Form 3160-3
(June 2015)

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

**APPLICATION FOR PERMIT TO DRILL OR REENTER**

HOBBS OCD
SEP 11 2019
RECEIVED

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|---|---|
| 1a. Type of work: ☑ DRILL ☐ REENTER | 5. Lease Serial No. NMNM126065 |
| 1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other | 6. If Indian, Allotee or Tribe Name |
| 1c. Type of Completion: ☐ Hydraulic Fracturing ☑ Single Zone ☐ Multiple Zone | 7. If Unit or CA Agreement, Name and No. |
| | 8. Lease Name and Well No. RED TANK 4 FEDERAL 59H 38179 |
| 2. Name of Operator CIMAREX ENERGY COMPANY (215099) | 9. API Well No. 30-025-46359 |
| 3a. Address 600 N. Marienfeld St., Suite 600 Midland TX 79701 | 3b. Phone No. *(include area code)* (432)620-1936 |
| | 10. Field and Pool, or Exploratory (97933) BONE SPRING / WILDCAT;BONE SPRIN |
| 4. Location of Well *(Report location clearly and in accordance with any State requirements.*)* At surface SWSW / 432 FSL / 290 FWL / LAT 32.327546 / LONG -103.687237 At proposed prod. zone LOT 4 / 100 FNL / 946 FWL / LAT 32.340558 / LONG -103.685125 | 11. Sec., T. R. M. or Blk. and Survey or Area SEC 4 / T23S / R32E / NMP |
| 14. Distance in miles and direction from nearest town or post office* 32 miles | 12. County or Parish LEA / 13. State NM |
| 15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 432 feet | 16. No of acres in lease 677.94 / 17. Spacing Unit dedicated to this well 159.48 |
| 18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 20 feet | 19. Proposed Depth 9524 feet / 14095 feet / 20. BLM/BIA Bond No. in file FED: NMB001188 |
| 21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3630 feet | 22. Approximate date work will start* 06/01/2019 / 23. Estimated duration 30 days |

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be requested by the BLM.

| | | |
|---|---|---|
| 25. Signature (Electronic Submission) | Name *(Printed/Typed)* Aricka Easterling / Ph: (918)560-7060 | Date 11/07/2018 |
| Title Regulatory Analyst | | |
| Approved by *(Signature)* (Electronic Submission) | Name *(Printed/Typed)* Cody Layton / Ph: (575)234-5959 | Date 07/31/2019 |
| Title Assistant Field Manager Lands & Minerals | Office CARLSBAD | |

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

GCP Rec 09/11/19

KZ 09/12/19

SL

APPROVED WITH CONDITIONS

Approval Date: 07/31/2019

(Continued on page 2)

*(Instructions on page 2)

## INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

ITEM I: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the wen, and any other required information, should be furnished when required by Federal agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionany drilled, give distances for subsurface location of hole in any present or objective productive zone.

ITEM 22: Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

ITEM 24: If the proposal will involve hydraulic fracturing operations, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

## NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48( d) provide that you be furnished the following information in connection with information required by this application.
AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160
PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service wen or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.
ROUTINE USE: Information from the record and/or the record win be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.
EFFECT OE NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:
The BLM conects this information to anow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

**BURDEN HOURS STATEMENT:** Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Conection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.



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## Additional Operator Remarks

### Location of Well

1. SHL: SWSW / 432 FSL / 290 FWL / TWSP: 23S / RANGE: 32E / SECTION: 4 / LAT: 32.327546 / LONG: -103.687237 ( TVD: 0 feet, MD: 0 feet )
   PPP: SWSW / 432 FSL / 946 FWL / TWSP: 23S / RANGE: 32E / SECTION: 4 / LAT: 32.327546 / LONG: -103.6851139 ( TVD: 9050 feet, MD: 9088 feet )
   BHL: LOT 4 / 100 FNL / 946 FWL / TWSP: 23S / RANGE: 32E / SECTION: 4 / LAT: 32.340558 / LONG: -103.685125 ( TVD: 9524 feet, MD: 14095 feet )

## BLM Point of Contact

Name: Priscilla Perez
Title: Legal Instruments Examiner
Phone: 5752345934
Email: pperez@blm.gov

## Review and Appeal Rights

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

AFMSS

U.S. Department of the Interior
Bureau of Land Management

*Application for Permit to Drill*

## APD Package Report

Date Printed: 09/09/2019 10:31 AM

| | |
|---|---|
| APD ID: 10400035749 | Well Status: AAPD |
| APD Received Date: 11/07/2018 08:33 AM | Well Name: RED TANK 4 FEDERAL |
| Operator: CIMAREX ENERGY COMPANY | Well Number: 59H |

APD Package Report Contents

- Form 3160-3

- Operator Certification Report

- Application Report
- Application Attachments
  -- Well Plat: 1 file(s)

- Drilling Plan Report
- Drilling Plan Attachments
  -- Blowout Prevention Choke Diagram Attachment: 2 file(s)
  -- Blowout Prevention BOP Diagram Attachment: 2 file(s)
  -- Casing Spec Documents: 1 file(s)
  -- Casing Design Assumptions and Worksheet(s): 4 file(s)
  -- Hydrogen sulfide drilling operations plan: 1 file(s)
  -- Proposed horizontal/directional/multi-lateral plan submission: 2 file(s)
  -- Other Facets: 3 file(s)
  -- Other Variances: 2 file(s)

- SUPO Report
- SUPO Attachments
  -- Existing Road Map: 1 file(s)
  -- New Road Map: 2 file(s)
  -- Attach Well map: 1 file(s)
  -- Production Facilities map: 2 file(s)
  -- Water source and transportation map: 1 file(s)
  -- Well Site Layout Diagram: 1 file(s)
  -- Recontouring attachment: 1 file(s)
  -- Other SUPO Attachment: 12 file(s)

- PWD Report
- PWD Attachments
  -- None

- Bond Report
- Bond Attachments
  -- None

# PECOS DISTRICT
# DRILLING CONDITIONS OF APPROVAL

| | |
|---|---|
| **OPERATOR'S NAME:** | **CIMAREX ENERGY COMPANY** |
| **LEASE NO.:** | **NMNM126065** |
| **WELL NAME & NO.:** | **RED TANK 4 FEDERAL 59H** |
| **SURFACE HOLE FOOTAGE:** | **432' FSL & 290' FWL** |
| **BOTTOM HOLE FOOTAGE** | **100' FNL & 946' FWL** |
| **LOCATION:** | **Section 4, T. 23 S., R 32 E., NMPM** |
| **COUNTY:** | **Lea County, New Mexico** |

**COA**

| | | | |
|---|---|---|---|
| H2S | ◉ Yes | ○ No | |
| Potash | ◉ None | ○ Secretary | ○ R-111-P |
| Cave/Karst Potential | ◉ Low | ○ Medium | ○ High |
| Variance | ○ None | ◉ Flex Hose | ○ Other |
| Wellhead | ○ Conventional | ◉ Multibowl | ○ Both |
| Other | ☐ 4 String Area | ☐ Capitan Reef | ☐ WIPP |
| Other | ☑ Fluid Filled | ☐ Cement Squeeze | ☐ Pilot Hole |
| Special Requirements | ☐ Water Disposal | ☐ COM | ☐ Unit |

## A. HYDROGEN SULFIDE

A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Delaware** formation. As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.

## B. CASING

1. The **13-3/8** inch surface casing shall be set at approximately _ feet (a minimum of 25 feet (Lea County) into the Rustler Anhydrite and above the salt) and cemented to the surface. **Excess Cement calculates to 21%, additional cement might be required.**

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
    b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to

include the lead cement)

c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
d. If cement falls back, remedial cementing will be done prior to drilling out that string.

**Intermediate casing must be kept fluid filled to meet BLM minimum collapse requirement.**

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

    - Cement to surface. If cement does not circulate see B.1.a, c-d above.

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:

    - Cement should tie-back at least **200 feet** into previous casing string. Operator shall provide method of verification. **Excess Cement calculates to 16%, additional cement might be required.**

## C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).'

2. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **3000 (3M)** psi.

    a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
    b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
    c. Manufacturer representative shall install the test plug for the initial BOP test.
    d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
    e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

**JJP06272019**

# GENERAL REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

☒ Chaves and Roosevelt Counties
Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.
During office hours call (575) 627-0272.
After office hours call (575)

☒ Eddy County
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

☒ Lea County
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575) 393-3612

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.

   a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
   b. When the operator proposes to set surface casing with Spudder Rig
      - Notify the BLM when moving in and removing the Spudder Rig.
      - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
      - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.

2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

3. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.

2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log.

3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.

4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.

7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.

3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.

4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:

    a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
    b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
    c. Manufacturer representative shall install the test plug for the initial BOP test.
    d. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
    e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.

5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the

plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time.

c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

e. The results of the test shall be reported to the appropriate BLM office.

f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.

g. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

D. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

# PECOS DISTRICT
# SURFACE USE
# CONDITIONS OF APPROVAL

**Red Tank 4 57H:**
**Surface Hole Location: 432' FSL & 290' FWL, Section 4, T. 23 S., R. 32 E.**
**Bottom Hole Location: 100' FNL & 946' FWL, Section 4, T. 23 S., R. 32 E.**

**Red Tank 4 58H:**
**Surface Hole Location: 432' FSL & 270' FWL, Section 4, T. 23 S., R. 32 E.**
**Bottom Hole Location: 100' FNL & 638' FWL, Section 4, T. 23 S., R. 32 E.**

**Red Tank 4 59H:**
**Surface Hole Location: 432' FNL & 250' FWL, Section 4, T. 23 S., R. 32 E.**
**Bottom Hole Location: 100' FNL & 946' FWL, Section 4, T. 28 S., R. 32 E.**



**Approval Date: 07/31/2019**

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Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

## I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

## II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

## III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

## IV. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

## V. SPECIAL REQUIREMENT(S)

**Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken**: Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 feet from the source of the noise.

**Ground-level Abandoned Well Marker to avoid raptor perching**: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

**Hydrology:**
The entire well pad(s) will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. The compacted berm shall be constructed at a minimum of 12 inches with impermeable mineral material (e.g. caliche). Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad. The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed. Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion. Stockpiling of topsoil is required. The top soil shall be stockpiled in an appropriate location to prevent loss of soil due to water or wind erosion and not used for berming or erosion control. If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.

Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank or 24 hour production, whichever is greater. Automatic shut off, check valves, or similar systems will be installed for tanks to minimize the effects of catastrophic line failures used in production or drilling.

When crossing ephemeral drainages the pipeline(s) will be buried to a minimum depth of 48 inches from the top of pipe to ground level. Erosion control methods such as gabions and/or rock aprons should be placed on both up and downstream sides of the pipeline crossing. In addition, curled (weed free) wood/straw fiber wattles/logs and/or silt fences

should be placed on the downstream side for sediment control during construction and maintained until soils and vegetation have stabilized. Water bars should be placed within the ROW to divert and dissipate surface runoff. A pipeline access road is not permitted to cross these ephemeral drainages. Traffic should be diverted to a preexisting route. Additional seeding may be required in floodplains and drainages to restore energy dissipating vegetation.

A leak detection plan will be submitted to the BLM Carlsbad Field Office for approval prior to pipeline installation. The method could incorporate gauges to detect pressure drops, situating valves and lines so they can be visually inspected periodically or installing electronic sensors to alarm when a leak is present. The leak detection plan will incorporate an automatic shut off system that will be installed for proposed pipelines to minimize the effects of an undesirable event.

Any water erosion that may occur due to the construction of overhead electric line and during the life of the power line will be quickly corrected and proper measures will be taken to prevent future erosion. A power pole should not be placed in drainages, playas, wetlands, riparian areas, or floodplains and must span across the features at a distance away that would not promote further erosion.

Temporary Fresh Water Frac Line: once the temporary use exceeds the timeline of 180 days and/or with a 90 day extension status; further analysis will be required if the applicant pursues to turn the temporary ROW into a permanent ROW.

# VI. CONSTRUCTION

## A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

## B. TOPSOIL

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

## C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

## D. FEDERAL MINERAL MATERIALS PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

## E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation. The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

## F. EXCLOSURE FENCING (CELLARS & PITS)

**Exclosure Fencing**
The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

## G. ON LEASE ACCESS ROADS

**Road Width**
The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

**Surfacing**
Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

**Crowning**
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

**Ditching**
Ditching shall be required on both sides of the road.

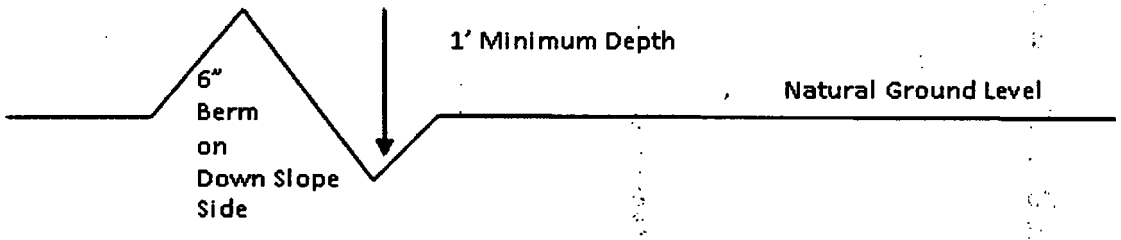
**Turnouts**
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

**Drainage**

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

**Cross Section of a Typical Lead-off Ditch**




All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

**Formula for Spacing Interval of Lead-off Ditches**

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

400 foot road with 4% road slope: $\frac{400'}{4\%} + 100' = 200'$ lead-off ditch interval

**Cattle guards**

An appropriately sized cattle guard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattle guards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattle guards that are in place and are utilized during lease operations.

**Fence Requirement**

Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

**Public Access**

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

**Construction Steps**

1. Salvage topsoil
2. Construct road
3. Redistribute topsoil
4. Revegetate slopes

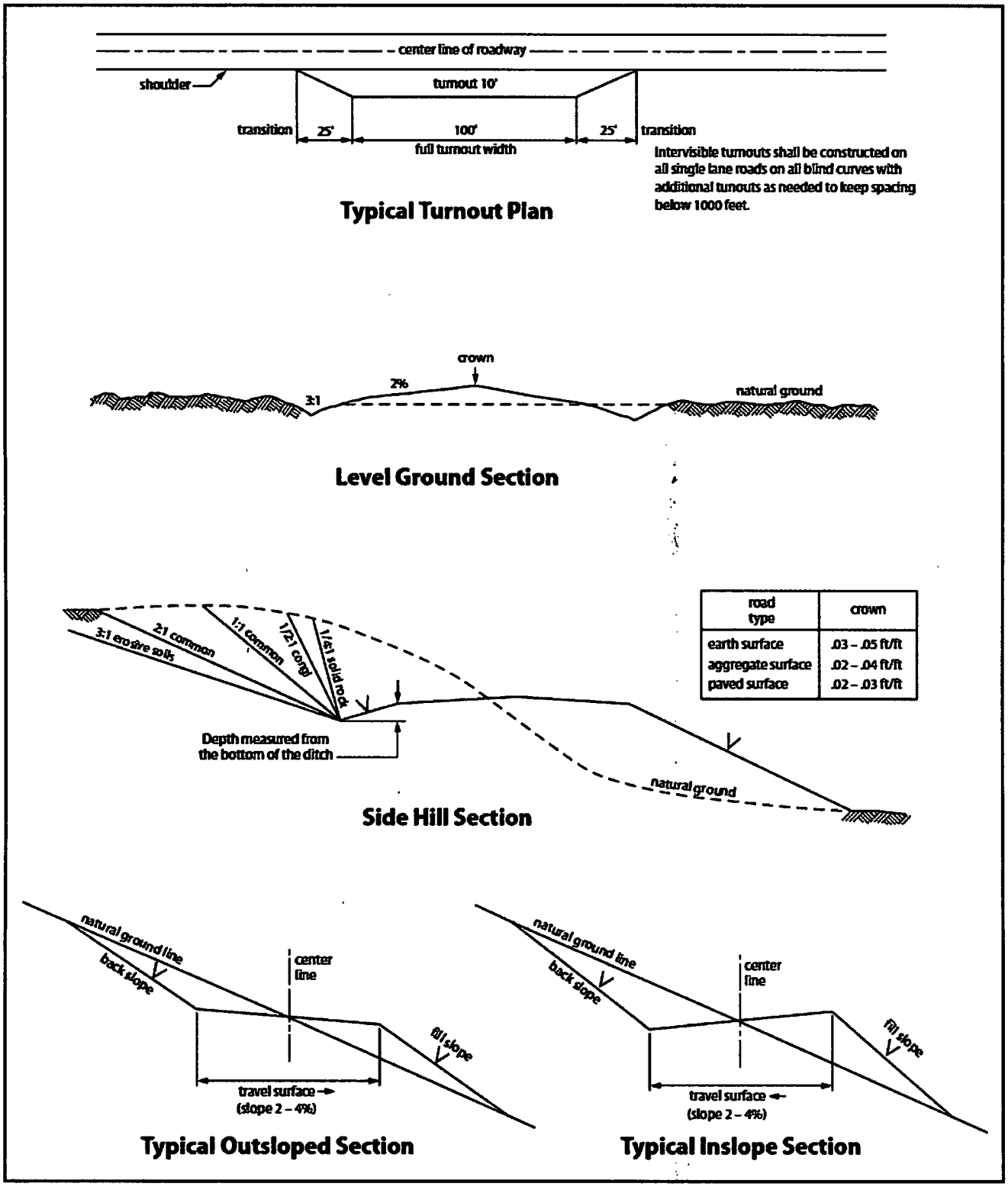



**Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.**

# VII. PRODUCTION (POST DRILLING)

## A. WELL STRUCTURES & FACILITIES

**Placement of Production Facilities**
Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

**Exclosure Netting (Open-top Tanks)**
Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

**Chemical and Fuel Secondary Containment and Exclosure Screening**
The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

**Open-Vent Exhaust Stack Exclosures**
The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

**Containment Structures**

Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

**Painting Requirement**
All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

**B. ELECTRIC LINES**
STANDARD STIPULATIONS FOR OVERHEAD ELECTRIC DISTRIBUTION LINES

**A copy of the grant and attachments, including stipulations, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.**

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. There will be no clearing or blading of the right-of-way unless otherwise agreed to in writing by the Authorized Officer.

