Form 3160-3
(June 2015)

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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

5. Lease Serial No.
NMNM126065

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other

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 45H (326104)

2. Name of Operator
CIMAREX ENERGY COMPANY (215099)

9. API Well No.
30-025- 46991

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 / ~~TRISTE DRAW BONE S.~~

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface SWSW / 430 FSL / 1227 FWL / LAT 32.327552 / LONG -103.684206
At proposed prod. zone LOT 3 / 100 FNL / 1870 FWL / LAT 32.340568 / LONG -103.682134

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)
430 feet

16. No of acres in lease
677.94

17. Spacing Unit dedicated to this well
159.47

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
20 feet

19. Proposed Depth
9524 feet / 14099 feet

20. BLM/BIA Bond No. in file
FED: NMB001188

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3646 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	Name *(Printed/Typed)*	Date
(Electronic Submission)	Aricka Easterling / Ph: (918)560-7060	11/06/2018
Title: Regulatory Analyst		
Approved by *(Signature)*: (Electronic Submission)	Name *(Printed/Typed)*: Cody Layton / Ph: (575)234-5959	Date: 02/11/2020
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 03/20/2020

APPROVED WITH CONDITIONS

KZ 03/20/2020

SL

(Continued on page 2)

*(Instructions on page 2)

Approval Date: 02/11/2020

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**CIMAREX ENERGY COMPANY**
LEASE NO.:	**NMNM126065**
WELL NAME & NO.:	**RED TANK 4 FEDERAL 45H**
SURFACE HOLE FOOTAGE:	**430' FSL & 1227' FWL**
BOTTOM HOLE FOOTAGE	**100' FNL & 1870' 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 17%, 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.

JJP07012019

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.

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Operator Certification Data Report

02/24/2020

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:** 11/06/2018

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

02/24/2020

APD ID: 10400035731 | Submission Date: 11/06/2018

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RED TANK 4 FEDERAL | Well Number: 45H

Well Type: OIL WELL | Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - General

APD ID: 10400035731 **Tie to previous NOS?** Y **Submission Date:** 11/06/2018

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:** 45H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** BONE SPRING **Pool Name:** TRISTE DRAW BONE SPRING

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:** 45H

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:** E2W2 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:** 430 FT

Reservoir well spacing assigned acres Measurement: 159.47 Acres

Well plat: Red_Tank_4_Fed_45H_C102_Plat_20181030075636.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:**

Wellbore	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	Will this well produce from this lease?
SHL Leg #1	430	FSL	1227	FWL	23S	32E	4	Aliquot SWSW	32.327552	-103.684206	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 126065	3646	0	0	
KOP Leg #1	430	FSL	1870	FWL	23S	32E	4	Aliquot SESW	32.327541 7	-103.6821222	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 126065	-5401	9087	9047	
PPP Leg #1-1	430	FSL	1870	FWL	23S	32E	4	Aliquot SESW	32.327541 7	-103.6821222	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 126065	-5404	9090	9050	

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RED TANK 4 FEDERAL **Well Number:** 45H

Wellbore	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	Will this well produce from this lease?
EXIT Leg #1	100	FNL	1870	FWL	23S	32E	4	Lot 3	32.340568	-103.682134	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 126065	-5878	14099	9524	
BHL Leg #1	100	FNL	1870	FWL	23S	32E	4	Lot 3	32.340568	-103.682134	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 126065	-5878	14099	9524	

AFMSS

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

Drilling Plan Data Report

02/24/2020

APD ID: 10400035731 **Submission Date:** 11/06/2018

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RED TANK 4 FEDERAL **Well Number:** 45H

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

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
331492	RUSTLER	3645	977	977		USEABLE WATER	N
331491	CASTILE	223	3422	3422		NONE	N
331483	LAMAR	-982	4627	4627		NONE	N
331488	BELL CANYON	-1028	4673	4673		NONE	N
331489	CHERRY CANYON	-2014	5659	5659		NONE	N
331490	BRUSHY CANYON	-3189	6834	6834		NATURAL GAS, OIL	N
331486	BONE SPRING	-4921	8566	8566		NATURAL GAS, OIL	Y
331494	BONE SPRING 1ST	-6076	9721	9721		NATURAL GAS, OIL	N
331484	BONE SPRING 2ND	-6713	10358	10358		NATURAL GAS, OIL	N
331487	BONE SPRING 3RD	-7886	11531	11531		OIL	N
331485	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" 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_45H_Choke_2M3M_20181102085954.pdf

BOP Diagram Attachment:

Red_Tank_4_Fed_45H_BOP_2M_20181102090007.pdf

Pressure Rating (PSI): 3M **Rating Depth:** 14099

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_45H_Choke_2M3M_20181102090028.pdf

BOP Diagram Attachment:

Red_Tank_4_Fed_45H_BOP_3M_20181102090049.pdf

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RED TANK 4 FEDERAL **Well Number:** 45H

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	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	9087	0	9087	0	9087	9087	L-80	17	LT&C	1.49	1.82	BUOY	2.09	BUOY	2.09
4	PRODUCTION	8.75	5.5	NEW	API	N	9087	14099	9087	9524	9087	14099	5012	L-80	17	BUTT	1.41	1.74	BUOY	53.44	BUOY	53.44

Casing Attachments

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

Inspection Document:

Spec Document:

Red_Tank_4_Fed_45H_Spec_Sheet_for_H40Hybrid_surf_casing_20181102090235.pdf

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Red_Tank_4_Fed_45H_Casing_Assumptions_20181102090255.pdf

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RED TANK 4 FEDERAL **Well Number:** 45H

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_45H_Casing_Assumptions_20181102090332.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Red_Tank_4_Fed_45H_Casing_Assumptions_20181102090423.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Red_Tank_4_Fed_45H_Casing_Assumptions_20181102090509.pdf

Section 4 - Cement

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RED TANK 4 FEDERAL **Well Number:** 45H

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	280	1.3	14.2	364	25	50:50 (Poz;H)	Salt, Bentonite, Fluid Loss, Dispersant, SMS
PRODUCTION	Lead		0	9087	400	3.64	10.3	1453	25	Tuned Light	LCM
PRODUCTION	Tail		0	9087	1072	1.3	14.2	1393	10	50:50 (Poz:H)	Salt, Bentonite, Fluid Loss, Dispersant, SMS
PRODUCTION	Lead		9087	14099	400	3.64	10.3	1453	25	Tuned Light	LCM
PRODUCTION	Tail		9087	14099	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:** 45H

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	14099	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_45H_H2S_Plan_20181030080314.pdf

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RED TANK 4 FEDERAL **Well Number:** 45H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Red_Tank_4_Fed_45H_AC_Report_20181030080327.pdf
Red_Tank_4_Fed_45H_Directional_Plan_20181030080328.pdf

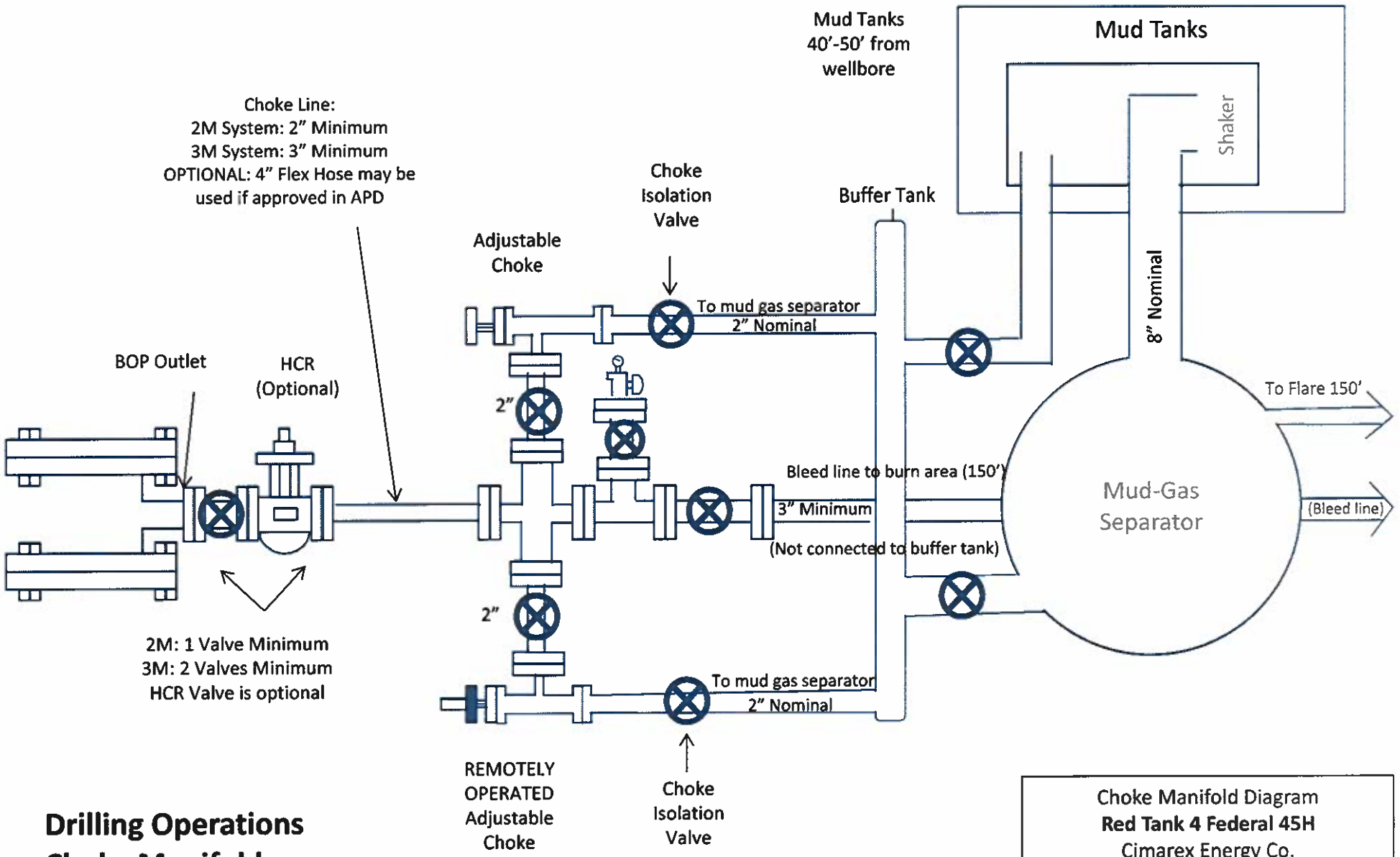
Other proposed operations facets description:

