

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
APPLICATION FOR PERMIT TO DRILL OR REENTER

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

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NMNM126969
1b. Type of Well: <input type="checkbox"/> Oil Well <input checked="" type="checkbox"/> Gas Well <input type="checkbox"/> Other		6. If Indian, Allottee or Tribe Name
1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		7. If Unit or CA Agreement, Name and No.
2. Name of Operator CIMAREX ENERGY COMPANY (215099)		8. Lease Name and Well No. RED TANK 3 FEDERAL 1H 927312
3a. Address 600 N. Marienfeld St., Suite 600 Midland TX 79701	3b. Phone No. (include area code) (432)620-1936	9. API Well No. 30-025-46994
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface SESE / 443 FSL / 840 FEL / LAT 32.32765 / LONG -103.6567 At proposed prod. zone NENE / 330 FNL / 380 FEL / LAT 32.340028 / LONG -103.655211		10. Field and Pool, or Exploratory JENNINGS, BONE SPRING WEST / WC 98286
11. Sec., T. R. M. or Blk. and Survey or Area SEC 3 / T23S / R32E / NMP		
14. Distance in miles and direction from nearest town or post office* 30.9 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) 330 feet	16. No of acres in lease 598.24	17. Spacing Unit dedicated to this well 159.64
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 20 feet	19. Proposed Depth 12263 feet / 16576 feet	20. BLM/BIA Bond No. in file FED: NMB001188
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3701 feet	22. Approximate date work will start* 04/01/2018	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. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification. |
| 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). | 6. Such other site specific information and/or plans as may be requested by the BLM. |

25. Signature (Electronic Submission)	Name (Printed/Typed) Amithy Crawford / Ph: (432)620-1909	Date 11/16/2017
Title Regulatory Analyst		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) Cody Layton / Ph: (575)234-5959	Date 02/24/2020
Title Assistant Field Manager Lands & Minerals		

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
Approval Date: 02/24/2020

KZ
03/20/2020

PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	CIMAREX ENERGY COMPANY
LEASE NO.:	NMNM126969
WELL NAME & NO.:	1H – RED TANK 3 FEDERAL
SURFACE HOLE FOOTAGE:	443'/S & 840'/E
BOTTOM HOLE FOOTAGE:	330'/N & 380'/E
LOCATION:	Section 3., T23S., R.32E., NMP
COUNTY:	LEA County, New Mexico

COA

H2S	<input type="radio"/> Yes	<input checked="" type="radio"/> No	
Potash	<input checked="" type="radio"/> None	<input type="radio"/> Secretary	<input type="radio"/> R-111-P
Cave/Karst Potential	<input checked="" type="radio"/> Low	<input type="radio"/> Medium	<input type="radio"/> High
Variance	<input type="radio"/> None	<input checked="" type="radio"/> Flex Hose	<input type="radio"/> Other
Wellhead	<input type="radio"/> Conventional	<input checked="" type="radio"/> Multibowl	<input type="radio"/> Both
Other	<input type="checkbox"/> 4 String Area	<input type="checkbox"/> Capitan Reef	<input type="checkbox"/> WIPP

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 10-3/4 inch surface casing shall be set at approximately 1250 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.
 - 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.

2. The minimum required fill of cement behind the 7-5/8 inch intermediate casing is: Cement to surface. If cement does not circulate see B.1.a, c-d above. **Additional cement maybe required. Excess calculates to -11%.**

Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.

Variance is approved for a 5.5"x 7.625" casing for annular spacing

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. **Additional cement maybe required. Excess calculates to 20%.**

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. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M) psi.**
3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the 7-5/8 inch intermediate casing shoe shall be **10,000 (10M) psi.**

Variance approved to use a 5M annular. The annular must be tested to full working pressure (5000 psi.)

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 (one log per well pad is acceptable) 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. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
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. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
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: The flex line must meet the requirements of API 16C. 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. 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.
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, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).
- c. The tests shall be done by an independent service company utilizing a test plug. The results of the test shall be reported to the appropriate BLM office.
- 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. 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.
- f. 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. This test shall be performed prior to the test at full stack pressure.
- g. 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.

Waste Minimization Plan (WMP)

In the interest of resource development, submission of additional well gas capture development plan information is deferred but may be required by the BLM Authorized Officer at a later date.

ZS 122818

Master COAs for the Cimarex Red Tank 3 Fed Com 1H – 12H

Red Tank Unit #1H:

Surface Hole Location: 443' FSL & 840' FEL, Section 3, T. 23 S., R. 32 E.

Bottom Hole Location: 330' FNL & 380' FEL, Section 3, T. 23 S., R. 32 E.

Red Tank Unit #2H:

Surface Hole Location: 384' FSL & 759' FEL, Section 3, T. 23 S., R. 32 E.

Bottom Hole Location: 330' FNL & 1040' FEL, Section 3, T. 23 S., R. 32 E.

Red Tank Unit #3H:

Surface Hole Location: 384' FSL & 739' FEL, Section 3, T. 23 S., R. 32 E.

Bottom Hole Location: 330' FNL & 710' FEL, Section 3, T. 23 S., R. 32 E.

Red Tank Unit #4H:

Surface Hole Location: 384' FSL & 719' FEL, Section 3, T. 23 S., R. 32 E.

Bottom Hole Location: 330' FNL & 710' FEL, Section 3, T. 23 S., R. 32 E.

Red Tank Unit #5H:

Surface Hole Location: 384' FSL & 699' FEL, Section 3, T. 23 S., R. 32 E.

Bottom Hole Location: 330' FNL & 380' FEL, Section 3, T. 23 S., R. 32 E.

Red Tank Unit #6H:

Surface Hole Location: 468' FSL & 1760' FEL, Section 3, T. 23 S., R. 32 E.

Bottom Hole Location: 330' FNL & 2340' FEL, Section 3, T. 23 S., R. 32 E.

Red Tank Unit #7H:

Surface Hole Location: 468' FSL & 1740' FEL, Section 3, T. 23 S., R. 32 E.

Bottom Hole Location: 100' FSL & 1980' FEL, Section 3, T. 23 S., R. 32 E.

Red Tank Unit #8H:

Surface Hole Location: 468' FSL & 1720' FEL, Section 3, T. 23 S., R. 32 E.

Bottom Hole Location: 100' FSL & 1980' FEL, Section 3, T. 23 S., R. 32 E.