5. Power lines shall be constructed and designed in accordance to standards outlined in "Suggested Practices for Avian Protection on Power lines: The State of the Art in 2006" Edison Electric Institute, APLIC, and the California Energy Commission 2006 . The holder shall assume the burden and expense of proving that pole designs not shown in the above publication deter raptor perching, roosting, and nesting. Such proof shall be provided by a raptor expert approved by the Authorized Officer. The BLM reserves the right to require modification or additions to all powerline structures placed on this right-of-way, should they be necessary to ensure the safety of large perching birds. Such modifications and/or additions shall be made by the holder without liability or expense to the United States.

Raptor deterrence will consist of but not limited to the following: triangle perch discouragers shall be placed on each side of the cross arms and a nonconductive perching deterrence shall be placed on all vertical poles that extend past the cross arms.

6. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

7. The BLM serial number assigned to this authorization shall be posted in a permanent, conspicuous manner where the power line crosses roads and at all serviced facilities. Numbers will be at least two inches high and will be affixed to the pole nearest the road crossing and at the facilities served.

8. Upon cancellation, relinquishment, or expiration of this grant, the holder shall comply with those abandonment procedures as prescribed by the Authorized Officer.

9. All surface structures (poles, lines, transformers, etc.) shall be removed within 180 days of abandonment, relinquishment, or termination of use of the serviced facility or facilities or within 180 days of abandonment, relinquishment, cancellation, or expiration of this grant, whichever comes first. This will not apply where the power line extends service to an active, adjoining facility or facilities.

10. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the

Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

11. Special Stipulations:
    - For reclamation remove poles, lines, transformer, etc. and dispose of properly.
    - Fill in any holes from the poles removed.

**Timing Limitation Stipulation/Condition of Approval for Lesser Prairie-Chicken**: Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, geophysical exploration other than 3-D operations, and pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 ft. from the source of the noise.

## VIII. INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

## IX. FINAL ABANDONMENT & RECLAMATION

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

Seed Mixture for LPC Sand/Shinnery Sites

Holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed shall be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed shall be either certified or registered seed. The seed container shall be tagged in accordance with State law(s) and available for inspection by the Authorized Officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). Holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. Seeding shall be repeated until a satisfactory stand is established as determined by the Authorized Officer. Evaluation of growth may not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

| Species | lb/acre |
|---|---|
| Plains Bristlegrass | 5lbs/A |
| Sand Bluestem | 5lbs/A |
| Little Bluestem | 3lbs/A |
| Big Bluestem | 6lbs/A |
| Plains Coreopsis | 2lbs/A |
| Sand Dropseed | 1lbs/A |

*Pounds of pure live seed:

Pounds of seed **x** percent purity **x** percent germination = pounds pure live seed

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# Operator Certification Data Report

09/09/2019

## Operator Certification

*I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.*

**NAME:** Aricka Easterling **Signed on:** 11/07/2018

**Title:** Regulatory Analyst

**Street Address:** 202 S. Cheyenne Ave, Ste 1000

**City:** Tulsa **State:** OK **Zip:** 74103

**Phone:** (918)560-7060

**Email address:** regulatory@cimarex.com

## Field Representative

**Representative Name:**

**Street Address:**

**City:** **State:** **Zip:**

**Phone:**

**Email address:**

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BUREAU OF LAND MANAGEMENT

# Application Data Report

09/09/2019

**APD ID:** 10400035749 **Submission Date:** 11/07/2018

**Operator Name:** CIMAREX ENERGY COMPANY

**Well Name:** RED TANK 4 FEDERAL **Well Number:** 59H

[redacted]

Show Final Text

**Well Type:** OIL WELL **Well Work Type:** Drill

## Section 1 - General

**APD ID:** 10400035749 **Tie to previous NOS?** Y **Submission Date:** 11/07/2018

**BLM Office:** CARLSBAD **User:** Aricka Easterling **Title:** Regulatory Analyst

**Federal/Indian APD:** FED **Is the first lease penetrated for production Federal or Indian?** FED

**Lease number:** NMNM126065 **Lease Acres:** 677.94

**Surface access agreement in place?** **Allotted?** **Reservation:**

**Agreement in place?** NO **Federal or Indian agreement:**

**Agreement number:**

**Agreement name:**

**Keep application confidential?** YES

**Permitting Agent?** NO **APD Operator:** CIMAREX ENERGY COMPANY

**Operator letter of designation:**

## Operator Info

**Operator Organization Name:** CIMAREX ENERGY COMPANY

**Operator Address:** 600 N. Marienfeld St., Suite 600

**Zip:** 79701

**Operator PO Box:**

**Operator City:** Midland **State:** TX

**Operator Phone:** (432)620-1936

**Operator Internet Address:** tstathem@cimarex.com

## Section 2 - Well Information

**Well in Master Development Plan?** NO **Master Development Plan name:**

**Well in Master SUPO?** NO **Master SUPO name:**

**Well in Master Drilling Plan?** NO **Master Drilling Plan name:**

**Well Name:** RED TANK 4 FEDERAL **Well Number:** 59H **Well API Number:**

**Field/Pool or Exploratory?** Field and Pool **Field Name:** BONE SPRING **Pool Name:** WILDCAT;BONE SPRING, S

**Is the proposed well in an area containing other mineral resources?** USEABLE WATER

**Operator Name:** CIMAREX ENERGY COMPANY

**Well Name:** RED TANK 4 FEDERAL **Well Number:** 59H

**Is the proposed well in an area containing other mineral resources?** USEABLE WATER

**Is the proposed well in a Helium production area?** N **Use Existing Well Pad?** YES **New surface disturbance?** Y

**Type of Well Pad:** MULTIPLE WELL **Multiple Well Pad Name:** RED TANK 4 FEDERAL **Number:** W2W2 PAD

**Well Class:** HORIZONTAL **Number of Legs:** 1

**Well Work Type:** Drill

**Well Type:** OIL WELL

**Describe Well Type:**

**Well sub-Type:** INFILL

**Describe sub-type:**

**Distance to town:** 32 Miles **Distance to nearest well:** 20 FT **Distance to lease line:** 432 FT

**Reservoir well spacing assigned acres Measurement:** 159.48 Acres

**Well plat:** Red_Tank_4_Fed_59H_C102_Plat_20181030132337.pdf

**Well work start Date:** 06/01/2019 **Duration:** 30 DAYS

## Section 3 - Well Location Table

**Survey Type:** RECTANGULAR

**Describe Survey Type:**

**Datum:** NAD83 **Vertical Datum:** NAVD88

**Survey number:** **Reference Datum:**

| | NS-Foot | NS Indicator | EW-Foot | EW Indicator | Twsp | Range | Section | Aliquot/Lot/Tract | Latitude | Longitude | County | State | Meridian | Lease Type | Lease Number | Elevation | MD | TVD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SHL Leg #1 | 432 | FSL | 290 | FWL | 23S | 32E | 4 | Aliquot SWSW | 32.327546 | -103.687237 | LEA | NEW MEXICO | NEW MEXICO | F | NMNM 126065 | 3630 | 0 | 0 |
| KOP Leg #1 | 432 | FSL | 946 | FWL | 23S | 32E | 4 | Aliquot SWSW | 32.327546 | -103.6851139 | LEA | NEW MEXICO | NEW MEXICO | F | NMNM 126065 | -5417 | 9084 | 9047 |
| PPP Leg #1 | 432 | FSL | 946 | FWL | 23S | 32E | 4 | Aliquot SWSW | 32.327546 | -103.6851139 | LEA | NEW MEXICO | NEW MEXICO | F | NMNM 126065 | -5420 | 9088 | 9050 |

**Operator Name:** CIMAREX ENERGY COMPANY

**Well Name:** RED TANK 4 FEDERAL **Well Number:** 59H

| | NS-Foot | NS Indicator | EW-Foot | EW Indicator | Twsp | Range | Section | Aliquot/Lot/Tract | Latitude | Longitude | County | State | Meridian | Lease Type | Lease Number | Elevation | MD | TVD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EXIT Leg #1 | 100 | FNL | 946 | FWL | 23S | 32E | 4 | Lot 4 | 32.340558 | -103.685125 | LEA | NEW MEXICO | NEW MEXICO | F | NMNM 126065 | -5894 | 14095 | 9524 |
| BHL Leg #1 | 100 | FNL | 946 | FWL | 23S | 32E | 4 | Lot 4 | 32.340558 | -103.685125 | LEA | NEW MEXICO | NEW MEXICO | F | NMNM 126065 | -5894 | 14095 | 9524 |

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U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

# Drilling Plan Data Report

09/09/2019

**APD ID:** 10400035749 **Submission Date:** 11/07/2018

**Operator Name:** CIMAREX ENERGY COMPANY

**Well Name:** RED TANK 4 FEDERAL **Well Number:** 59H

**Well Type:** OIL WELL **Well Work Type:** Drill

[redacted]

Show Final Text

## Section 1 - Geologic Formations

| Formation ID | Formation Name | Elevation | True Vertical Depth | Measured Depth | Lithologies | Mineral Resources | Producing Formation |
|---|---|---|---|---|---|---|---|
| 1 | RUSTLER | 3645 | 977 | 977 | | USEABLE WATER | N |
| 2 | CASTILE | 223 | 3422 | 3422 | | NONE | N |
| 3 | LAMAR | -982 | 4627 | 4627 | | NONE | N |
| 4 | BELL CANYON | -1028 | 4673 | 4673 | | NONE | N |
| 5 | CHERRY CANYON | -2014 | 5659 | 5659 | | NONE | N |
| 6 | BRUSHY CANYON | -3189 | 6834 | 6834 | | NATURAL GAS,OIL | N |
| 7 | BONE SPRING | -4921 | 8566 | 8566 | | NATURAL GAS,OIL | Y |
| 8 | BONE SPRING 1ST | -6076 | 9721 | 9721 | | NATURAL GAS,OIL | N |
| 9 | BONE SPRING 2ND | -6713 | 10358 | 10358 | | NATURAL GAS,OIL | N |
| 10 | BONE SPRING 3RD | -7886 | 11531 | 11531 | | OIL | N |
| 11 | WOLFCAMP | -8258 | 11903 | 11903 | | NATURAL GAS,OIL | N |

## Section 2 - Blowout Prevention

**Pressure Rating (PSI):** 2M **Rating Depth:** 4653

**Equipment:** A BOP consisting of three rams, including one blind ram and two pipe rams and one annular preventer. An accumulator that meets the requirements in Onshore Order #2 for the pressure rating of the BOP stack. A rotating head may be installed as needed. A Kelly clock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor.
**Requesting Variance?** YES

**Variance request:** Co-flex line between the BOP and choke manifold. Certification for proposed co-flex hose is attached. The hose is not required by the manufacturer to be anchored. In the event the specific hose is not available, one of equal or higher rating will be used. Variance to include Hammer Union connections on lines downstream of the buffer tank only.
**Testing Procedure:** A multi-bowl wellhead system will be utilized. After running the 13-3/8" surface casing, a 13 5/8"

pressure tested to 250 psi low followed by a 3000 psi test. Annular will be tested to 50% of working pressure. The pressure test will be repeated at least every 30 days, as per Onshore Order No. 2. The multi-bowl wellhead will be installed by vendor's representative. A copy of the installation instructions has been sent to the BLM field office. The wellhead will be installed by a third-party welder while being monitored by the wellhead vendor representative. All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type. A solid steel body pack-off will be utilized after running and cementing the intermediate casing. After installation the pack-off and lower flange will be pressure tested to 3000 psi. The surface casing string will be tested as per Onshore Order No. 2 to at least 0.22 psi/ft or 1500 psi, whichever is greater. The casing string utilizing steel body pack-off will be tested to 70% of casing burst. If well conditions dictate conventional slips will be set and BOPE will be tested to appropriate pressures based on permitted pressure requirements.

**Choke Diagram Attachment:**

Red_Tank_4_Fed_59H_Choke_2M3M_20181102103538.pdf

**BOP Diagram Attachment:**

Red_Tank_4_Fed_59H_BOP_2M_20181102103554.pdf

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**Pressure Rating (PSI):** 3M **Rating Depth:** 14095

**Equipment:** A BOP consisting of three rams, including one blind ram and two pipe rams and one annular preventer. An accumulator that meets the requirements in Onshore Order #2 for the pressure rating of the BOP stack. A rotating head may be installed as needed. A Kelly clock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor.

**Requesting Variance?** YES

**Variance request:** Co-flex line between the BOP and choke manifold. Certification for proposed co-flex hose is attached. The hose is not required by the manufacturer to be anchored. In the event the specific hose is not available, one of equal or higher rating will be used. Variance to include Hammer Union connections on lines downstream of the buffer tank only.

**Testing Procedure:** A multi-bowl wellhead system will be utilized. After running the 13-3/8" surface casing, a 13 5/8" BOP/BOPE system with a minimum working pressure of 3000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 3000 psi test. Annular will be tested to 50% of working pressure. The pressure test will be repeated at least every 30 days, as per Onshore Order No. 2. The multi-bowl wellhead will be installed by vendor's representative. A copy of the installation instructions has been sent to the BLM field office. The wellhead will be installed by a third-party welder while being monitored by the wellhead vendor representative. All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type. A solid steel body pack-off will be utilized after running and cementing the intermediate casing. After installation the pack-off and lower flange will be pressure tested to 3000 psi. The surface casing string will be tested as per Onshore Order No. 2 to at least 0.22 psi/ft or 1500 psi, whichever is greater. The casing string utilizing steel body pack-off will be tested to 70% of casing burst. If well conditions dictate conventional slips will be set and BOPE will be tested to appropriate pressures based on permitted pressure requirements.