Other proposed operations facets attachment:

Red_Tank_4_Fed_45H_Gas_Capture_Plan_20181030080350.pdf
Red_Tank_4_Fed_45H_Flex_Hose_20181030080349.pdf
Red_Tank_4_Fed_45H_Drilling_Plan_20181102091001.pdf

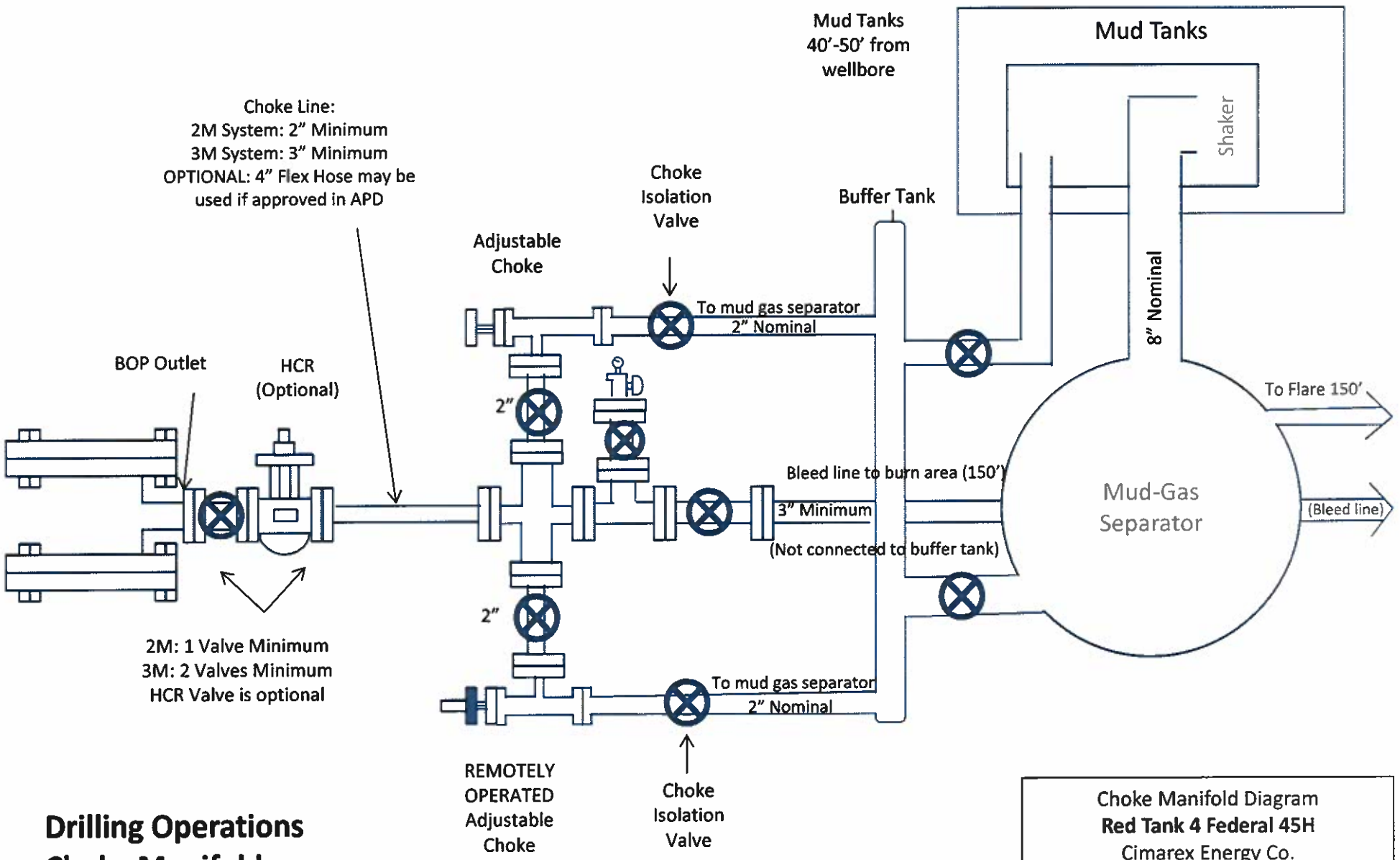
Other Variance attachment:

Red_Tank_4_Fed_45H_Multibowl_Procedure_20181030080422.pdf
Red_Tank_4_Fed_45H_Multibowl_Wellhead_20181030080423.pdf



Drilling Operations
Choke Manifold
2M/3M Service

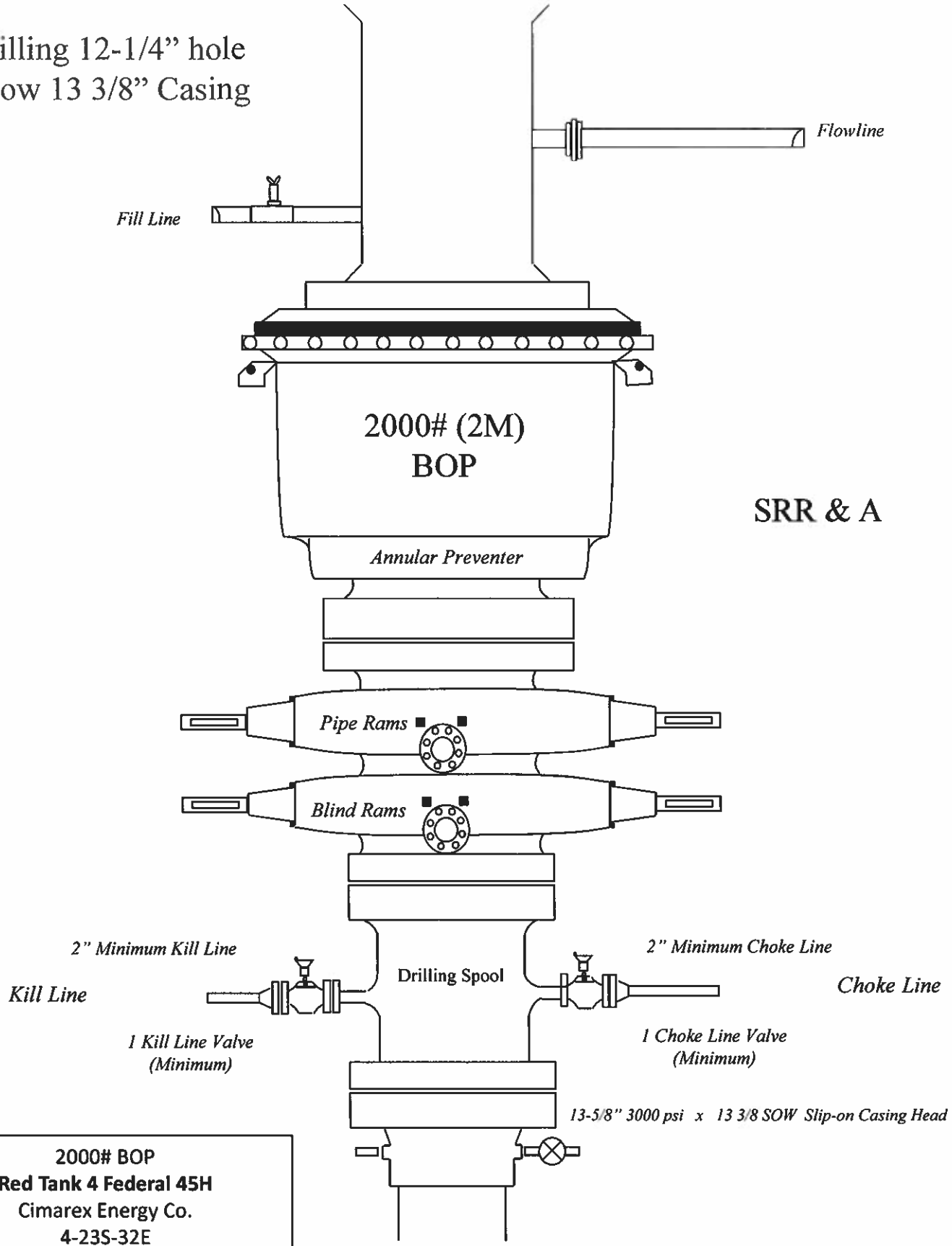
Choke Manifold Diagram
Red Tank 4 Federal 45H
Cimarex Energy Co.
4-23S-32E
Lea Co., NM