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

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: Amithy Crawford

Signed on: 11/16/2017

Title: Regulatory Analyst

Street Address: 600 N MARIENFELD STE 600

City: MIDLAND

State: TX

Zip: 79701

Phone: (432)620-1909

Email address: acrawford@cimarex.com

Field Representative

Representative Name:

Street Address:

City:

State:

Zip:

Phone:

Email address:



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

Application Data Report

02/24/2020

APD ID: 10400022712

Submission Date: 11/16/2017

Highlighted data
reflects the most
recent changes

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RED TANK 3 FEDERAL

Well Number: 1H

[Show Final Text](#)

Well Type: CONVENTIONAL GAS WELL

Well Work Type: Drill

Section 1 - General

APD ID: 10400022712

Tie to previous NOS? Y

Submission Date: 11/16/2017

BLM Office: CARLSBAD

User: Amithy Crawford

Title: Regulatory Analyst

Federal/Indian APD: FED

Is the first lease penetrated for production Federal or Indian? FED

Lease number: NMNM126969

Lease Acres: 598.24

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 3 FEDERAL

Well Number: 1H

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: JENNINGS; BONE
SPRING WEST

Pool Name: WC-025 G-09
S233216K; UPR WOLFCAMP

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

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RED TANK 3 FEDERAL

Well Number: 1H

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? NO New surface disturbance?

Type of Well Pad: MULTIPLE WELL

Multiple Well Pad Name: RED TANK 3 FEDERAL
Number of Legs: 1

Well Class: HORIZONTAL

Well Work Type: Drill

Well Type: CONVENTIONAL GAS WELL

Describe Well Type:

Well sub-Type: EXPLORATORY (WILDCAT)

Describe sub-type:

Distance to town: 30.9 Miles

Distance to nearest well: 20 FT

Distance to lease line: 330 FT

Reservoir well spacing assigned acres Measurement: 159.64 Acres

Well plat: Red_Tank_3_Federal_1H_C102_20191212085226.pdf

Well work start Date: 04/01/2018

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	443	FSL	840	FEL	23S	32E	3	Aliquot SESE	32.32765	-103.6567	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 126969	3701	0	0	
KOP Leg #1	443	FSL	840	FEL	23S	32E	3	Aliquot SESE	32.32765	-103.6567	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 126969	-7977	11678	11678	
PPP Leg #1-1	494	FSL	531	FEL	23S	32E	3	Aliquot SESE	32.329003	-103.655689	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 126969	-8492	12538	12193	

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RED TANK 3 FEDERAL

Well Number: 1H

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	330	FNL	380	FEL	23S	32E	3	Aliquot NENE	32.340028	- 103.655211	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 126969	- 8562	16576	12263	
BHL Leg #1	330	FNL	380	FEL	23S	32E	3	Aliquot NENE	32.340028	- 103.655211	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 126969	- 8562	16576	12263	



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

Drilling Plan Data Report

02/24/2020

APD ID: 10400022712

Submission Date: 11/16/2017

Highlighted data
reflects the most
recent changes

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RED TANK 3 FEDERAL

Well Number: 1H

[Show Final Text](#)

Well Type: CONVENTIONAL GAS WELL

Well Work Type: Drill

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
141815	RUSTLER	3701	1200	1200		USEABLE WATER	N
141828	CASTILE	201	3500	3500		NONE	N
141829	LAMAR	-1034	4735	4735		NONE	N
141830	BELL CANYON	-1089	4790	4790		NATURAL GAS, OIL	N
141831	CHERRY CANYON	-1919	5620	5620		NATURAL GAS, OIL	N
141832	BRUSHY CANYON	-3501	7202	7202		NATURAL GAS, OIL	N
141857	BONE SPRING	-5044	8745	8745		NATURAL GAS, OIL	N
141882	WOLFCAMP	-8837	12538	12538		NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Pressure Rating (PSI): 10M

Rating Depth: 16576

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. Cimarex requests a 5M annular variance for the 10M BOP system. See attached procedure.

Testing Procedure: A multi-bowl wellhead system will be utilized. After running the 10-3/4" surface casing, a 13 5/8" BOP/BOPE system with a minimum working pressure of 10000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 10000 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 10000 psi.

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RED TANK 3 FEDERAL

Well Number: 1H

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_3_Federal_1H__10M_Choke_20171115145110.pdf

BOP Diagram Attachment:

Red_Tank_3_Federal_1H_10M_BOP_20180723085400.pdf

Pressure Rating (PSI): 5M

Rating Depth: 12302

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 10-3/4" surface casing, a 13 5/8" BOP/BOPE system with a minimum working pressure of 5000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 5000 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 5000 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_3_Federal_1H_5M_Choke_20171114075118.pdf

BOP Diagram Attachment:

Red_Tank_3_Federal_1H_5M_BOP_20171115145203.pdf

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
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Operator Name: CIMAREX ENERGY COMPANY

Well Name: RED TANK 3 FEDERAL

Well Number: 1H

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	14.75	10.75	NEW	API	N	0	1250	0	1250			1250	J-55	40.5	BUTT	2.76	5.47	BUOY	12.42	BUOY	12.42
2	PRODUCTION	6.75	5.5	NEW	API	N	0	11673	0	11673			11673	L-80	20	LT&C	1.16	1.21	BUOY	1.88	BUOY	1.88
3	INTERMEDIATE	9.875	7.625	NEW	API	N	0	12302	0	12302			12302	HCL-80	29.7	BUTT	2.52	1.21	BUOY	1.89	BUOY	1.89
4	PRODUCTION	6.75	5.0	NEW	API	N	11673	16576	11673	16576			4903	P-110	218	BUTT	1.69	1.71	BUOY	54.61	BUOY	54.61

Casing Attachments

Casing ID: 1 String Type: SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Red_Tank_3_Federal_1H_Casing_Assumptions_20180723085442.pdf

Casing ID: 2 String Type: PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Red_Tank_3_Federal_1H_Casing_Assumptions_20180723085612.pdf

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RED TANK 3 FEDERAL

Well Number: 1H

Casing Attachments

Casing ID: 3 String Type: INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Red_Tank_3_Federal_1H_Casing_Assumptions_20180723085627.pdf

Casing ID: 4 String Type: PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Red_Tank_3_Federal_1H_Casing_Assumptions_20180723085639.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	1250	485	1.72	13.5	834	50	Class C	Bentonite
SURFACE	Tail		0	1250	130	1.34	14.8	173	25	Class C	LCM
PRODUCTION	Lead		0	1167 3	347	1.3	14.2	451	25	50:50 (Poz.H)	Salt, Bentonite, Fluid Loss, Dispersant, SMS
INTERMEDIATE	Lead	4735	0	1230 2	852	3.64	10.3	2116	50	Tuned Light	LCM