**Choke Diagram Attachment:**

Red_Tank_4_Fed_59H_Choke_2M3M_20181102103615.pdf

**BOP Diagram Attachment:**

Red_Tank_4_Fed_59H_BOP_3M_20181102103627.pdf

---

**Operator Name:** CIMAREX ENERGY COMPANY

**Well Name:** RED TANK 4 FEDERAL **Well Number:** 59H

## Section 3 - Casing

| Casing ID | String Type | Hole Size | Csg Size | Condition | Standard | Tapered String | Top Set MD | Bottom Set MD | Top Set TVD | Bottom Set TVD | Top Set MSL | Bottom Set MSL | Calculated casing length MD | Grade | Weight | Joint Type | Collapse SF | Burst SF | Joint SF Type | Joint SF | Body SF Type | Body SF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SURFACE | 17.5 | 13.375 | NEW | NON API | N | 0 | 1027 | 0 | 1027 | 0 | 1027 | 1027 | H-40 | 48 | ST&C | 1.57 | 3.68 | BUOY | 6.53 | BUOY | 6.53 |
| 2 | INTERMEDIATE | 12.25 | 9.625 | NEW | API | N | 0 | 4653 | 0 | 4653 | 0 | 4653 | 4653 | J-55 | 40 | LT&C | 1.53 | 1.6 | BUOY | 2.79 | BUOY | 2.79 |
| 3 | PRODUCTION | 8.75 | 5.5 | NEW | API | N | 0 | 9085 | 0 | 9085 | 0 | 9085 | 9085 | L-80 | 17 | LT&C | 1.48 | 1.82 | BUOY | 2.09 | BUOY | 2.09 |
| 4 | PRODUCTION | 8.75 | 5.5 | NEW | API | N | 9085 | 14095 | 9085 | 9524 | 9085 | 14095 | 5010 | L-80 | 17 | BUTT | 1.41 | 1.74 | BUOY | 53.2 | BUOY | 53.2 |

**Casing Attachments**

**Casing ID:** 1 **String Type:** SURFACE

**Inspection Document:**

**Spec Document:**

Red_Tank_4_Fed_59H_Spec_Sheet_for_H40Hybrid_surf_casing_20181102103715.pdf

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

Red_Tank_4_Fed_59H_Casing_Assumptions_20181102103746.pdf

**Operator Name:** CIMAREX ENERGY COMPANY

**Well Name:** RED TANK 4 FEDERAL **Well Number:** 59H

**Casing Attachments**

**Casing ID:** 2 **String Type:** INTERMEDIATE

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

Red_Tank_4_Fed_59H_Casing_Assumptions_20181102103823.pdf

**Casing ID:** 3 **String Type:** PRODUCTION

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

Red_Tank_4_Fed_59H_Casing_Assumptions_20181102103910.pdf

**Casing ID:** 4 **String Type:** PRODUCTION

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

Red_Tank_4_Fed_59H_Casing_Assumptions_20181102103958.pdf

## Section 4 - Cement

**Operator Name:** CIMAREX ENERGY COMPANY

**Well Name:** RED TANK 4 FEDERAL **Well Number:** 59H

| String Type | Lead/Tail | Stage Tool Depth | Top MD | Bottom MD | Quantity(sx) | Yield | Density | Cu Ft | Excess% | Cement type | Additives |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SURFACE | Lead | | 0 | 1027 | 498 | 1.72 | 13.5 | 855 | 50 | Class C | Bentonite |
| SURFACE | Tail | | 0 | 1027 | 133 | 1.34 | 14.8 | 178 | 25 | Class C | LCM |
| INTERMEDIATE | Lead | | 0 | 4653 | 880 | 1.88 | 12.9 | 1653 | 50 | 35:65 (Poz:C) | Salt, Bentonite |
| INTERMEDIATE | Tail | | 0 | 4653 | 272 | 1.34 | 14.8 | 364 | 25 | Class C | LCM |
| PRODUCTION | Lead | | 0 | 9085 | 399 | 3.64 | 10.3 | 1452 | 25 | Tuned Light | LCM |
| PRODUCTION | Tail | | 0 | 9085 | 1072 | 1.3 | 14.2 | 1393 | 10 | 50:50 (Poz:H) | Salt, Bentonite, Fluid Loss, Dispersant, SMS |
| PRODUCTION | Lead | | 9085 | 14095 | 399 | 3.64 | 10.3 | 1452 | 25 | Tuned Light | LCM |
| PRODUCTION | Tail | | 9085 | 14095 | 1072 | 1.3 | 14.2 | 1393 | 10 | 50:50 (Poz:H) | Salt, Bentonite, Fluid Loss, Dispersant, SMS |

## Section 5 - Circulating Medium

**Mud System Type:** Closed

**Will an air or gas system be Used?** NO

**Description of the equipment for the circulating system in accordance with Onshore Order #2:**

**Diagram of the equipment for the circulating system in accordance with Onshore Order #2:**

**Describe what will be on location to control well or mitigate other conditions:** Sufficient mud materials will be kept on location at all times in order to combat lost circulation or unexpected kicks. In order to run DSTs, open hole logs, and casing, the viscosity and water loss may have to be adjusted in order to meet these needs.
**Describe the mud monitoring system utilized:** PVT/Pason/Visual Monitoring

## Circulating Medium Table

| Top Depth | Bottom Depth | Mud Type | Min Weight (lbs/gal) | Max Weight (lbs/gal) | Density (lbs/cu ft) | Gel Strength (lbs/100 sqft) | PH | Viscosity (CP) | Salinity (ppm) | Filtration (cc) | Additional Characteristics |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1027 | SPUD MUD | 8.3 | 8.8 | | | | | | | |

**Operator Name:** CIMAREX ENERGY COMPANY

**Well Name:** RED TANK 4 FEDERAL **Well Number:** 59H

| Top Depth | Bottom Depth | Mud Type | Min Weight (lbs/gal) | Max Weight (lbs/gal) | Density (lbs/cu ft) | Gel Strength (lbs/100 sqft) | PH | Viscosity (CP) | Salinity (ppm) | Filtration (cc) | Additional Characteristics |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1027 | 4653 | SALT SATURATED | 9.7 | 10.2 | | | | | | | |
| 4653 | 14095 | OTHER : FW/Cut Brine | 8.5 | 9 | | | | | | | |

## Section 6 - Test, Logging, Coring

**List of production tests including testing procedures, equipment and safety measures:**

No DST Planned

**List of open and cased hole logs run in the well:**

CNL,DS,GR

**Coring operation description for the well:**

n/a

## Section 7 - Pressure

**Anticipated Bottom Hole Pressure:** 4457 **Anticipated Surface Pressure:** 2361.71

**Anticipated Bottom Hole Temperature(F):** 166

**Anticipated abnormal pressures, temperatures, or potential geologic hazards?** YES

**Describe:**

Lost circulation may be encountered in the Delaware mountain group. Abnormal pressure as well as hole stability issues may be encountered in the Wolfcamp.

**Contingency Plans geoharzards description:**

Lost circulation material will be available, as well as additional drilling fluid along with the fluid volume in the drilling rig pit system. Drilling fluid can be mixed on location or mixed in vendor mud plant and trucked to location if needed. Sufficient barite will be available to maintain appropriate mud weight for the Wolfcamp interval.

**Contingency Plans geohazards attachment:**

**Hydrogen Sulfide drilling operations plan required?** YES

**Hydrogen sulfide drilling operations plan:**

Red_Tank_4_Fed_59H_H2S_Plan_20181030132811.pdf

**Operator Name:** CIMAREX ENERGY COMPANY

**Well Name:** RED TANK 4 FEDERAL **Well Number:** 59H

## Section 8 - Other Information

**Proposed horizontal/directional/multi-lateral plan submission:**

Red_Tank_4_Fed_59H_AC_Report_20181030132825.pdf

Red_Tank_4_Fed_59H_Directional_Plan_20181030132826.pdf

**Other proposed operations facets description:**

**Other proposed operations facets attachment:**

Red_Tank_4_Fed_59H_Flex_Hose_20181030132853.pdf

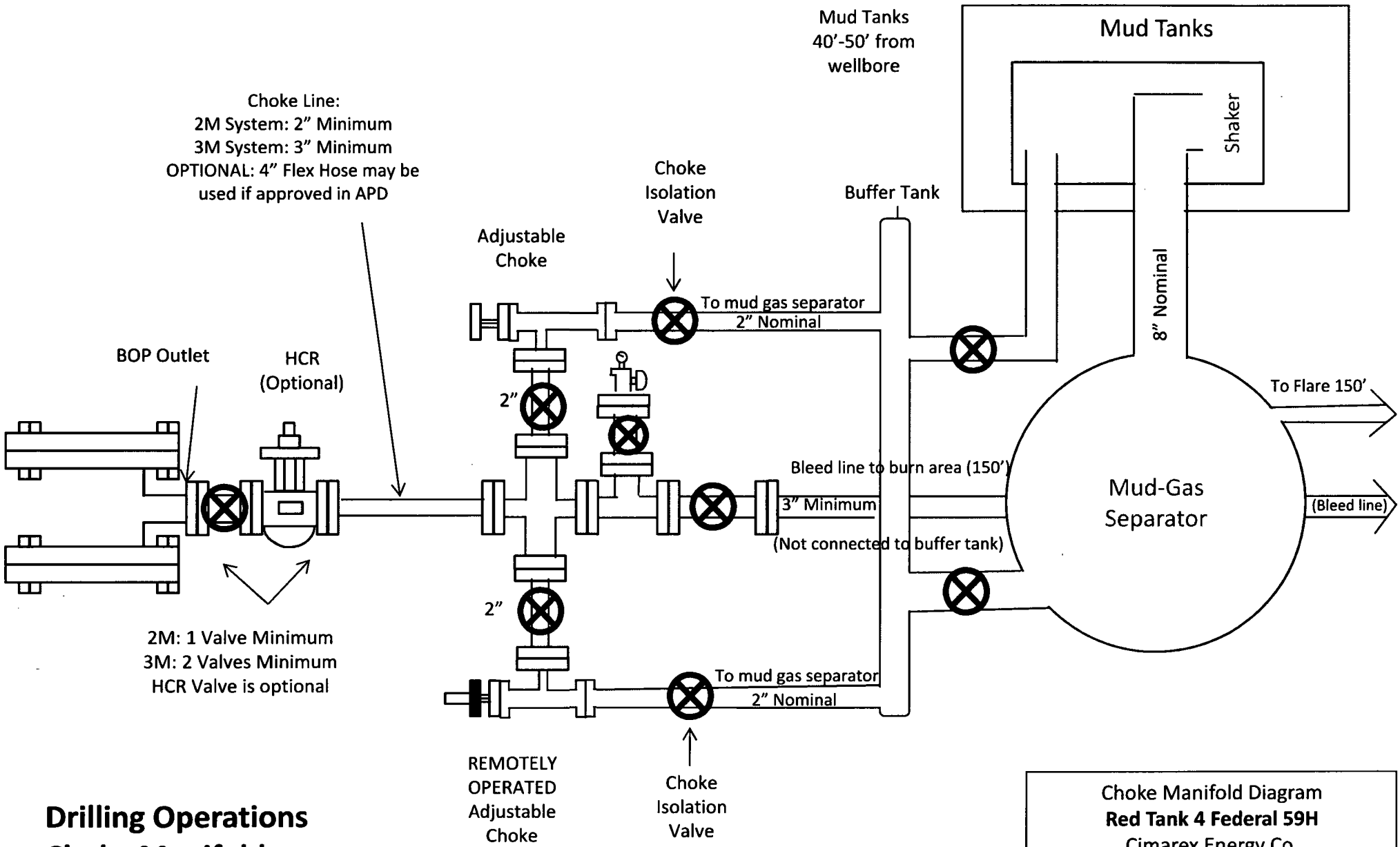
Red_Tank_4_Fed_59H_Gas_Capture_Plan_20181030132854.pdf

Red_Tank_4_Fed_59H_Drilling_Plan_20181102104345.pdf

**Other Variance attachment:**

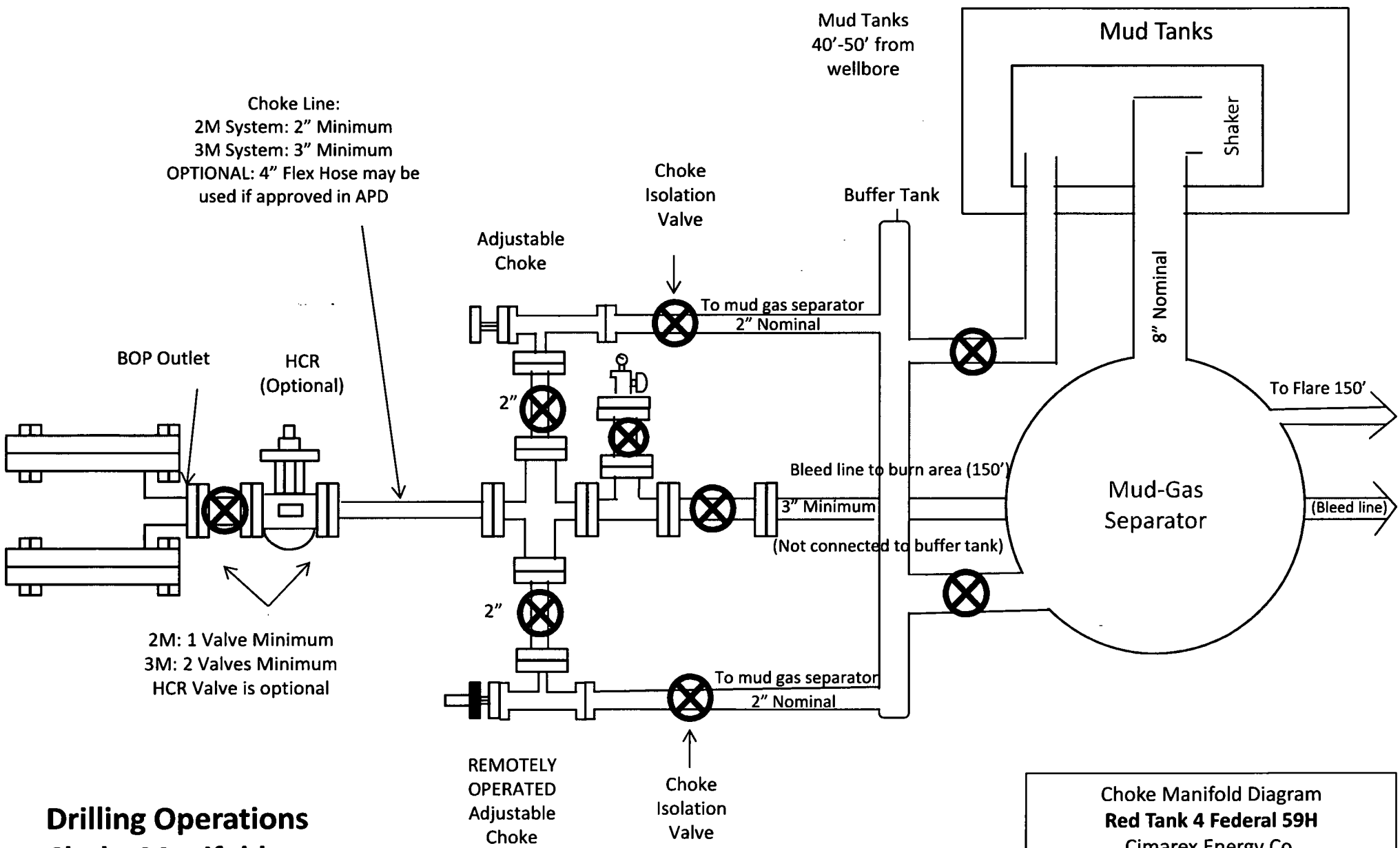
Red_Tank_4_Fed_59H_Multibowl_Procedure_20181030132928.pdf