Drilling Operations
Choke Manifold
2M/3M Service

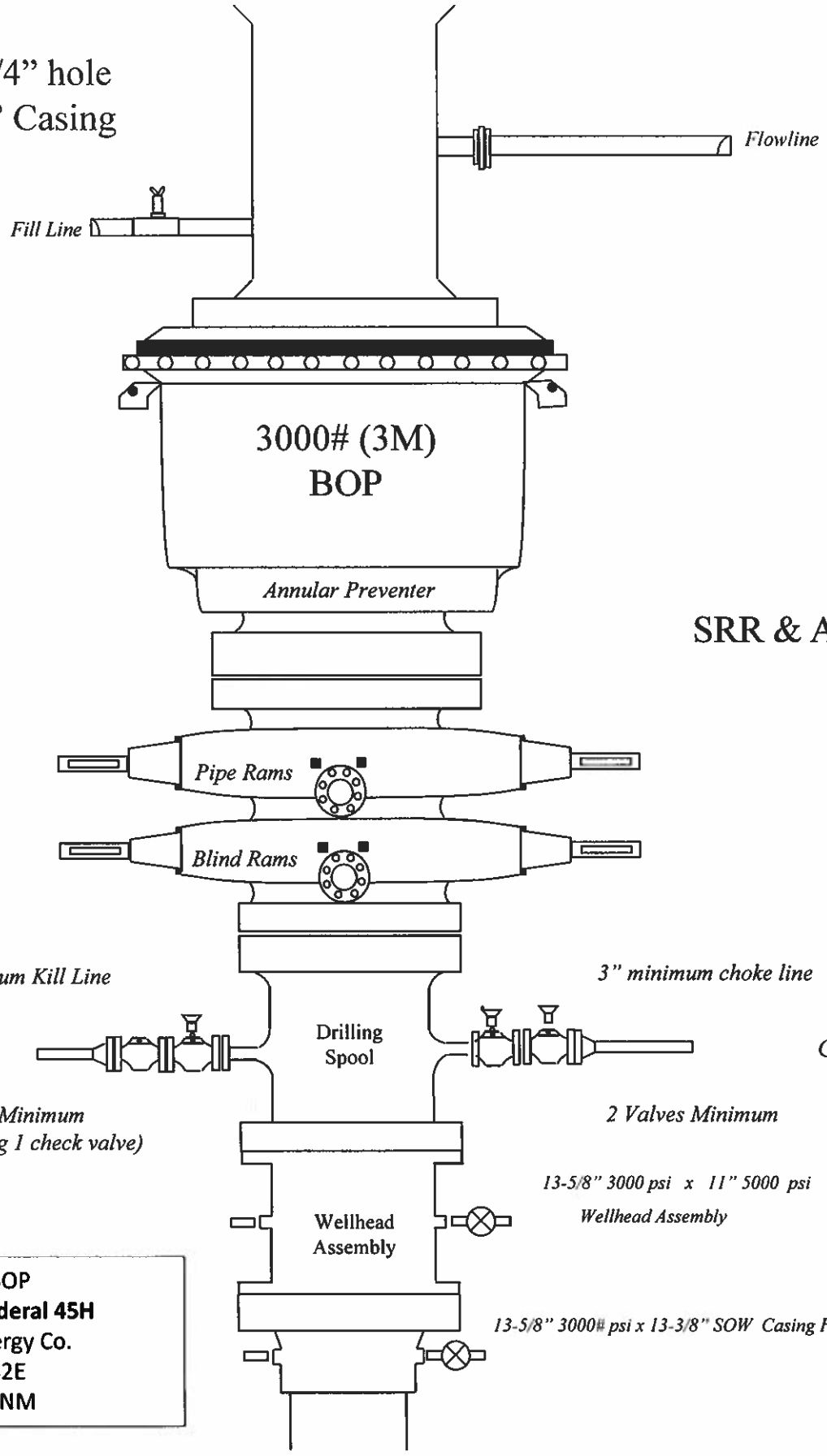
Choke Manifold Diagram
Red Tank 4 Federal 45H
Cimarex Energy Co.
4-23S-32E
Lea Co., NM

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



2000# BOP
Red Tank 4 Federal 45H
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 45H
Cimarex Energy Co.
4-23S-32E
Lea Co., NM

Print

EVRAZ

Red Tank 4 Federal 45H
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:	-		

Hydrogen Sulfide Drilling Operations Plan
Red Tank 4 Federal 45H
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 45H
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 45H
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 #45H Rev0 RM 23Oct18 Anti-Collision Summary Report

Analysis Date-24hr Time:	October 26, 2018 - 14:15	**Analysis Method:**	3D Least Distance
Client:	Cimarex Energy	**Reference Trajectory:**	Cimarex Red Tank 4 Federal #45H Rev0 RM 23Oct18 (Non-Def Plan)
Field:	NM Lea County (NAD 83)	**Depth Interval:**	Every 10.00 Measured Depth (ft)
Structure:	Cimarex Red Tank 4 Federal #45H	**Rule Set:**	NAL Procedure: D&M AntiCollision Standard S002
Slot:	New Slot	**Min Pts:**	All local minima indicated.
Well:	Red Tank 4 Federal #45H	**Version / Patch:**	2.10.740.0
Borehole:	Red Tank 4 Federal #45H	**Database \ Project:**	US1153APP452.dir.slb.com\drilling-NM Lea County 2.10
Scan MD Range:	0.00ft ~ 14098.60ft		

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 #44H Rev0 RM 23Oct18 (Non-Def Plan)												Warning Alert	
	20.00	16.50	17.50	3.50	N/A	MAS = 5.03 (m)	0.00	0.00	CtCt<=15m<15.00			Enter Alert	
	20.00	16.50	17.50	3.50	15754.55	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	8.48	3.66	1.92	MAS = 5.03 (m)	1530.00	1530.00				MinPt-O-SF	
	56.63	18.90	43.19	37.73	4.95	OSF1.50	1970.00	1968.15	OSF>5.00			Exit Alert	
	103.31	32.76	80.64	70.56	5.00	OSF1.50	4310.00	4289.00	OSF<5.00			Enter Alert	
	110.58	39.00	83.75	71.58	4.44	OSF1.50	5030.00	5003.11				MinPt-O-SF	
	125.97	39.66	98.70	86.31	4.98	OSF1.50	5290.00	5260.98	OSF>5.00			Exit Alert	
	307.96	94.15	244.36	213.81	5.00	OSF1.50	11220.00	9524.00	OSF<5.00			Enter Alert	
	307.96	175.42	190.18	132.54	2.65	OSF1.50	14090.00	9524.00				MinPt-CtCt	
	307.96	175.62	190.05	132.34	2.65	OSF1.50	14098.60	9524.00				MinPts	
Cimarex Red Tank 4 Federal #43H Rev0 RM 23Oct18 (Non-Def Plan)												Warning Alert	
	40.00	32.50	37.50	7.51	N/A	MAS = 9.90 (m)	0.00	0.00	CtCt<=15m<15.00			Enter Alert	
	39.99	32.50	37.49	7.50	N/A	MAS = 9.90 (m)	26.00	26.00				WRP	
	39.99	32.50	28.47	7.50	4.15	MAS = 9.90 (m)	1500.00	1500.00				MinPts	
	40.01	32.50	28.44	7.52	4.13	MAS = 9.90 (m)	1510.00	1510.00				MINPT-O-EOU	
	40.62	32.50	28.81	8.13	4.09	MAS = 9.90 (m)	1560.00	1560.00				MinPt-O-SF	
	52.71	32.50	40.09	20.21	4.96	MAS = 9.90 (m)	1770.00	1769.60	OSF>5.00			Exit Alert	
	615.92	183.19	492.96	432.73	5.09	OSF1.50	14090.00	9524.00				MinPt-CtCt	
	615.92	183.38	492.83	432.54	5.09	OSF1.50	14098.60	9524.00				MinPts	

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		
Cimarex Red Tank 4 Federal #58H Rev0 RM 26Oct18 (Non-Def Plan)													Pass
	936.52	32.81	934.02	903.71	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	936.40	32.81	933.89	903.59	87868.19	MAS = 10.00 (m)	10.00	10.00				MinPt-O-SF	
	936.39	32.81	933.89	903.58	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	936.39	32.81	924.90	903.58	103.98	MAS = 10.00 (m)	1500.00	1500.00				MinPts	
	936.40	32.81	924.87	903.59	103.44	MAS = 10.00 (m)	1510.00	1510.00				MINPT-O-EOU	
	931.65	32.81	919.60	898.84	97.27	MAS = 10.00 (m)	1840.00	1839.20				MinPts	
	975.20	55.18	937.56	920.03	27.70	OSF1.50	6539.25	6500.00				MinPt-O-ADP	
	927.93	55.77	889.90	872.16	26.06	OSF1.50	7220.00	7179.75				MinPt-O-SF	
	923.87	62.05	881.66	861.83	23.23	OSF1.50	9086.78	9046.54				MinPt-CtCt	
	924.01	67.26	878.31	856.74	21.36	OSF1.50	9836.78	9524.00				MinPt-CtCt	
	924.01	174.14	807.07	749.87	8.06	OSF1.50	14098.60	9524.00				MinPts	
Cimarex Red Tank 4 Federal #58H Rev0 RM 23Oct18 (Non-Def Plan)													Pass
	956.53	32.81	954.03	923.72	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	956.41	32.81	953.90	923.60	80385.90	MAS = 10.00 (m)	10.00	10.00				MinPt-O-SF	
	956.39	32.81	953.89	923.58	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	956.39	32.81	944.91	923.58	106.24	MAS = 10.00 (m)	1500.00	1500.00				MinPts	
	956.41	32.81	944.88	923.60	105.68	MAS = 10.00 (m)	1510.00	1510.00				MINPT-O-EOU	
	1155.91	48.02	1123.07	1107.90	38.01	OSF1.50	6070.00	6034.60				MinPt-O-SF	
	1208.39	50.13	1174.14	1158.27	37.98	OSF1.50	6539.25	6500.00				MinPt-O-SF	
	1231.84	60.91	1190.40	1170.93	31.57	OSF1.50	9110.00	9069.74				MinPt-CtCt	
	1231.96	174.84	1114.57	1057.12	10.70	OSF1.50	14098.60	9524.00				MinPts	
Cimarex Red Tank 4 Federal #57H Rev0 RM 23Oct18 (Non-Def Plan)													Pass
	976.58	32.81	974.08	943.77	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	976.47	32.81	973.95	943.66	83797.07	MAS = 10.00 (m)	10.00	10.00				MinPt-O-SF	
	976.44	32.81	973.94	943.64	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	976.44	32.81	964.96	943.64	108.47	MAS = 10.00 (m)	1500.00	1500.00				MinPts	
	976.46	32.81	964.93	943.65	107.90	MAS = 10.00 (m)	1510.00	1510.00				MINPT-O-EOU	
	1156.60	32.81	1137.17	1123.80	68.15	MAS = 10.00 (m)	3720.00	3703.83				MinPt-O-SF	
	1523.47	53.54	1486.95	1469.93	44.70	OSF1.50	6600.00	6560.33				MinPt-O-SF	
	1539.80	69.16	1482.86	1470.64	34.59	OSF1.50	9150.00	9109.57				MinPt-CtCt	
	1539.90	180.09	1419.00	1359.81	12.99	OSF1.50	14098.60	9524.00				MinPts	
Cimarex Red Tank 4 Federal #1H Gyro 0ft to 12233ft MD (Def Survey)													Pass
	4386.81	32.81	4384.31	4354.00	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	4386.50	32.81	4383.96	4353.69	108338.06	MAS = 10.00 (m)	26.00	26.00				MinPt-O-SF	
	4386.33	32.81	4383.73	4353.52	44842.52	MAS = 10.00 (m)	70.00	70.00				MinPts	
	4387.50	32.81	4378.12	4354.69	637.25	MAS = 10.00 (m)	1530.00	1530.00				MinPts	
	4387.53	32.81	4378.10	4354.72	633.21	MAS = 10.00 (m)	1560.00	1560.00				MINPT-O-EOU	
	4387.62	32.81	4378.13	4354.81	627.69	MAS = 10.00 (m)	1600.00	1599.98				MinPt-O-SF	
	4503.39	40.03	4475.87	4463.38	179.88	OSF1.50	6600.00	6560.33				MinPt-O-SF	
	4502.72	38.96	4475.91	4463.76	185.14	OSF1.50	7350.00	7309.75				MinPt-CtCt	
	4502.74	39.03	4475.89	4463.71	184.77	OSF1.50	7380.00	7339.75				MINPT-O-EOU	
	4502.77	39.06	4475.90	4463.71	184.65	OSF1.50	7390.00	7349.75				MinPt-O-ADP	
	4502.72	39.45	4475.59	4463.27	182.70	OSF1.50	7550.00	7509.75				MinPt-CtCt	
	4502.85	39.75	4475.52	4463.11	181.24	OSF1.50	7660.00	7619.75				MINPT-O-EOU	