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RED TANK 3 FEDERAL

Well Number: 1H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
INTERMEDIATE	Tail		0	1230 2	207	1.3	14.5	268	25	50:50 (Poz:H)	Salt, Bentonite, Fluid Loss, dispersant, Expanding Agent, Retarder, Antifoam
INTERMEDIATE	Lead		0	1230 2	754	1.88	12.9	1416	50	35:65 (Poz:C)	Salt, Bentonite

PRODUCTION	Lead		1167 3	1657 6	347	1.3	14.2	451	25	50:50 (Poz:H)	Slat, Bentonite, Fluid Loss, Dispersant, SMS
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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	1250	SPUD MUD	8.3	8.8							
1230 2	1657 6	OIL-BASED MUD	12	12.5							
1250 2	1230 2	OTHER : Brine Diesel Emulsion	8.5	9							

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RED TANK 3 FEDERAL

Well Number: 1H

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: 7970

Anticipated Surface Pressure: 5272.14

Anticipated Bottom Hole Temperature(F): 177

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 geohazards 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_3_Federal_1H_H2S_Plan_20171114090827.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Red_Tank_3_Federal_1H_Directional_Plans_20171114090912.pdf

Other proposed operations facets description:

No gas Capture plan will be attached as this is a Gas well. Per 3162.3 drilling applications, require all Oil wells submit a Waste Minimization plan.

Other proposed operations facets attachment:

Other Variance attachment:

Red_Tank_3_Federal_1H_Flex_Hose_20171114090941.pdf

Red_Tank_3_Federal_1H_Well_Control_Plan_20171116074429.pdf

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RED TANK 3 FEDERAL

Well Number: 1H

Red_Tank_3_Federal_1H_Drilling_Plan_20180723090717.pdf

Red_Tank_3_Federal_1H_Multibowl_Wellhead_20180723091005.pdf



Drilling 9.875" hole
below 10.75" Casing

Fill Line

Flowline

5000# (5M)
BOP

Annular Preventer

SRR & A

Pipe Rams

Blind Rams

2" Minimum Kill Line

Kill Line

Drilling
Spool

3" minimum choke line

Choke Line

2 Valves Minimum
(HCR Required)

2 Valves and a check valve

Wellhead
Assembly

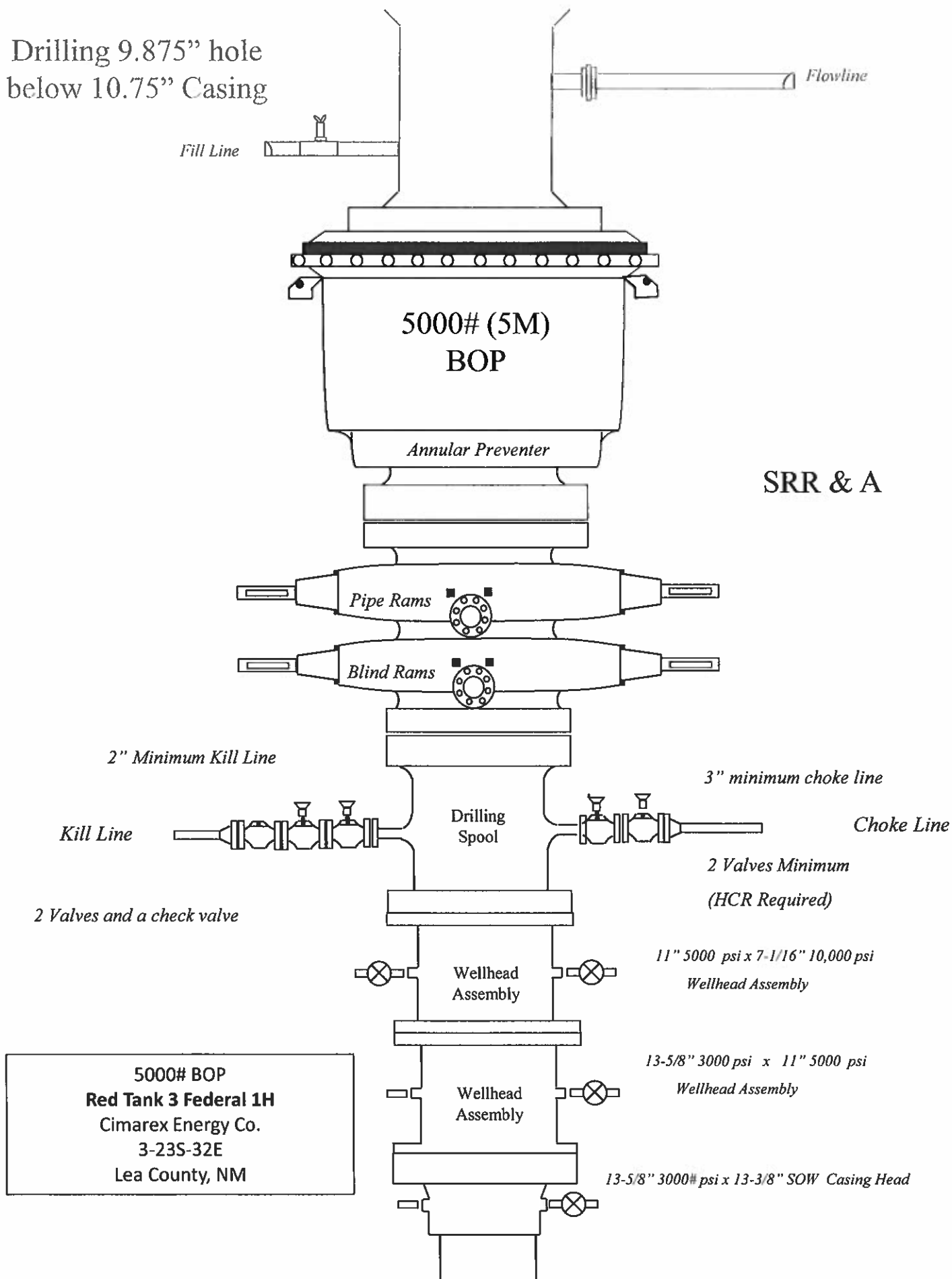
11" 5000 psi x 7-1/16" 10,000 psi
Wellhead Assembly