Red_Tank_4_Fed_59H_Multibowl_Wellhead_20181030132929.pdf




**Drilling Operations**
**Choke Manifold**
**2M/3M Service**

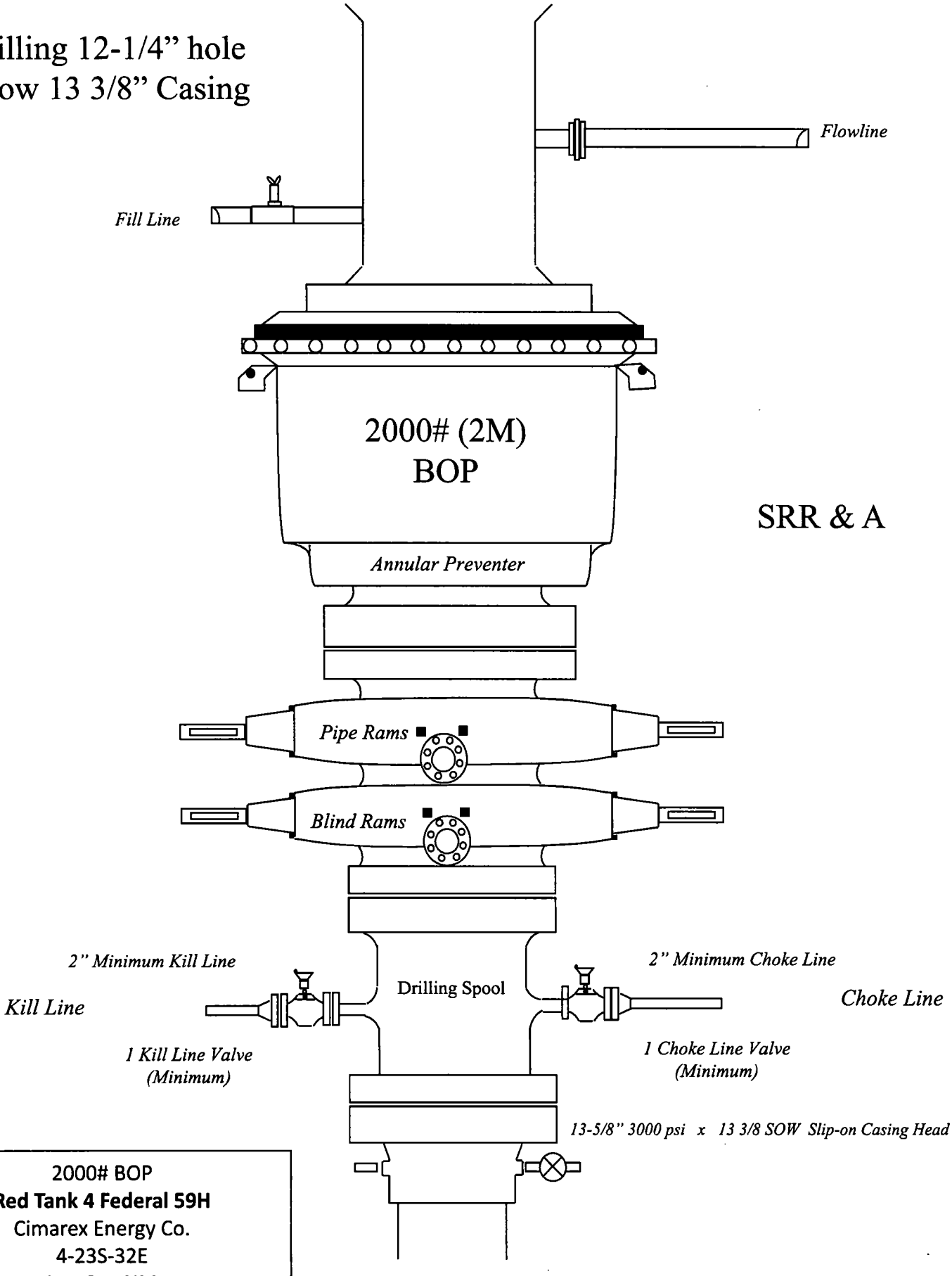
Choke Manifold Diagram
**Red Tank 4 Federal 59H**
Cimarex Energy Co.
4-23S-32E
Lea Co., NM




**Drilling Operations**
**Choke Manifold**
**2M/3M Service**

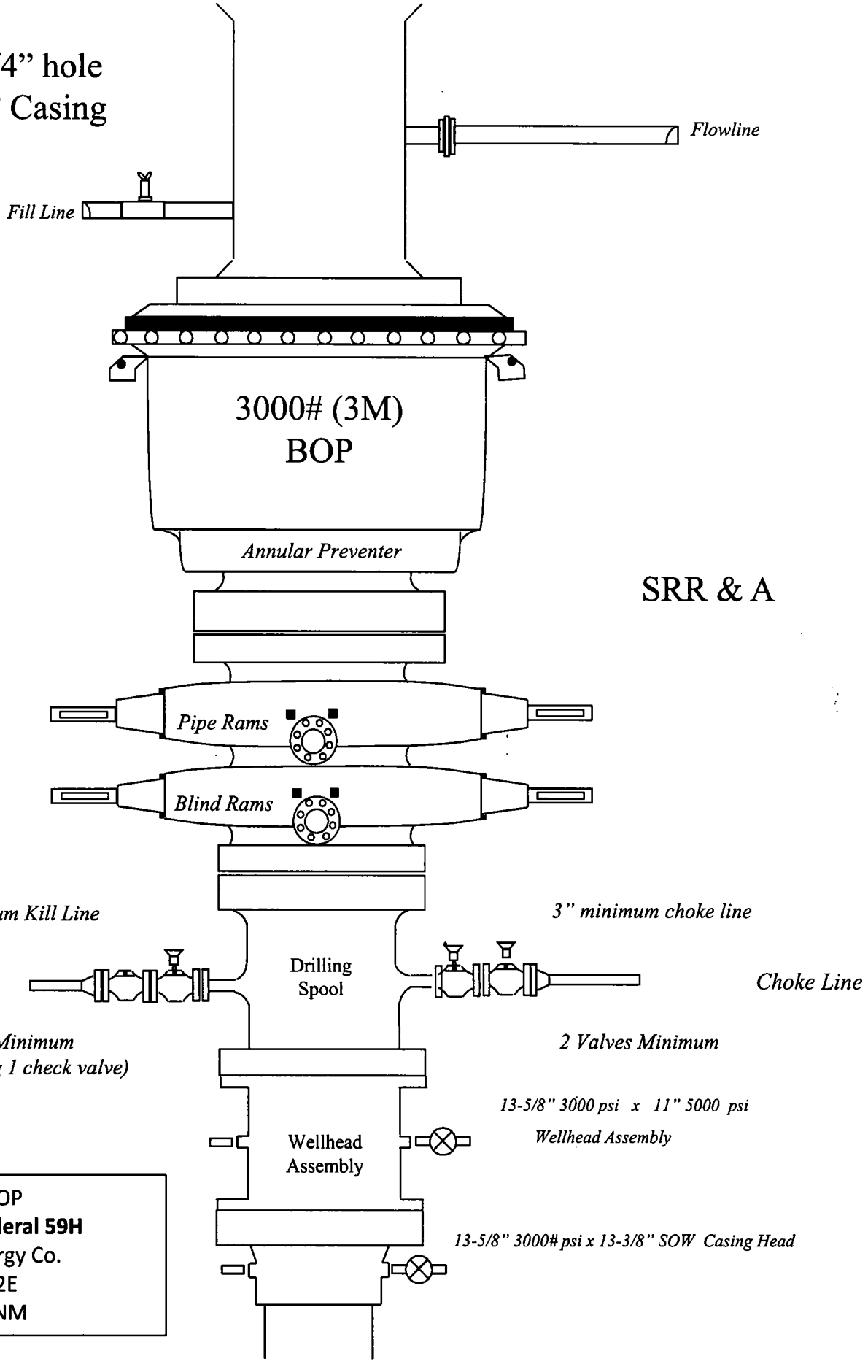
Choke Manifold Diagram
**Red Tank 4 Federal 59H**
Cimarex Energy Co.
4-23S-32E
Lea Co., NM

Drilling 12-1/4" hole
below 13 3/8" Casing




2000# BOP
**Red Tank 4 Federal 59H**
Cimarex Energy Co.
4-23S-32E
Lea Co., NM

Drilling 8-3/4" hole
below 9 5/8" Casing




SRR & A

3000# BOP
**Red Tank 4 Federal 59H**
Cimarex Energy Co.
4-23S-32E
Lea Co., NM

Print

EVRAZ

# Red Tank 4 Federal 59H Surface Casing Spec Sheet

# OCTG Performance Data

## Casing Performance

Availability: ERW

### Pipe Body Geometry

| | | | |
|---|---|---|---|
| Outside Diameter: | 13.375 in | Inside Diameter: | 12.715 in |
| Wall Thickness: | 0.330 in | Cross Section Area: | 13.524 sq in |
| Nominal Weight: | 48.00 lb/ft | Drift Diameter: | 12.559 in |
| Plain End Weight: | 46.02 lb/ft | Alternate Drift Diameter: | - |

### Pipe Body Performance

| | | | |
|---|---|---|---|
| Grade: | H40 | Collapse Strength (ERW): | 740 psi |
| Pipe Body Yield Strength: | 541000 lbf | Collapse Strength (SMLS): | - |

## SC Connection

### Connection Geometry

| | Optimum | Minimum | Maximum |
|---|---|---|---|
| Make Up Torque: | 3220 lb·ft | 2420 lb·ft | 4030 lb·ft |
| Coupling Outside Diameter: | 14.375 in | | |

### Connection Performance

| | | | |
|---|---|---|---|
| Grade: | H40 | Minimum Internal Yield Pressure: | 1730 psi |
| Joint Strength: | 322000 lbf | | |

## LC Connection

### Connection Geometry

| | Optimum | Minimum | Maximum |
|---|---|---|---|
| Make Up Torque: | - | - | - |
| Coupling Outside Diameter: | 14.375 in | | |

### Connection Performance

| | | | |
|---|---|---|---|
| Grade: | H40 | Minimum Internal Yield Pressure: | - |
| Joint Strength: | - | | |

## BC Connection

### Connection Geometry

| | Optimum | Minimum | Maximum |
|---|---|---|---|
| Make Up Torque: | - | - | - |
| Coupling Outside Diameter: | 14.375 in | | |

### Connection Performance

| | | | |
|---|---|---|---|
| Grade: | H40 | Minimum Internal Yield Pressure: | - |
| Joint Strength: | - | | |

## PE Connection

### Connection Geometry

| | Optimum | Minimum | Maximum |
|---|---|---|---|
| Make Up Torque: | - | - | - |
| Coupling Outside Diameter: | 14.375 in | | |

## Connection Performance

| | | | |
|---|---|---|---|
| Grade: | H40 | Minimum Internal Yield Pressure: | 1730 psi |
| Joint Strength: | - | | |

# Red Tank 4 Federal 59H

Casing Assumptions

## Casing Program

| Hole Size | Casing Depth From | Casing Depth To | Setting Depth TVD | Casing Size | Weight (lb/ft) | Grade | Conn. | SF Collapse | SF Burst | SF Tension |
|---|---|---|---|---|---|---|---|---|---|---|
| 17 1/2 | 0 | 1027 | 1027 | 13-3/8" | 48.00 | H-40/J-55 Hybrid | ST&C | 1.57 | 3.68 | 6.53 |
| 12 1/4 | 0 | 4653 | 4653 | 9-5/8" | 40.00 | J-55 | LT&C | 1.53 | 1.60 | 2.79 |
| 8 3/4 | 0 | 9085 | 9085 | 5-1/2" | 17.00 | L-80 | LT&C | 1.48 | 1.82 | 2.09 |
| 8 3/4 | 9085 | 14095 | 9524 | 5-1/2" | 17.00 | L-80 | BT&C | 1.41 | 1.74 | 53.20 |
| | | | | | | BLM Minimum Safety Factor | | 1.125 | 1 | 1.6 Dry<br>1.8 Wet |

TVD was used on all calculations.

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

# Red Tank 4 Federal 59H

Casing Assumptions

## Casing Program

| Hole Size | Casing Depth From | Casing Depth To | Setting Depth TVD | Casing Size | Weight (lb/ft) | Grade | Conn. | SF Collapse | SF Burst | SF Tension |
|---|---|---|---|---|---|---|---|---|---|---|
| 17 1/2 | 0 | 1027 | 1027 | 13-3/8" | 48.00 | H-40/J-55 Hybrid | ST&C | 1.57 | 3.68 | 6.53 |
| 12 1/4 | 0 | 4653 | 4653 | 9-5/8" | 40.00 | J-55 | LT&C | 1.53 | 1.60 | 2.79 |
| 8 3/4 | 0 | 9085 | 9085 | 5-1/2" | 17.00 | L-80 | LT&C | 1.48 | 1.82 | 2.09 |
| 8 3/4 | 9085 | 14095 | 9524 | 5-1/2" | 17.00 | L-80 | BT&C | 1.41 | 1.74 | 53.20 |
| | | | | | BLM Minimum Safety Factor | | | 1.125 | 1 | 1.6 Dry<br>1.8 Wet |

TVD was used on all calculations.

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 IILB.1.h

# Red Tank 4 Federal 59H

Casing Assumptions

## Casing Program

| Hole Size | Casing Depth From | Casing Depth To | Setting Depth TVD | Casing Size | Weight (lb/ft) | Grade | Conn. | SF Collapse | SF Burst | SF Tension |
|---|---|---|---|---|---|---|---|---|---|---|
| 17 1/2 | 0 | 1027 | 1027 | 13-3/8" | 48.00 | H-40/J-55 Hybrid | ST&C | 1.57 | 3.68 | 6.53 |
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| 8 3/4 | 9085 | 14095 | 9524 | 5-1/2" | 17.00 | L-80 | BT&C | 1.41 | 1.74 | 53.20 |
| | | | | | BLM Minimum Safety Factor | | | 1.125 | 1 | 1.6 Dry<br>1.8 Wet |

TVD was used on all calculations.
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 IILB.1.h

# Red Tank 4 Federal 59H

Casing Assumptions

## Casing Program

| Hole Size | Casing Depth From | Casing Depth To | Setting Depth TVD | Casing Size | Weight (lb/ft) | Grade | Conn. | SF Collapse | SF Burst | SF Tension |
|---|---|---|---|---|---|---|---|---|---|---|
| 17 1/2 | 0 | 1027 | 1027 | 13-3/8" | 48.00 | H-40/J-55 Hybrid | ST&C | 1.57 | 3.68 | 6.53 |
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| | | | | | BLM Minimum Safety Factor | | | 1.125 | 1 | 1.6 Dry<br>1.8 Wet |

TVD was used on all calculations.
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

Hydrogen Sulfide Drilling Operations Plan
**Red Tank 4 Federal 59H**
Cimarex Energy Co.
UL: M, Sec. 4, 23S, 32E
Lea Co., NM

1 All Company and Contract personnel admitted on location must be trained by a qualified H2S safety instructor to the following:

A. Characteristics of $H_2S$
B. Physical effects and hazards
C. Principal and operation of H2S detectors, warning system and briefing areas.
D. Evacuation procedure, routes and first aid.
E. Proper use of safety equipment & life support systems
F. Essential personnel meeting Medical Evaluation criteria will receive additional training on the proper use of 30 minute pressure demand air packs.

$H_2S$ Detection and Alarm Systems:

A. H2S sensors/detectors to be located on the drilling rig floor, in the base of the sub structure/cellar area, on the mud pits in the shale shaker area. Additional H2S detectors may play placed as deemed necessary.

B. An audio alarm system will be installed on the derrick floor and in the top doghouse.

3 Windsock and/or wind streamers:

A. Windsock at mudpit area should be high enough to be visible.

B. Windsock on the rig floor and / or top doghouse should be high enough to be visible.

4 Condition Flags and Signs

A. Warning sign on access road to location.
B. Flags to be displayed on sign at entrance to location. Green flag indicates normal safe condition. Yellow flag indicates potential pressure and danger. Red flag indicates danger ($H_2S$ present in dangerous concentration). Only H2S trained and certified personnel admitted to location.

5 Well control equipment:

A. See exhibit "E-1"

6 Communication:

A. While working under masks chalkboards will be used for communication.
B. Hand signals will be used where chalk board is inappropriate.
C. Two way radio will be used to communicate off location in case of emergency help is required. In most cases cellular telephones will be available at most drilling foreman's trailer or living quarters.

7 Drillstem Testing:
No DSTs r cores are planned at this time.

8 Drilling contractor supervisor will be required to be familiar with the effects $H_2S$ has on tubular goods and other mechanical equipment.

9 If H2S is encountered, mud system will be altered if necessary to maintain control of formation. A mud gas separator will be brought into service along with H2S scavengers if necessary.

$H_2S$ Contingency Plan
**Red Tank 4 Federal 59H**
Cimarex Energy Co.
UL: M, Sec. 4, 23S, 32E
Lea Co., NM

**Emergency Procedures**

In the event of a release of gas containing $H_2S$, the first responder(s) must:

« Isolate the area and prevent entry by other persons into the 100 ppm ROE.
« Evacuate any public places encompassed by the 100 ppm ROE.
« Be equipped with $H_2S$ monitors and air packs in order to control the release.
« Use the "buddy system" to ensure no injuries occur during the 432-620-1975
« Take precautions to avoid personal injury during this operation.
« Contact operator and/or local officials to aid in operation. See list of phone numbers attached.
« Have received training in the:
  - Detection of $H_2S$, and
  - Measures for protection against the gas,
  - Equipment used for protection and emergency response.

**Ignition of Gas Source**

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide ($SO_2$). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally, the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever there is an ignition of the gas.

**Characteristics of $H_2S$ and $SO_2$**

Please see attached International Chemical Safety Cards.

**Contacting Authorities**

Cimarex Energy Co. of Colorado's personnel must liaise with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available including directions to site. The following call list of essential and potential responders has been prepared for use during a release. Cimarex Energy Co. of Colorado's response must be in coordination with the State of New Mexico's "Hazardous Materials Emergency Response Plan" (HMER).

$H_2S$ Contingency Plan Emergency Contacts
**Red Tank 4 Federal 59H**
Cimarex Energy Co.
UL: M, Sec. 4, 23S, 32E
Lea Co., NM

| **Company Office** | | | |
|---|---|---|---|
| Cimarex Energy Co. of Colorado | | 800-969-4789 | |
| Co. Office and After-Hours Menu | | | |

**Key Personnel**

| **Name** | **Title** | **Office** | **Mobile** |
|---|---|---|---|
| Larry Seigrist | Drilling Manager | 432-620-1934 | 580-243-8485 |
| Charlie Pritchard | Drilling Superintendent | 432-620-1975 | 432-238-7084 |
| Roy Shirley | Construction Superintendent | | 432-634-2136 |

| **Artesia** | | |
|---|---|---|
| Ambulance | 911 | |
| State Police | 575-746-2703 | |
| City Police | 575-746-2703 | |
| Sheriff's Office | 575-746-9888 | |
| **Fire Department** | **575-746-2701** | |
| Local Emergency Planning Committee | 575-746-2122 | |
| New Mexico Oil Conservation Division | 575-748-1283 | |

| **Carlsbad** | | |
|---|---|---|
| Ambulance | 911 | |
| State Police | 575-885-3137 | |
| City Police | 575-885-2111 | |
| Sheriff's Office | 575-887-7551 | |
| **Fire Department** | **575-887-3798** | |
| Local Emergency Planning Committee | 575-887-6544 | |
| US Bureau of Land Management | 575-887-6544 | |

| **Santa Fe** | | |
|---|---|---|
| New Mexico Emergency Response Commission (Santa Fe) | 505-476-9600 | |
| New Mexico Emergency Response Commission (Santa Fe) 24 Hrs | 505-827-9126 | |
| New Mexico State Emergency Operations Center | 505-476-9635 | |

| **National** | | |
|---|---|---|
| National Emergency Response Center (Washington, D.C.) | 800-424-8802 | |

| **Medical** | | |
|---|---|---|
| Flight for Life - 4000 24th St.; Lubbock, TX | 806-743-9911 | |
| Aerocare - R3, Box 49F; Lubbock, TX | 806-747-8923 | |
| Med Flight Air Amb - 2301 Yale Blvd S.E., #D3; Albuquerque, NM | 505-842-4433 | |
| SB Air Med Service - 2505 Clark Carr Loop S.E.; Albuquerque, NM | 505-842-4949 | |

| **Other** | | |
|---|---|---|
| Boots & Coots IWC | 800-256-9688 | or 281-931-8884 |
| Cudd Pressure Control | 432-699-0139 | or 432-563-3356 |
| Halliburton | 575-746-2757 | |
| B.J. Services | 575-746-3569 | |

Schlumberger

CIMAREX

# Cimarex Red Tank 4 Federal #59H Rev0 RM 26Oct18 Anti-Collision Summary Report

| | | | |
|---|---|---|---|
| **Analysis Date-24hr Time:** | October 26, 2018 - 15:02 | **Analysis Method:** | 3D Least Distance |
| **Client:** | Cimarex Energy | **Reference Trajectory:** | Cimarex Red Tank 4 Federal #59H Rev0 RM 26Oct18 (Non-Def Plan) |
| **Field:** | NM Lea County (NAD 83) | **Depth Interval:** | Every 10.00 Measured Depth (ft) |
| **Structure:** | Cimarex Red Tank 4 Federal #59H | **Rule Set:** | NAL Procedure: D&M AntiCollision Standard S002 |
| **Slot:** | New Slot | **Min Pts:** | All local minima indicated. |
| **Well:** | Red Tank 4 Federal #59H | **Version / Patch:** | 2.10.740.0 |
| **Borehole:** | Red Tank 4 Federal #59H | **Database \ Project:** | US1153APP452.dir.slb.com\drilling-NM Lea County 2.10 |
| **Scan MD Range:** | 0.00ft ~ 14095.04ft | | |

**Trajectory Error Model:** ISCWSA0 3-D 95.000% Confidence 2.7955 sigma, for subject well. For offset wells, error model version is specified with each well respectively.

**Offset Trajectories Summary**

**Offset Selection Criteria**

Wellhead distance scan: Not performed!

Selection filters: Definitive Surveys - Definitive Plans - Definitive surveys exclude definitive plans
- All Non-Def Surveys when no Def-Survey is set in a borehole - All Non-Def Plans when no Def-Plan is set in a borehole

| Offset Trajectory | Separation | | | Allow | Sep. | Controlling | Reference Trajectory | | Risk Level | | | Alert | Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ct-Ct (ft) | MAS (ft) | EOU (ft) | Dev. (ft) | Fact. | Rule | MD (ft) | TVD (ft) | Alert | Minor | Major | | |
| Results highlighted: Sep-Factor separation <= 1.50 ft | | | | | | | | | | | | | |
| Cimarex Red Tank 4 Federal #58H Rev0 RM 23Oct18 (Non-Def Plan) | | | | | | | | | | | | | Warning Alert |
| | 20.02 | 16.50 | 17.52 | 3.52 | N/A | MAS = 5.03 (m) | 0.00 | 0.00 | CtCt<=15m<15.00 | | | | Enter Alert |
| | 20.00 | 16.50 | 17.50 | 3.50 | N/A | MAS = 5.03 (m) | 26.00 | 26.00 | | | | | WRP |
| | 20.00 | 16.50 | 8.47 | 3.50 | 1.94 | MAS = 5.03 (m) | 1500.00 | 1500.00 | | | | | MinPts |
| | 20.02 | 16.50 | 8.44 | 3.52 | 1.93 | MAS = 5.03 (m) | 1510.00 | 1510.00 | | | | | MINPT-O-EOU |
| | 20.16 | 16.50 | 8.49 | 3.66 | 1.93 | MAS = 5.03 (m) | 1530.00 | 1530.00 | | | | | MinPt-O-SF |
| | 56.74 | 18.95 | 43.27 | 37.79 | 4.94 | OSF1.50 | 1980.00 | 1978.22 | OSF>5.00 | | | | Exit Alert |
| | 179.60 | 47.58 | 147.04 | 132.01 | 5.89 | OSF1.50 | 6020.00 | 5989.77 | | | | | MinPt-O-SF |
| | 307.97 | 65.42 | 263.52 | 242.54 | 7.28 | OSF1.50 | 9640.00 | 9484.84 | | | | | MinPt-CtCt |
| | 307.97 | 94.16 | 244.36 | 213.81 | 5.00 | OSF1.50 | 11250.00 | 9524.00 | OSF<5.00 | | | | Enter Alert |
| | 307.97 | 174.56 | 190.76 | 133.41 | 2.66 | OSF1.50 | 14095.04 | 9524.00 | | | | | MinPts |
| Cimarex Red Tank 4 Federal #57H Rev0 RM 23Oct18 (Non-Def Plan) | | | | | | | | | | | | | Warning Alert |
| | 40.07 | 32.55 | 37.57 | 7.52 | N/A | MAS = 9.92 (m) | 0.00 | 0.00 | CtCt<=15m<15.00 | | | | Enter Alert |
| | 40.06 | 32.55 | 37.56 | 7.51 | N/A | MAS = 9.92 (m) | 26.00 | 26.00 | | | | | WRP |
| | 40.06 | 32.55 | 28.53 | 7.51 | 4.16 | MAS = 9.92 (m) | 1500.00 | 1500.00 | | | | | MinPts |
| | 40.08 | 32.55 | 28.50 | 7.53 | 4.14 | MAS = 9.92 (m) | 1510.00 | 1510.00 | | | | | MINPT-O-EOU |
| | 40.69 | 32.55 | 28.88 | 8.14 | 4.10 | MAS = 9.92 (m) | 1560.00 | 1560.00 | | | | | MinPt-O-SF |
| | 52.77 | 32.55 | 40.16 | 20.22 | 4.97 | MAS = 9.92 (m) | 1770.00 | 1769.60 | OSF>5.00 | | | | Exit Alert |
| | 186.35 | 32.55 | 167.48 | 153.80 | 11.23 | MAS = 9.92 (m) | 3500.00 | 3487.51 | | | | | MinPt-O-SF |
| | 615.93 | 74.48 | 565.44 | 541.44 | 12.78 | OSF1.50 | 9720.00 | 9510.28 | | | | | MinPt-CtCt |
| | 615.93 | 179.91 | 495.16 | 436.02 | 5.19 | OSF1.50 | 14095.04 | 9524.00 | | | | | MinPts |
| Cimarex Red Tank 4 Federal #1H Gyro 0ft to 12233ft MD (Def Survey) | | | | | | | | | | | | | Warning Alert |

| Offset Trajectory | Separation | | | Allow | Sep. | Controlling | Reference Trajectory | | Risk Level | | | Alert | Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ct-Ct (ft) | MAS (ft) | EOU (ft) | Dev. (ft) | Fact. | Rule | MD (ft) | TVD (ft) | Alert | Minor | Major | | |
| | 4389.84 | 32.81 | 4387.34 | 4357.03 | N/A | MAS = 10.00 (m) | 0.00 | 0.00 | | | | Surface | |
| | 4389.62 | 32.81 | 4387.10 | 4356.81 | 181284.09 | MAS = 10.00 (m) | 26.00 | 26.00 | | | | MinPt-O-SF | |
| | 4389.56 | 32.81 | 4387.01 | 4356.75 | 82272.03 | MAS = 10.00 (m) | 50.00 | 50.00 | | | | MinPts | |
| | 4390.49 | 32.81 | 4381.07 | 4357.68 | 634.20 | MAS = 10.00 (m) | 1600.00 | 1599.98 | | | | MinPt-O-SF | |
| | 4383.26 | 32.81 | 4373.02 | 4350.45 | 566.57 | MAS = 10.00 (m) | 2320.00 | 2315.82 | | | | MinPts | |
| | 4376.78 | 32.81 | 4362.73 | 4343.97 | 378.84 | MAS = 10.00 (m) | 3380.00 | 3368.36 | | | | MinPts | |
| | 4374.09 | 32.81 | 4358.81 | 4341.28 | 341.94 | MAS = 10.00 (m) | 3720.00 | 3705.97 | | | | MinPts | |
| | 4374.18 | 32.81 | 4358.71 | 4341.37 | 337.00 | MAS = 10.00 (m) | 3770.00 | 3755.61 | | | | MINPT-O-EOU | |
| | 4374.65 | 32.81 | 4358.75 | 4341.84 | 326.11 | MAS = 10.00 (m) | 3880.00 | 3864.84 | | | | MINPT-O-EOU | |
| | 4375.37 | 32.81 | 4357.60 | 4342.57 | 286.31 | MAS = 10.00 (m) | 4310.00 | 4291.81 | | | | MinPts | |
| | 4375.54 | 32.81 | 4357.45 | 4342.73 | 280.57 | MAS = 10.00 (m) | 4380.00 | 4361.32 | | | | MINPT-O-EOU | |
| | 4374.06 | 32.81 | 4354.05 | 4341.25 | 249.66 | MAS = 10.00 (m) | 4860.00 | 4837.94 | | | | MinPts | |
| | 4373.75 | 36.48 | 4348.60 | 4337.27 | 192.96 | OSF1.50 | 6050.00 | 6019.56 | | | | MinPt-CtCt | |
| | 4374.19 | 38.25 | 4347.85 | 4335.94 | 183.40 | OSF1.50 | 6310.00 | 6277.73 | | | | MINPT-O-EOU | |
| | 4374.67 | 43.22 | 4345.01 | 4331.45 | 161.18 | OSF1.50 | 7100.00 | 7062.24 | | | | MinPt-O-SF | |
| | 4374.08 | 42.74 | 4344.75 | 4331.34 | 163.01 | OSF1.50 | 7180.00 | 7141.96 | | | | MinPt-O-ADP | |
| | 4373.88 | 42.50 | 4344.72 | 4331.38 | 163.94 | OSF1.50 | 7220.00 | 7181.89 | | | | MINPT-O-EOU | |
| | 4373.69 | 42.00 | 4344.86 | 4331.69 | 165.99 | OSF1.50 | 7310.00 | 7271.81 | | | | MinPt-CtCt | |
| | 4373.86 | 41.75 | 4345.20 | 4332.11 | 167.04 | OSF1.50 | 7390.00 | 7351.81 | | | | MinPt-O-SF | |
| | 4373.77 | 41.98 | 4344.95 | 4331.79 | 166.08 | OSF1.50 | 7530.00 | 7491.81 | | | | MinPt-CtCt | |
| | 4373.79 | 42.04 | 4344.93 | 4331.75 | 165.83 | OSF1.50 | 7560.00 | 7521.81 | | | | MINPT-O-EOU | |
| | 4373.39 | 42.60 | 4344.16 | 4330.80 | 163.51 | OSF1.50 | 7830.00 | 7791.81 | | | | MinPt-CtCt | |
| | 277.73 | 90.76 | 215.08 | 186.98 | 4.83 | OSF1.50 | 13500.00 | 9524.00 | OSF<5.00 | | | Enter Alert | |
| | 167.51 | 116.03 | 89.33 | 51.48 | 2.18 | OSF1.50 | 13710.00 | 9524.00 | | | | MinPts | |
| | 167.10 | 115.61 | 89.19 | 51.49 | 2.18 | OSF1.50 | 13720.00 | 9524.00 | | | | MinPts | |
| | 244.25 | 78.92 | 190.80 | 165.33 | 4.75 | OSF1.50 | 13900.00 | 9524.00 | OSF>5.00 | | | Exit Alert | |
| | 408.90 | 56.60 | 370.33 | 352.29 | 11.27 | OSF1.50 | 14095.04 | 9524.00 | | | | TD | |
| Cimarex Red Tank 4 Federal #1H ST01 Gyro+MWD 10140ft to 14929ft MD (Def Survey) | | | | | | | | | | | | | Warning Alert |
| | 4389.84 | 32.81 | 4387.34 | 4357.03 | N/A | MAS = 10.00 (m) | 0.00 | 0.00 | | | | Surface | |
| | 4389.62 | 32.81 | 4387.10 | 4356.81 | 181284.09 | MAS = 10.00 (m) | 26.00 | 26.00 | | | | MinPt-O-SF | |
| | 4389.56 | 32.81 | 4387.01 | 4356.75 | 82272.03 | MAS = 10.00 (m) | 50.00 | 50.00 | | | | MinPts | |
| | 4390.49 | 32.81 | 4381.07 | 4357.68 | 634.20 | MAS = 10.00 (m) | 1600.00 | 1599.98 | | | | MinPt-O-SF | |
| | 4383.26 | 32.81 | 4373.02 | 4350.45 | 566.57 | MAS = 10.00 (m) | 2320.00 | 2315.82 | | | | MinPts | |
| | 4376.78 | 32.81 | 4362.73 | 4343.97 | 378.84 | MAS = 10.00 (m) | 3380.00 | 3368.36 | | | | MinPts | |
| | 4374.09 | 32.81 | 4358.81 | 4341.28 | 341.94 | MAS = 10.00 (m) | 3720.00 | 3705.97 | | | | MinPts | |
| | 4374.18 | 32.81 | 4358.71 | 4341.37 | 337.00 | MAS = 10.00 (m) | 3770.00 | 3755.61 | | | | MINPT-O-EOU | |
| | 4374.65 | 32.81 | 4358.75 | 4341.84 | 326.11 | MAS = 10.00 (m) | 3880.00 | 3864.84 | | | | MINPT-O-EOU | |
| | 4375.37 | 32.81 | 4357.60 | 4342.57 | 286.31 | MAS = 10.00 (m) | 4310.00 | 4291.81 | | | | MinPts | |
| | 4375.54 | 32.81 | 4357.45 | 4342.73 | 280.57 | MAS = 10.00 (m) | 4380.00 | 4361.32 | | | | MINPT-O-EOU | |
| | 4374.06 | 32.81 | 4354.05 | 4341.25 | 249.66 | MAS = 10.00 (m) | 4860.00 | 4837.94 | | | | MinPts | |
| | 4373.75 | 36.48 | 4348.60 | 4337.27 | 192.96 | OSF1.50 | 6050.00 | 6019.56 | | | | MinPt-CtCt | |
| | 4374.19 | 38.25 | 4347.85 | 4335.94 | 183.40 | OSF1.50 | 6310.00 | 6277.73 | | | | MINPT-O-EOU | |
| | 1319.04 | 95.85 | 1254.31 | 1223.19 | 21.16 | OSF1.50 | 9730.00 | 9512.56 | | | | MinPt-O-SF | |
| | 1308.35 | 94.31 | 1244.65 | 1214.05 | 21.34 | OSF1.50 | 9820.00 | 9523.77 | | | | MinPt-O-ADP | |
| | 1308.14 | 94.09 | 1244.58 | 1214.05 | 21.38 | OSF1.50 | 9830.00 | 9523.98 | | | | MINPT-O-EOU | |
| | 1307.52 | 92.76 | 1244.85 | 1214.76 | 21.69 | OSF1.50 | 9900.00 | 9524.00 | | | | MINPT-O-EOU | |
| | 1276.35 | 78.15 | 1223.42 | 1198.20 | 25.26 | OSF1.50 | 11000.00 | 9524.00 | | | | MinPts | |
| | 1284.19 | 76.30 | 1232.49 | 1207.89 | 26.05 | OSF1.50 | 11460.00 | 9524.00 | | | | MinPt-O-SF | |
| | 1274.63 | 78.02 | 1221.79 | 1196.61 | 25.27 | OSF1.50 | 11940.00 | 9524.00 | | | | MinPt-CtCt | |
| | 1261.12 | 82.42 | 1205.33 | 1178.69 | 23.62 | OSF1.50 | 12470.00 | 9524.00 | | | | MinPts | |
| | 277.73 | 90.76 | 215.08 | 186.98 | 4.83 | OSF1.50 | 13500.00 | 9524.00 | OSF<5.00 | | | Enter Alert | |