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		
	4502.28	40.29	4474.58	4461.99	178.61	OSF1.50	7860.00	7819.75				MinPt-CtCt	
	4496.67	43.85	4466.80	4453.02	163.02	OSF1.50	8900.00	8859.75				MinPt-CtCt	
	1090.90	115.42	1013.12	975.48	14.46	OSF1.50	13720.00	9524.00				MinPt-CtCt	
	1090.93	115.51	1013.09	975.42	14.45	OSF1.50	13730.00	9524.00				MinPts	
	1091.94	115.77	1013.93	976.17	14.43	OSF1.50	13770.00	9524.00				MinPt-O-SF	
	1153.95	113.23	1077.63	1040.72	15.60	OSF1.50	14098.60	9524.00				TD	
Cimarex Red Tank 4 Federal #1H ST01 Gyro+MWD 10140ft to 14929ft MD (Def Survey)													Pass
	4386.81	32.81	4384.31	4354.00	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	4386.50	32.81	4383.96	4353.68	108338.06	MAS = 10.00 (m)	26.00	26.00				MinPt-O-SF	
	4386.33	32.81	4383.73	4353.52	44842.52	MAS = 10.00 (m)	70.00	70.00				MinPts	
	4387.50	32.81	4378.12	4354.69	637.25	MAS = 10.00 (m)	1530.00	1530.00				MinPts	
	4387.53	32.81	4378.10	4354.72	633.21	MAS = 10.00 (m)	1560.00	1560.00				MINPT-O-EOU	
	4387.62	32.81	4378.13	4354.81	627.69	MAS = 10.00 (m)	1600.00	1599.98				MinPt-O-SF	
	1783.70	158.72	1677.05	1624.98	17.10	OSF1.50	9660.00	9491.65				MinPt-O-SF	
	1762.57	154.59	1658.67	1607.97	17.36	OSF1.50	9810.00	9523.25				MinPts	
	1762.24	153.85	1658.84	1608.39	17.44	OSF1.50	9830.00	9523.95				MinPt-CtCt	
	1722.42	119.34	1642.02	1603.08	22.08	OSF1.50	11000.00	9524.00				MinPt-O-ADP	
	1722.24	119.12	1641.99	1603.12	22.12	OSF1.50	11020.00	9524.00				MINPT-O-EOU	
	1722.13	118.76	1642.12	1603.37	22.19	OSF1.50	11050.00	9524.00				MinPt-CtCt	
	1725.37	109.90	1651.27	1615.47	24.06	OSF1.50	11450.00	9524.00				MINPT-O-EOU	
	1716.17	104.67	1645.56	1611.50	25.16	OSF1.50	11900.00	9524.00				MinPts	
	1716.16	104.65	1645.56	1611.51	25.16	OSF1.50	11910.00	9524.00				MinPt-CtCt	
	1716.57	102.63	1647.31	1613.94	25.68	OSF1.50	12120.00	9524.00				MINPT-O-EOU	
	1702.77	100.84	1634.70	1601.92	25.93	OSF1.50	12410.00	9524.00				MinPts	
	1090.90	115.42	1013.12	975.48	14.46	OSF1.50	13720.00	9524.00				MinPt-CtCt	
	1090.93	115.51	1013.09	975.42	14.45	OSF1.50	13730.00	9524.00				MinPts	
	1091.94	115.77	1013.93	976.17	14.43	OSF1.50	13770.00	9524.00				MinPt-O-SF	
	1153.95	113.23	1077.63	1040.72	15.60	OSF1.50	14098.60	9524.00				TD	

Schlumberger

Cimarex Red Tank 4 Federal #45H Rev0 RM 23Oct18 Proposal Geodetic Report

(Non-Def Plan)

CIMAREX

Report Date:	October 26, 2018 - 02:15 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 #45H / New Slot	**TVD Reference Datum:**	RKB
Well:	Red Tank 4 Federal #45H	**TVD Reference Elevation:**	3672.100 ft above MSL
Borehole:	Red Tank 4 Federal #45H	**Seabed / Ground Elevation:**	3646.100 ft above MSL
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	6.836 °
Survey Name:	Cimarex Red Tank 4 Federal #45H Rev0 RM 23Oct18	**Total Gravity Field Strength:**	998.4452mgn (9.80665 Based)
Survey Date:	October 23, 2018	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	104.672 ° / 5382.773 ft / 5.921 / 0.565	**Total Magnetic Field Strength:**	48058.284 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	60.080 °
Location Lat / Long:	N 32° 19' 39.18670", W 103° 41' 3.14213"	**Declination Date:**	October 23, 2018
Location Grid N/E Y/X:	N 483502.920 ftUS, E 741842.390 ftUS	**Magnetic Declination Model:**	HDGM 2018
CRS Grid Convergence Angle:	0.3471 °	**North Reference:**	Grid North
Grid Scale Factor:	0.99995513	**Grid Convergence Used:**	0.3471 °
Version / Patch:	2.10.740.0	**Total Corr Mag North->Grid North:**	6.4885 °
		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 [430' FSL, 1227' FWL]	0.00	0.00	90.00	0.00	0.00	0.00	0.00	N/A	483502.92	741842.39	N 32 19 39.19	W 103 41 3.14
	100.00	0.00	90.00	100.00	0.00	0.00	0.00	0.00	483502.92	741842.39	N 32 19 39.19	W 103 41 3.14
	200.00	0.00	90.00	200.00	0.00	0.00	0.00	0.00	483502.92	741842.39	N 32 19 39.19	W 103 41 3.14
	300.00	0.00	90.00	300.00	0.00	0.00	0.00	0.00	483502.92	741842.39	N 32 19 39.19	W 103 41 3.14
	400.00	0.00	90.00	400.00	0.00	0.00	0.00	0.00	483502.92	741842.39	N 32 19 39.19	W 103 41 3.14
	500.00	0.00	90.00	500.00	0.00	0.00	0.00	0.00	483502.92	741842.39	N 32 19 39.19	W 103 41 3.14
	600.00	0.00	90.00	600.00	0.00	0.00	0.00	0.00	483502.92	741842.39	N 32 19 39.19	W 103 41 3.14
	700.00	0.00	90.00	700.00	0.00	0.00	0.00	0.00	483502.92	741842.39	N 32 19 39.19	W 103 41 3.14
	800.00	0.00	90.00	800.00	0.00	0.00	0.00	0.00	483502.92	741842.39	N 32 19 39.19	W 103 41 3.14
	900.00	0.00	90.00	900.00	0.00	0.00	0.00	0.00	483502.92	741842.39	N 32 19 39.19	W 103 41 3.14
Rustler	*977.00*	*0.00*	*90.00*	*977.00*	*0.00*	*0.00*	*0.00*	*0.00*	*483502.92*	*741842.39*	*N 32 19 39.19*	*W 103 41 3.14*
	1000.00	0.00	90.00	1000.00	0.00	0.00	0.00	0.00	483502.92	741842.39	N 32 19 39.19	W 103 41 3.14
	1100.00	0.00	90.00	1100.00	0.00	0.00	0.00	0.00	483502.92	741842.39	N 32 19 39.19	W 103 41 3.14
	1200.00	0.00	90.00	1200.00	0.00	0.00	0.00	0.00	483502.92	741842.39	N 32 19 39.19	W 103 41 3.14
	1300.00	0.00	90.00	1300.00	0.00	0.00	0.00	0.00	483502.92	741842.39	N 32 19 39.19	W 103 41 3.14
	1400.00	0.00	90.00	1400.00	0.00	0.00	0.00	0.00	483502.92	741842.39	N 32 19 39.19	W 103 41 3.14
Nudge 2°/100' DLS	1500.00	0.00	90.00	1500.00	0.00	0.00	0.00	0.00	483502.92	741842.39	N 32 19 39.19	W 103 41 3.14
	1600.00	2.00	90.00	1599.98	-0.01	0.00	1.75	2.00	483502.92	741844.14	N 32 19 39.19	W 103 41 3.12
	1700.00	4.00	90.00	1699.84	-0.05	0.00	6.98	2.00	483502.92	741849.37	N 32 19 39.19	W 103 41 3.06
	1800.00	6.00	90.00	1799.45	-0.11	0.00	15.69	2.00	483502.92	741858.08	N 32 19 39.19	W 103 41 2.96
Hold Nudge	1866.79	7.34	90.00	1865.79	-0.16	0.00	23.45	2.00	483502.92	741865.84	N 32 19 39.19	W 103 41 2.87
	1900.00	7.34	90.00	1898.73	-0.19	0.00	27.69	0.00	483502.92	741870.08	N 32 19 39.19	W 103 41 2.82
	2000.00	7.34	90.00	1997.91	-0.27	0.00	40.46	0.00	483502.92	741882.85	N 32 19 39.18	W 103 41 2.67
	2100.00	7.34	90.00	2097.09	-0.36	0.00	53.23	0.00	483502.92	741895.61	N 32 19 39.18	W 103 41 2.52
	2200.00	7.34	90.00	2196.27	-0.45	0.00	65.99	0.00	483502.92	741908.38	N 32 19 39.18	W 103 41 2.37
	2300.00	7.34	90.00	2295.45	-0.53	0.00	78.76	0.00	483502.92	741921.15	N 32 19 39.18	W 103 41 2.22
	2400.00	7.34	90.00	2394.63	-0.62	0.00	91.53	0.00	483502.92	741933.92	N 32 19 39.18	W 103 41 2.08