Wellhead
Assembly

13-5/8" 3000 psi x 11" 5000 psi
Wellhead Assembly

5000# BOP
Red Tank 3 Federal 1H
Cimarex Energy Co.
3-23S-32E
Lea County, NM

13-5/8" 3000# psi x 13-3/8" SOW Casing Head



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

5 M Annular Preventer

10M Double
Ram BOP

Pipe Rams

Blind Rams

2" Kill Line Valves (2)
with Check Valve

2" Kill Line

3" Manual Choke Valve
and 3" HCR Valve

3" Choke Line

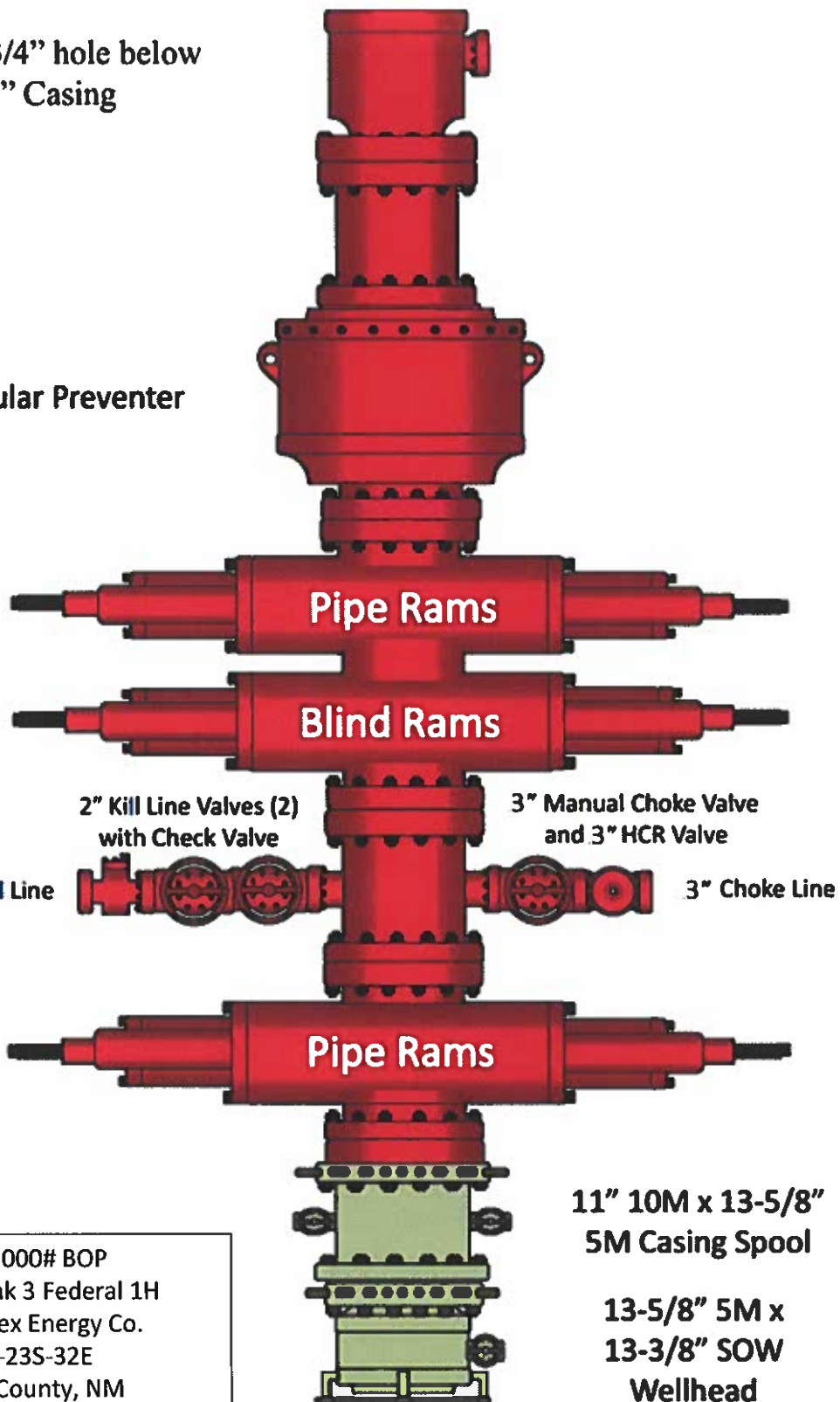
10M Single
Ram BOP

Pipe Rams

10,000# BOP
Red Tank 3 Federal 1H
Cimarex Energy Co.
3-23S-32E
Lea County, NM

11" 10M x 13-5/8"
5M Casing Spool

13-5/8" 5M x
13-3/8" SOW
Wellhead



Hydrogen Sulfide Drilling Operations Plan
Red Tank 3 Federal 1H
Cimarex Energy Co.
UL: P, Sec. 3, 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 H₂S
 - 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.

H₂S 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 (H₂S 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 H₂S 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.

H₂S Contingency Plan
Red Tank 3 Federal 1H
Cimarex Energy Co.
UL: P, Sec. 3, 23S, 32E
Lea Co., NM

Emergency Procedures

In the event of a release of gas containing H₂S, 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 H₂S 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 H₂S, 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 (SO₂). 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 H₂S and SO₂

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).

H₂S Contingency Plan Emergency Contacts

Red Tank 3 Federal 1H

Cimarex Energy Co.

UL: P, Sec. 3, 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
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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		

Cimarex Red Tank 3 Federal #1H Rev0 RM 12Sept17 Proposal Geodetic Report

(Non-Def Plan)



Report Date: September 12, 2017 - 10:32 AM
 Client: Cimarex
 Field: NM Lea County (NAD 83)
 Structure / Slot: Cimarex Red Tank 3 Federal #1H / Cimarex Red Tank 3 Federal #1H
 Well: Cimarex Red Tank 3 Federal #1H
 Borehole: Original Borehole
 UWI / API#: Unknown / Unknown
 Survey Name: Cimarex Red Tank 3 Federal #1H Rev0 RM 12Sept17
 Survey Date: September 12, 2017
 Tort / AHD / DDI / ERD Ratio: 112.010 * / 4616.329 ft / 5.844 / 0.376
 Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
 Location Lat / Long: N 32° 19' 39.54206", W 103° 39' 24.11923"
 Location Grid N/E Y/X: N 483591.400 NUS, E 750338.600 NUS
 CRS Grid Convergence Angle: 0.3618 *
 Grid Scale Factor: 0.99995912
 Version / Patch: 2.10.544.0