| Offset Trajectory | Separation | | | Allow | Sep. | Controlling | Reference Trajectory | | Risk Level | | | Alert | Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ct-Ct (ft) | MAS (ft) | EOU (ft) | Dev. (ft) | Fact. | Rule | MD (ft) | TVD (ft) | Alert | Minor | Major | | |
| | 167.51 | 116.03 | 89.33 | 51.48 | 2.18 | OSF1.50 | 13710.00 | 9524.00 | | | | MinPts | |
| | 167.10 | 115.61 | 89.19 | 51.49 | 2.18 | OSF1.50 | 13720.00 | 9524.00 | | | | MinPts | |
| | 244.25 | 78.92 | 190.80 | 165.33 | 4.75 | OSF1.50 | 13900.00 | 9524.00 | OSF>5.00 | | | Exit Alert | |
| | 408.90 | 56.60 | 370.33 | 352.29 | 11.27 | OSF1.50 | 14095.04 | 9524.00 | | | | TD | |
| Cimarex Red Tank 4 Federal #43H Rev0 RM 28Oct18 (Non-Def Plan) | | | | | | | | | | | | | Warning Alert |
| | 896.39 | 32.81 | 893.89 | 863.58 | N/A | MAS = 10.00 (m) | 0.00 | 0.00 | | | | Surface | |
| | 896.39 | 32.81 | 893.86 | 863.58 | 27001.56 | MAS = 10.00 (m) | 26.00 | 26.00 | | | | WRP | |
| | 240.47 | 74.49 | 189.72 | 165.98 | 5.00 | OSF1.50 | 8740.00 | 8701.81 | OSF<5.00 | | | Enter Alert | |
| | 240.47 | 76.80 | 188.18 | 163.67 | 4.84 | OSF1.50 | 9060.00 | 9021.81 | | | | MinPt-CtCt | |
| | 240.49 | 76.88 | 188.14 | 163.61 | 4.83 | OSF1.50 | 9070.00 | 9031.81 | | | | MINPT-O-EOU | |
| | 240.56 | 76.95 | 188.16 | 163.61 | 4.83 | OSF1.50 | 9080.00 | 9041.81 | | | | MinPt-O-ADP | |
| | 240.86 | 77.09 | 188.38 | 163.77 | 4.83 | OSF1.50 | 9100.00 | 9061.81 | | | | MinPt-O-SF | |
| | 251.55 | 77.86 | 198.56 | 173.69 | 4.99 | OSF1.50 | 9270.00 | 9227.19 | OSF>5.00 | | | Exit Alert | |
| | 308.32 | 94.74 | 244.11 | 213.58 | 5.00 | OSF1.50 | 10630.00 | 9524.00 | OSF<5.00 | | | Enter Alert | |
| | 308.32 | 184.60 | 184.20 | 123.71 | 2.52 | OSF1.50 | 14095.04 | 9524.00 | | | | MinPts | |
| Cimarex Red Tank 4 Federal #44H Rev0 RM 28Oct18 (Non-Def Plan) | | | | | | | | | | | | | Pass |
| | 916.38 | 32.81 | 913.88 | 883.58 | N/A | MAS = 10.00 (m) | 0.00 | 0.00 | | | | Surface | |
| | 916.38 | 32.81 | 913.85 | 883.58 | 25390.20 | MAS = 10.00 (m) | 26.00 | 26.00 | | | | WRP | |
| | 615.92 | 63.05 | 572.92 | 552.88 | 15.29 | OSF1.50 | 9060.00 | 9021.81 | | | | MinPt-CtCt | |
| | 616.13 | 69.15 | 569.05 | 546.98 | 13.89 | OSF1.50 | 9840.00 | 9524.00 | | | | MinPt-CtCt | |
| | 616.13 | 176.61 | 497.42 | 439.52 | 5.30 | OSF1.50 | 14095.04 | 9524.00 | | | | MinPts | |
| Cimarex Red Tank 4 Federal #45H Rev0 RM 28Oct18 (Non-Def Plan) | | | | | | | | | | | | | Pass |
| | 936.39 | 32.81 | 933.89 | 903.58 | N/A | MAS = 10.00 (m) | 0.00 | 0.00 | | | | Surface | |
| | 936.39 | 32.81 | 933.85 | 903.58 | 26772.21 | MAS = 10.00 (m) | 26.00 | 26.00 | | | | WRP | |
| | 936.39 | 32.81 | 924.93 | 903.58 | 104.29 | MAS = 10.00 (m) | 1480.00 | 1480.00 | | | | MinPts | |
| | 936.42 | 32.81 | 924.87 | 903.61 | 103.20 | MAS = 10.00 (m) | 1500.00 | 1500.00 | | | | MINPT-O-EOU | |
| | 931.66 | 32.81 | 919.60 | 898.85 | 97.22 | MAS = 10.00 (m) | 1940.00 | 1938.50 | | | | MinPts | |
| | 975.21 | 55.18 | 937.59 | 920.03 | 27.70 | OSF1.50 | 6640.00 | 6605.41 | | | | MinPt-O-ADP | |
| | 975.11 | 55.45 | 937.31 | 919.66 | 27.55 | OSF1.50 | 6690.00 | 6655.05 | | | | MinPt-O-SF | |
| | 927.18 | 55.64 | 889.24 | 871.54 | 26.13 | OSF1.50 | 7240.00 | 7201.86 | | | | MinPt-O-SF | |
| | 924.45 | 55.46 | 886.63 | 869.00 | 26.14 | OSF1.50 | 7320.00 | 7281.81 | | | | MinPt-O-SF | |
| | 923.88 | 62.00 | 881.69 | 861.87 | 23.25 | OSF1.50 | 9060.00 | 9021.81 | | | | MinPt-CtCt | |
| | 924.01 | 67.31 | 878.28 | 856.70 | 21.35 | OSF1.50 | 9840.00 | 9524.00 | | | | MinPt-CtCt | |
| | 924.01 | 174.16 | 807.05 | 749.85 | 8.05 | OSF1.50 | 14095.04 | 9524.00 | | | | MinPts | |

Schlumberger

# Cimarex Red Tank 4 Federal #59H Rev0 RM 26Oct18 Proposal Geodetic Report

**(Non-Def Plan)**

CIMAREX

| | | | |
|---|---|---|---|
| **Report Date:** | October 26, 2018 - 03:02 PM | **Survey / DLS Computation:** | Minimum Curvature / Lubinski |
| **Client:** | Cimarex Energy | **Vertical Section Azimuth:** | 359.612 ° (Grid North) |
| **Field:** | NM Lea County (NAD 83) | **Vertical Section Origin:** | 0.000 ft, 0.000 ft |
| **Structure / Slot:** | Cimarex Red Tank 4 Federal #59H / New Slot | **TVD Reference Datum:** | RKB |
| **Well:** | Red Tank 4 Federal #59H | **TVD Reference Elevation:** | 3656.400 ft above MSL |
| **Borehole:** | Red Tank 4 Federal #59H | **Seabed / Ground Elevation:** | 3630.400 ft above MSL |
| **UWI / API#:** | Unknown / Unknown | **Magnetic Declination:** | 6.838 ° |
| **Survey Name:** | Cimarex Red Tank 4 Federal #59H Rev0 RM 26Oct18 | **Total Gravity Field Strength:** | 998.4465mgn (9.80665 Based) |
| **Survey Date:** | October 26, 2018 | **Gravity Model:** | GARM |
| **Tort / AHD / DDI / ERD Ratio:** | 103.606 ° / 5393.787 ft / 5.918 / 0.566 | **Total Magnetic Field Strength:** | 48057.214 nT |
| **Coordinate Reference System:** | NAD83 New Mexico State Plane, Eastern Zone, US Feet | **Magnetic Dip Angle:** | 60.080 ° |
| **Location Lat / Long:** | N 32° 19' 39.16631", W 103° 41' 14.05464" | **Declination Date:** | October 26, 2018 |
| **Location Grid N/E Y/X:** | N 483495.200 ftUS, E 740906.080 ftUS | **Magnetic Declination Model:** | HDGM 2018 |
| **CRS Grid Convergence Angle:** | 0.3455 ° | **North Reference:** | Grid North |
| **Grid Scale Factor:** | 0.9999547 | **Grid Convergence Used:** | 0.3455 ° |
| **Version / Patch:** | 2.10.740.0 | **Total Corr Mag North->Grid North:** | 6.4921 ° |
| | | **Local Coord Referenced To:** | Well Head |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | VSEC (ft) | NS (ft) | EW (ft) | DLS (°/100ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SHL [432' FSL, 290' FWL] | 0.00 | 0.00 | 90.00 | 0.00 | 0.00 | 0.00 | 0.00 | N/A | 483495.20 | 740906.08 | N 32 19 39.17 | W 103 41 14.05 |
| | 100.00 | 0.00 | 90.00 | 100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 483495.20 | 740906.08 | N 32 19 39.17 | W 103 41 14.05 |
| | 200.00 | 0.00 | 90.00 | 200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 483495.20 | 740906.08 | N 32 19 39.17 | W 103 41 14.05 |
| | 300.00 | 0.00 | 90.00 | 300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 483495.20 | 740906.08 | N 32 19 39.17 | W 103 41 14.05 |
| | 400.00 | 0.00 | 90.00 | 400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 483495.20 | 740906.08 | N 32 19 39.17 | W 103 41 14.05 |
| | 500.00 | 0.00 | 90.00 | 500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 483495.20 | 740906.08 | N 32 19 39.17 | W 103 41 14.05 |
| | 600.00 | 0.00 | 90.00 | 600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 483495.20 | 740906.08 | N 32 19 39.17 | W 103 41 14.05 |
| | 700.00 | 0.00 | 90.00 | 700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 483495.20 | 740906.08 | N 32 19 39.17 | W 103 41 14.05 |
| | 800.00 | 0.00 | 90.00 | 800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 483495.20 | 740906.08 | N 32 19 39.17 | W 103 41 14.05 |
| | 900.00 | 0.00 | 90.00 | 900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 483495.20 | 740906.08 | N 32 19 39.17 | W 103 41 14.05 |
| *Rustler* | *977.00* | *0.00* | *90.00* | *977.00* | *0.00* | *0.00* | *0.00* | *0.00* | *483495.20* | *740906.08* | *N 32 19 39.17* | *W 103 41 14.05* |
| | 1000.00 | 0.00 | 90.00 | 1000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 483495.20 | 740906.08 | N 32 19 39.17 | W 103 41 14.05 |
| | 1100.00 | 0.00 | 90.00 | 1100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 483495.20 | 740906.08 | N 32 19 39.17 | W 103 41 14.05 |
| | 1200.00 | 0.00 | 90.00 | 1200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 483495.20 | 740906.08 | N 32 19 39.17 | W 103 41 14.05 |
| | 1300.00 | 0.00 | 90.00 | 1300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 483495.20 | 740906.08 | N 32 19 39.17 | W 103 41 14.05 |
| | 1400.00 | 0.00 | 90.00 | 1400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 483495.20 | 740906.08 | N 32 19 39.17 | W 103 41 14.05 |
| Nudge 2°/100' DLS | 1500.00 | 0.00 | 90.00 | 1500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 483495.20 | 740906.08 | N 32 19 39.17 | W 103 41 14.05 |
| | 1600.00 | 2.00 | 90.00 | 1599.98 | -0.01 | 0.00 | 1.75 | 2.00 | 483495.20 | 740907.83 | N 32 19 39.17 | W 103 41 14.03 |
| | 1700.00 | 4.00 | 90.00 | 1699.84 | -0.05 | 0.00 | 6.98 | 2.00 | 483495.20 | 740913.06 | N 32 19 39.17 | W 103 41 13.97 |
| | 1800.00 | 6.00 | 90.00 | 1799.45 | -0.11 | 0.00 | 15.69 | 2.00 | 483495.20 | 740921.77 | N 32 19 39.17 | W 103 41 13.87 |
| Hold Nudge | 1840.16 | 6.80 | 90.00 | 1839.36 | -0.14 | 0.00 | 20.17 | 2.00 | 483495.20 | 740926.25 | N 32 19 39.17 | W 103 41 13.82 |
| | 1900.00 | 6.80 | 90.00 | 1898.78 | -0.18 | 0.00 | 27.26 | 0.00 | 483495.20 | 740933.34 | N 32 19 39.16 | W 103 41 13.74 |
| | 2000.00 | 6.80 | 90.00 | 1998.08 | -0.26 | 0.00 | 39.11 | 0.00 | 483495.20 | 740945.18 | N 32 19 39.16 | W 103 41 13.60 |
| | 2100.00 | 6.80 | 90.00 | 2097.37 | -0.35 | 0.00 | 50.95 | 0.00 | 483495.20 | 740957.03 | N 32 19 39.16 | W 103 41 13.46 |
| | 2200.00 | 6.80 | 90.00 | 2196.67 | -0.43 | 0.00 | 62.80 | 0.00 | 483495.20 | 740968.87 | N 32 19 39.16 | W 103 41 13.32 |
| | 2300.00 | 6.80 | 90.00 | 2295.96 | -0.51 | 0.00 | 74.64 | 0.00 | 483495.20 | 740980.72 | N 32 19 39.16 | W 103 41 13.18 |
| | 2400.00 | 6.80 | 90.00 | 2395.26 | -0.59 | 0.00 | 86.49 | 0.00 | 483495.20 | 740992.57 | N 32 19 39.16 | W 103 41 13.05 |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | VSEC (ft) | NS (ft) | EW (ft) | DLS (°/100ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2500.00 | 6.80 | 90.00 | 2494.56 | -0.67 | 0.00 | 98.34 | 0.00 | 483495.20 | 741004.41 | N 32 19 39.16 | W 103 41 12.91 |
| | 2600.00 | 6.80 | 90.00 | 2593.85 | -0.75 | 0.00 | 110.18 | 0.00 | 483495.20 | 741016.26 | N 32 19 39.16 | W 103 41 12.77 |
| | 2700.00 | 6.80 | 90.00 | 2693.15 | -0.83 | 0.00 | 122.03 | 0.00 | 483495.20 | 741028.10 | N 32 19 39.16 | W 103 41 12.63 |
| | 2800.00 | 6.80 | 90.00 | 2792.44 | -0.91 | 0.00 | 133.87 | 0.00 | 483495.20 | 741039.95 | N 32 19 39.16 | W 103 41 12.49 |
| | 2900.00 | 6.80 | 90.00 | 2891.74 | -0.99 | 0.00 | 145.72 | 0.00 | 483495.20 | 741051.79 | N 32 19 39.16 | W 103 41 12.36 |
| | 3000.00 | 6.80 | 90.00 | 2991.03 | -1.07 | 0.00 | 157.57 | 0.00 | 483495.20 | 741063.64 | N 32 19 39.16 | W 103 41 12.22 |
| | 3100.00 | 6.80 | 90.00 | 3090.33 | -1.15 | 0.00 | 169.41 | 0.00 | 483495.20 | 741075.48 | N 32 19 39.16 | W 103 41 12.08 |
| | 3200.00 | 6.80 | 90.00 | 3189.63 | -1.23 | 0.00 | 181.26 | 0.00 | 483495.20 | 741087.33 | N 32 19 39.16 | W 103 41 11.94 |
| | 3300.00 | 6.80 | 90.00 | 3288.92 | -1.31 | 0.00 | 193.10 | 0.00 | 483495.20 | 741099.17 | N 32 19 39.15 | W 103 41 11.80 |
| | 3400.00 | 6.80 | 90.00 | 3388.22 | -1.39 | 0.00 | 204.95 | 0.00 | 483495.20 | 741111.02 | N 32 19 39.15 | W 103 41 11.67 |
| *Castille* | *3434.02* | *6.80* | *90.00* | *3422.00* | *-1.42* | *0.00* | *208.98* | *0.00* | *483495.20* | *741115.05* | *N 32 19 39.15* | *W 103 41 11.62* |
| | 3500.00 | 6.80 | 90.00 | 3487.51 | -1.47 | 0.00 | 216.79 | 0.00 | 483495.20 | 741122.86 | N 32 19 39.15 | W 103 41 11.53 |
| | 3600.00 | 6.80 | 90.00 | 3586.81 | -1.55 | 0.00 | 228.64 | 0.00 | 483495.20 | 741134.71 | N 32 19 39.15 | W 103 41 11.39 |
| | 3700.00 | 6.80 | 90.00 | 3686.11 | -1.63 | 0.00 | 240.49 | 0.00 | 483495.20 | 741146.56 | N 32 19 39.15 | W 103 41 11.25 |
| | 3800.00 | 6.80 | 90.00 | 3785.40 | -1.71 | 0.00 | 252.33 | 0.00 | 483495.20 | 741158.40 | N 32 19 39.15 | W 103 41 11.11 |
| | 3900.00 | 6.80 | 90.00 | 3884.70 | -1.79 | 0.00 | 264.18 | 0.00 | 483495.20 | 741170.25 | N 32 19 39.15 | W 103 41 10.98 |
| | 4000.00 | 6.80 | 90.00 | 3983.99 | -1.87 | 0.00 | 276.02 | 0.00 | 483495.20 | 741182.09 | N 32 19 39.15 | W 103 41 10.84 |
| | 4100.00 | 6.80 | 90.00 | 4083.29 | -1.95 | 0.00 | 287.87 | 0.00 | 483495.20 | 741193.94 | N 32 19 39.15 | W 103 41 10.70 |
| | 4200.00 | 6.80 | 90.00 | 4182.59 | -2.03 | 0.00 | 299.72 | 0.00 | 483495.20 | 741205.78 | N 32 19 39.15 | W 103 41 10.56 |
| | 4300.00 | 6.80 | 90.00 | 4281.88 | -2.11 | 0.00 | 311.56 | 0.00 | 483495.20 | 741217.63 | N 32 19 39.15 | W 103 41 10.42 |
| | 4400.00 | 6.80 | 90.00 | 4381.18 | -2.19 | 0.00 | 323.41 | 0.00 | 483495.20 | 741229.47 | N 32 19 39.15 | W 103 41 10.29 |
| | 4500.00 | 6.80 | 90.00 | 4480.47 | -2.27 | 0.00 | 335.25 | 0.00 | 483495.20 | 741241.32 | N 32 19 39.15 | W 103 41 10.15 |
| | 4600.00 | 6.80 | 90.00 | 4579.77 | -2.35 | 0.00 | 347.10 | 0.00 | 483495.20 | 741253.16 | N 32 19 39.15 | W 103 41 10.01 |
| *Lamar* | *4647.57* | *6.80* | *90.00* | *4627.00* | *-2.39* | *0.00* | *352.73* | *0.00* | *483495.20* | *741258.80* | *N 32 19 39.15* | *W 103 41 9.94* |
| *Bell Canyon* | *4693.89* | *6.80* | *90.00* | *4673.00* | *-2.43* | *0.00* | *358.22* | *0.00* | *483495.20* | *741264.29* | *N 32 19 39.14* | *W 103 41 9.88* |
| | 4700.00 | 6.80 | 90.00 | 4679.06 | -2.43 | 0.00 | 358.95 | 0.00 | 483495.20 | 741265.01 | N 32 19 39.14 | W 103 41 9.87 |
| | 4800.00 | 6.80 | 90.00 | 4778.36 | -2.51 | 0.00 | 370.79 | 0.00 | 483495.20 | 741276.85 | N 32 19 39.14 | W 103 41 9.73 |
| | 4900.00 | 6.80 | 90.00 | 4877.66 | -2.59 | 0.00 | 382.64 | 0.00 | 483495.20 | 741288.70 | N 32 19 39.14 | W 103 41 9.60 |
| | 5000.00 | 6.80 | 90.00 | 4976.95 | -2.67 | 0.00 | 394.48 | 0.00 | 483495.20 | 741300.55 | N 32 19 39.14 | W 103 41 9.46 |
| | 5100.00 | 6.80 | 90.00 | 5076.25 | -2.75 | 0.00 | 406.33 | 0.00 | 483495.20 | 741312.39 | N 32 19 39.14 | W 103 41 9.32 |
| | 5200.00 | 6.80 | 90.00 | 5175.54 | -2.83 | 0.00 | 418.18 | 0.00 | 483495.20 | 741324.24 | N 32 19 39.14 | W 103 41 9.18 |
| | 5300.00 | 6.80 | 90.00 | 5274.84 | -2.91 | 0.00 | 430.02 | 0.00 | 483495.20 | 741336.08 | N 32 19 39.14 | W 103 41 9.04 |
| | 5400.00 | 6.80 | 90.00 | 5374.14 | -2.99 | 0.00 | 441.87 | 0.00 | 483495.20 | 741347.93 | N 32 19 39.14 | W 103 41 8.91 |
| | 5500.00 | 6.80 | 90.00 | 5473.43 | -3.07 | 0.00 | 453.71 | 0.00 | 483495.20 | 741359.77 | N 32 19 39.14 | W 103 41 8.77 |
| | 5600.00 | 6.80 | 90.00 | 5572.73 | -3.15 | 0.00 | 465.56 | 0.00 | 483495.20 | 741371.62 | N 32 19 39.14 | W 103 41 8.63 |
| *Cherry Canyon* | *5686.88* | *6.80* | *90.00* | *5659.00* | *-3.22* | *0.00* | *475.85* | *0.00* | *483495.20* | *741381.91* | *N 32 19 39.14* | *W 103 41 8.51* |
| | 5700.00 | 6.80 | 90.00 | 5672.02 | -3.23 | 0.00 | 477.41 | 0.00 | 483495.20 | 741383.46 | N 32 19 39.14 | W 103 41 8.49 |
| | 5800.00 | 6.80 | 90.00 | 5771.32 | -3.31 | 0.00 | 489.25 | 0.00 | 483495.20 | 741395.31 | N 32 19 39.14 | W 103 41 8.35 |
| | 5900.00 | 6.80 | 90.00 | 5870.62 | -3.39 | 0.00 | 501.10 | 0.00 | 483495.20 | 741407.15 | N 32 19 39.14 | W 103 41 8.22 |
| | 6000.00 | 6.80 | 90.00 | 5969.91 | -3.47 | 0.00 | 512.94 | 0.00 | 483495.20 | 741419.00 | N 32 19 39.14 | W 103 41 8.08 |
| | 6100.00 | 6.80 | 90.00 | 6069.21 | -3.55 | 0.00 | 524.79 | 0.00 | 483495.20 | 741430.84 | N 32 19 39.13 | W 103 41 7.94 |
| | 6200.00 | 6.80 | 90.00 | 6168.50 | -3.63 | 0.00 | 536.64 | 0.00 | 483495.20 | 741442.69 | N 32 19 39.13 | W 103 41 7.80 |
| | 6300.00 | 6.80 | 90.00 | 6267.80 | -3.71 | 0.00 | 548.48 | 0.00 | 483495.20 | 741454.54 | N 32 19 39.13 | W 103 41 7.66 |
| | 6400.00 | 6.80 | 90.00 | 6367.09 | -3.79 | 0.00 | 560.33 | 0.00 | 483495.20 | 741466.38 | N 32 19 39.13 | W 103 41 7.52 |
| | 6500.00 | 6.80 | 90.00 | 6466.39 | -3.87 | 0.00 | 572.17 | 0.00 | 483495.20 | 741478.23 | N 32 19 39.13 | W 103 41 7.39 |
| | 6600.00 | 6.80 | 90.00 | 6565.69 | -3.95 | 0.00 | 584.02 | 0.00 | 483495.20 | 741490.07 | N 32 19 39.13 | W 103 41 7.25 |
| | 6700.00 | 6.80 | 90.00 | 6664.98 | -4.04 | 0.00 | 595.87 | 0.00 | 483495.20 | 741501.92 | N 32 19 39.13 | W 103 41 7.11 |
| | 6800.00 | 6.80 | 90.00 | 6764.28 | -4.12 | 0.00 | 607.71 | 0.00 | 483495.20 | 741513.76 | N 32 19 39.13 | W 103 41 6.97 |
| *Brushy Canyon* | *6870.22* | *6.80* | *90.00* | *6834.00* | *-4.17* | *0.00* | *616.03* | *0.00* | *483495.20* | *741522.08* | *N 32 19 39.13* | *W 103 41 6.88* |
| | 6900.00 | 6.80 | 90.00 | 6863.57 | -4.20 | 0.00 | 619.56 | 0.00 | 483495.20 | 741525.61 | N 32 19 39.13 | W 103 41 6.83 |
| | 7000.00 | 6.80 | 90.00 | 6962.87 | -4.28 | 0.00 | 631.40 | 0.00 | 483495.20 | 741537.45 | N 32 19 39.13 | W 103 41 6.70 |
| Drop to Vertical 2°/100' DLS | 7037.39 | 6.80 | 90.00 | 7000.00 | -4.31 | 0.00 | 635.83 | 0.00 | 483495.20 | 741541.88 | N 32 19 39.13 | W 103 41 6.64 |
| | 7100.00 | 5.55 | 90.00 | 7062.24 | -4.35 | 0.00 | 642.57 | 2.00 | 483495.20 | 741548.62 | N 32 19 39.13 | W 103 41 6.57 |
| | 7200.00 | 3.55 | 90.00 | 7161.92 | -4.41 | 0.00 | 650.50 | 2.00 | 483495.20 | 741556.55 | N 32 19 39.13 | W 103 41 6.47 |
| | 7300.00 | 1.55 | 90.00 | 7261.82 | -4.44 | 0.00 | 654.95 | 2.00 | 483495.20 | 741561.00 | N 32 19 39.13 | W 103 41 6.42 |
| Hold Vertical | 7377.55 | 0.00 | 90.00 | 7339.36 | -4.44 | 0.00 | 656.00 | 2.00 | 483495.20 | 741562.05 | N 32 19 39.13 | W 103 41 6.41 |
| " | 7400.00 | 0.00 | 90.00 | 7361.81 | -4.44 | 0.00 | 656.00 | 0.00 | 483495.20 | 741562.05 | N 32 19 39.13 | W 103 41 6.41 |
| | 7500.00 | 0.00 | 90.00 | 7461.81 | -4.44 | 0.00 | 656.00 | 0.00 | 483495.20 | 741562.05 | N 32 19 39.13 | W 103 41 6.41 |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | VSEC (ft) | NS (ft) | EW (ft) | DLS (°/100ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 7600.00 | 0.00 | 90.00 | 7561.81 | -4.44 | 0.00 | 656.00 | 0.00 | 483495.20 | 741562.05 | N 32 19 39.13 | W 103 41 6.41 |
| | 7700.00 | 0.00 | 90.00 | 7661.81 | -4.44 | 0.00 | 656.00 | 0.00 | 483495.20 | 741562.05 | N 32 19 39.13 | W 103 41 6.41 |
| | 7800.00 | 0.00 | 90.00 | 7761.81 | -4.44 | 0.00 | 656.00 | 0.00 | 483495.20 | 741562.05 | N 32 19 39.13 | W 103 41 6.41 |
| | 7900.00 | 0.00 | 90.00 | 7861.81 | -4.44 | 0.00 | 656.00 | 0.00 | 483495.20 | 741562.05 | N 32 19 39.13 | W 103 41 6.41 |
| | 8000.00 | 0.00 | 90.00 | 7961.81 | -4.44 | 0.00 | 656.00 | 0.00 | 483495.20 | 741562.05 | N 32 19 39.13 | W 103 41 6.41 |
| | 8100.00 | 0.00 | 90.00 | 8061.81 | -4.44 | 0.00 | 656.00 | 0.00 | 483495.20 | 741562.05 | N 32 19 39.13 | W 103 41 6.41 |
| | 8200.00 | 0.00 | 90.00 | 8161.81 | -4.44 | 0.00 | 656.00 | 0.00 | 483495.20 | 741562.05 | N 32 19 39.13 | W 103 41 6.41 |
| | 8300.00 | 0.00 | 90.00 | 8261.81 | -4.44 | 0.00 | 656.00 | 0.00 | 483495.20 | 741562.05 | N 32 19 39.13 | W 103 41 6.41 |
| | 8400.00 | 0.00 | 90.00 | 8361.81 | -4.44 | 0.00 | 656.00 | 0.00 | 483495.20 | 741562.05 | N 32 19 39.13 | W 103 41 6.41 |
| | 8500.00 | 0.00 | 90.00 | 8461.81 | -4.44 | 0.00 | 656.00 | 0.00 | 483495.20 | 741562.05 | N 32 19 39.13 | W 103 41 6.41 |
| | 8600.00 | 0.00 | 90.00 | 8561.81 | -4.44 | 0.00 | 656.00 | 0.00 | 483495.20 | 741562.05 | N 32 19 39.13 | W 103 41 6.41 |
| *BSGL* | *8604.19* | *0.00* | *90.00* | *8566.00* | *-4.44* | *0.00* | *656.00* | *0.00* | *483495.20* | *741562.05* | *N 32 19 39.13* | *W 103 41 6.41* |
| | 8700.00 | 0.00 | 90.00 | 8661.81 | -4.44 | 0.00 | 656.00 | 0.00 | 483495.20 | 741562.05 | N 32 19 39.13 | W 103 41 6.41 |
| *Leonard Shale* | *8753.19* | *0.00* | *90.00* | *8715.00* | *-4.44* | *0.00* | *656.00* | *0.00* | *483495.20* | *741562.05* | *N 32 19 39.13* | *W 103 41 6.41* |
| | 8800.00 | 0.00 | 90.00 | 8761.81 | -4.44 | 0.00 | 656.00 | 0.00 | 483495.20 | 741562.05 | N 32 19 39.13 | W 103 41 6.41 |
| | 8900.00 | 0.00 | 90.00 | 8861.81 | -4.44 | 0.00 | 656.00 | 0.00 | 483495.20 | 741562.05 | N 32 19 39.13 | W 103 41 6.41 |
| | 9000.00 | 0.00 | 90.00 | 8961.81 | -4.44 | 0.00 | 656.00 | 0.00 | 483495.20 | 741562.05 | N 32 19 39.13 | W 103 41 6.41 |
| KOP - Build 12°/100' DLS | 9084.73 | 0.00 | 90.00 | 9046.54 | -4.44 | 0.00 | 656.00 | 0.00 | 483495.20 | 741562.05 | N 32 19 39.13 | W 103 41 6.41 |
| *Avalon Shale* | *9088.19* | *0.42* | *359.61* | *9050.00* | *-4.43* | *0.01* | *656.00* | *12.00* | *483495.21* | *741562.05* | *N 32 19 39.13* | *W 103 41 6.41* |
| | 9100.00 | 1.83 | 359.61 | 9061.81 | -4.20 | 0.24 | 656.00 | 12.00 | 483495.44 | 741562.05 | N 32 19 39.13 | W 103 41 6.41 |
| | 9200.00 | 13.83 | 359.61 | 9160.69 | 9.41 | 13.85 | 655.91 | 12.00 | 483509.05 | 741561.96 | N 32 19 39.26 | W 103 41 6.41 |
| | 9300.00 | 25.83 | 359.61 | 9254.59 | 43.27 | 47.71 | 655.68 | 12.00 | 483542.91 | 741561.73 | N 32 19 39.60 | W 103 41 6.41 |
| | 9400.00 | 37.83 | 359.61 | 9339.39 | 95.92 | 100.36 | 655.32 | 12.00 | 483595.55 | 741561.37 | N 32 19 40.12 | W 103 41 6.41 |
| | 9500.00 | 49.83 | 359.61 | 9411.40 | 165.05 | 169.49 | 654.86 | 12.00 | 483664.68 | 741560.91 | N 32 19 40.80 | W 103 41 6.41 |
| | 9600.00 | 61.83 | 359.61 | 9467.46 | 247.64 | 252.07 | 654.30 | 12.00 | 483747.26 | 741560.35 | N 32 19 41.62 | W 103 41 6.41 |
| | 9700.00 | 73.83 | 359.61 | 9505.12 | 340.08 | 344.51 | 653.67 | 12.00 | 483839.69 | 741559.72 | N 32 19 42.54 | W 103 41 6.41 |
| | 9800.00 | 85.83 | 359.61 | 9522.74 | 438.33 | 442.76 | 653.01 | 12.00 | 483937.94 | 741559.05 | N 32 19 43.51 | W 103 41 6.41 |
| Landing Point Low Avalon | 9834.73 | 90.00 | 359.61 | 9524.00 | 473.02 | 477.45 | 652.77 | 12.00 | 483972.63 | 741558.82 | N 32 19 43.85 | W 103 41 6.41 |
| | 9900.00 | 90.00 | 359.61 | 9524.00 | 538.30 | 542.73 | 652.33 | 0.00 | 484037.90 | 741558.38 | N 32 19 44.50 | W 103 41 6.41 |
| | 10000.00 | 90.00 | 359.61 | 9524.00 | 638.30 | 642.72 | 651.65 | 0.00 | 484137.89 | 741557.70 | N 32 19 45.49 | W 103 41 6.42 |
| | 10100.00 | 90.00 | 359.61 | 9524.00 | 738.30 | 742.72 | 650.97 | 0.00 | 484237.89 | 741557.02 | N 32 19 46.48 | W 103 41 6.42 |
| | 10200.00 | 90.00 | 359.61 | 9524.00 | 838.30 | 842.72 | 650.30 | 0.00 | 484337.88 | 741556.35 | N 32 19 47.47 | W 103 41 6.42 |
| | 10300.00 | 90.00 | 359.61 | 9524.00 | 938.30 | 942.72 | 649.62 | 0.00 | 484437.87 | 741555.67 | N 32 19 48.46 | W 103 41 6.42 |
| | 10400.00 | 90.00 | 359.61 | 9524.00 | 1038.30 | 1042.71 | 648.94 | 0.00 | 484537.86 | 741554.99 | N 32 19 49.44 | W 103 41 6.42 |
| | 10500.00 | 90.00 | 359.61 | 9524.00 | 1138.30 | 1142.71 | 648.27 | 0.00 | 484637.86 | 741554.31 | N 32 19 50.43 | W 103 41 6.42 |
| | 10600.00 | 90.00 | 359.61 | 9524.00 | 1238.30 | 1242.71 | 647.59 | 0.00 | 484737.85 | 741553.64 | N 32 19 51.42 | W 103 41 6.42 |
| | 10700.00 | 90.00 | 359.61 | 9524.00 | 1338.30 | 1342.71 | 646.91 | 0.00 | 484837.84 | 741552.96 | N 32 19 52.41 | W 103 41 6.42 |
| | 10800.00 | 90.00 | 359.61 | 9524.00 | 1438.30 | 1442.70 | 646.23 | 0.00 | 484937.84 | 741552.28 | N 32 19 53.40 | W 103 41 6.42 |
| | 10900.00 | 90.00 | 359.61 | 9524.00 | 1538.30 | 1542.70 | 645.56 | 0.00 | 485037.83 | 741551.61 | N 32 19 54.39 | W 103 41 6.42 |
| | 11000.00 | 90.00 | 359.61 | 9524.00 | 1638.30 | 1642.70 | 644.88 | 0.00 | 485137.82 | 741550.93 | N 32 19 55.38 | W 103 41 6.42 |
| | 11100.00 | 90.00 | 359.61 | 9524.00 | 1738.30 | 1742.70 | 644.20 | 0.00 | 485237.82 | 741550.25 | N 32 19 56.37 | W 103 41 6.42 |
| | 11200.00 | 90.00 | 359.61 | 9524.00 | 1838.30 | 1842.70 | 643.52 | 0.00 | 485337.81 | 741549.57 | N 32 19 57.36 | W 103 41 6.43 |
| | 11300.00 | 90.00 | 359.61 | 9524.00 | 1938.30 | 1942.69 | 642.85 | 0.00 | 485437.80 | 741548.90 | N 32 19 58.35 | W 103 41 6.43 |
| | 11400.00 | 90.00 | 359.61 | 9524.00 | 2038.30 | 2042.69 | 642.17 | 0.00 | 485537.79 | 741548.22 | N 32 19 59.34 | W 103 41 6.43 |
| | 11500.00 | 90.00 | 359.61 | 9524.00 | 2138.30 | 2142.69 | 641.49 | 0.00 | 485637.79 | 741547.54 | N 32 20 0.33 | W 103 41 6.43 |
| | 11600.00 | 90.00 | 359.61 | 9524.00 | 2238.30 | 2242.69 | 640.82 | 0.00 | 485737.78 | 741546.87 | N 32 20 1.32 | W 103 41 6.43 |
| | 11700.00 | 90.00 | 359.61 | 9524.00 | 2338.30 | 2342.68 | 640.14 | 0.00 | 485837.77 | 741546.19 | N 32 20 2.31 | W 103 41 6.43 |
| | 11800.00 | 90.00 | 359.61 | 9524.00 | 2438.30 | 2442.68 | 639.46 | 0.00 | 485937.77 | 741545.51 | N 32 20 3.30 | W 103 41 6.43 |
| | 11900.00 | 90.00 | 359.61 | 9524.00 | 2538.30 | 2542.68 | 638.78 | 0.00 | 486037.76 | 741544.83 | N 32 20 4.29 | W 103 41 6.43 |
| | 12000.00 | 90.00 | 359.61 | 9524.00 | 2638.30 | 2642.68 | 638.11 | 0.00 | 486137.75 | 741544.16 | N 32 20 5.28 | W 103 41 6.43 |
| | 12100.00 | 90.00 | 359.61 | 9524.00 | 2738.30 | 2742.68 | 637.43 | 0.00 | 486237.75 | 741543.48 | N 32 20 6.27 | W 103 41 6.43 |
| | 12200.00 | 90.00 | 359.61 | 9524.00 | 2838.30 | 2842.67 | 636.75 | 0.00 | 486337.74 | 741542.80 | N 32 20 7.26 | W 103 41 6.43 |
| | 12300.00 | 90.00 | 359.61 | 9524.00 | 2938.30 | 2942.67 | 636.08 | 0.00 | 486437.73 | 741542.13 | N 32 20 8.25 | W 103 41 6.43 |
| | 12400.00 | 90.00 | 359.61 | 9524.00 | 3038.30 | 3042.67 | 635.40 | 0.00 | 486537.72 | 741541.45 | N 32 20 9.23 | W 103 41 6.44 |
| | 12500.00 | 90.00 | 359.61 | 9524.00 | 3138.30 | 3142.67 | 634.72 | 0.00 | 486637.72 | 741540.77 | N 32 20 10.22 | W 103 41 6.44 |
| | 12600.00 | 90.00 | 359.61 | 9524.00 | 3238.30 | 3242.66 | 634.04 | 0.00 | 486737.71 | 741540.09 | N 32 20 11.21 | W 103 41 6.44 |
| | 12700.00 | 90.00 | 359.61 | 9524.00 | 3338.30 | 3342.66 | 633.37 | 0.00 | 486837.70 | 741539.42 | N 32 20 12.20 | W 103 41 6.44 |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | VSEC (ft) | NS (ft) | EW (ft) | DLS (°/100ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 12800.00 | 90.00 | 359.61 | 9524.00 | 3438.30 | 3442.66 | 632.69 | 0.00 | 486937.70 | 741538.74 | N 32 20 13.19 | W 103 41 6.44 |
| | 12900.00 | 90.00 | 359.61 | 9524.00 | 3538.30 | 3542.66 | 632.01 | 0.00 | 487037.69 | 741538.06 | N 32 20 14.18 | W 103 41 6.44 |
| | 13000.00 | 90.00 | 359.61 | 9524.00 | 3638.30 | 3642.65 | 631.34 | 0.00 | 487137.68 | 741537.39 | N 32 20 15.17 | W 103 41 6.44 |
| | 13100.00 | 90.00 | 359.61 | 9524.00 | 3738.30 | 3742.65 | 630.66 | 0.00 | 487237.68 | 741536.71 | N 32 20 16.16 | W 103 41 6.44 |
| | 13200.00 | 90.00 | 359.61 | 9524.00 | 3838.30 | 3842.65 | 629.98 | 0.00 | 487337.67 | 741536.03 | N 32 20 17.15 | W 103 41 6.44 |
| | 13300.00 | 90.00 | 359.61 | 9524.00 | 3938.30 | 3942.65 | 629.30 | 0.00 | 487437.66 | 741535.35 | N 32 20 18.14 | W 103 41 6.44 |
| | 13400.00 | 90.00 | 359.61 | 9524.00 | 4038.30 | 4042.65 | 628.63 | 0.00 | 487537.65 | 741534.68 | N 32 20 19.13 | W 103 41 6.44 |
| | 13500.00 | 90.00 | 359.61 | 9524.00 | 4138.30 | 4142.64 | 627.95 | 0.00 | 487637.65 | 741534.00 | N 32 20 20.12 | W 103 41 6.44 |
| | 13600.00 | 90.00 | 359.61 | 9524.00 | 4238.30 | 4242.64 | 627.27 | 0.00 | 487737.64 | 741533.32 | N 32 20 21.11 | W 103 41 6.45 |
| | 13700.00 | 90.00 | 359.61 | 9524.00 | 4338.30 | 4342.64 | 626.59 | 0.00 | 487837.63 | 741532.65 | N 32 20 22.10 | W 103 41 6.45 |
| | 13800.00 | 90.00 | 359.61 | 9524.00 | 4438.30 | 4442.64 | 625.92 | 0.00 | 487937.63 | 741531.97 | N 32 20 23.09 | W 103 41 6.45 |
| | 13900.00 | 90.00 | 359.61 | 9524.00 | 4538.30 | 4542.63 | 625.24 | 0.00 | 488037.62 | 741531.29 | N 32 20 24.08 | W 103 41 6.45 |
| | 14000.00 | 90.00 | 359.61 | 9524.00 | 4638.30 | 4642.63 | 624.56 | 0.00 | 488137.61 | 741530.61 | N 32 20 25.07 | W 103 41 6.45 |
| Cimarex Red Tank 4 Federal #59H - PBHL [100' FNL, 946' FWL] | 14095.04 | 90.00 | 359.61 | 9524.00 | 4733.34 | 4737.67 | 623.92 | 0.00 | 488232.65 | 741529.97 | N 32 20 26.01 | W 103 41 6.45 |

**Survey Type:** Non-Def Plan

**Survey Error Model:** ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma

**Survey Program:**

| Description | Part | MD From (ft) | MD To (ft) | EOU Freq (ft) | Hole Size (in) | Casing Diameter (in) | Expected Max Inclination (deg) | Survey Tool Type | Borehole / Survey |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 0.000 | 26.000 | 1/100.000 | 30.000 | 30.000 | | NAL_MWD_IFR1+MS-Depth Only | Red Tank 4 Federal #59H / Cimarex Red Tank 4 Federal #59H Rev0 RM 26Oct18 |
| | 1 | 26.000 | 14095.045 | 1/100.000 | 30.000 | 30.000 | | NAL_MWD_IFR1+MS | Red Tank 4 Federal #59H / Cimarex Red Tank 4 Federal |

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# PWD Data Report

09/09/2019

**APD ID:** 10400035749 **Submission Date:** 11/07/2018

**Operator Name:** CIMAREX ENERGY COMPANY

**Well Name:** RED TANK 4 FEDERAL **Well Number:** 59H

**Well Type:** OIL WELL **Well Work Type:** Drill

## Section 1 - General

**Would you like to address long-term produced water disposal?** NO

## Section 2 - Lined Pits

**Would you like to utilize Lined Pit PWD options?** NO

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:** **PWD disturbance (acres):**

**Lined pit PWD on or off channel:**

**Lined pit PWD discharge volume (bbl/day):**

**Lined pit specifications:**

**Pit liner description:**

**Pit liner manufacturers information:**

**Precipitated solids disposal:**

**Decribe precipitated solids disposal:**

**Precipitated solids disposal permit:**

**Lined pit precipitated solids disposal schedule:**

**Lined pit precipitated solids disposal schedule attachment:**

**Lined pit reclamation description:**

**Lined pit reclamation attachment:**

**Leak detection system description:**

**Leak detection system attachment:**

**Operator Name:** CIMAREX ENERGY COMPANY

**Well Name:** RED TANK 4 FEDERAL **Well Number:** 59H

**Lined pit Monitor description:**

**Lined pit Monitor attachment:**

**Lined pit: do you have a reclamation bond for the pit?**

**Is the reclamation bond a rider under the BLM bond?**

**Lined pit bond number:**

**Lined pit bond amount:**

**Additional bond information attachment:**

## Section 3 - Unlined Pits

**Would you like to utilize Unlined Pit PWD options?** NO

**Produced Water Disposal (PWD) Location:**

**PWD disturbance (acres):** **PWD surface owner:**

**Unlined pit PWD on or off channel:**

**Unlined pit PWD discharge volume (bbl/day):**

**Unlined pit specifications:**

**Precipitated solids disposal:**

**Decribe precipitated solids disposal:**

**Precipitated solids disposal permit:**

**Unlined pit precipitated solids disposal schedule:**

**Unlined pit precipitated solids disposal schedule attachment:**

**Unlined pit reclamation description:**

**Unlined pit reclamation attachment:**

**Unlined pit Monitor description:**

**Unlined pit Monitor attachment:**

**Do you propose to put the produced water to beneficial use?**

**Beneficial use user confirmation:**

**Estimated depth of the shallowest aquifer (feet):**

**Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?**

**TDS lab results:**

**Geologic and hydrologic evidence:**

**State authorization:**

**Unlined Produced Water Pit Estimated percolation:**

**Unlined pit: do you have a reclamation bond for the pit?**

**Operator Name:** CIMAREX ENERGY COMPANY

**Well Name:** RED TANK 4 FEDERAL **Well Number:** 59H

**Is the reclamation bond a rider under the BLM bond?**

**Unlined pit bond number:**

**Unlined pit bond amount:**

**Additional bond information attachment:**

## Section 4 - Injection

**Would you like to utilize Injection PWD options?** NO

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:** **PWD disturbance (acres):**

**Injection PWD discharge volume (bbl/day):**

**Injection well mineral owner:**

**Injection well type:**

**Injection well number:** **Injection well name:**

**Assigned injection well API number?** **Injection well API number:**

**Injection well new surface disturbance (acres):**

**Minerals protection information:**

**Mineral protection attachment:**

**Underground Injection Control (UIC) Permit?**

**UIC Permit attachment:**

## Section 5 - Surface Discharge

**Would you like to utilize Surface Discharge PWD options?** NO

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:** **PWD disturbance (acres):**

**Surface discharge PWD discharge volume (bbl/day):**

**Surface Discharge NPDES Permit?**

**Surface Discharge NPDES Permit attachment:**

**Surface Discharge site facilities information:**

**Surface discharge site facilities map:**

## Section 6 - Other

**Would you like to utilize Other PWD options?** NO

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:** **PWD disturbance (acres):**

**Operator Name:** CIMAREX ENERGY COMPANY

**Well Name:** RED TANK 4 FEDERAL **Well Number:** 59H

**Other PWD type description:**

**Other PWD type attachment:**

**Have other regulatory requirements been met?**

**Other regulatory requirements attachment:**

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# Bond Info Data Report

09/09/2019

**APD ID:** 10400035749

**Submission Date:** 11/07/2018

**Operator Name:** CIMAREX ENERGY COMPANY

**Well Name:** RED TANK 4 FEDERAL

**Well Number:** 59H

**Well Type:** OIL WELL

**Well Work Type:** Drill

[redacted]

Show Final Text

## Bond Information

**Federal/Indian APD:** FED

**BLM Bond number:** NMB001188

**BIA Bond number:**

**Do you have a reclamation bond?** NO

**Is the reclamation bond a rider under the BLM bond?**

**Is the reclamation bond BLM or Forest Service?**

**BLM reclamation bond number:**

**Forest Service reclamation bond number:**

**Forest Service reclamation bond attachment:**

**Reclamation bond number:**

**Reclamation bond amount:**

**Reclamation bond rider amount:**

**Additional reclamation bond information attachment:**