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	7.34	90.00	2493.82	-0.71	0.00	104.30	0.00	483502.92	741946.68	N 32 19 39.18	W 103 41 1.93
	2600.00	7.34	90.00	2593.00	-0.79	0.00	117.07	0.00	483502.92	741959.45	N 32 19 39.18	W 103 41 1.78
	2700.00	7.34	90.00	2692.18	-0.88	0.00	129.84	0.00	483502.92	741972.22	N 32 19 39.18	W 103 41 1.63
	2800.00	7.34	90.00	2791.36	-0.97	0.00	142.60	0.00	483502.92	741984.99	N 32 19 39.18	W 103 41 1.48
	2900.00	7.34	90.00	2890.54	-1.05	0.00	155.37	0.00	483502.92	741997.76	N 32 19 39.18	W 103 41 1.33
	3000.00	7.34	90.00	2989.72	-1.14	0.00	168.14	0.00	483502.92	742010.52	N 32 19 39.18	W 103 41 1.18
	3100.00	7.34	90.00	3088.90	-1.23	0.00	180.91	0.00	483502.92	742023.29	N 32 19 39.18	W 103 41 1.03
	3200.00	7.34	90.00	3188.09	-1.31	0.00	193.68	0.00	483502.92	742036.06	N 32 19 39.18	W 103 41 0.89
	3300.00	7.34	90.00	3287.27	-1.40	0.00	206.45	0.00	483502.92	742048.83	N 32 19 39.17	W 103 41 0.74
	3400.00	7.34	90.00	3386.45	-1.48	0.00	219.21	0.00	483502.92	742061.59	N 32 19 39.17	W 103 41 0.59
Castille	*3435.84*	*7.34*	*90.00*	*3422.00*	*-1.52*	*0.00*	*223.79*	*0.00*	*483502.92*	*742066.17*	*N 32 19 39.17*	*W 103 41 0.53*
	3500.00	7.34	90.00	3485.63	-1.57	0.00	231.98	0.00	483502.92	742074.36	N 32 19 39.17	W 103 41 0.44
	3600.00	7.34	90.00	3584.81	-1.66	0.00	244.75	0.00	483502.92	742087.13	N 32 19 39.17	W 103 41 0.29
	3700.00	7.34	90.00	3683.99	-1.74	0.00	257.52	0.00	483502.92	742099.90	N 32 19 39.17	W 103 41 0.14
	3800.00	7.34	90.00	3783.18	-1.83	0.00	270.29	0.00	483502.92	742112.67	N 32 19 39.17	W 103 40 59.99
	3900.00	7.34	90.00	3882.36	-1.92	0.00	283.06	0.00	483502.92	742125.43	N 32 19 39.17	W 103 40 59.84
	4000.00	7.34	90.00	3981.54	-2.00	0.00	295.82	0.00	483502.92	742138.20	N 32 19 39.17	W 103 40 59.69
	4100.00	7.34	90.00	4080.72	-2.09	0.00	308.59	0.00	483502.92	742150.97	N 32 19 39.17	W 103 40 59.55
	4200.00	7.34	90.00	4179.90	-2.18	0.00	321.36	0.00	483502.92	742163.74	N 32 19 39.17	W 103 40 59.40
	4300.00	7.34	90.00	4279.08	-2.26	0.00	334.13	0.00	483502.92	742176.50	N 32 19 39.17	W 103 40 59.25
	4400.00	7.34	90.00	4378.26	-2.35	0.00	346.90	0.00	483502.92	742189.27	N 32 19 39.17	W 103 40 59.10
	4500.00	7.34	90.00	4477.45	-2.44	0.00	359.67	0.00	483502.92	742202.04	N 32 19 39.17	W 103 40 58.95
	4600.00	7.34	90.00	4576.63	-2.52	0.00	372.43	0.00	483502.92	742214.81	N 32 19 39.16	W 103 40 58.80
Lamar	*4650.79*	*7.34*	*90.00*	*4627.00*	*-2.57*	*0.00*	*378.92*	*0.00*	*483502.92*	*742221.29*	*N 32 19 39.16*	*W 103 40 58.73*
Bell Canyon	*4697.17*	*7.34*	*90.00*	*4673.00*	*-2.61*	*0.00*	*384.84*	*0.00*	*483502.92*	*742227.21*	*N 32 19 39.16*	*W 103 40 58.66*
	4700.00	7.34	90.00	4675.81	-2.61	0.00	385.20	0.00	483502.92	742227.57	N 32 19 39.16	W 103 40 58.65
	4800.00	7.34	90.00	4774.99	-2.69	0.00	397.97	0.00	483502.92	742240.34	N 32 19 39.16	W 103 40 58.50
	4900.00	7.34	90.00	4874.17	-2.78	0.00	410.74	0.00	483502.92	742253.11	N 32 19 39.16	W 103 40 58.36
	5000.00	7.34	90.00	4973.35	-2.87	0.00	423.51	0.00	483502.92	742265.88	N 32 19 39.16	W 103 40 58.21
	5100.00	7.34	90.00	5072.53	-2.95	0.00	436.28	0.00	483502.92	742278.65	N 32 19 39.16	W 103 40 58.06
	5200.00	7.34	90.00	5171.72	-3.04	0.00	449.04	0.00	483502.92	742291.41	N 32 19 39.16	W 103 40 57.91
	5300.00	7.34	90.00	5270.90	-3.13	0.00	461.81	0.00	483502.92	742304.18	N 32 19 39.16	W 103 40 57.76
	5400.00	7.34	90.00	5370.08	-3.21	0.00	474.58	0.00	483502.92	742316.95	N 32 19 39.16	W 103 40 57.61
	5500.00	7.34	90.00	5469.26	-3.30	0.00	487.35	0.00	483502.92	742329.72	N 32 19 39.16	W 103 40 57.46
	5600.00	7.34	90.00	5568.44	-3.39	0.00	500.12	0.00	483502.92	742342.48	N 32 19 39.16	W 103 40 57.31
Cherry Canyon	*5691.31*	*7.34*	*90.00*	*5659.00*	*-3.47*	*0.00*	*511.78*	*0.00*	*483502.92*	*742354.14*	*N 32 19 39.16*	*W 103 40 57.18*
	5700.00	7.34	90.00	5667.62	-3.47	0.00	512.89	0.00	483502.92	742355.25	N 32 19 39.16	W 103 40 57.17
	5800.00	7.34	90.00	5766.81	-3.56	0.00	525.65	0.00	483502.92	742368.02	N 32 19 39.16	W 103 40 57.02
	5900.00	7.34	90.00	5865.99	-3.65	0.00	538.42	0.00	483502.92	742380.79	N 32 19 39.15	W 103 40 56.87
	6000.00	7.34	90.00	5965.17	-3.73	0.00	551.19	0.00	483502.92	742393.56	N 32 19 39.15	W 103 40 56.72
	6100.00	7.34	90.00	6064.35	-3.82	0.00	563.96	0.00	483502.92	742406.32	N 32 19 39.15	W 103 40 56.57
	6200.00	7.34	90.00	6163.53	-3.91	0.00	576.73	0.00	483502.92	742419.09	N 32 19 39.15	W 103 40 56.42
	6300.00	7.34	90.00	6262.71	-3.99	0.00	589.50	0.00	483502.92	742431.86	N 32 19 39.15	W 103 40 56.27
	6400.00	7.34	90.00	6361.89	-4.08	0.00	602.26	0.00	483502.92	742444.63	N 32 19 39.15	W 103 40 56.12
	6500.00	7.34	90.00	6461.08	-4.16	0.00	615.03	0.00	483502.92	742457.39	N 32 19 39.15	W 103 40 55.97
Drop to Vertical 2°/100' DLS	6539.25	7.34	90.00	6500.00	-4.20	0.00	620.04	0.00	483502.92	742462.41	N 32 19 39.15	W 103 40 55.92
	6600.00	6.12	90.00	6560.33	-4.25	0.00	627.16	2.00	483502.92	742469.52	N 32 19 39.15	W 103 40 55.83
	6700.00	4.12	90.00	6659.93	-4.31	0.00	636.09	2.00	483502.92	742478.45	N 32 19 39.15	W 103 40 55.73
	6800.00	2.12	90.00	6759.78	-4.34	0.00	641.53	2.00	483502.92	742483.89	N 32 19 39.15	W 103 40 55.67
Brushy Canyon	*6874.25*	*0.64*	*90.00*	*6834.00*	*-4.36*	*0.00*	*643.32*	*2.00*	*483502.92*	*742485.68*	*N 32 19 39.15*	*W 103 40 55.65*
	6900.00	0.12	90.00	6859.75	-4.36	0.00	643.49	2.00	483502.92	742485.85	N 32 19 39.15	W 103 40 55.64
Hold Vertical	6906.03	0.00	90.00	6865.79	-4.36	0.00	643.49	2.00	483502.92	742485.85	N 32 19 39.15	W 103 40 55.64
	7000.00	0.00	90.00	6959.75	-4.36	0.00	643.49	0.00	483502.92	742485.85	N 32 19 39.15	W 103 40 55.64
	7100.00	0.00	90.00	7059.75	-4.36	0.00	643.49	0.00	483502.92	742485.85	N 32 19 39.15	W 103 40 55.64
	7200.00	0.00	90.00	7159.75	-4.36	0.00	643.49	0.00	483502.92	742485.85	N 32 19 39.15	W 103 40 55.64
	7300.00	0.00	90.00	7259.75	-4.36	0.00	643.49	0.00	483502.92	742485.85	N 32 19 39.15	W 103 40 55.64
	7400.00	0.00	90.00	7359.75	-4.36	0.00	643.49	0.00	483502.92	742485.85	N 32 19 39.15	W 103 40 55.64
	7500.00	0.00	90.00	7459.75	-4.36	0.00	643.49	0.00	483502.92	742485.85	N 32 19 39.15	W 103 40 55.64

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	7559.75	-4.36	0.00	643.49	0.00	483502.92	742485.85	N 32 19 39.15	W 103 40 55.64
	7700.00	0.00	90.00	7659.75	-4.36	0.00	643.49	0.00	483502.92	742485.85	N 32 19 39.15	W 103 40 55.64
	7800.00	0.00	90.00	7759.75	-4.36	0.00	643.49	0.00	483502.92	742485.85	N 32 19 39.15	W 103 40 55.64
	7900.00	0.00	90.00	7859.75	-4.36	0.00	643.49	0.00	483502.92	742485.85	N 32 19 39.15	W 103 40 55.64
	8000.00	0.00	90.00	7959.75	-4.36	0.00	643.49	0.00	483502.92	742485.85	N 32 19 39.15	W 103 40 55.64
	8100.00	0.00	90.00	8059.75	-4.36	0.00	643.49	0.00	483502.92	742485.85	N 32 19 39.15	W 103 40 55.64
	8200.00	0.00	90.00	8159.75	-4.36	0.00	643.49	0.00	483502.92	742485.85	N 32 19 39.15	W 103 40 55.64
	8300.00	0.00	90.00	8259.75	-4.36	0.00	643.49	0.00	483502.92	742485.85	N 32 19 39.15	W 103 40 55.64
	8400.00	0.00	90.00	8359.75	-4.36	0.00	643.49	0.00	483502.92	742485.85	N 32 19 39.15	W 103 40 55.64
	8500.00	0.00	90.00	8459.75	-4.36	0.00	643.49	0.00	483502.92	742485.85	N 32 19 39.15	W 103 40 55.64
	8600.00	0.00	90.00	8559.75	-4.36	0.00	643.49	0.00	483502.92	742485.85	N 32 19 39.15	W 103 40 55.64
BSGL	*8606.25*	*0.00*	*90.00*	*8566.00*	*-4.36*	*0.00*	*643.49*	*0.00*	*483502.92*	*742485.85*	*N 32 19 39.15*	*W 103 40 55.64*
	8700.00	0.00	90.00	8659.75	-4.36	0.00	643.49	0.00	483502.92	742485.85	N 32 19 39.15	W 103 40 55.64
Leonard Shale	*8755.25*	*0.00*	*90.00*	*8715.00*	*-4.36*	*0.00*	*643.49*	*0.00*	*483502.92*	*742485.85*	*N 32 19 39.15*	*W 103 40 55.64*
	8800.00	0.00	90.00	8759.75	-4.36	0.00	643.49	0.00	483502.92	742485.85	N 32 19 39.15	W 103 40 55.64
	8900.00	0.00	90.00	8859.75	-4.36	0.00	643.49	0.00	483502.92	742485.85	N 32 19 39.15	W 103 40 55.64
	9000.00	0.00	90.00	8959.75	-4.36	0.00	643.49	0.00	483502.92	742485.85	N 32 19 39.15	W 103 40 55.64
KOP - Build 12°/100' DLS	9086.78	0.00	90.00	9046.54	-4.36	0.00	643.49	0.00	483502.92	742485.85	N 32 19 39.15	W 103 40 55.64
Avalon Shale	*9090.25*	*0.42*	*359.61*	*9050.00*	*-4.35*	*0.01*	*643.49*	*12.00*	*483502.93*	*742485.85*	*N 32 19 39.15*	*W 103 40 55.64*
	9100.00	1.59	359.61	9059.75	-4.17	0.18	643.49	12.00	483503.10	742485.85	N 32 19 39.15	W 103 40 55.64
	9200.00	13.59	359.61	9158.70	9.00	13.36	643.40	12.00	483516.28	742485.76	N 32 19 39.28	W 103 40 55.64
	9300.00	25.59	359.61	9252.74	42.46	46.82	643.18	12.00	483549.74	742485.54	N 32 19 39.61	W 103 40 55.64
	9400.00	37.59	359.61	9337.77	94.75	99.10	642.82	12.00	483602.02	742485.18	N 32 19 40.13	W 103 40 55.64
	9500.00	49.59	359.61	9410.07	163.56	167.92	642.36	12.00	483670.83	742484.72	N 32 19 40.81	W 103 40 55.64
	9600.00	61.59	359.61	9466.48	245.91	250.26	641.80	12.00	483753.17	742484.16	N 32 19 41.62	W 103 40 55.65
	9700.00	73.59	359.61	9504.54	338.19	342.54	641.17	12.00	483845.44	742483.53	N 32 19 42.54	W 103 40 55.65
	9800.00	85.59	359.61	9522.58	436.36	440.71	640.51	12.00	483943.61	742482.87	N 32 19 43.51	W 103 40 55.65
Landing Point Low Avalon	9836.78	90.00	359.61	9524.00	473.11	477.45	640.26	12.00	483980.35	742482.62	N 32 19 43.87	W 103 40 55.65
	9900.00	90.00	359.61	9524.00	536.33	540.67	639.83	0.00	484043.57	742482.19	N 32 19 44.50	W 103 40 55.65
	10000.00	90.00	359.61	9524.00	636.33	640.67	639.15	0.00	484143.56	742481.51	N 32 19 45.49	W 103 40 55.65
	10100.00	90.00	359.61	9524.00	736.33	740.67	638.48	0.00	484243.55	742480.84	N 32 19 46.48	W 103 40 55.65
	10200.00	90.00	359.61	9524.00	836.33	840.66	637.80	0.00	484343.54	742480.16	N 32 19 47.47	W 103 40 55.65
	10300.00	90.00	359.61	9524.00	936.33	940.66	637.12	0.00	484443.54	742479.48	N 32 19 48.46	W 103 40 55.65
	10400.00	90.00	359.61	9524.00	1036.33	1040.66	636.45	0.00	484543.53	742478.81	N 32 19 49.45	W 103 40 55.65
	10500.00	90.00	359.61	9524.00	1136.33	1140.66	635.77	0.00	484643.52	742478.13	N 32 19 50.44	W 103 40 55.65
	10600.00	90.00	359.61	9524.00	1236.33	1240.65	635.09	0.00	484743.52	742477.45	N 32 19 51.42	W 103 40 55.65
	10700.00	90.00	359.61	9524.00	1336.33	1340.65	634.41	0.00	484843.51	742476.77	N 32 19 52.41	W 103 40 55.65
	10800.00	90.00	359.61	9524.00	1436.33	1440.65	633.74	0.00	484943.50	742476.10	N 32 19 53.40	W 103 40 55.65
	10900.00	90.00	359.61	9524.00	1536.33	1540.65	633.06	0.00	485043.50	742475.42	N 32 19 54.39	W 103 40 55.66
	11000.00	90.00	359.61	9524.00	1636.33	1640.65	632.38	0.00	485143.49	742474.74	N 32 19 55.38	W 103 40 55.66
	11100.00	90.00	359.61	9524.00	1736.33	1740.64	631.70	0.00	485243.48	742474.07	N 32 19 56.37	W 103 40 55.66
	11200.00	90.00	359.61	9524.00	1836.33	1840.64	631.03	0.00	485343.47	742473.39	N 32 19 57.36	W 103 40 55.66
	11300.00	90.00	359.61	9524.00	1936.33	1940.64	630.35	0.00	485443.47	742472.71	N 32 19 58.35	W 103 40 55.66
	11400.00	90.00	359.61	9524.00	2036.33	2040.64	629.67	0.00	485543.46	742472.03	N 32 19 59.34	W 103 40 55.66
	11500.00	90.00	359.61	9524.00	2136.33	2140.63	629.00	0.00	485643.45	742471.36	N 32 20 0.33	W 103 40 55.66
	11600.00	90.00	359.61	9524.00	2236.33	2240.63	628.32	0.00	485743.45	742470.68	N 32 20 1.32	W 103 40 55.66
	11700.00	90.00	359.61	9524.00	2336.33	2340.63	627.64	0.00	485843.44	742470.00	N 32 20 2.31	W 103 40 55.66
	11800.00	90.00	359.61	9524.00	2436.33	2440.63	626.96	0.00	485943.43	742469.33	N 32 20 3.30	W 103 40 55.66
	11900.00	90.00	359.61	9524.00	2536.33	2540.62	626.29	0.00	486043.43	742468.65	N 32 20 4.29	W 103 40 55.66
	12000.00	90.00	359.61	9524.00	2636.33	2640.62	625.61	0.00	486143.42	742467.97	N 32 20 5.28	W 103 40 55.66
	12100.00	90.00	359.61	9524.00	2736.33	2740.62	624.93	0.00	486243.41	742467.29	N 32 20 6.27	W 103 40 55.67
	12200.00	90.00	359.61	9524.00	2836.33	2840.62	624.26	0.00	486343.40	742466.62	N 32 20 7.26	W 103 40 55.67
	12300.00	90.00	359.61	9524.00	2936.33	2940.62	623.58	0.00	486443.40	742465.94	N 32 20 8.25	W 103 40 55.67
	12400.00	90.00	359.61	9524.00	3036.33	3040.61	622.90	0.00	486543.39	742465.26	N 32 20 9.24	W 103 40 55.67
	12500.00	90.00	359.61	9524.00	3136.33	3140.61	622.22	0.00	486643.38	742464.59	N 32 20 10.23	W 103 40 55.67
	12600.00	90.00	359.61	9524.00	3236.33	3240.61	621.55	0.00	486743.38	742463.91	N 32 20 11.21	W 103 40 55.67
	12700.00	90.00	359.61	9524.00	3336.33	3340.61	620.87	0.00	486843.37	742463.23	N 32 20 12.20	W 103 40 55.67