Survey / DLS Computation: Minimum Curvature / Lubinski
 Vertical Section Azimuth: 359.837 * (Grid North)
 Vertical Section Origin: 0.000 ft, 0.000 ft
 TVD Reference Datum: RKB
 TVD Reference Elevation: 3725.300 ft above MSL
 Seabed / Ground Elevation: 3701.300 ft above MSL
 Magnetic Declination: 6.919 *
 Total Gravity Field Strength: 998.4419mgm (9.80665 Based)
 Gravity Model: GARM
 Total Magnetic Field Strength: 48188.074 nT
 Magnetic Dip Angle: 60.124 *
 Declination Date: September 12, 2017
 Magnetic Declination Model: HDGM 2017
 North Reference: Grid North
 Grid Convergence Used: 0.3618 *
 Total Corr Mag North→Grid North: 6.5567 *
 Local Coord Referenced To: Structure Reference Point

Comments	MD (ft)	Incl (°)	Azim Grd (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (ft/100ft)	Northing (NUS)	Easting (EUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL [443' FSL, 840' FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	100.00	0.00	33.88	100.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	200.00	0.00	33.88	200.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	300.00	0.00	33.88	300.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	400.00	0.00	33.88	400.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	500.00	0.00	33.88	500.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	600.00	0.00	33.88	600.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	700.00	0.00	33.88	700.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	800.00	0.00	33.88	800.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	900.00	0.00	33.88	900.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	1000.00	0.00	33.88	1000.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	1100.00	0.00	33.88	1100.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	1200.00	0.00	33.88	1200.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	1300.00	0.00	33.88	1300.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	1400.00	0.00	33.88	1400.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	1500.00	0.00	33.88	1500.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	1600.00	0.00	33.88	1600.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	1700.00	0.00	33.88	1700.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	1800.00	0.00	33.88	1800.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	1900.00	0.00	33.88	1900.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	2000.00	0.00	33.88	2000.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	2100.00	0.00	33.88	2100.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	2200.00	0.00	33.88	2200.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	2300.00	0.00	33.88	2300.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	2400.00	0.00	33.88	2400.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	2500.00	0.00	33.88	2500.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	2600.00	0.00	33.88	2600.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	2700.00	0.00	33.88	2700.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	2800.00	0.00	33.88	2800.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	2900.00	0.00	33.88	2900.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	3000.00	0.00	33.88	3000.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	3100.00	0.00	33.88	3100.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	3200.00	0.00	33.88	3200.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	3300.00	0.00	33.88	3300.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	3400.00	0.00	33.88	3400.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	3500.00	0.00	33.88	3500.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	3600.00	0.00	33.88	3600.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	3700.00	0.00	33.88	3700.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	3800.00	0.00	33.88	3800.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	3900.00	0.00	33.88	3900.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	4000.00	0.00	33.88	4000.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	4100.00	0.00	33.88	4100.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	4200.00	0.00	33.88	4200.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	4300.00	0.00	33.88	4300.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	4400.00	0.00	33.88	4400.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	4500.00	0.00	33.88	4500.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	4600.00	0.00	33.88	4600.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	4700.00	0.00	33.88	4700.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	4735.00	0.00	33.88	4735.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	4790.00	0.00	33.88	4790.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	4800.00	0.00	33.88	4800.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	4900.00	0.00	33.88	4900.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	5000.00	0.00	33.88	5000.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	5100.00	0.00	33.88	5100.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	5200.00	0.00	33.88	5200.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	5300.00	0.00	33.88	5300.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	5400.00	0.00	33.88	5400.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	5500.00	0.00	33.88	5500.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	5600.00	0.00	33.88	5600.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	5620.00	0.00	33.88	5620.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	5700.00	0.00	33.88	5700.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	5800.00	0.00	33.88	5800.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	5900.00	0.00	33.88	5900.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	6000.00	0.00	33.88	6000.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	6100.00	0.00	33.88	6100.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	6200.00	0.00	33.88	6200.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	6300.00	0.00	33.88	6300.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	6400.00	0.00	33.88	6400.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	6500.00	0.00	33.88	6500.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	6600.00	0.00	33.88	6600.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	6700.00	0.00	33.88	6700.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	6800.00	0.00	33.88	6800.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	6900.00	0.00	33.88	6900.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	7000.00	0.00	33.88	7000.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12

	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northings (ftUS)	Easting (ftUS)	Latitude (N/S ° ° ' ")	Longitude (E/W ° ° ' ")
Brushy Canyon	7202.00	0.00	33.88	7202.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	7300.00	0.00	33.88	7300.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	7400.00	0.00	33.88	7400.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	7500.00	0.00	33.88	7500.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	7600.00	0.00	33.88	7600.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	7700.00	0.00	33.88	7700.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	7800.00	0.00	33.88	7800.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	7900.00	0.00	33.88	7900.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	8000.00	0.00	33.88	8000.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	8100.00	0.00	33.88	8100.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	8200.00	0.00	33.88	8200.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	8300.00	0.00	33.88	8300.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	8400.00	0.00	33.88	8400.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	8500.00	0.00	33.88	8500.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	8600.00	0.00	33.88	8600.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	8700.00	0.00	33.88	8700.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
Top Bone Spring	8745.00	0.00	33.88	8745.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	8800.00	0.00	33.88	8800.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	8900.00	0.00	33.88	8900.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	9000.00	0.00	33.88	9000.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	9100.00	0.00	33.88	9100.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	9200.00	0.00	33.88	9200.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	9300.00	0.00	33.88	9300.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	9400.00	0.00	33.88	9400.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	9500.00	0.00	33.88	9500.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	9600.00	0.00	33.88	9600.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	9700.00	0.00	33.88	9700.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	9800.00	0.00	33.88	9800.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	9900.00	0.00	33.88	9900.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	10000.00	0.00	33.88	10000.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	10100.00	0.00	33.88	10100.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	10200.00	0.00	33.88	10200.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
KOP - Build 12"/100' DLS	10300.00	0.00	33.88	10300.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	10400.00	0.00	33.88	10400.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	10500.00	0.00	33.88	10500.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	10600.00	0.00	33.88	10600.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	10700.00	0.00	33.88	10700.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	10800.00	0.00	33.88	10800.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	10900.00	0.00	33.88	10900.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	11000.00	0.00	33.88	11000.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	11100.00	0.00	33.88	11100.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	11200.00	0.00	33.88	11200.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	11300.00	0.00	33.88	11300.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	11400.00	0.00	33.88	11400.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	11500.00	0.00	33.88	11500.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	11600.00	0.00	33.88	11600.00	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	11677.72	0.00	33.88	11677.72	0.00	0.00	0.00	0.00	483591.40	750338.60	N 32 19 39.54	W 103 39 24.12
	11700.00	2.67	33.88	11699.99	0.43	0.43	0.29	12.00	483591.83	750338.89	N 32 19 39.55	W 103 39 24.12
Build & Turn 4"/100' DLS	11800.00	14.67	33.88	11798.67	12.87	12.93	8.68	12.00	483604.33	750347.28	N 32 19 39.67	W 103 39 24.02
	11900.00	26.87	33.88	11892.06	42.01	42.19	28.32	12.00	483633.59	750366.92	N 32 19 39.96	W 103 39 23.79
	12000.00	38.67	33.88	11876.08	86.55	86.93	58.36	12.00	483678.32	750396.86	N 32 19 40.40	W 103 39 23.43
	12100.00	50.67	33.88	12047.06	144.57	145.19	97.48	12.00	483736.59	750436.07	N 32 19 40.97	W 103 39 22.97
	12200.00	62.67	33.88	12101.90	213.52	214.44	143.96	12.00	483805.83	750482.56	N 32 19 41.65	W 103 39 22.43
	12300.00	74.67	33.88	12138.20	290.39	291.63	195.79	12.00	483883.02	750534.38	N 32 19 42.42	W 103 39 21.82
	12302.72	75.00	33.88	12138.92	292.58	293.81	197.26	12.00	483885.20	750535.85	N 32 19 42.44	W 103 39 21.80
	12400.00	76.41	30.13	12162.94	372.17	373.74	247.20	4.00	483965.12	750585.79	N 32 19 43.22	W 103 39 21.21
	12500.00	77.92	26.34	12185.16	457.76	459.63	293.31	4.00	484051.01	750631.89	N 32 19 44.07	W 103 39 20.67
	12538.41	78.52	24.89	12193.00	491.58	493.54	309.56	4.00	484084.91	750648.15	N 32 19 44.41	W 103 39 20.48
	12600.00	79.48	22.58	12204.75	546.75	548.87	333.89	4.00	484140.25	750672.47	N 32 19 44.95	W 103 39 20.19
	12700.00	81.09	18.86	12221.63	638.70	641.05	368.75	4.00	484232.42	750707.33	N 32 19 45.86	W 103 39 19.77
	12800.00	82.73	15.18	12235.71	733.16	735.70	397.71	4.00	484327.07	750736.30	N 32 19 46.80	W 103 39 19.43
	12900.00	84.40	11.52	12246.92	829.68	832.36	420.65	4.00	484423.73	750759.23	N 32 19 47.75	W 103 39 19.18
	13000.00	86.09	7.88	12258.21	927.78	930.57	437.43	4.00	484521.93	750776.01	N 32 19 48.72	W 103 39 18.95
	Landing Point	13100.00	87.80	4.26	12260.54	1026.99	1029.85	447.99	4.00	484621.21	750786.57	N 32 19 49.70
13200.00		89.52	0.65	12262.88	1126.83	1129.71	452.27	4.00	484721.06	750790.85	N 32 19 50.69	W 103 39 18.77
13227.96		90.00	359.64	12263.00	1154.79	1157.68	452.34	4.00	484749.03	750790.92	N 32 19 50.97	W 103 39 18.76
13300.00		90.00	359.64	12263.00	1226.82	1229.71	451.88	0.00	484821.06	750790.46	N 32 19 51.68	W 103 39 18.76
13400.00		90.00	359.64	12263.00	1326.82	1329.71	451.25	0.00				

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 ° ' ")
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Survey Type: Non-Del Plan

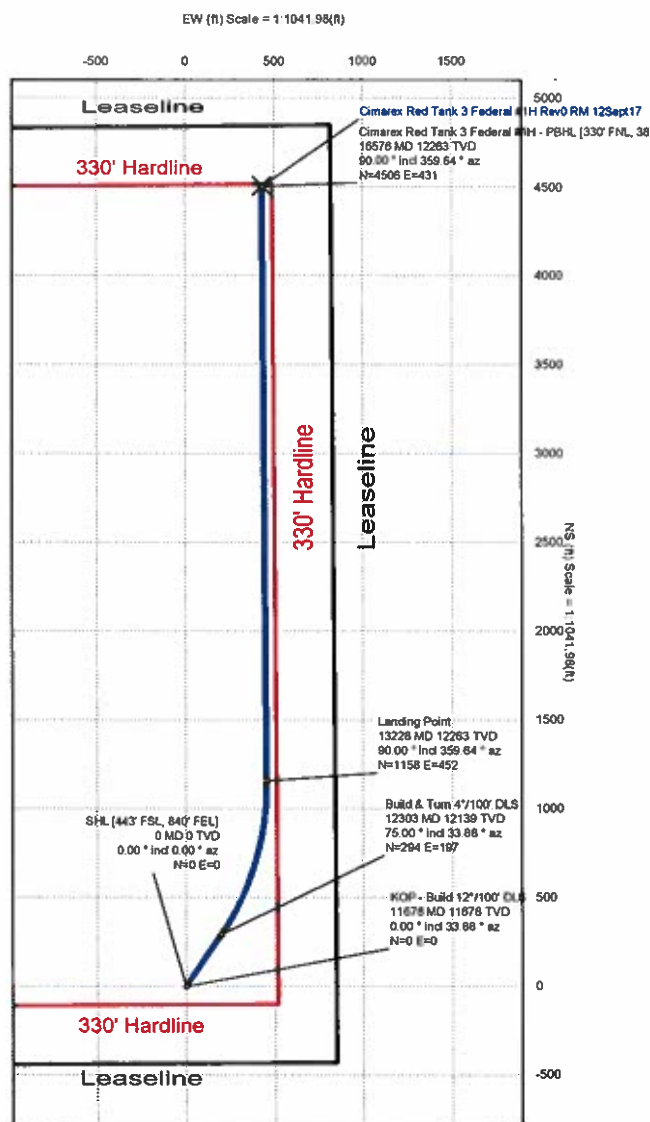
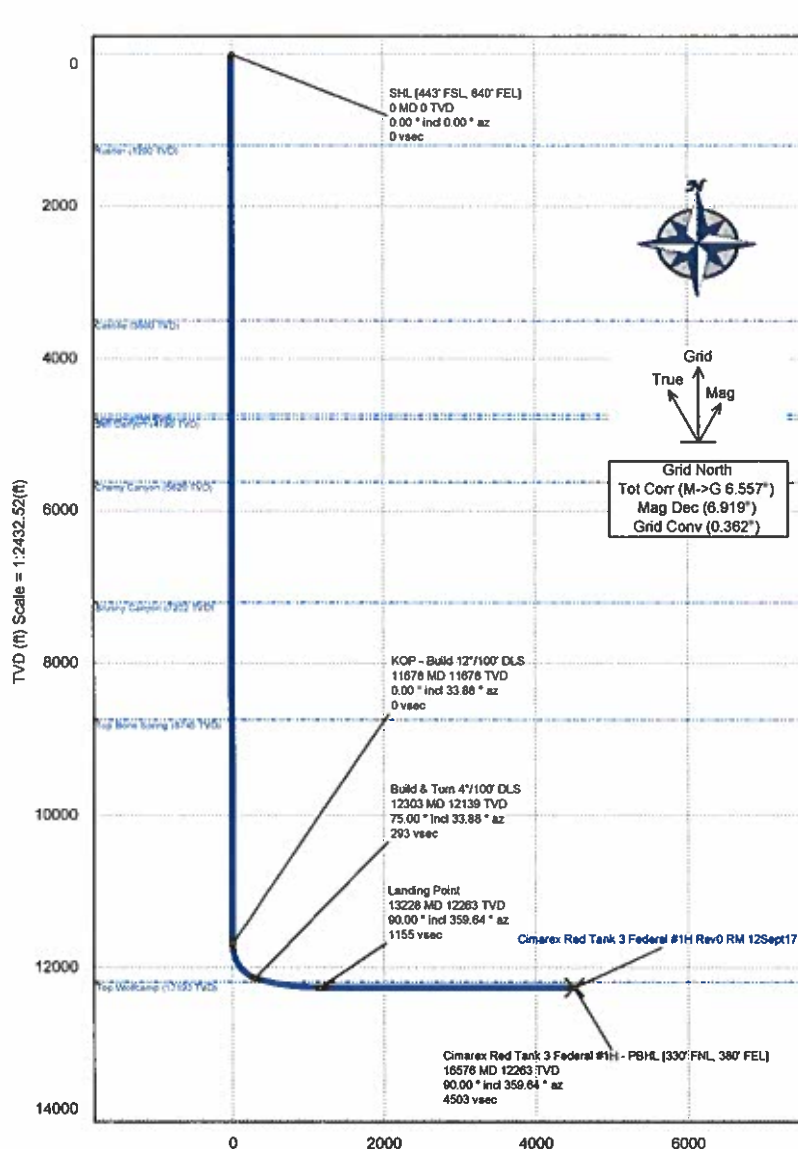
Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma

Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EDU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	24.000	1/100.000	30.000	30.000		NAL_MWD_PLUS_0.5_DEG- Depth Only	Original Borehole / Cimarex Red Tank 3 Federal #1H Rev0 RM 12Sept17
	1	24.000	16576.218	1/100.000	30.000	30.000		NAL_MWD_PLUS_0.5_DEG	Original Borehole / Cimarex Red Tank 3 Federal #1H Rev0 RM

Borehole:	Well:	Field:	Structure:
Original Borehole	Cimarex Red Tank 3 Federal #1H	NM Lea County (NAD 83)	Cimarex Red Tank 3 Federal #1H

Gravity & Magnetic Parameters	Surface Location	NAD83 New Mexico State Plane, Eastern Zone, US Feet	Miscellaneous
Model: HDOM 2017 Dip: 60.124° Date: 12-Sep-2017	Lat: N 32 18 39.54 Northing: 453801.40US Grid Conv: 0.3618°	Slot: Cimarex Red Tank 3 Federal #1H TVD Ref: R43(3725.3H above MSL)	Plan: Cimarex Red Tank 3 Federal #1H Rev0 RM 12Sept17
MagDec: 6.819° FS: 48188.67nT Gravity FS: 996.442mg (RIM 65 Based)	Lon: W 103 39 24.12 Easting: 700310.60US Scale Fact: 0.99995912		



Vertical Section (ft) Azim = 359.64° Scale = 1:2432.52(ft) Origin = ON/S, OE/W

Critical Points								
Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL (443° FSL, 840° FEL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rustler	1200.00	0.00	33.88	1200.00	0.00	0.00	0.00	0.00
Castille	3500.00	0.00	33.88	3500.00	0.00	0.00	0.00	0.00
Lamar	4735.00	0.00	33.88	4735.00	0.00	0.00	0.00	0.00
Bell Canyon	4790.00	0.00	33.88	4790.00	0.00	0.00	0.00	0.00
Cherry Canyon	5620.00	0.00	33.88	5620.00	0.00	0.00	0.00	0.00
Brushy Canyon	7202.00	0.00	33.88	7202.00	0.00	0.00	0.00	0.00
Top Bone Spring	8745.00	0.00	33.88	8745.00	0.00	0.00	0.00	0.00
KOP - Build 12°/100' DLS	11677.72	0.00	33.88	11677.72	0.00	0.00	0.00	0.00
Build & Turn 4°/100' DLS	12302.72	75.00	33.88	12138.92	292.56	293.81	197.26	12.00
Top Wolfcamp	12538.41	78.52	24.89	12193.00	491.56	493.54	309.56	4.00
Landing Point	13227.96	90.00	359.64	12263.00	1154.79	1157.68	452.34	4.00
Cimarex Red Tank 3 Federal #1H - PBHL (330° FNL, 380° FEL)	16576.22	90.00	359.64	12263.00	4503.04	4505.86	431.15	0.00
Wolfcamp A1 Shale	NaN			12338.00				
Up. WFMP A1 Target	NaN			12378.00				

Cimarex Energy Co., Red Tank 3 Federal #1H

1. Geological Formations

TVD of target 12,263
MD at TD 16,576

Pilot Hole TD N/A
Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
Rustler	1200	N/A	
Castille	3500	N/A	
Lamar	4735	N/A	
Bell Canyon	4790	N/A	
Cherry Canyon	5620	N/A	
Brushy Canyon	7202	N/A	
Bone Spring	8745	N/A	
Wolfcamp	12193	Hydrocarbons	
Wolfcamp A1 Shale	12338	N/A	
Up. WFMP A1 Target	12378	Hydrocarbons	

2. Casing Program

Hole Size	Casing Depth From	Casing Depth To	Casing Size	Weight (lb/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
14 3/4	0	1250	10-3/4"	40.50	J-55	BT&C	2.76	5.47	12.42
9 7/8	0	12302	7-5/8"	29.70	HCL-80	BT&C	2.52	1.21	1.89
6 3/4	0	11673	5-1/2"	20.00	L-80	LT&C	1.16	1.21	1.88
6 3/4	11673	16576	5"	18.00	P-110	BT&C	1.69	1.71	54.61
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

Request Variance for 5-1/2" x 7-5/8" annular clearance. The portion that does not meet clearance will not be cemented

Cimarex Energy Co., Red Tank 3 Federal #1H

	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	# Sk	Wt. lb/gal	Yld ft ³ /sack	H ₂ O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	485	13.50	1.72	9.15	15.5	Lead: Class C + Bentonite
	130	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate Stage 1	582	10.30	3.64	22.18		Lead: Tuned Light + LCM
	207	14.50	1.30	5.79	20	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + Expanding Agent + Retarder + Antifoam
Intermediate Stage 2	754	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
Production	347	14.20	1.30	5.86	14:30	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS

DV tool with possible annular casing packer as needed is proposed at a depth of +/- 4,735'.

Casing String	TOC	% Excess
Surface	0	45
Intermediate Stage 1	4735	47
Intermediate Stage 2	0	37
Production	12102	8

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
9 7/8	13 5/8	5M	Annular	X	50% of working pressure
			Blind Ram		5M
			Pipe Ram	X	
			Double Ram	X	
			Other		
6 3/4	13 5/8	10M	Annular	X	50% of working pressure
			Blind Ram		10M
			Pipe Ram	X	
			Double Ram	X	
			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.

X	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 1250'	FW Spud Mud	8.30 - 8.80	30-32	N/C
1250' to 12302'	Brine Diesel Emulsion	8.50 - 9.00	30-35	N/C
12302' to 16576'	OBM	12.00 - 12.50	50-70	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.

The Brine Emulsion is completely saturated brine fluid that ties diesel into itself to lower the weight of the fluid. The drilling fluid is completely salt saturated.

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring
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6. Logging and Testing Procedures

Logging, Coring and Testing	
X	Will run GR/CNL from TD 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	7970 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	H ₂ S is present
X	H ₂ S plan is attached

8. Other Facets of Operation**9. Wellhead**

A multi-bowl wellhead system will be utilized.

After running the 10-3/4" surface casing, a 13 5/8" BOP/BOPE system with a minimum working pressure of 10000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 10000 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.

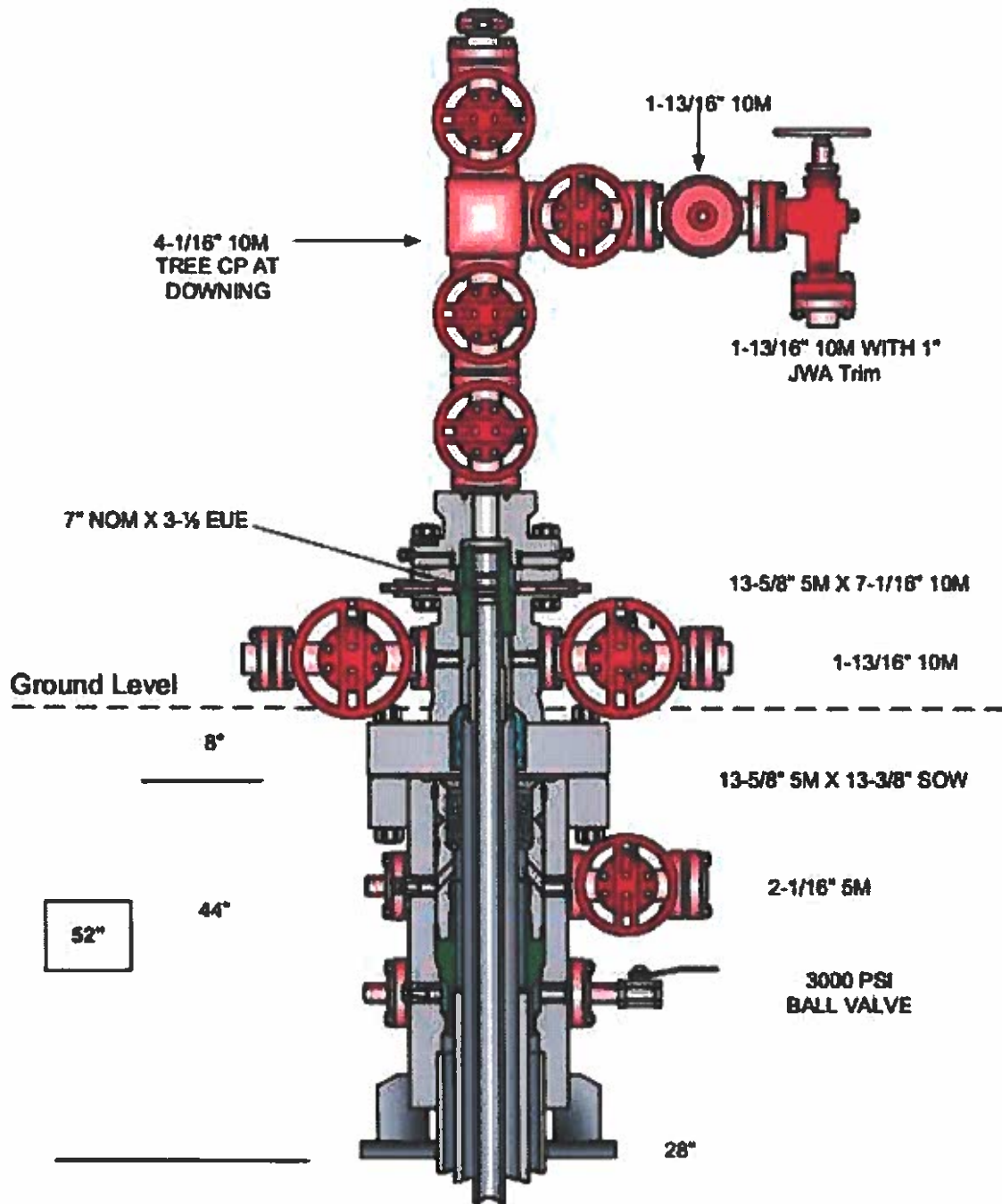
A solid steel body pack-off will be utilized after running and cementing the intermediate casing. After installation the pack-off and lower flange will be pressure tested to 10000 psi.

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 3 Federal 1H
Cimarex Energy Co.
3-23S-32E
Lea County, NM



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

PWD Data Report

02/24/2020

APD ID: 10400022712

Submission Date: 11/16/2017

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RED TANK 3 FEDERAL

Well Number: 1H

Well Type: CONVENTIONAL GAS 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:

Describe 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 3 FEDERAL

Well Number: 1H

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:

Describe 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 3 FEDERAL

Well Number: 1H

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 3 FEDERAL

Well Number: 1H

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:



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

Bond Info Data Report

02/24/2020

APD ID: 10400022712

Submission Date: 11/16/2017

Highlighted data
reflects the most
recent changes

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RED TANK 3 FEDERAL

Well Number: 1H

[Show Final Text](#)

Well Type: CONVENTIONAL GAS WELL

Well Work Type: Drill

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: