, which actually would occur under very different meteorological conditions and would not be likely to coincide.

- The HAP analyses assumed all existing equipment would continue to operate simultaneously at the assumed emission levels continuously throughout the life of the project. ***Since no data are available to characterize HAP concentrations in the vicinity of the GNBPA, no background HAP concentrations were assumed for near-field modeling.***

4.1.1 No Action Alternative

On BLM-administered lands, current management plans would continue to guide oil and natural gas exploration and development activity. Air quality effects for the No Action Alternative would include an increase in air pollutant emissions resulting from drill and development projects previously approved.

Emissions for the No Action Alternative are represented by the 2018 Projected Baseline, specifically including the WRAP III data for the Uinta and Piceance basins, and the WRAP II data for other basins.

4.1.1.1 Impacts on Air Quality

The USEPA dispersion model AERMOD was used to predict maximum potential near-field air quality impacts from existing emission sources, which would continue to operate under the No Action Alternative. As of October 2007, there were 1,102 undrilled wells within the GNBPA that have been described in approved NEPA decision documents or identified in the ***UDOGM*** database. The analysis results identify predicted air pollutant concentrations in the vicinity of ***producing*** wells ***(drill rigs),*** compressor engines, ***and related oil and gas facilities. Specific modeling scenarios for the near-field impact analysis are discussed in more detail in Appendix G.***

CALPUFF modeling was used to predict impacts at distant ***receptors*** (greater than 50 km from the GNBPA), mandatory federal PSD Class I areas for comparison with applicable air quality standards, PSD increments, HAP exposures, visibility standards, and atmospheric deposition (**Appendix G**).

Because this alternative includes wells that have not yet been drilled, there would be construction-related air quality impacts. Construction emissions would occur during road and well pad construction, well drilling, and well completion testing. In addition, particulate matter ($PM_{2.5}$ and PM_{10}) concentrations likely would increase during construction. Potential SO_2 emissions would be generated by drilling rigs and other diesel engines used during rig-up, drilling, and completion operations (sulfur being a trace element in diesel fuel). Maximum air pollutant emissions from each well would be temporary (i.e., occurring only during the construction period), would occur in isolation, and would not significantly interact with adjacent well locations. Since construction emissions would be temporary, PSD increments are not applicable.

Near-field modeling was conducted to determine the impacts from simultaneous operation of drill rigs on adjacent pads spaced at 400-meter intervals. This modeling assumed drill rigs (each with two drill rig engines and one rig boiler) operating simultaneously on each of four adjacent pads. Both Tier 2 and Tier 4 drill rig engines were modeled, with the data shown separately in Table 4.1-4. Modeling for the single completion rig engine on four adjacent pads was conducted separately and showed lower impacts than the scenario with four drill rigs.

The maximum impacts of criteria pollutants in the near-field for this alternative are presented in Table 4.1-4. As shown in Table 4.1-4, the near-field modeled impacts would be in compliance with the NAAQS.

Table 4.1-4 Air Quality Impacts for Criteria Air Pollutants in the Near-field, No Action Alternative

Pollutant	Standard	Modeled Impact[1] (µg/m^3)	Background Concentration (µg/m^3)	Total Impact (µg/m^3)	NAAQS / SAAQS (µg/m^3)
NO_2	*1-hour*[2]	*137.1 (106.9)*	*N/A*[3]	*157.2 (125.6)*	*188*
	Annual[4]	*7.7 (2.0)*	*9.0*	*16.7 (11.0)*	100
CO	1-hour	*399*	6,325	6,*724*	40,000
	8-hour	*251*	3,910	4,*161*	10,000
SO_2	*1-hour*[5]	*2.6*	*21.7*	*24.3*	*196*
	3-hour	*1.9*	*16.7*	*18.6*	1,300
	24-hour	*0.9*	*5.9*	*6.8*	365
	Annual	*0.1*	*1.5*	*1.6*	80
PM_{10}	24-hour	*4.5 (0.7)*	*18*	*22.5 (18.7)*	150
$PM_{2.6}$	24-hour	*4.5 (0.7)*	*21.6*	*26.1 (22.3)*	35
	Annual	*0.0 (0.0)*	*12.3*	*12.3 (12.3)*	15

[1] *Modeled results are based on Tier 2 engine emission factors; results in parentheses reflect Tier 4 engine emission factors.*

[2] *Modeled impacts are the 5-year average 98th percentile daily maximum.*

[3] *1-hour NO_2 modeling used background concentrations that vary by season and hour of day.*

[4] *For annual averaging period, predicted concentration does not include a reduction from NO_X to NO_2. All NO_X is presumed to be NO_2.*

[5] *Modeled impacts are the 5-year average 99th percentile daily maximum.*

Source: Air Quality Technical Support Document (Appendix G; *Tables 5-11, 5-12, and 5-13*).

Comparison of modeled HAP concentrations against USEPA TSLs and Reference Concentrations (RfC) indicates no adverse impacts from emissions of HAPs from project sources. The maximum concentrations are predicted from the 10-acre production scenario (64 operating wells per section) for all pollutants. These results are shown in Table 4.1-5.

Table 4.1-5 Air Quality Impacts for HAPs in the Near-field, No Action Alternative

Pollutant/Averaging Period	Concentration per Production Well Density (µg/m^3)			Non-Carcinogenic RfC[1] (µg/m^3)	TSL[2] (µg/m^3)
	10-Acre Spacing	20-Acre Spacing	40-Acre Spacing		
Benzene					
24-hour	*5.25*	*4.14*	*2.99*	-	*53.3*
Annual	*1.55*	*1.22*	*0.71*	*30*	-
Ethylbenzene					
24-hour	*0.32*	*0.26*	*0.18*	-	*14,473*
Annual	*0.17*	*0.13*	*0.08*	*1,000*	-

Appendix H

Regulatory Analysis

Regulatory Analysis

Applicable and potentially applicable Federal regulations for the Antelope Flats / Sand Wash Compressor Station / South Central Tank Battery (the Facility) are discussed below:

40 CFR 52 – Prevention of Significant Deterioration (PSD)

Subpart A, General Provisions describe general requirements for pre-construction review and permitting for major sources under the PSD program. Based on the potential to emit of the Facility, the Antelope Flats / Sand Wash Compressor Station is a not PSD major source and the regulations are therefore not applicable.

40 CFR 60 - New Source Performance Standards (NSPS)

Subpart A contains general requirements for notification, testing and reporting for the NSPS program. The subpart applies to each facility that has an affected source as defined under another subpart. There are affected sources at the Facility under Part 60, Subpart A does apply.

Subpart Db, Standards of Performance for Small Industrial, Commercial, Institutional Steam Generating Units, applies to steam generating units having a capacity greater than 100 MMBtu/hr that are construction, reconstructed or modified after June 9, 1989. No heater located at the facility is rated greater than 100 MMBTU/hr, therefore, NSPS Subpart Db is not applicable.

Subpart Dc, Standards of Performance for Small Industrial, Commercial, Institutional Steam Generating Units, applies to steam generating units having a capacity between 10 MMBtu/hr and 100 MMBtu/hr that are construction, reconstructed or modified after June 9, 1989. A steam generating unit is defined, by rule, as follows:

> *"Steam generating unit means a device that combusts any fuel and produces steam or heats water or any other heat transfer medium. This term includes any duct burner that combusts fuel and is part of a combined cycle system. This term does not include process heaters as defined in this subpart."*

No heater located at the facility is rated at greater than 10 MMBTU/hr, therefore, NSPS Subpart Dc is not applicable.

Subpart K, Standards of Performance for Storage Vessels for Petroleum Liquids for Construction, Reconstruction, or Modification Commenced after June 11, 1973, and Prior to May 19, 1978. The storage vessels at the facility were constructed after May 19, 1978; therefore, NSPS Subpart K is not an applicable regulation for the Facility.

Subpart Ka, Standards of Performance for Storage Vessels for Petroleum Liquids for Construction, Reconstruction, or Modification Commenced after May 1, 1978, and Prior to July 23, 1984. The storage vessels at the Facility were constructed after July 23, 1984; therefore, NSPS Subpart Ka is not an applicable regulation for the Facility.

Subpart Kb, Standards of Performance for VOL Storage Vessels, regulating volatile organic liquid storage vessels having a storage capacity greater than 75 m^3 (19,815 gallons), constructed after July 23, 1984. VOL storage vessels at the Facility have a capacity less than 75 m^3 but records of tanks size have to be kept, therefore this subpart is applicable.

Subpart GG, Standards of Performance for Turbines –applies to all stationary gas turbines with a heat input at peak load equal to or greater than 10.7 gigajoules (10 million Btu) per hour, based on the lower

heating value of the fuel fired and constructed, modified, or reconstructed after October 3, 1977. There are no gas turbines at the Facility therefore this subpart is not applicable.

Subpart KKK, Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants, applies to affected facilities in onshore natural gas processing plants. The Facility is not a natural gas processing facility, as defined in §60.631; therefore, this subpart is not applicable.

Subpart LLL, Standards of Performance for Onshore Natural Gas Processing: SO2 emissions, applies to facilities that process natural gas and have sweetening units. The Facility is not a natural gas processing facility and does not have a sweetening unit; therefore, NSPS Subpart LLL is not an applicable regulation at the current time.

Subpart VV, Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry, this subpart applies to affected facilities in the synthetic organic chemicals manufacturing industry. The Facility is not, by rule definition, a synthetic organic chemical manufacturing facility. Therefore, NSPS Subpart VV is not an applicable regulation.

Subpart IIII, Standards of Performance for Stationary Compression Ignition (CI) Internal Combustion Engines, applies to manufacturers, owners, and operators of stationary compression ignition internal combustion engines. There are no CI engines installed at the facility at this time; therefore, NSPS Subpart IIII is not an applicable regulation for The Facility.

Subpart JJJJ, Standards of Performance for Stationary Spark Ignition (SI) Internal Combustion Engines, applies to manufacturers, owners, and operators of stationary SI internal combustion engines. There are SI internal combustions engines that were manufactured after July 1, 2007; therefore, NSPS Subpart JJJJ is applicable to The Facility (engines ATF 3, ATF 5, and ATF 6.).

Subpart OOOO Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution. This subpart establishes emissions standards and compliance schedules for the control of VOCs and SO2 emissions from affected facilities that commenced construction, modification or reconstruction after August 23, 2011.The rule applies to compressors located between the well head and the city gate. The are no new compressors that were installed after August 23,2011 and therefore this Facility is not subject to this rule.

40 CFR 61 - National Emission Standards for Hazardous Air Pollutants (NESHAP)

Subpart V, National Emission Standard for Equipment Leaks (Fugitive Emission Sources) applies to sources that are intended to operate in volatile hazardous air pollutant (VHAP) service. Engineering judgment based on the gas composition and process knowledge demonstrates that the percent VHAP content can be reasonably expected never to exceed 10 percent by weight; therefore Subpart V is not an applicable regulation for the Facility.

40 CFR 63 - National Emission Standards for Hazardous Air Pollutants (NESHAP)

Subpart A contains general requirements for notification, testing and reporting for the NESHAP program. The subpart applies to each facility that has an affected source as defined under another subpart. As The Facility will have units subject to one or more standards under Part 63, Subpart A applies to the Facility.

Subpart HH, National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities, applies to glycol dehydration units, storage vessels with potential for flash emissions, and ancillary equipment operating in volatile hazardous air pollutant service that is located at a natural gas processing plant which is a major source of HAPS. The Facility is not a natural gas processing plant therefore Subpart HH is not applicable to the facility.

Subpart HHH, National Emission Standards for Hazardous Air Pollutants from Natural Gas Transmission and Storage Facilities, applies to owners and operators of natural gas transmission and storage facilities that transport or store natural gas prior to entering the pipeline to a local distribution company or to a final end user (if there is no local distribution company), and that are major sources of hazardous air pollutants (HAP) emissions as defined in § 63.1271. The Facility is not a transmission or storage facility therefore Subpart HHH does not apply.

Subpart EEEE, National Emission Standards for Hazardous Air Pollutants: Organic Liquids Distribution (Non-Gasoline) establishes national emission limitations, operating limits, and work practice standards for organic hazardous air pollutants emitted from organic liquids distribution (non-gasoline) operations at major sources of HAP emissions. The Facility is not an organic liquids distribution operation; therefore Subpart EEEE is not applicable.

Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE), establishes national emission limitations and operating limitations for HAPs emitted from stationary reciprocating internal combustion engines, and requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations. The Facility has Subpart ZZZZ stationary RICE units (engines ATF 1, ATF 2, ATF 4, and SNW 1), but because it is below the potential to emit threshold for any single, or combination, of any HAPs, the Facility is an area source under Subpart ZZZZ. (The Facility is also subject to 40 CFR part 60, subpart JJJJ (SI NSPS) under the area source amendment for engines ATF #3, #5, #6.)

40 CFR 64 – Compliance Assurance Monitoring (CAM)

This regulation applies to a pollutant specific emissions unit at a major source that is required to obtain a part 70 or 71 permit if the unit meets certain criteria. CAM does not apply for initial Title V applications.

40 CFR 68 – Chemical Accident Prevention

Subpart A contains general requirements for sources that have more than a threshold quantity of a regulated substance in a process and the requirements for a Risk Management Plan (RMP). The Facility is not subject to part 68.

40 CFR 82 – Stratospheric Ozone and Climate Protection

Subpart A applies to any person that produces, transforms, destroys, imports or exports a controlled substance or imports or exports a controlled product. The Facility does not conduct any of these activities; therefore this is not an applicable regulation.

Subpart F applies to any person servicing, maintaining, or repairing appliances using ozone depleting substances. This subpart also applies to persons disposing of appliances, including small appliances and motor vehicle air conditioners. In addition, this subpart applies to refrigerant reclaimers, technician certifying programs, appliance owners and operators, manufacturers of appliances, manufacturers of recycling and recovery equipment, approved recycling and recovery equipment testing organizations, persons selling class I or class II refrigerants or offering class I or class II refrigerants for sale, and persons purchasing class I or class II refrigerants. Subpart F is not an applicable regulation.

Subpart H Halon Fire Emission Reduction - applies to any person testing, servicing, maintaining, repairing or disposing of equipment that contains halons or using such equipment during technician training. This subpart also applies to any person disposing of halons; to manufacturers of halon blends; and to organizations that employ technicians who service halon containing equipment. Halon is not used at the facility.

40 CFR 98 – Green House Gas Reporting

Subpart A –General Provisions – applies to a facility that contains any source category (as defined in subparts C through JJ of this part) that is listed in this paragraph (a)(2) in any calendar year starting in 2010 and that emits 25,000 metric tons CO2e or more per year in combined emissions from stationary fuel combustion units, miscellaneous uses of carbonate, and all source categories that are listed in this regulation. The Facility does contain stationary fuel combustion sources as defined in Subpart C, and the GHG emissions for 2011 are estimated to be more than 25,000 metric tons CO2. Therefore, the facility is subject to this subpart.

Smith, Claudia

From: Schlichtemeier, Chad <Chad.Schlichtemeier@anadarko.com>
Sent: Thursday, March 16, 2017 8:53 AM
To: Smith, Claudia
Subject: Re: MNSR Permit Application for Antelope Flats/Sand Wash/South Central Tank Battery

It will just be you and I

Sent from my iPhone

Chad Schlichtemeier
Onshore E&P HSE Air Manager
Anadarko Petroleum Corporation
Office 720/929-6867
Cell 307/631-2134

> On Mar 16, 2017, at 8:42 AM, Smith, Claudia <Smith.Claudia@epa.gov> wrote:
>
> Will you all be together, or should I provide a conference line?
>
> Thanks,
>
> Claudia
>
> -----Original Message-----
> From: Schlichtemeier, Chad [mailto:Chad.Schlichtemeier@anadarko.com]
> Sent: Thursday, March 16, 2017 8:41 AM
> To: Smith, Claudia <Smith.Claudia@epa.gov>
> Subject: Re: MNSR Permit Application for Antelope Flats/Sand Wash/South Central Tank Battery
>
> Yes please pick a time slot that works good for you. Thank you
>
> Sent from my iPhone
>
> Chad Schlichtemeier
> Onshore E&P HSE Air Manager
> Anadarko Petroleum Corporation
> Office 720/929-6867
> Cell 307/631-2134
>
>> On Mar 16, 2017, at 8:35 AM, Smith, Claudia <Smith.Claudia@epa.gov> wrote:
>>
>> Yes, do you need me to send an invite?
>>
>> Thanks,
>>
>> Claudia
>>
>> -----Original Message-----
>> From: Schlichtemeier, Chad [mailto:Chad.Schlichtemeier@anadarko.com]
>> Sent: Thursday, March 16, 2017 6:25 AM
>> To: Smith, Claudia <Smith.Claudia@epa.gov>

>> Subject: Re: MNSR Permit Application for Antelope Flats/Sand Wash/South Central Tank Battery
>>
>> Morning Claudia
>>
>> Does a call between 1-3 tomorrow work for you? Half hour should be plenty. Thanks Chad
>>
>> Sent from my iPhone
>>
>> Chad Schlichtemeier
>> Onshore E&P HSE Air Manager
>> Anadarko Petroleum Corporation
>> Office 720/929-6867
>> Cell 307/631-2134
>>
>>> On Mar 15, 2017, at 4:32 PM, Smith, Claudia <Smith.Claudia@epa.gov> wrote:
>>>
>>> I'm pretty booked up tomorrow (Thursday 3/16). Are there any times on Friday (3/17) that would work? I have a call from 9:30 to 10:30 MT, but otherwise am open.
>>>
>>> Thanks,
>>>
>>> Claudia
>>>
>>> -----Original Message-----
>>> From: Schlichtemeier, Chad [mailto:Chad.Schlichtemeier@anadarko.com]
>>> Sent: Wednesday, March 15, 2017 4:27 PM
>>> To: Smith, Claudia <Smith.Claudia@epa.gov>
>>> Cc: Edrich, John [Tetra Tech Inc.] <John.Edrich@anadarko.com>
>>> Subject: Re: MNSR Permit Application for Antelope Flats/Sand Wash/South Central Tank Battery
>>>
>>> Thanks Claudia, I'm out this week but would be available for a call first thing tmw if that works on your end.
>>>
>>> Thanks
>>>
>>> Sent from my iPhone
>>>
>>> Chad Schlichtemeier
>>> Onshore E&P HSE Air Manager
>>> Anadarko Petroleum Corporation
>>> Office 720/929-6867
>>> Cell 307/631-2134
>>>
>>>> On Mar 15, 2017, at 3:53 PM, Smith, Claudia <Smith.Claudia@epa.gov> wrote:
>>>>
>>>> Chad,
>>>>
>>>> I agree it is a good idea to have a discussion and submit a revised clean application. My response to John regarding engine specific emission limits being in the CD were just off the top of my head, thinking about what went in to the Cottonwood permit, but I did not have the CD in front of me at the time.
>>>>
>>>> Thanks,
>>>>
>>>> Claudia
>>>>
>>>> -----Original Message-----
>>>> From: Schlichtemeier, Chad [mailto:Chad.Schlichtemeier@anadarko.com]

>>>> Sent: Wednesday, March 15, 2017 11:51 AM
>>>> To: Edrich, John [Tetra Tech Inc.] <John.Edrich@anadarko.com>
>>>> Cc: Smith, Claudia <Smith.Claudia@epa.gov>
>>>> Subject: Re: MNSR Permit Application for Antelope Flats/Sand Wash/South Central Tank Battery
>>>>
>>>> Hi Claudia
>>>>
>>>> I would like to step back and discuss whether a synthetic minor permit for any pollutant is required. Oxidation catalyst are required on all engines meeting a 93% control efficiency by the CD. As shown in your email, this limits the PTE of the facility well below the 250 tpy threshold. Therefore, incorporating the requirements of the CD into a permit provides the enforceable requirements to limit the PTE. Sorry for the back and forth but as we discussed the purpose of the application is to bring forward the CD requirements and not create new requirements. For Cottonwood, we had to incorporate limits because the oxidation catalyst were required by ZZZZ, which EPA does not recognize as being enforceable for CO. If it would be cleaner, we can resubmit the application.
>>>>
>>>> Let me know what you think.
>>>>
>>>> Thanks, Chad
>>>>
>>>> Chad Schlichtemeier
>>>> Onshore E&P HSE Air Manager
>>>> Anadarko Petroleum Corporation
>>>> (720)929-6867 - Office
>>>> (307)631-2134 - Cell
>>>>
>>>> Sent from my iPad
>>>>
>>>> On Mar 15, 2017, at 9:20 AM, Edrich, John [Tetra Tech Inc.]
<John.Edrich@anadarko.com<mailto:John.Edrich@anadarko.com>> wrote:
>>>>
>>>> Hi Claudia,
>>>>
>>>> Thanks for the information. The question was based on a read of Paragraph 77 of the Consent Decree, which states
>>>>
>>>> VI. Limits on Potential to Emit
>>>> 77. The PTE for CO and formaldehyde for all RICE in the Uinta Basin with a nameplate rating of 500 hp or greater shall be limited by the requirement that emissions be controlled by catalysts which meet the destruction efficiency for CO set forth in Paragraphs 41 and 50 and shall be federally enforceable on that basis.
>>>>
>>>> Paragraphs 41 and 50, of course, are the requirement to install oxidation catalyst achieving 93% destruction efficiency. The CD contains no other emission limits on these engines, such as g/hp-hr or tpy, etc.
>>>>
>>>> Thanks,
>>>>
>>>> John Edrich
>>>> GNB Air Quality Support
>>>> Anadarko Petroleum Corporation
>>>> Direct: 720-929-3146
>>>> Mobile: 303-921-1010
>>>>
>>>> From: Smith, Claudia [mailto:Smith.Claudia@epa.gov]
>>>> Sent: Tuesday, March 14, 2017 4:30 PM
>>>> To: Edrich, John [Tetra Tech Inc.] <John.Edrich@anadarko.com<mailto:John.Edrich@anadarko.com>>
>>>> Subject: RE: MNSR Permit Application for Antelope Flats/Sand Wash/South Central Tank Battery
>>>>
>>>> John,

>>>>
>>>> According to EPA guidance, when permits require add-on controls operated at a specified efficiency level, in order to ensure that the efficiency condition is enforceable as a practical matter, permits should include those operating parameters and assumptions which we depended upon to determine that the control equipment would have a given control efficiency. Therefore, we would need to put directly into the permit the optimal catalyst inlet temperature ranges and pressure drop across the catalyst ranges specified by the manufacturer of the catalyst. I did not see that information for the engines in the application.
>>>>
>>>> Further, if the intent of the requested conditions is to appropriately limit potential to emit, defined as the product of a source's emission rate at maximum operating capacity, capacity utilization, and hours of operation, an operational limit (i.e. 93% CO reduction using oxidation catalyst) must be accompanied by an emission rate limitation over a certain time period, preferably as short as possible, but no more than on a monthly basis. Typically for limiting PTE from engines, we have used a g/hp-hr and/or lbs/hr limit associated with the operational limits.
>>>>
>>>> The CD contained both the 93% CO reduction, as well as the g/hp-hr emission limits. We could do lbs/hr limits if you believe it would be more practically achievable. A 93% CO reduction for the 2,370 hp engines would result in 0.91 lbs/hr, for instance. We could alternatively do rolling 12-month engine-specific limits in tpy, which would come to 3.98 tpy for each 2,370 hp engine.
>>>>
>>>> Below are links to our most often consulted guidance on limiting PTE:
>>>>
>>>> https://www3.epa.gov/ttn/atw/pte/june13_89.pdf
>>>>
>>>> https://www.epa.gov/sites/production/files/2015-07/documents/potoem.pdf
>>>>
>>>> "In general, practical enforceability for a source-specific permit term means that the provision must specify (1) a technically accurate limitation and the portions of the source subject to the limitation; (2) the time period for the limitation (hourly, daily, monthly, annually); and (3) the method to determine compliance including appropriate monitoring, record keeping and reporting."
>>>>
>>>> Thanks,
>>>>
>>>> Claudia
>>>>
>>>> From: Edrich, John [Tetra Tech Inc.] [mailto:John.Edrich@anadarko.com]
>>>> Sent: Tuesday, March 14, 2017 3:19 PM
>>>> To: Smith, Claudia <Smith.Claudia@epa.gov<mailto:Smith.Claudia@epa.gov>>
>>>> Subject: RE: MNSR Permit Application for Antelope Flats/Sand Wash/South Central Tank Battery
>>>>
>>>> Would we need to have an engine specific g/hp-hr emission limit? Or could the permit only specify 93% control based on pre- and post- catalyst CO concentrations?
>>>>
>>>> -John
>>>>
>>>>
>>>> From: Smith, Claudia [mailto:Smith.Claudia@epa.gov]
>>>> Sent: Tuesday, March 14, 2017 2:29 PM
>>>> To: Edrich, John [Tetra Tech Inc.] <John.Edrich@anadarko.com<mailto:John.Edrich@anadarko.com>>
>>>> Subject: RE: MNSR Permit Application for Antelope Flats/Sand Wash/South Central Tank Battery
>>>>
>>>> John,
>>>>
>>>> The engine detail sheets list a PTE g/hp-hr emission factors that are only 20% CO reduction. I assume you are looking to have engine limits that reflect 93% CO reduction (for instance the uncontrolled CO g/hp-hr for the 2,370 hp engines is listed as 2.50 g/hp-hr, so 93% reduction would result in an engine-specific limit of 0.17 g/hp-hr).
>>>>

>>>> Thanks,
>>>>
>>>> Claudia
>>>>
>>>> From: Edrich, John [Tetra Tech Inc.] [mailto:John.Edrich@anadarko.com]
>>>> Sent: Tuesday, March 14, 2017 2:23 PM
>>>> To: Smith, Claudia <Smith.Claudia@epa.gov<mailto:Smith.Claudia@epa.gov>>
>>>> Subject: RE: MNSR Permit Application for Antelope Flats/Sand Wash/South Central Tank Battery
>>>>
>>>> Claudia,
>>>>
>>>> Yes that is correct. Regardless of NSPS JJJJ requirements, we'll still need to meet the 93% CO reduction requirement of the Consent Decree.
>>>>
>>>> Thank you,
>>>>
>>>> John Edrich
>>>> GNB Air Quality Support
>>>> Anadarko Petroleum Corporation
>>>> Direct: 720-929-3146
>>>> Mobile: 303-921-1010
>>>>
>>>>
>>>>
>>>> From: Smith, Claudia [mailto:Smith.Claudia@epa.gov]
>>>> Sent: Tuesday, March 14, 2017 2:10 PM
>>>> To: Edrich, John [Tetra Tech Inc.] <John.Edrich@anadarko.com<mailto:John.Edrich@anadarko.com>>
>>>> Subject: RE: MNSR Permit Application for Antelope Flats/Sand Wash/South Central Tank Battery
>>>>
>>>> Thank you, John,
>>>>
>>>> For clarification, Anadarko still wants the permit to cover all seven engines, not just the four engines that are not subject to NSPS JJJJ? If so, is that because the NSPS JJJJ requirements alone do not meet the 93% CO reduction requirement?
>>>>
>>>> Thanks,
>>>>
>>>> Claudia
>>>>
>>>> From: Edrich, John [Tetra Tech Inc.] [mailto:John.Edrich@anadarko.com]
>>>> Sent: Tuesday, March 14, 2017 10:41 AM
>>>> To: Smith, Claudia <Smith.Claudia@epa.gov<mailto:Smith.Claudia@epa.gov>>
>>>> Subject: RE: MNSR Permit Application for Antelope Flats/Sand Wash/South Central Tank Battery
>>>>
>>>> Hello Claudia,
>>>>
>>>> I am forwarding this on behalf of Chad who is out on vacation this week.
>>>>
>>>> We agree that facility-wide emission limits are not needed.
>>>>
>>>> Regarding the Antelope Flats engines, in order to keep the Consent Decree (CD) requirements federally enforceable in the MNSR permit, we only need permit conditions specifying engines 500 hp or greater must be lean burn or achieve comparable emission reductions and be equipped with catalyst controls achieving at least 93% destruction efficiency for CO (CD language).
>>>>

>>>> We want to continue using annual JJJJ testing on the JJJJ engines and portable analyzer testing on the balance of the engines to demonstrate control efficiency and show the facility is under major source limits.
>>>>
>>>> Consistent with our comments on the draft permit for Cottonwood Wash, we are not seeking additional conditions or redundant language in the MNSR permit from NSPS JJJJJ or NESHAP ZZZZ, as the respective engines are already subject to the requirements of these Subparts.
>>>>
>>>> Hope this helps. Thanks for all of your effort helping us get these permits in place in order to terminate the CD.
>>>>
>>>>
>>>> John Edrich
>>>> GNB Air Quality Support
>>>> Anadarko Petroleum Corporation
>>>> Direct: 720-929-3146
>>>> Mobile: 303-921-1010
>>>>
>>>>
>>>>
>>>>
>>>> From: Smith, Claudia [mailto:Smith.Claudia@epa.gov]
>>>> Sent: Wednesday, March 08, 2017 4:51 PM
>>>> To: Schlichtemeier, Chad <Chad.Schlichtemeier@anadarko.com<mailto:Chad.Schlichtemeier@anadarko.com>>; Ohlhausen, Natalie <Natalie.Ohlhausen@anadarko.com<mailto:Natalie.Ohlhausen@anadarko.com>>
>>>> Subject: RE: MNSR Permit Application for Antelope Flats/Sand Wash/South Central Tank Battery
>>>>
>>>> Chad/Natalie,
>>>>
>>>> I also notice that 3 of the engines at ATF are subject to NSPS JJJJ with federally enforceable CO emission limits that you are complying with using oxidation catalysts. Therefore, should the permit only contain conditions for the other 4 engines that are only subject to the area source requirements of NESHAP ZZZZ, which does not require oxidation catalyst controls?
>>>>
>>>> Thanks,
>>>>
>>>> Claudia
>>>>
>>>> From: Smith, Claudia
>>>> Sent: Wednesday, March 08, 2017 4:10 PM
>>>> To: Schlichtemeier, Chad (Chad.Schlichtemeier@anadarko.com<mailto:Chad.Schlichtemeier@anadarko.com>) <Chad.Schlichtemeier@anadarko.com<mailto:Chad.Schlichtemeier@anadarko.com>>; Ohlhausen, Natalie (Natalie.Ohlhausen@anadarko.com<mailto:Natalie.Ohlhausen@anadarko.com>) <Natalie.Ohlhausen@anadarko.com<mailto:Natalie.Ohlhausen@anadarko.com>>
>>>> Subject: MNSR Permit Application for Antelope Flats/Sand Wash/South Central Tank Battery
>>>>
>>>> Chad/Natalie,
>>>>
>>>> While internal review is in process for the final MNSR permit for Cottonwood Wash, I have begun drafting the proposed MNSR permit for Antelope Flats/Sand Wash/South Central Tank Battery. The application requests facility-wide emission limits for NOX, CO, and VOC of 240 tpy each. Based on the emissions calculations provided, and considering the requested limits for the Cottonwood Wash CS permit, it does not appear that facility-wide emission limits are necessary for this permit and that unit-specific CO limits for the engines could serve to memorialize the CD requirements, along with conditions for the low-emission dehydrators and pneumatic controllers (similar to the revised conditions Anadarko suggested in the comments to the proposed permit for Cottonwood Wash).
>>>>
>>>> Can you please verify that you really want to request facility-wide VOC, NOX and CO emission limits?
>>>>

>>>> Thank you,
>>>>
>>>> Claudia Young Smith
>>>> Environmental Scientist
>>>> Air Program, Mail Code 8P-AR
>>>> US Environmental Protection Agency Region 8
>>>> 1595 Wynkoop Street
>>>> Denver, Colorado 80202
>>>>
>>>> Phone: (303) 312-6520
>>>> Fax: (303) 312-6064
>>>> http://www.epa.gov/caa-permitting/caa-permitting-epas-mountains-and-plains-region
>>>> **********
>>>>
>>>>
>>>> Click here for Anadarko's Electronic Mail Disclaimer<http://www.anadarko.com/notices/Pages/Electronic-Mail-Disclaimer.aspx>
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>>> Click here for Anadarko's Electronic Mail Disclaimer<http://www.anadarko.com/notices/Pages/Electronic-Mail-Disclaimer.aspx>
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> Click here for Anadarko’s Electronic Mail Disclaimer<http://www.anadarko.com/notices/Pages/Electronic-Mail-Disclaimer.aspx>

SMNSR-UO-000972-2016.001
027 - 2012.001
Replacement application (updated)

RECEIVED NOV 15 2016

Anadarko Uintah Midstream LLC
P.O. Box 173779, Denver, Colorado 80217-3779
720-929-6000 Fax 720-929-7000

November 7, 2016

Sent Via Certified Mail No.: 7014 3490 0001 8054 0305

Ms. Claudia Smith
U.S. EPA, Region 8
1595 Wynkoop Street, 8P-AR
Denver, CO 80202-1129

RE: Synthetic Minor NSR Permit Application under Part 49
Antelope Flats / Sand Wash Compressor Stations / South Central Tank Battery

Dear Ms. Smith:

Anadarko Uintah Midstream LLC (Anadarko) submitted on February 15, 2015 a revised permit application under Part 49 Minor NSR rules for the Antelope Flats / Sand Wash Compressor Stations / South Central Tank Battery in Uintah County, Utah. The revised application has been updated. Therefore, Anadarko Uintah Midstream LLC is submitting the attached application to reflect these changes. Please replace previously submitted information with this application. Anadarko is submitting this minor source application to establish federally enforceable limits as required by the Civil Action No. 07–CV–01034–EWN–KMT (KMG Consent Decree).

The attached application contains the following:

- Appendix A: EPA Form New
- Appendix B: EPA Form SYNMIN
- Appendix C: Process Description, Flow Diagram, and Plot Plan
- Appendix D: Emission Unit and Emission Control Descriptions
- Appendix E: Emission Summary
- Appendix F: Detailed Emission Calculations
- Appendix G: Ambient Air Quality Analysis
- Appendix H: Regulatory Analysis

Sincerely,

Anadarko Uintah Midstream LLC

Natalie Ohlhausen
Sr. HSE Representative

Enclosures

SMNSR-UO-00027-2012.001
Synthetic Minor NSR Permit
Replacement application (updated)

Anadarko Uintah Midstream LLC
P.O. Box 173779, Denver, Colorado 80217-3779
720-929-6000 Fax 720-929-7000

February 13, 2015

Sent Via Certified Mail No.: 7012 3460 0000 6485 6745

U.S. EPA, Region 8
1595 Wynkoop Street, 8P-AR
Denver, CO 80202-1129

RE: Synthetic Minor NSR Permit Application under Part 49
Antelope Flats / Sand Wash Compressor Stations / South Central Tank Battery

Dear Sir/Madam:

Anadarko Uintah Midstream LLC (Anadarko) submitted on September 4, 2012 a permit application under newly promulgated Part 49 Minor NSR rules for the Antelope Flats / Sand Wash Compressor Stations / South Central Tank Battery in Uintah County, Utah. The application has been updated. Therefore, Anadarko Uintah Midstream LLC is submitting the revised application to reflect these changes. Please replace previously submitted information with this application.

If you have any questions, or require additional information, please call me at (720) 929-6511 or via email at Katherine.Doolittle@Anadarko.com

Sincerely,

Anadarko Uintah Midstream LLC

Katherine Doolittle

Katherine Doolittle
Staff HSE Representative

Enclosures

GARY R. HERBERT
Governor

GREG BELL
Lieutenant Governor

Julie Fisher
Executive Director
Department of
Heritage & Arts

Utah Division of
State History

Brad Westwood
Director

September 10, 2013

Victoria Parker-Christensen
Environmental Engineer
Air Program
United States Environmental
Protection Agency – Region 8
1595 Wynkoop Street
Denver, CO 80202-1129

RE: Proposed Federal Clean Air Act Synthetic Minor New Source Review Permits on the Uintah and Ouray Indian Reservation

For future correspondence, please reference Case No. 13-1088

Dear Ms. Parker-Christensen:

The Utah State Historic Preservation Office received your request for our comment on the above-referenced undertaking on September 5, 2013. From the information you provided, it appears that no cultural resources were located in the undertaking's Area of Potential Effects. We concur with your determination of No Historic Properties Affected, §36CFR800.4(d)(1) for the undertaking.

This letter serves as our comment on the determinations you have made, within the consultation process specified in §36CFR800.4. If you have questions, please contact me at 801-245-7263 or Lori Hunsaker at 801-245-7241 *lhunsaker@utah.gov*.

Sincerely,

Chris Merritt, Ph.D.
Senior Preservation Specialist
cmerritt@utah.gov

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
DENVER, CO 80202-1129
Phone 800-227-8917
http://www.epa.gov/region08

SEP 09 2013

Ref: 8P-AR

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Honorable Gordon Howell, Chairman
Ute Indian Tribe
Uintah and Ouray Indian Reservation
P.O. Box 190
Fort Duchesne, Utah 84026

RE: Section 106 of the National Historic Preservation Act regarding Proposed Synthetic Minor New Source Review Permits on the Uintah and Ouray Indian Reservation

Dear Chairman Howell:

The U.S. Environmental Protection Agency Region 8 (EPA) is initiating consultation and coordination with the Ute Indian Tribe regarding potential impacts to historic, religious or cultural properties covered by section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations at 36 C.F.R. Part 800.

The EPA has received federal Clean Air Act (CAA) permit applications, as detailed in the enclosure, and is preparing draft synthetic minor New Source Review (NSR) air pollution control permits for seven existing natural gas production facilities within the exterior boundary of the Uintah and Ouray Indian Reservation in Uintah County, Utah. As required by the NHPA, we are assessing whether approving the permits would cause any impacts on these properties. The EPA permit issuance process includes public notice of a draft permit, opportunity for public comment, as well as administrative and judicial review provisions. A copy of the draft permit document and technical support document will be available on the internet during the public comment period at www.epa.gov/region8/air/permitting/pubcomment.html.

The permit applications request approval to transfer conditions from a federal consent decree into synthetic minor NSR permits. The synthetic minor NSR permits are intended only to incorporate allowable and requested emission limits and provisions from the associated federal consent decree and permit applications.

The EPA has made the finding "*No historic properties affected*" for the proposed synthetic minor NSR permit actions. The proposed permit actions do not authorize the construction of any new emission sources, or emission increases from existing units, nor do they otherwise authorize any other physical modifications to the associated facility or its operations. The emissions, approved at present, from each

existing facility will not increase due to the associated permit action and the emissions will continue to be well controlled at all times. This is an administrative action with no physical changes to the existing facilities or surrounding area. A map showing the locations of the facilities is enclosed with this letter.

We seek consultation with you concerning 1) how the Ute Indian Tribe wishes us to address the NHPA consultation process, 2) the presence of historic properties within the areas of potential effects (APE) and 3) our proposed determination as to the potential effects of these proposed permit actions. We want to ensure that we fulfill our obligations under the NHPA and that we are working with the appropriate representatives of the Tribe on air permitting matters. If a tribe does not have a federally designated Tribal Historic Preservation Officer (THPO), which is the case for the Ute Indian Tribe, then federal agencies consult directly with the State Historic Preservation Officer (SHPO) concerning undertakings that may affect historic properties on tribal lands. The EPA initiated consultation with the Utah SHPO on August 30, 2013. The enclosed letter to the Utah SHPO describes the specific information for the facility and seeks their concurrence with our proposed determination.

In addition, the NHPA and its implementing regulations require that the agencies consult with federally recognized tribes to ensure that tribes attaching religious or cultural significance to historic properties that may be affected by an undertaking have a reasonable opportunity to participate in the process. Therefore, please advise us as to the Tribe's preference for the process we should follow for the NHPA. Would you prefer that we communicate only with the SHPO, do you have a NHPA designated representative for the Tribe, or would you prefer that we communicate with the Tribal government as well as the SHPO and/or NHPA designated representative concerning any NHPA matters on the Reservation?

Second, to ensure that we are considering all relevant information, we would appreciate your assistance in identifying any historic properties of traditional religious or cultural importance to the Ute Indian Tribe that may be located within the APE that may be directly or indirectly affected. The area is described in the enclosed letter. If the Tribe has any information concerning such properties, please contact us.

We understand the Ute Indian Tribe may not wish to divulge information about historic properties that have religious or cultural significance. The NHPA and its regulations provide a means to consider protecting information about a historic property if public disclosure might cause harm to the property, a significant invasion of privacy or impediments to traditional religious practices. We are open to working with the Tribe to seek to address any concerns that you may have regarding the sensitivity of information. If any properties are determined to be historic properties under the NHPA, the EPA would propose to consult with you on possible measures to avoid or minimize potential adverse effects.

Finally, based on the information we have reviewed to date, we are proposing to determine that there are no historic properties within the APE for the project, and therefore, that no historic properties will be affected as a result of issuing this permit. If you have any concerns regarding our determination or additional information about historic properties related to this permit, please notify me in writing within the 30 day time period described at 36 C.F.R. § 800.3(c)(4). If we have not received comments from you within 30 days, we will assume you concur with our finding.

If you have questions or comments, please contact me directly at (303) 312-6611 or your staff can contact Victoria Parker-Christensen, Air Program, at (303) 312-6441 or parker-christensen.victoria@epa.gov. We are available to meet with you or your representatives to consult further regarding this permit action.

Sincerely,

Derrith R. Watchman-Moore
Assistant Regional Administrator
Office of Partnerships and Regulatory Assistance

Enclosures:

cc: Cover Letter Only:
Ronald Wopsock, Vice-Chairman, Ute Indian Tribe
Phillip Chimburas, Councilman, Ute Indian Tribe
Stewart Pike, Councilman, Ute Indian Tribe
Tony Small, Councilman, Ute Indian Tribe
Bruce Ignacio, Councilman, Ute Indian Tribe
Manuel Myore, Energy, Minerals, and Air Director, Ute Indian Tribe
Reannin Tapoof, Executive Assistant, Ute Indian Tribe

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
DENVER, CO 80202-1129
Phone 800-227-8917
http://www.epa.gov/region08

AUG 3 0 2013

Ref: 8P-AR

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Wilson Martin, Director
Utah State History
300 South Rio Grande Street
Salt Lake City, UT 84101

RE: Section 106 of the National Historic Preservation Act regarding Proposed Federal Clean Air Act Synthetic Minor New Source Review Permits on the Uintah and Ouray Indian Reservation

Dear Mr. Martin:

The Environmental Protection Agency Region 8 (EPA) received federal Clean Air Act (CAA) permit applications and is preparing proposed synthetic minor New Source Review (NSR) air pollution control permits for several existing natural gas production facilities on the Uintah and Ouray Indian Reservation in Uintah County, Utah. To comply with our obligations under Section 106 of the National Historic Preservation Act and its implementing regulations at 36 C.F.R. Part 800, we are consulting with you concerning our finding as to the potential effects and we are seeking any information you may have as to whether there are any historic properties within the area of potential effects for these facilities.

The permit applications request approval to transfer conditions from a federal consent decree into synthetic minor NSR permits. The synthetic minor NSR permits are intended only to incorporate allowable and requested emission limits and provisions from the associated federal consent decree and permit applications.

The EPA has made the finding "*No historic properties affected*" for the proposed synthetic minor NSR permit actions. The proposed permit actions do not authorize the construction of any new emission sources, or emission increases from existing units, nor do they otherwise authorize any other physical modifications to the associated facility or its operations. The emissions, approved at present, from each existing facility will not increase due to the associated permit action and the emissions will continue to be well controlled at all times. This is an administrative action with no physical changes to the existing facilities or surrounding area. A map showing the locations of the facilities is enclosed with this letter.

The following table lists the applicant, facility and location affected by each proposed permit action.

Applicant/Facility	Location
Chipeta Processing LLC Natural Buttes Compressor Station	SW S24, T9S, R21E Lat. 40.017, Long. -109.508
Anadarko Uintah Midstream, LLC Cottonwood Compressor Station	S27, T9S, R21E Lat. 40.009722, Long. -109.543889
Anadarko Uintah Midstream, LLC Antelope Flats/Sand Wash Compressor Station	NE S32, T9S, R22E Lat. 39.995. Long. -109.4712
XTO Energy Inc. RBU 11-18F	NESW S18, T10S, R20E Lat. 39.94625, Long. -109.71063
XTO Energy Inc. Wild Horse Bench	NESE S26, T11S, R19E Lat. 39.88899, Long. -109.7342
XTO Energy Inc. RBU 9-17E	NESE S17, T10S, R19E Lat. 39.94387, Long. -109.79873

If you have any concerns regarding our determination, please notify me in writing within the 30 day time period described at 36 C.F.R. § 800.3(c)(4). If we haven't heard back from you within 30 days, we will assume you concur with our finding. In addition, please send any comments or information concerning historic properties within the project areas to me within 30 days, so as to ensure that we will have ample time to review them. You can reach me by phone at (303) 312-6441 or email at parker-christensen.victoria@epa.gov. Thank you for your assistance.

Sincerely,

Victoria Parker-Christensen
Environmental Engineer
Air Program

Enclosure

cc: Lori Hunsaker, Deputy SHPO, Antiquities

Uintah-Ouray Indian Reservation Proposed Clean Air Act Synthetic Minor New Source Review (SM NSR) Permit Actions

City Boundary

SM NSR Permit Applicants

Date: August 30, 2013

Map Projection: UTM, Meters, Zone 13N, NAD83.

Data Sources:

Base - Microsoft Bing web service (2012).

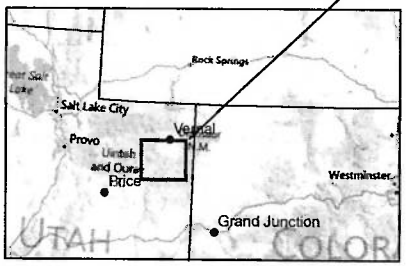
Disclaimer: EPA makes no claim regarding the accuracy or precision of these data. Questions concerning the data should be referred to the source agency. This map does not necessarily represent EPA's position on any Indian Country boundaries or the jurisdictional status of any specific location.

N

0 4.5 9 Miles

0 5 10 Kilometers

Area Enlarged



EPA United States Environmental Protection Agency

REGION 8
serving the states & tribes of Colorado, Montana, Wyoming, Utah, North Dakota & South Dakota

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SEP 25 2012

Ref: 8P-AR

The Honorable Irene Cuch, Chairwoman
Ute Indian Tribe
Uintah and Ouray Indian Reservation
P.O. Box 190
Fort Duchesne, UT 84026

Re: Notification of Consultation and Coordination on Issuance of Synthetic Minor New Source Review Permits for Proposed Natural Gas Compression Facilities on the Uintah and Ouray Indian Reservation

Dear Chairwoman Cush:

The U.S. Environmental Protection Agency Region 8 (EPA Region 8) is initiating consultation and coordination with the Ute Indian Tribe on issuance of proposed permits to approve the construction of seven (7) pipeline compressions stations within the exterior boundaries of the Uintah and Ouray Indian Reservation. In accordance with the Federal Tribal New Source Review Clean Air Act (CAA) air pollution control permitting program found at 40 CFR Part 49, the following companies are currently requesting a pre-construction permit with federally enforceable synthetic minor air pollutant emission limits:

Summit Gas Gathering, LLC - RBU 11-18F Compressor Station
Summit Gas Gathering, LLC - West Willow Creek Compressor Station
Summit Gas Gathering, LLC - RBU 9-17E Compressor Station
Summit Gas Gathering, LLC - Wild Horse Bench Compressor Station
Anadarko Petroleum Corporation - Antelope Flats/Sand Wash Compressor Station & Central Tank Battery
Anadarko Petroleum Corporation - Cottonwood Wash Compressor Station
Chipeta Processing, LLC - Natural Buttes Compressor Station

These permits will provide the facilities the opportunity to avoid the major source air pollution control permitting requirements of the Prevention of Significant Deterioration pre-construction permitting program found at 40 CFR Part 52.

This consultation and coordination process is being conducted based on the *EPA Policy on Consultation and Coordination with Indian Tribes* (www.epa.gov/tribal/consultation/consult-policy.htm). We invite you and your designated consultation representative(s) to participate in this process. Our anticipated timeline for the consultation and coordination period is expected to

extend to 30 days after you receive this letter. Whether or not you decide to accept this offer for government-to-government consultation, the EPA Region 8 plans to regularly coordinate and communicate with the Ute Indian Tribe's Energy, Minerals, & Air Director, Manuel Myore, for facilities located within the exterior boundaries of the Uintah and Ouray Indian Reservation. If you would prefer to designate an alternative representative for communication on air pollution control permitting matters, please notify us of that person's name and contact information. We will keep the tribal government informed and will seek your input on these permits.

We welcome the opportunity to consult and coordinate with the Ute Indian Tribe. If you choose to consult about this permitting action, we will work with your tribal government to develop a consultation plan including a description of the process we would follow, opportunity for your input, and timeline for the Region to provide feedback and to complete the consultation. We will send a draft consultation plan for your review as soon as practical after we receive your reply to this letter. The Agency's goal will be to ensure that you have an opportunity to provide tribal input into these permit actions.

We request that you reply in writing to this letter within the next 30 days if the Ute Indian Tribe desires to consult on these permit actions. The official EPA Region 8 contact person for this consultation and coordination process is Kathleen Paser, a permit engineer on my staff.

Thank you very much for your attention to this matter. Please contact me at (303) 312-6308 or your staff can contact Kathleen Paser at (303) 312-6526 or paser.kathleen@epa.gov should you have any questions on this action. We look forward to hearing from you on this important matter.

Sincerely,

Howard M. Cantor, for
Assistant Regional Administrator
Office of Partnerships and Regulatory Assistance

cc: Manuel Myore, Energy, Minerals, & Air Director, Ute Indian Tribe

Permit # SMNSR-UO,-~~000128~~ 000027 -2012.001

Anadarko Uintah Midstream LLC
P.O. Box 173779, Denver, Colorado 80217-3779
720-929-6000 Fax 720-929-7000

August 30, 2012

SENT VIA CERTIFIED MAIL No.: 91 7199 9991 7031 0431 2238

Ms. Kathleen Paser
U.S. EPA, Region 8
1595 Wynkoop Street, 8P-AR
Denver, CO 80202-1129

RE: Synthetic Minor NSR Permit Application under Part 49
Antelope Flats / Sand Wash Compressor Station/South Central Tank Battery

Dear Ms. Paser:

Anadarko Uintah Midstream LLC (Anadarko) is currently operating the Antelope Flats / Sand Wash Compressor Stations & South Central Tank Battery in Uintah County, Utah. An initial Part 71 permit application was submitted in May 2011. According to the newly promulgated Minor NSR rules under Part 49, the existing sources operating under synthetic minor limits are required to submit an application for a synthetic minor permit under Part 49. Therefore, Anadarko Uintah Midstream LLC is currently submitting the application with the following information:

1. Registration for Existing Sources (Form REG)
2. Facility Description
3. Plot Plan
4. Process Description and Process Flow Diagram
5. Emission Control Description
6. Supporting Documentation
7. Ambient Air Quality Impact Analysis
8. Regulatory Analysis

If you have any questions, or require additional information, please call me at (720) 929-6867 or via email at Chad.Schlichtemeier@Anadarko.com

Sincerely,

Anadarko Uintah Midstream LLC

Chad Schlichtemeier
Sr Staff EHS Representative

Enclosures