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	3436.33	3440.60	620.19	0.00	486943.36	742462.55	N 32 20 13.19	W 103 40 55.67
	12900.00	90.00	359.61	9524.00	3536.33	3540.60	619.52	0.00	487043.36	742461.88	N 32 20 14.18	W 103 40 55.67
	13000.00	90.00	359.61	9524.00	3636.33	3640.60	618.84	0.00	487143.35	742461.20	N 32 20 15.17	W 103 40 55.67
	13100.00	90.00	359.61	9524.00	3736.33	3740.60	618.16	0.00	487243.34	742460.52	N 32 20 16.16	W 103 40 55.67
	13200.00	90.00	359.61	9524.00	3836.33	3840.59	617.48	0.00	487343.33	742459.84	N 32 20 17.15	W 103 40 55.67
	13300.00	90.00	359.61	9524.00	3936.33	3940.59	616.81	0.00	487443.33	742459.17	N 32 20 18.14	W 103 40 55.67
	13400.00	90.00	359.61	9524.00	4036.33	4040.59	616.13	0.00	487543.32	742458.49	N 32 20 19.13	W 103 40 55.68
	13500.00	90.00	359.61	9524.00	4136.33	4140.59	615.45	0.00	487643.31	742457.81	N 32 20 20.12	W 103 40 55.68
	13600.00	90.00	359.61	9524.00	4236.33	4240.59	614.78	0.00	487743.31	742457.14	N 32 20 21.11	W 103 40 55.68
	13700.00	90.00	359.61	9524.00	4336.33	4340.58	614.10	0.00	487843.30	742456.46	N 32 20 22.10	W 103 40 55.68
	13800.00	90.00	359.61	9524.00	4436.33	4440.58	613.42	0.00	487943.29	742455.78	N 32 20 23.09	W 103 40 55.68
	13900.00	90.00	359.61	9524.00	4536.33	4540.58	612.74	0.00	488043.29	742455.10	N 32 20 24.08	W 103 40 55.68
	14000.00	90.00	359.61	9524.00	4636.33	4640.58	612.07	0.00	488143.28	742454.43	N 32 20 25.07	W 103 40 55.68
Cimarex Red Tank 4 Federal #45H - PBHL [100' FNL, 1870' FWL]	14098.60	90.00	359.61	9524.00	4734.92	4739.17	611.40	0.00	488241.87	742453.76	N 32 20 26.04	W 103 40 55.68

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 #45H / Cimarex Red Tank 4 Federal #45H Rev0 RM 23Oct18
	1	26.000	14098.598	1/100.000	30.000	30.000		NAL_MWD_IFR1+MS	Red Tank 4 Federal #45H / Cimarex Red Tank 4 Federal

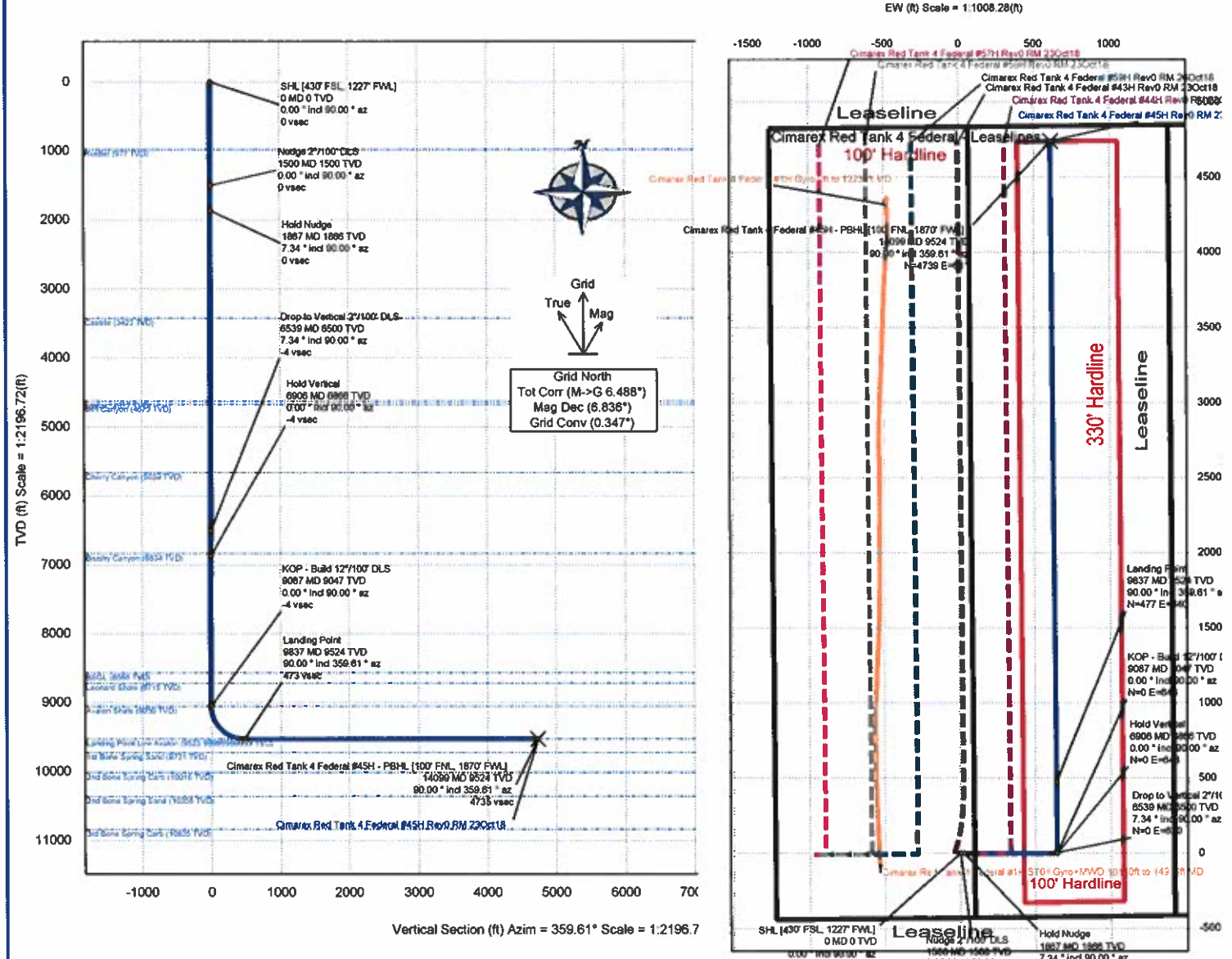
Schlumberger

Cimarex Energy Rev 0

CIMAREX

Borehole:	Well:	Field:	Structure:
Red Tank 4 Federal #45H	Red Tank 4 Federal #45H	NM Lea County (NAD 83)	Cimarex Red Tank 4 Federal #45H

Gravity & Magnetic Parameters					Surface Location	NAD83 New Mexico State Plane, Eastern Zone, US Feet				Miscellaneous			
Model:	HDGM 2018	Dip: 60.08°	Date:	23-Oct-2018	Lat:	N 32 15 39.19	Northing:	483402.92fUS	Grid Conv:	0.3471°	Slot: New Slot	TVD Ref:	RKB(3672.1ft above MSL)
MagDec:	6.836°	FS:	48058.284nT	Gravity FS:	998.448mgn (9.80665 Based)	Lon:	W 103 41 3.14	Easting:	741842.39fUS	Scale Fact:	0.99996613	Plan:	Cimarex Red Tank 4 Federal #45H Rev0 RM 23Oct18



Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL [430' FSL, 1227' FWL]	0.00	0.00	90.00	0.00	0.00	0.00	0.00	
Rustler	977.00	0.00	90.00	977.00	0.00	0.00	0.00	0.00
Nudge 2°/100' DLS	1500.00	0.00	90.00	1500.00	0.00	0.00	0.00	0.00
Hold Nudge	1866.79	7.34	90.00	1865.79	-0.16	0.00	23.45	2.00
Castile	3435.84	7.34	90.00	3422.00	-1.52	0.00	223.79	0.00
Lamar	4650.79	7.34	90.00	4627.00	-2.57	0.00	378.92	0.00
Bell Canyon	4697.17	7.34	90.00	4673.00	-2.61	0.00	384.84	0.00
Cherry Canyon	5691.31	7.34	90.00	5659.00	-3.47	0.00	511.78	0.00
Drop to Vertical 2°/100' DLS	6539.25	7.34	90.00	6500.00	-4.20	0.00	620.04	0.00
Brushy Canyon	6874.25	0.64	90.00	6834.00	-4.36	0.00	643.32	2.00
Hold Vertical	6906.03	0.00	90.00	6865.79	-4.36	0.00	643.49	2.00
BSGL	8606.25	0.00	90.00	8566.00	-4.36	0.00	643.49	0.00
Leonard Shale	8755.25	0.00	90.00	8715.00	-4.36	0.00	643.49	0.00
KOP - Build 12°/100' DLS	9086.78	0.00	90.00	9046.54	-4.36	0.00	643.49	0.00
Avalon Shale	9090.25	0.42	359.61	9050.00	-4.35	0.01	643.49	12.00
Landing Point	9836.78	90.00	359.61	9524.00	473.11	477.45	640.26	12.00
Landing Point Low Avalon	9836.78	90.00	359.61	9524.00	473.11	477.45	640.26	12.00
Cimarex Red Tank 4 Federal #45H - PBHL [100' FNL, 1870' FWL]	14098.60	90.00	359.61	9524.00	4734.92	4739.17	611.40	0.00
1st Bone Spring Sand	NaN			9721.00				
Wolfcamp	NaN			11903.00				
3rd Bone Spring Sand	NaN			11531.00				
2nd Bone Spring Sand	NaN			10358.00				
2nd Bone Spring Carb	NaN			10016.00				
Wolfcamp Y SS	NaN			12014.00				
Wolfcamp X SS	NaN			11928.00				
3rd Bone Spring Carb	NaN			10835.00				
Wolfcamp A1	NaN			12074.00				
Wolfcamp B	NaN			12568.00				
Wolfcamp A2	NaN			12473.00				

1. Geological Formations

TVD of target 9,524
MD at TD 14,099

Pilot Hole TD N/A
Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
RUSTLER	977	N/A	
CASTILLE	3422	N/A	
LAMAR	4627	N/A	
BELL CANYON	4673	N/A	
CHERRY CANYON	5659	N/A	
BRUSHY CANYON	6834	Hydrocarbons	
BONE SPRING LIME	8566	Hydrocarbons	
BONE SPRING TARGET	9524	Hydrocarbons	
1ST BONE SPRING	9721	Hydrocarbons	
2ND BONE SPRING	10358	Hydrocarbons	
3RD BONE SPRING	11531	Hydrocarbons	
WOLFCAMP	11903	Hydrocarbons	

2. 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	9087	9087	5-1/2"	17.00	L-80	LT&C	1.48	1.82	2.09
8 3/4	9087	14099	9524	5-1/2"	17.00	L-80	BT&C	1.41	1.74	53.44
					BLM Minimum Safety Factor			1.125	1	1.6 Dry 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

Cimarex Energy Co., Red Tank 4 Federal 45H

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	N
Is well within the designated 4 string boundary.	N
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	N
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	N
Is 2nd string set 100' to 600' below the base of salt?	N
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	N
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	N
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	N
Is AC Report included?	N

3. Cementing Program

Casing	# Sks	Wt. lb/gal	Yld ft3/sack	H2O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	498	13.50	1.72	9.15	15.5	Lead: Class C + Bentonite
	133	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate	880	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
	280	14.20	1.30	5.86	14:30	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS
Production	400	10.30	3.64	22.18		Lead: Tuned Light + LCM
	1072	14.20	1.30	5.86	14:30	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS

Casing String	TOC	% Excess
Surface	0	45
Intermediate	0	50
Production	4453	17

4. Pressure Control Equipment

	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.

BOP installed and tested before drilling which hole?	Size	Min Required WP	Type		Tested To
12 1/4	13 5/8	2M	Annular	X	50% of working pressure
			Blind Ram		2M
			Pipe Ram		
			Double Ram	X	
			Other		
8 3/4	13 5/8	3M	Annular		50% of working pressure
			Blind Ram		3M
			Pipe Ram		
			Double Ram		
			Other		

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or 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. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.	
X	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.	
	N	Are anchors required by manufacturer?

5. Mud Program

Depth	Type	Weight (ppg)	Viscosity	Water Loss
0' to 1027'	FW Spud Mud	8.30 - 8.80	30-32	N/C
1027' to 4653'	Brine Water	9.70 - 10.20	30-32	N/C
4653' to 14099'	FW/Cut Brine	8.50 - 9.00	30-32	N/C

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring

6. Logging and Testing Procedures

Logging, Coring and Testing	
	Will run GR/CNL fromTD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
	No logs are planned based on well control or offset log information.
	Drill stem test?
	Coring?

Additional Logs Planned	Interval

7. Drilling Conditions

Condition	
BH Pressure at deepest TVD	4457 psi
Abnormal Temperature	No

Hydrogen Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.	
X	H2S is present
X	H2S plan is attached

8. Other Facets of Operation

9. Wellhead

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.

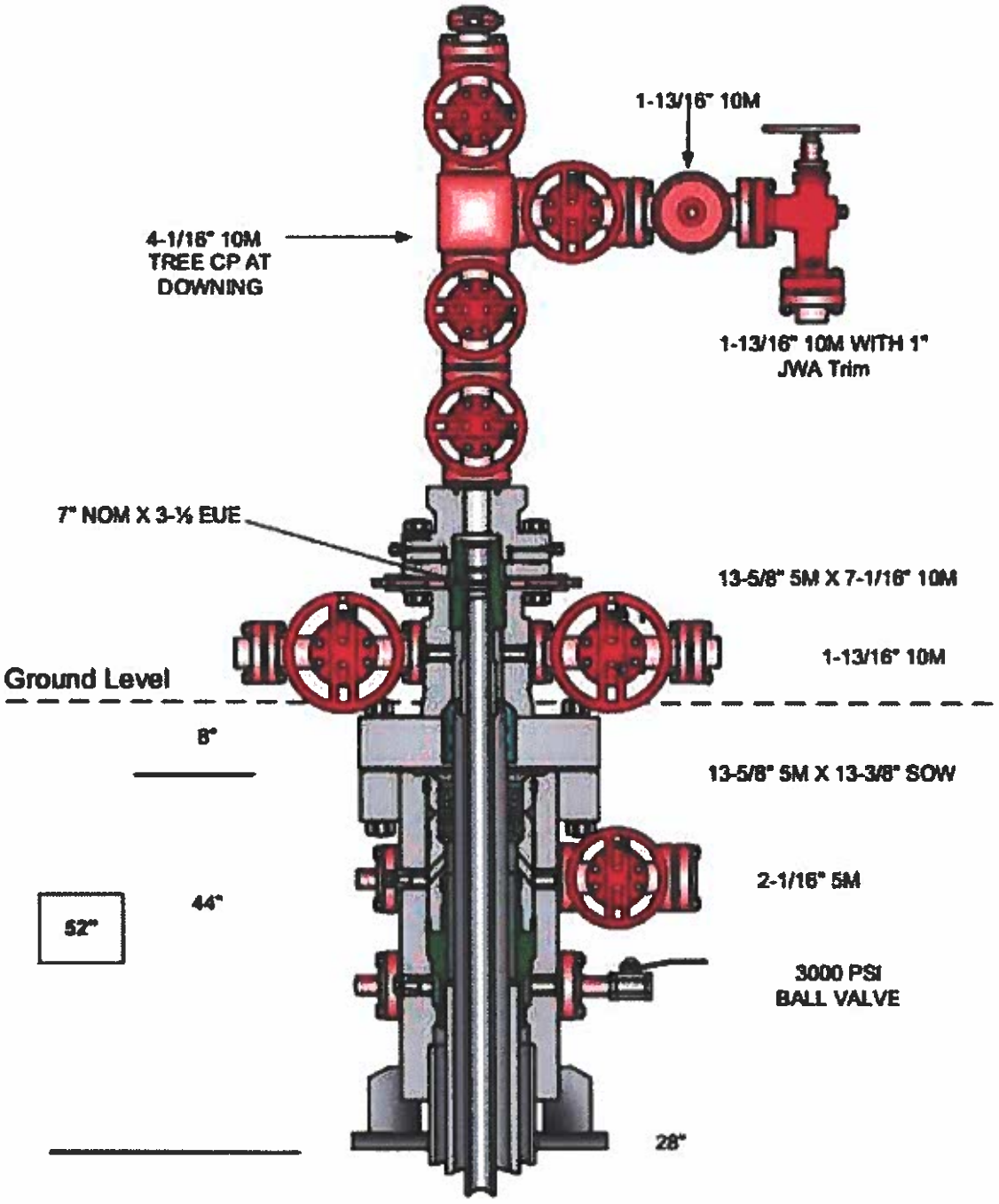
A solid steel body pack-off will be utilized after running and cementing the intermediate casing. After installation the pack-off and lower flange will be pressure tested to 3000 psi.

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.

Multi-bowl Wellhead Diagram



Multi-bowl Wellhead Diagram
Red Tank 4 Federal 45H
Cimarex Energy Co.
4-23S-32E
Lea Co., NM

AFMSS

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

PWD Data Report
02/24/2020

APD ID: 10400035731 **Submission Date:** 11/06/2018

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RED TANK 4 FEDERAL **Well Number:** 45H

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: 45H

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: 45H

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):

Other PWD discharge volume (bbl/day):

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RED TANK 4 FEDERAL **Well Number:** 45H

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

AFMSS

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

Bond Info Data Report

02/24/2020

APD ID: 10400035731

Submission Date: 11/06/2018

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RED TANK 4 FEDERAL

Well Number: 45H

Well Type: OIL WELL

Well Work Type: Drill

Highlighted data reflects the most recent changes

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: