Form 3160-3
(June 2015)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.

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.

[319775]

2. Name of Operator

[215099]

9. API Well No. **30-025-50177**

3a. Address

3b. Phone No. *(include area code)*

10. Field and Pool, or Exploratory **[97994]**

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*

At surface

At proposed prod. zone

11. Sec., T. R. M. or Blk. and Survey or Area

14. Distance in miles and direction from nearest town or post office*

12. County or Parish

13. State

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration

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
Title		
Approved by *(Signature)*	Name *(Printed/Typed)*	Date
Title	Office	

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.

NGMP Rec 05/03/2022

SL

KZ
05/27/2022

APPROVED WITH CONDITIONS

(Continued on page 2)

*(Instructions on page 2)

Approval Date: 05/26/2021

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number	2 Pool Code	3 Pool Name
30-025 ~~50177~~ 50177	97994	WC-025 G-06 S253329D; Upper Bone Spring

4 Property Code	5 Property Name	6 Well Number
319775	VACA DRAW 20-17 FEDERAL	16H

7 OGRID No.	8 Operator Name	9 Elevation
215099	CIMAREX ENERGY CO.	3422.9'

10 Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	20	25S	33E		270	SOUTH	630	WEST	LEA

11 Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	17	25S	33E		100	NORTH	1272	WEST	LEA

12 Dedicated Acres	13 Joint or Infill	14 Consolidation Code	15 Order No.
320			

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

16

NAD 83 (SURFACE HOLE LOCATION)
LATITUDE = 32°06'34.47" (32.109575°)
LONGITUDE = 103°36'02.93" (103.600814°)
NAD 27 (SURFACE HOLE LOCATION)
LATITUDE = 32°06'34.02" (32.109450°)
LONGITUDE = 103°36'01.23" (103.600340°)
STATE PLANE NAD 83 (N.M. EAST)
N: 404370.09' E: 768142.34'
STATE PLANE NAD 27 (N.M. EAST)
N: 404312.30' E: 726956.14'

NAD 83 (LP/FTP)
LATITUDE = 32°06'34.47" (32.109575°)
LONGITUDE = 103°35'55.47" (103.598740°)
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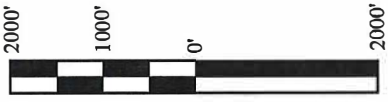
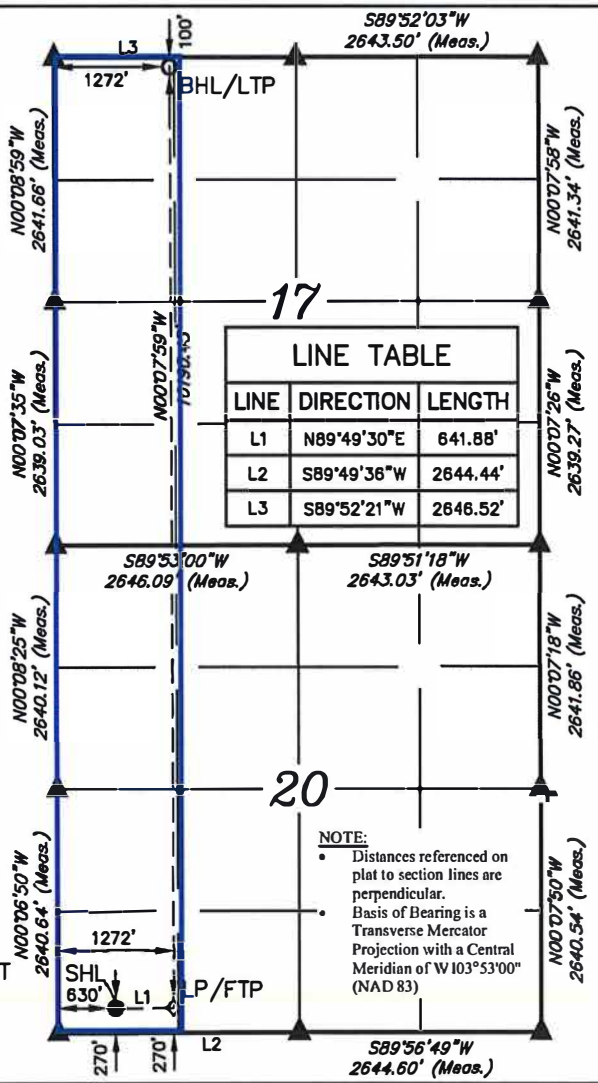
LATITUDE = 32°06'34.02" (32.109450°)
LONGITUDE = 103°35'53.77" (103.598268°)
STATE PLANE NAD 83 (N.M. EAST)
N: 404374.74' E: 768784.06'
STATE PLANE NAD 27 (N.M. EAST)
N: 404316.96' E: 727597.91'

NAD 83 (BHL/LTP)
LATITUDE = 32°08'15.29" (32.137581°)
LONGITUDE = 103°35'55.43" (103.598730°)
NAD 27 (BHL/LTP)
LATITUDE = 32°08'14.84" (32.137457°)
LONGITUDE = 103°35'53.72" (103.598256°)
STATE PLANE NAD 83 (N.M. EAST)
N: 414563.20' E: 768717.87'
STATE PLANE NAD 27 (N.M. EAST)
N: 414505.17' E: 727532.19'



SCALE
DRAWN BY: K.A. 01-14-20

● = SURFACE HOLE LOCATION
◇ = LANDING POINT/FIRST TAKE POINT
O = BOTTOM HOLE LOCATION/LAST TAKE POINT
▲ = SECTION CORNER LOCATED



LINE TABLE		
LINE	DIRECTION	LENGTH
L1	N89°49'30"E	641.88'
L2	S89°49'36"W	2644.44'
L3	S89°52'21"W	2646.52'

NOTE:
- Distances referenced on plat to section lines are perpendicular.
- Basis of Bearing is a Transverse Mercator Projection with a Central Meridian of W 103°53'00" (NAD 83)

17 OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature 3/17/2020 Date

Hope Knauls
Printed Name

hknauls@cimarex.com
E-mail Address

18 SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

January 19, 2017
Date of Survey

Signature and Seal of Professional Surveyor:

Certificate Number:

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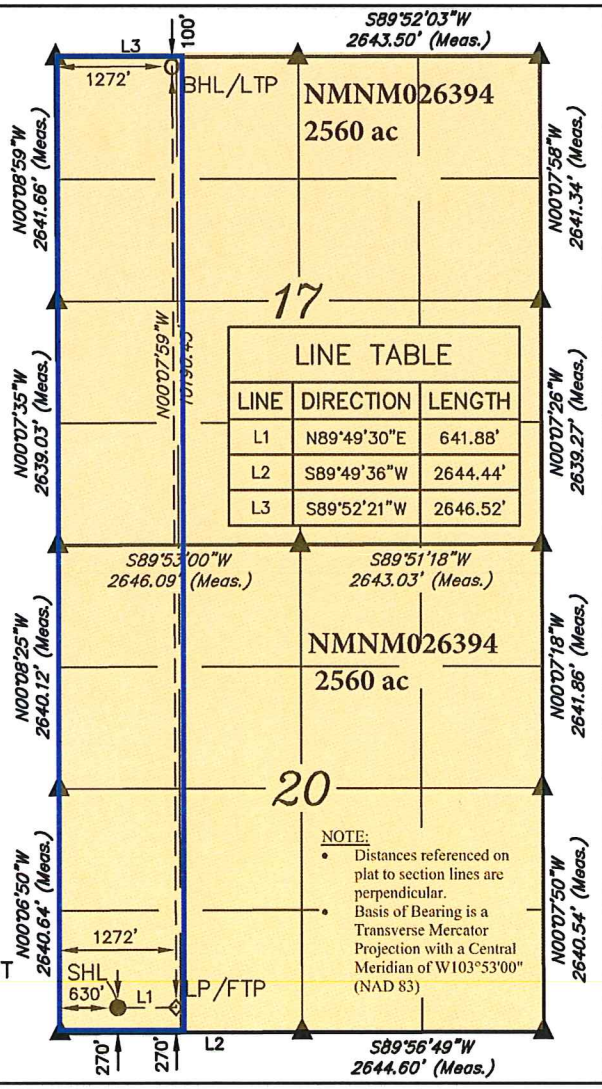

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Signature 3/17/2020 Date

Hope Knauls
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January 19, 2017
Date of Survey

Signature and Seal of Professional Surveyor:

Certificate Number:

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**Cimarex**
LEASE NO.:	**NMNM0026394**
LOCATION:	Section 20, T.25 S., R.33 E., NMPM
COUNTY:	Lea County, New Mexico

WELL NAME & NO.:	**Vaca Draw 20-17 Fed 16H**
SURFACE HOLE FOOTAGE:	270'/S& 630'/W
BOTTOM HOLE FOOTAGE	100'/N & 1272'/W

COA

H2S	○ Yes	◉ No	
Potash	◉ None	○ Secretary	○ R-111-P
Cave/Karst Potential	◉ Low	○ Medium	○ High
Cave/Karst Potential	○ Critical		
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

Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

B. CASING

1. The **13-3/8** inch surface casing shall be set at approximately **1050** feet (a minimum of 25 feet (Lea County) 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**

Approval Date: 05/26/2021

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 1/3rd 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.

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

3. The minimum required fill of cement behind the **7** inch production casing is:
   - Cement should tie-back at least **200 feet** into previous casing string. Operator shall provide method of verification.

4. The minimum required fill of cement behind the **4-1/2** inch production liner is:
   - Cement should tie-back **100 feet** into the previous casing. Operator shall provide method of verification.

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 **5000 (5M)** 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.

Approval Date: 05/26/2021

e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

D. SPECIAL REQUIREMENT (S)

Communitization Agreement

- The operator will submit a Communitization Agreement to the Santa Fe Office, 301 Dinosaur Trail Santa Fe, New Mexico 87508, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

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)

☒ 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. The casing intergrity 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 intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

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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. 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, 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 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.
ZS050621

Approval Date: 05/26/2021

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

Application Data Report
05/27/2021

APD ID: 10400037875
Submission Date: 01/15/2019
Operator Name: CIMAREX ENERGY COMPANY
Well Name: VACA DRAW 20-17 FEDERAL
Well Number: 16H
Well Type: OIL WELL
Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - General

APD ID: 10400037875
Tie to previous NOS? Y
Submission Date: 01/15/2019
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: NMNM0026394
Lease Acres:
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 STREET ST SUITE 600
Zip: 79701
Operator PO Box:
Operator City: MIDLAND
State: TX
Operator Phone: (432)571-7800
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: VACA DRAW 20-17 FEDERAL
Well Number: 16H
Well API Number:
Field/Pool or Exploratory? Field and Pool
Field Name: BONE SPRING
Pool Name: UPPER BONE SPRING
Is the proposed well in an area containing other mineral resources? USEABLE WATER

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL **Well Number:** 16H

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:** VACA DRAW 20-17 FEDERAL **Number:** W2W2 PAD

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

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: INFILL

Describe sub-type:

Distance to town: 27 Miles **Distance to nearest well:** 20 FT **Distance to lease line:** 270 FT

Reservoir well spacing assigned acres Measurement: 320 Acres

Well plat: Vaca_Draw_20_17_Fed_16H__BLM_Lease_C102_20200325124732.pdf

Vaca_Draw_20_17_Fed_16H__C102_20200325124804.pdf

Well work start Date: 06/24/2020 **Duration:** 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: 23782 **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	270	FSL	630	FWL	25S	33E	20	Aliquot SWSW	32.109575	-103.600814	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 26394	3422	0	0	
KOP Leg #1	271	FSL	1273	FWL	25S	33E	20	Aliquot SWSW	32.109575	-103.598742	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 26394	-5440	8906	8862	

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL **Well Number:** 16H

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?
PPP Leg #1-1	272	FSL	1273	FWL	25S	33E	20	Aliquot SWSW	32.109575	-103.598742	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 26394	3422	0	0	
EXIT Leg #1	100	FNL	1272	FWL	25S	33E	17	Aliquot NWNW	32.137581	-103.59873	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 26394	-5918	19368	9340	
BHL Leg #1	100	FNL	1272	FWL	25S	33E	17	Aliquot NWNW	32.137581	-103.59873	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 26394	-5918	19368	9340	

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

Drilling Plan Data Report
05/27/2021

APD ID: 10400037875
Submission Date: 01/15/2019
Operator Name: CIMAREX ENERGY COMPANY
Well Name: VACA DRAW 20-17 FEDERAL
Well Number: 16H
Well Type: OIL WELL
Well Work Type: Drill

Highlighted data reflects the most recent changes

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Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
371687	RUSTLER	3462	1001	1001		USEABLE WATER	N
371688	TOP SALT	2121	1341	1341		NONE	N
371698	BASE OF SALT	-1233	4695	4695		NONE	N
371700	BELL CANYON	-1507	4969	4969		NONE	N
870997	CHERRY CANYON	-2586	6048	6048		OIL	N
371699	BRUSHY CANYON	-4063	7525	7525		OIL	N
371694	BONE SPRING	-5652	9114	9114		NATURAL GAS, OIL	Y
371693	UPPER AVALON SHALE	-5878	9340	9340		NATURAL GAS, OIL	N

Section 2 - Blowout Prevention

Pressure Rating (PSI): 2M
Rating Depth: 4915

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 100% 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.

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL **Well Number:** 16H

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:

Vaca_Draw_20_17_Fed_16H_Choke_2M3M_20200409141608.pdf

BOP Diagram Attachment:

Vaca_Draw_20_17_Fed_16H_BOP_2M_20200409141815.pdf

Pressure Rating (PSI): 2M **Rating Depth:** 9550

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 100% 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:

Vaca_Draw_20_17_Fed_16H_Choke_2M3M_20200409141941.pdf

BOP Diagram Attachment:

Vaca_Draw_20_17_Fed_16H_BOP_2M_20200410082837.pdf

Pressure Rating (PSI): 5M **Rating Depth:** 19368

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 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 100% 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

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL **Well Number:** 16H

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. Slips will be utilized after running and cementing the production casing. After installation of the slips and wellhead on the production 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 100% of working pressure. The pressure test will be repeated at least every 30 days, as per Onshore Order No. 2. 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:

Vaca_Draw_20_17_Fed_16H_Choke_5M_20200409142047.pdf

BOP Diagram Attachment:

Vaca_Draw_20_17_Fed_16H_BOP_5M_20200409142102.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
1	SURFACE	17.5	13.375	NEW	NON API	N	0	1051	0	1051			1051	H-40	48	ST&C	1.63	3.8	BUOY	6.38	BUOY	6.38
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	4915	0	4915			4915	J-55	40	BUTT	1.54	1.5	BUOY	3.2	BUOY	3.2
3	PRODUCTION	8.75	7.0	NEW	API	N	0	8006	0	8006	0		8006	L-80	29	LT&C	1.87	2.18	BUOY	2.17	BUOY	2.17
4	PRODUCTION	8.75	7.0	NEW	API	N	8006	9550	8006	9320			1544	L-80	29	BUTT	1.61	1.81	BUOY	17.74	BUOY	17.74
5	COMPLETION SYSTEM	6	4.5	NEW	API	N	7906	19368	7906	9340			11462	P-110	13.5	BUTT	2	2.32	BUOY	21.8	BUOY	21.8

Casing Attachments

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL **Well Number:** 16H

Casing Attachments

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

Inspection Document:

Spec Document:

Vaca_Draw_20_17_Fed_16H_Spec_Sheet_20200409143358.pdf

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Vaca_Draw_20_17_Fed_16H_Casing_Assumptions_20200916153921.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Vaca_Draw_20_17_Fed_16H_Casing_Assumptions_20200916153945.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Vaca_Draw_20_17_Fed_16H_Casing_Assumptions_20200916153959.pdf

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL **Well Number:** 16H

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Vaca_Draw_20_17_Fed_16H_Casing_Assumptions_20200916154016.pdf

Casing ID: 5 **String Type:** COMPLETION SYSTEM

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Vaca_Draw_20_17_Fed_16H_Casing_Assumptions_20200916154038.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
COMPLETION SYSTEM	Lead		0	0	0	0	0	0	0	0	0
COMPLETION SYSTEM	Tail		7906	19368	729	1.3	14.2	947	10	50:50 (PozH)	Salt, bentonite, fluid loss, dispersant, sms
SURFACE	Lead		0	1051	509	1.72	13.5	875	50	Class C	Bentonite
SURFACE	Tail		0	1051	137	1.34	14.8	183	25	Class C	LCM
INTERMEDIATE	Lead		0	4915	931	1.88	12.9	1750	50	35:65 (Poz:C)	Salt, Bentonite

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL **Well Number:** 16H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
INTERMEDIATE	Tail		0	4915	287	1.34	14.8	384	25	Class C	LCM
PRODUCTION	Lead		0	8006	215	3.64	10.3	782	25	Tuned Light	LCM
PRODUCTION	Tail		0	8006	91	1.34	14.2	947	10	Class C	LCM
PRODUCTION	Lead		8006	9550	215	3.64	10.3	782	25	Tuned Light	LCM
PRODUCTION	Tail		8006	9550	91	1.34	14.8	121	25	Class C	LCM

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	1051	OTHER : FRESH WATER	7.83	8.33							
1051	4915	OTHER : BRINE WATER	9.8	10.3							
4915	9550	OTHER : Cut Brine or OBM	8.5	9							
9550	19368	OIL-BASED MUD	10.5	11							

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL **Well Number:** 16H

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: 5342 **Anticipated Surface Pressure:** 3287.2

Anticipated Bottom Hole Temperature(F): 164

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:

Vaca_Draw_20_17_Fed_16H_H2S_Plan_20200409151554.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Vaca_Draw_20_17_Fed_16H_AC_Report_20200409151957.pdf

Vaca_Draw_20_17_Fed_16H_Directional_Plan_20200409151959.pdf

Other proposed operations facets description:

Other proposed operations facets attachment:

Vaca_Draw_20_17_Fed_16H_Flex_Hose_20200409152057.pdf

Vaca_Draw_20_17_Fed_16H_Gas_Capture_Plan_20200409152144.pdf

Vaca_Draw_20_17_Fed_16H_Drilling_Plan_20210412124709.pdf

Other Variance attachment:

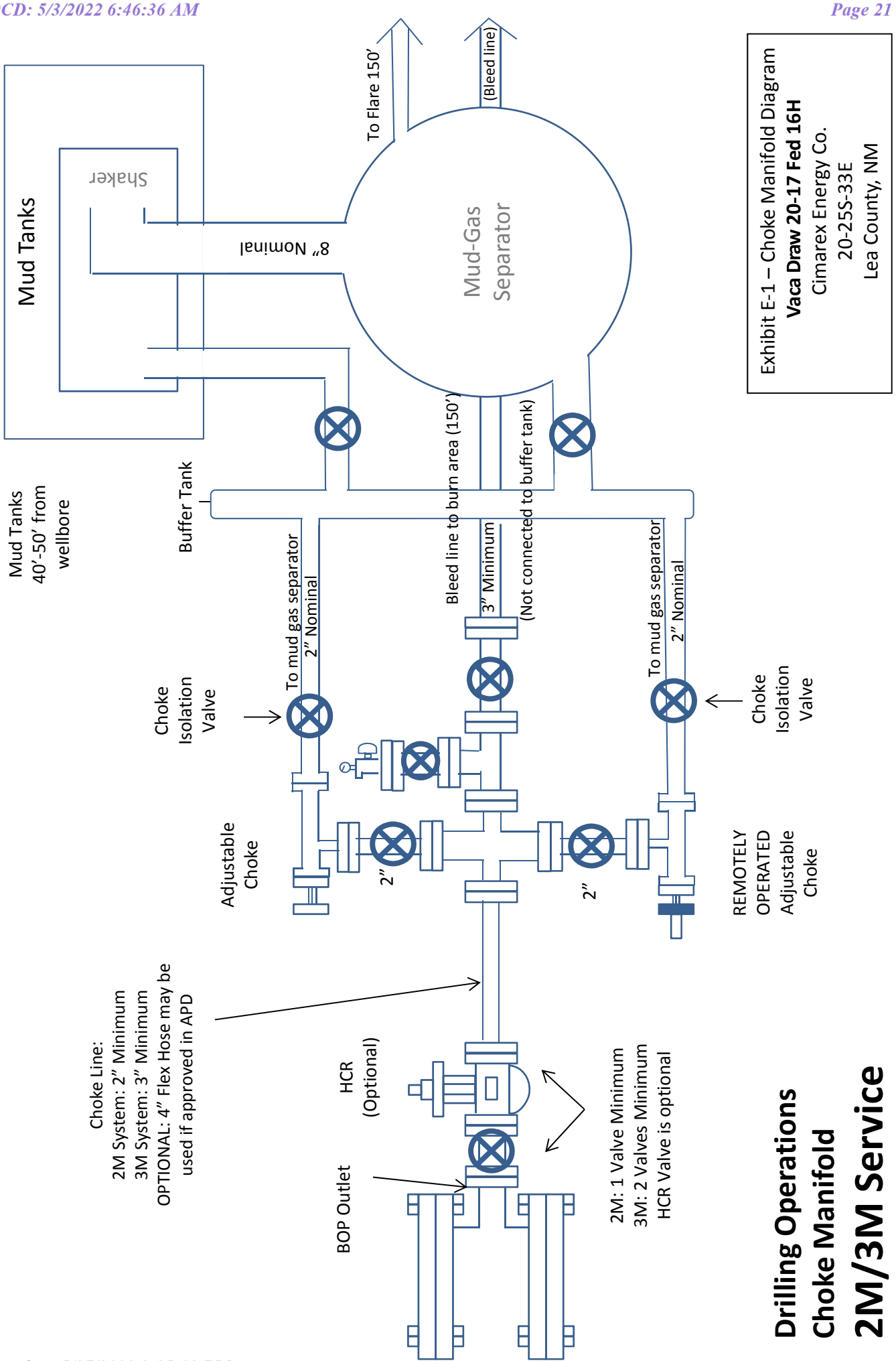


Exhibit E-1 – Choke Manifold Diagram
Vaca Draw 20-17 Fed 16H
Cimarex Energy Co.
20-25S-33E
Lea County, NM

Drilling Operations
Choke Manifold
2M/3M Service

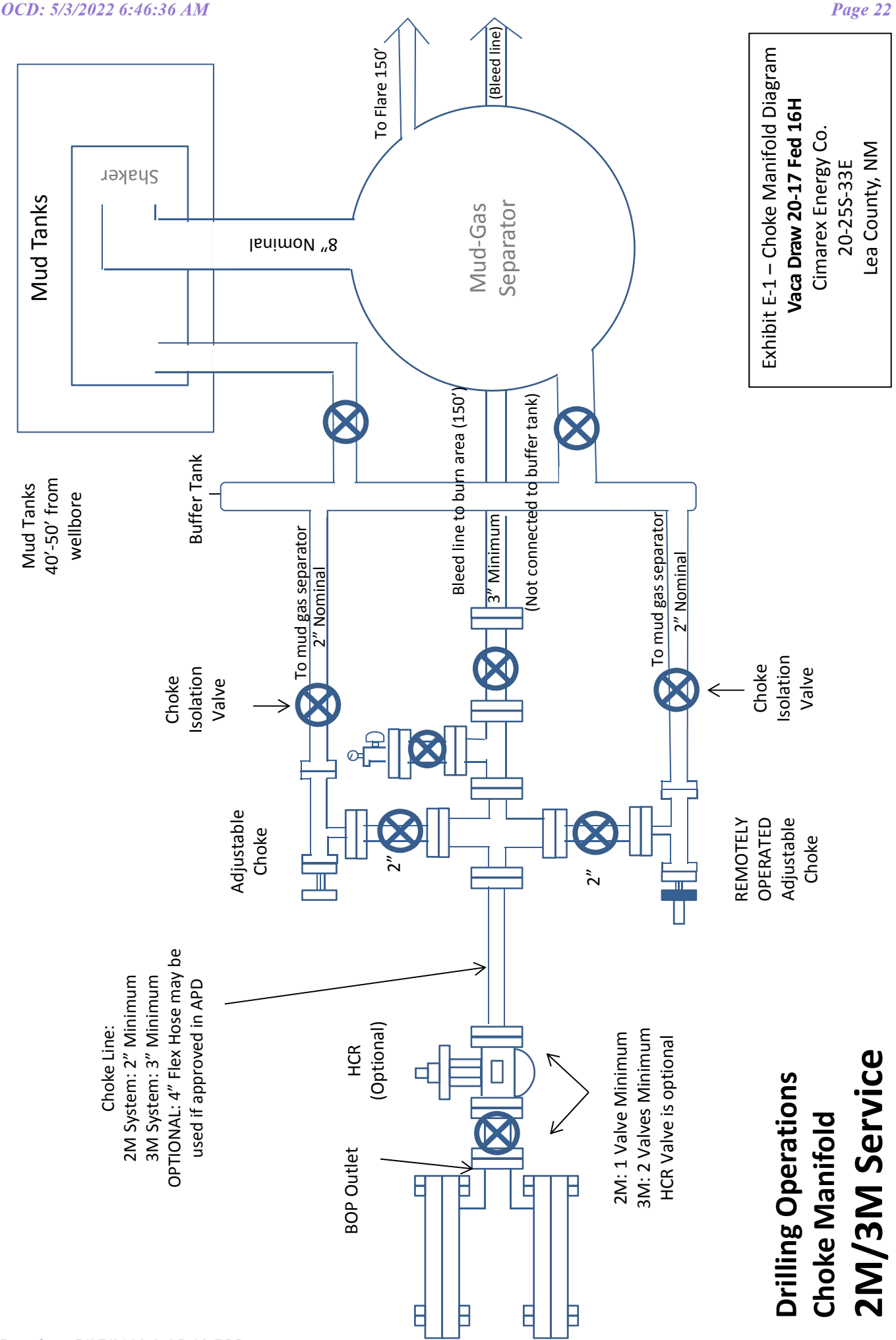
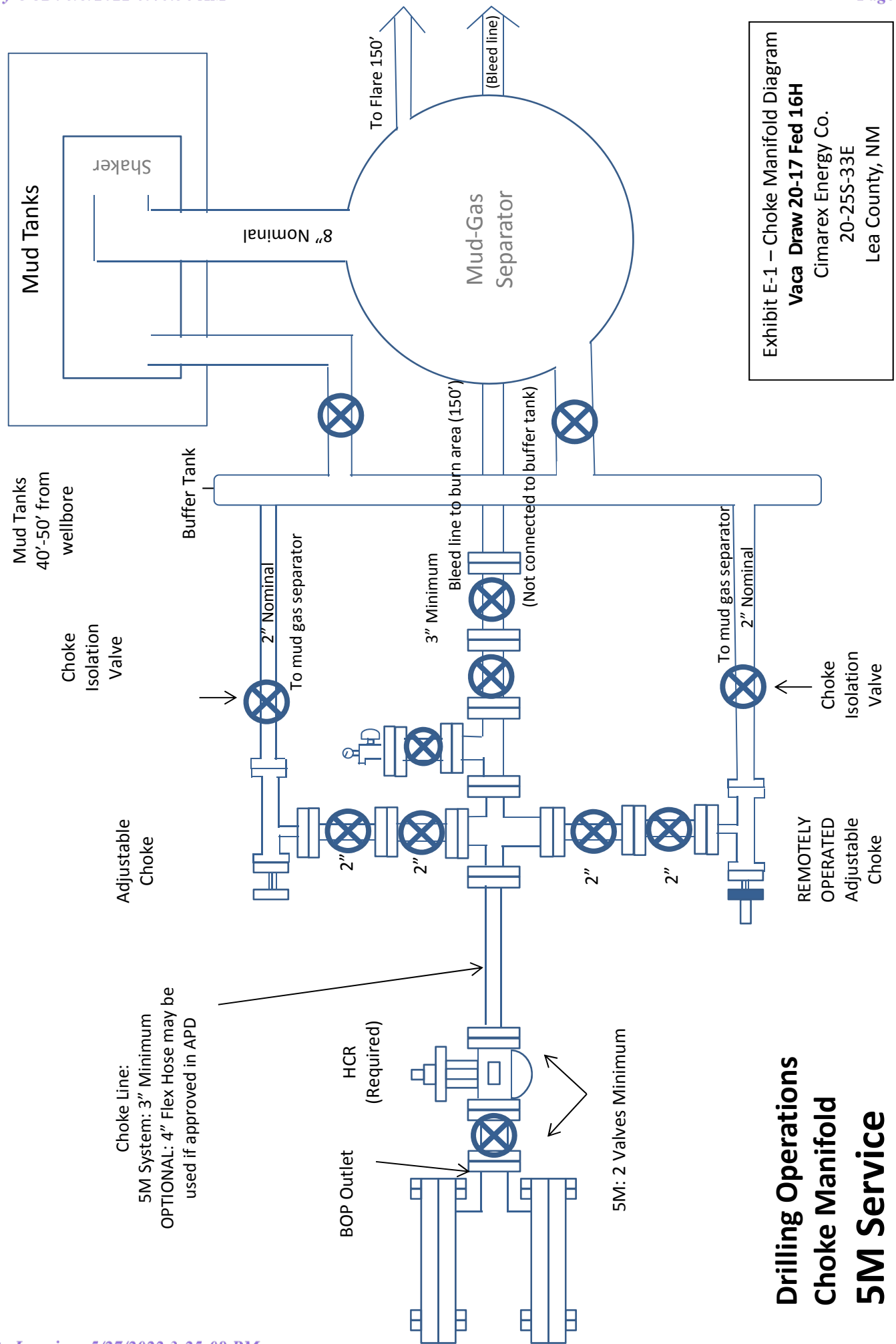


Exhibit E-1 – Choke Manifold Diagram
Vaca Draw 20-17 Fed 16H
Cimarex Energy Co.
20-25S-33E
Lea County, NM

Drilling Operations
Choke Manifold
2M/3M Service


Mud Tanks
Shaker
8" Nominal
Mud-Gas Separator
To Flare 150'
(Bleed line)
Exhibit E-1 – Choke Manifold Diagram
Vaca Draw 20-17 Fed 16H
Cimarex Energy Co.
20-25S-33E
Lea County, NM
Mud Tanks 40'-50' from wellbore
Buffer Tank
Choke Isolation Valve
2" Nominal
To mud gas separator
3" Minimum
Bleed line to burn area (150')
(Not connected to buffer tank)
To mud gas separator
2" Nominal
Choke Isolation Valve
Adjustable Choke
2"
2"
2"
2"
REMOTELY OPERATED Adjustable Choke
Choke Line:
5M System: 3" Minimum
OPTIONAL: 4" Flex Hose may be used if approved in APD
HCR (Required)
BOP Outlet
5M: 2 Valves Minimum
Drilling Operations
Choke Manifold
5M Service

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

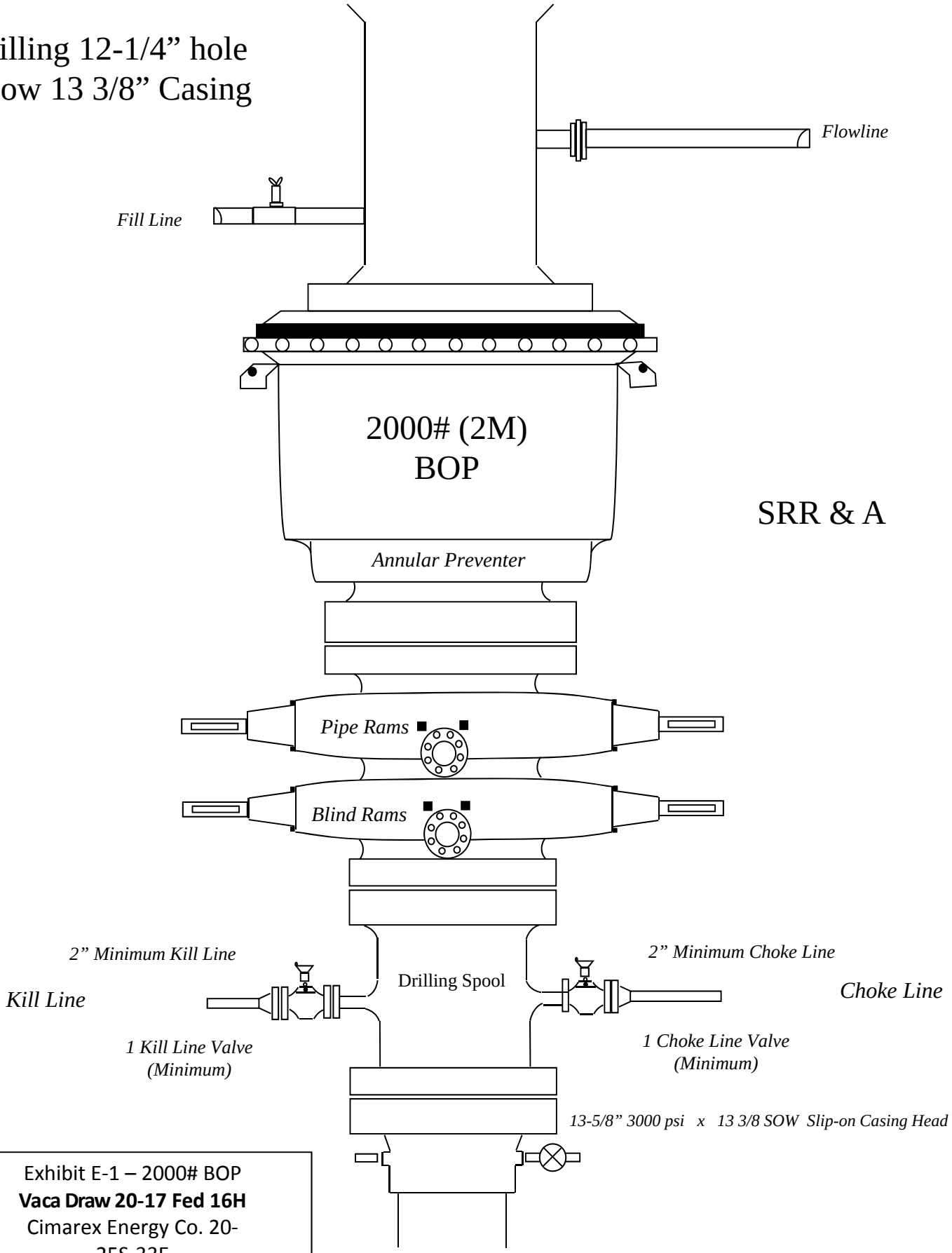


Exhibit E-1 – 2000# BOP
Vaca Draw 20-17 Fed 16H
Cimarex Energy Co. 20-25S-33E
Lea County, NM

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

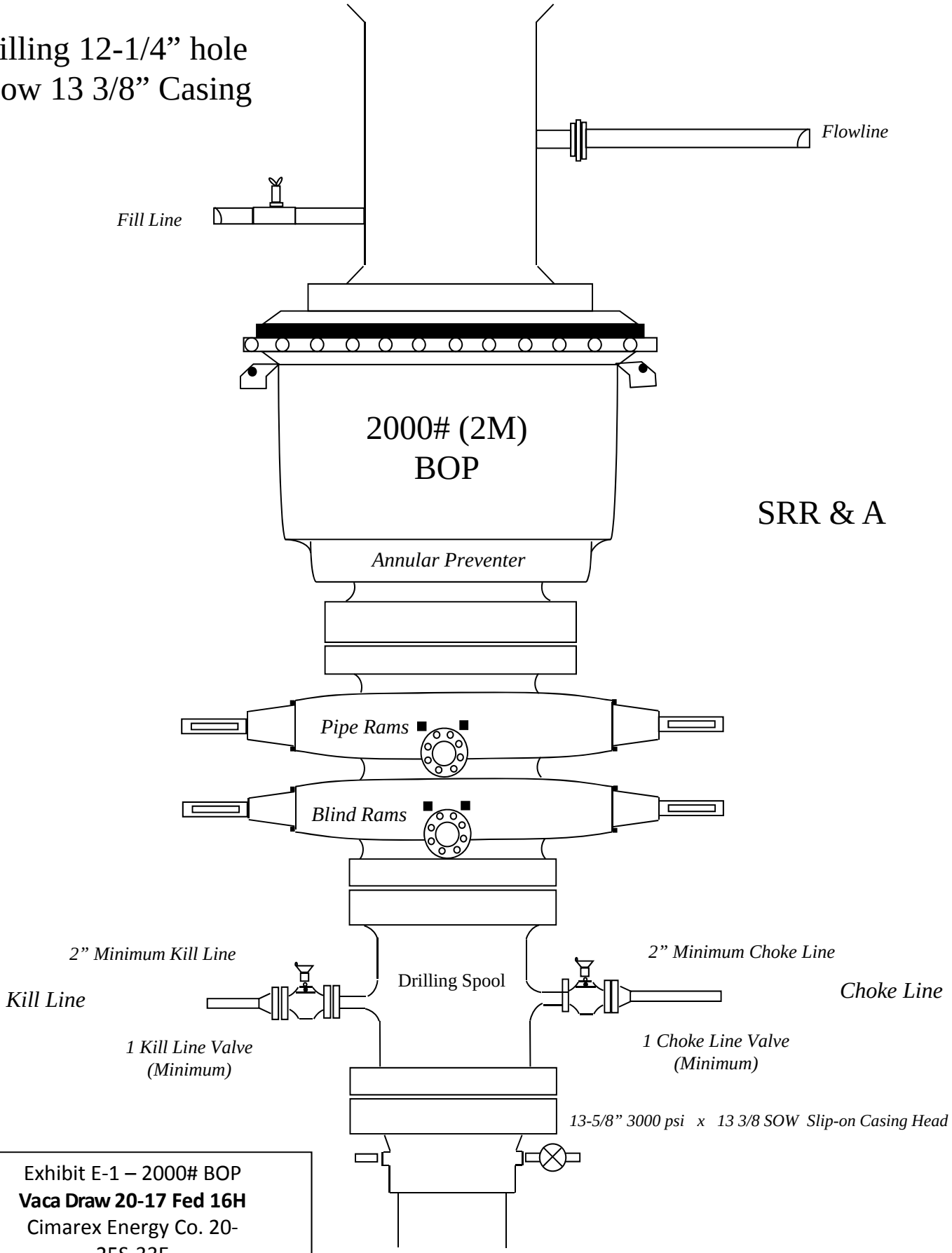


Exhibit E-1 – 2000# BOP
Vaca Draw 20-17 Fed 16H
Cimarex Energy Co. 20-25S-33E
Lea County, NM

Drilling below 7” Casing

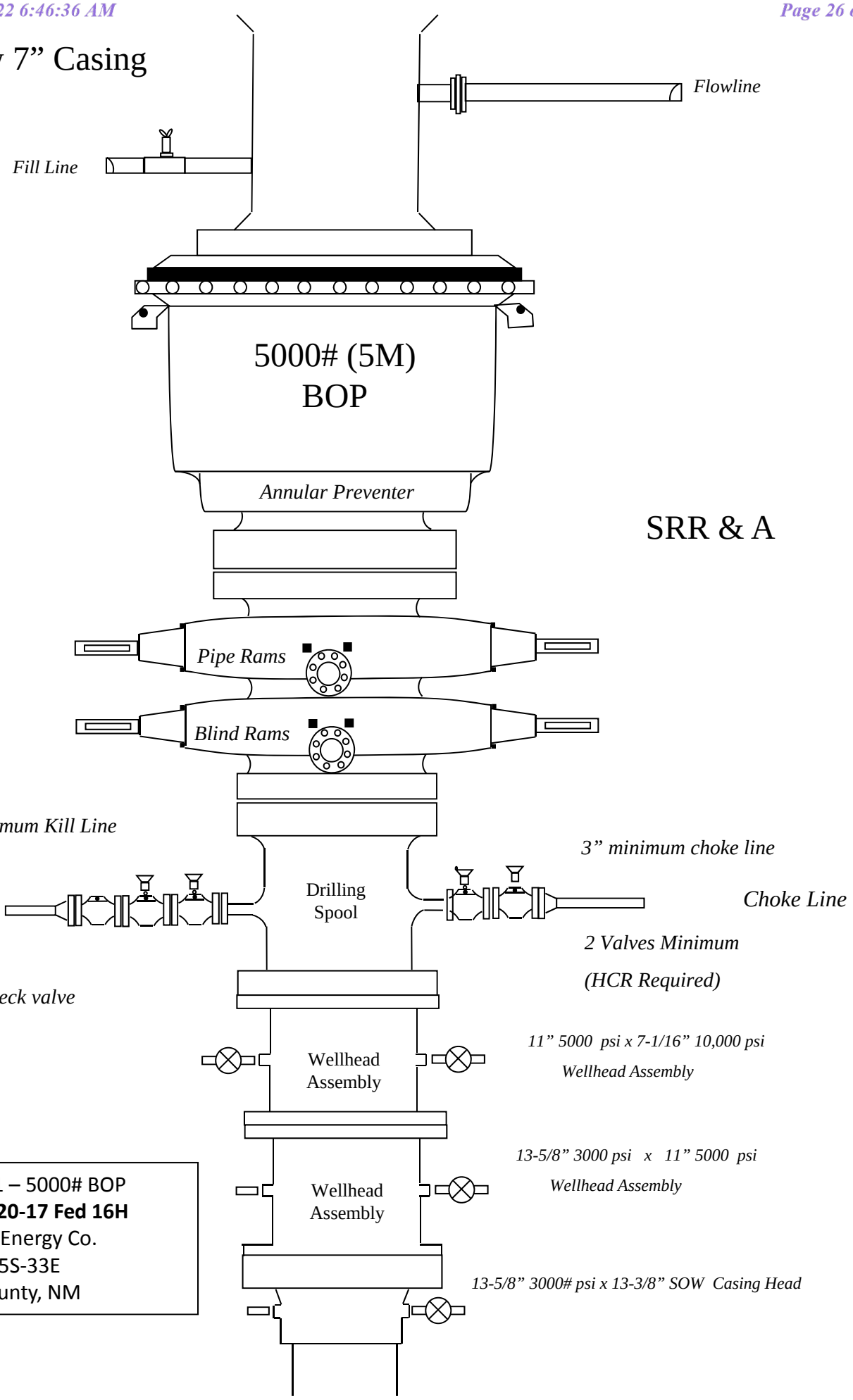


Exhibit E-1 – 5000# BOP
Vaca Draw 20-17 Fed 16H
Cimarex Energy Co.
20-25S-33E
Lea County, NM

Print

EVRAZ

Vaca Draw 20-17 Fed #16H
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:	-		

Vaca Draw 20-17 Fed 16H

Casing Assumptions

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	1051	1051	13-3/8"	48.00	H-40/J-55 Hybrid	ST&C	1.63	3.80	6.38
12 1/4	0	4915	4915	9-5/8"	40.00	J-55	BT&C	1.54	1.50	3.20
8 3/4	0	8006	8006	7"	29.00	L-80	LT&C	1.87	2.18	2.17
8 3/4	8006	9550	9320	7"	29.00	L-80	BT&C	1.61	1.87	17.74
6	7906	19368	9340	4-1/2"	13.50	P-110	BT&C	2.00	2.32	21.80
						BLM Minimum Safety Factor		1.125	1	1.6 Dry 1.8 Wet

Vaca Draw 20-17 Fed 16H

Casing Assumptions

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	1051	1051	13-3/8"	48.00	H-40/J-55 Hybrid	ST&C	1.63	3.80	6.38
12 1/4	0	4915	4915	9-5/8"	40.00	J-55	BT&C	1.54	1.50	3.20
8 3/4	0	8006	8006	7"	29.00	L-80	LT&C	1.87	2.18	2.17
8 3/4	8006	9550	9320	7"	29.00	L-80	BT&C	1.61	1.87	17.74
6	7906	19368	9340	4-1/2"	13.50	P-110	BT&C	2.00	2.32	21.80
						BLM Minimum Safety Factor		1.125	1	1.6 Dry 1.8 Wet

Vaca Draw 20-17 Fed 16H

Casing Assumptions

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	1051	1051	13-3/8"	48.00	H-40/J-55 Hybrid	ST&C	1.63	3.80	6.38
12 1/4	0	4915	4915	9-5/8"	40.00	J-55	BT&C	1.54	1.50	3.20
8 3/4	0	8006	8006	7"	29.00	L-80	LT&C	1.87	2.18	2.17
8 3/4	8006	9550	9320	7"	29.00	L-80	BT&C	1.61	1.87	17.74
6	7906	19368	9340	4-1/2"	13.50	P-110	BT&C	2.00	2.32	21.80
						BLM Minimum Safety Factor		1.125	1	1.6 Dry 1.8 Wet

Vaca Draw 20-17 Fed 16H

Casing Assumptions

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	1051	1051	13-3/8"	48.00	H-40/J-55 Hybrid	ST&C	1.63	3.80	6.38
12 1/4	0	4915	4915	9-5/8"	40.00	J-55	BT&C	1.54	1.50	3.20
8 3/4	0	8006	8006	7"	29.00	L-80	LT&C	1.87	2.18	2.17
8 3/4	8006	9550	9320	7"	29.00	L-80	BT&C	1.61	1.87	17.74
6	7906	19368	9340	4-1/2"	13.50	P-110	BT&C	2.00	2.32	21.80
						BLM Minimum Safety Factor		1.125	1	1.6 Dry 1.8 Wet

Vaca Draw 20-17 Fed 16H

Casing Assumptions

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	1051	1051	13-3/8"	48.00	H-40/J-55 Hybrid	ST&C	1.63	3.80	6.38
12 1/4	0	4915	4915	9-5/8"	40.00	J-55	BT&C	1.54	1.50	3.20
8 3/4	0	8006	8006	7"	29.00	L-80	LT&C	1.87	2.18	2.17
8 3/4	8006	9550	9320	7"	29.00	L-80	BT&C	1.61	1.87	17.74
6	7906	19368	9340	4-1/2"	13.50	P-110	BT&C	2.00	2.32	21.80
						BLM Minimum Safety Factor		1.125	1	1.6 Dry 1.8 Wet

Hydrogen Sulfide Drilling Operations Plan
Vaca Draw 20-17 Federal 16H
Cimarex Energy Co.
UL: M, Sec. 20, 25S, 33E
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
Vaca Draw 20-17 Federal 16H
Cimarex Energy Co.
UL: M, Sec. 20, 25S, 33E
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 Contact
s **Vaca Draw 20-17 Federal 16H** Cimarex
Energy Co.
UL: M, Sec. 20, 25S, 33E
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 Vaca Draw 20-17 Federal #16H Rev0 RM 20Jan20 Anti-Collision Summary Report

Analysis Date-24hr Time:	January 21, 2020 - 09:15	**Analysis Method:**	3D Least Distance
Client:	Cimarex Energy	**Reference Trajectory:**	Cimarex Vaca Draw 20-17 Federal #16H Rev0 RM 20Jan20 (Non-Def Plan)
Field:	NM Lea County (NAD 83)	**Depth Interval:**	Every 10.00 Measured Depth (ft)
Structure:	Cimarex Vaca Draw 20-17 Federal #16H	**Rule Set:**	NAL Procedure: D&M AntiCollision Standard S002
Slot:	New Slot	**Min Pts:**	All local minima indicated.
Well:	Vaca Draw 20-17 Federal #16H	**Version / Patch:**	2.10.787.0
Borehole:	Vaca Draw 20-17 Federal #16H	**Database \ Project:**	us1153APP452.DIR.SLB.COM\DRILLING-NM Lea County 2.10
Scan MD Range:	0.00ft ~ 19368.65ft		

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		
Cimarex Vaca Draw 20-17 Federal #30H Rev0 RM 19Sept18 (Non-Def Plan)													Fail Major
	643.44	32.81	641.46	610.63	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	643.43	32.81	641.46	610.63	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	160.05	50.11	125.83	109.94	4.96	OSF1.50	5690.00	5655.72	OSF<5.00			Enter Alert	
	60.94	58.68	21.16	2.26	1.56	OSF1.50	6870.00	6825.83				MinPt-CtCt	
	60.95	61.00	19.63	-0.05	1.50	OSF1.50	7260.00	7215.82		OSF<1.50		Enter Minor	
	49.83	74.36	-0.41	-24.53	0.99	OSF1.50	9010.00	8965.01			OSF<1.00	Enter Major	
	1.22	74.87	-49.35	-73.65	-0.02	OSF1.50	9150.00	9095.43				MinPts	
	50.74	76.14	-0.68	-25.40	0.99	OSF1.50	9240.00	9169.40			OSF>1.00	Exit Major	
	70.73	76.35	19.17	-5.62	1.39	OSF1.50	9270.00	9191.77		OSF>1.50		Exit Minor	
	253.17	77.52	200.83	175.65	4.99	OSF1.50	9490.00	9311.19	OSF>5.00			Exit Alert	
	604.88	183.12	482.14	421.76	4.99	OSF1.50	15030.00	9340.00	OSF<5.00			Enter Alert	
	604.88	316.09	393.50	288.79	2.88	OSF1.50	19368.65	9340.00				MinPts	
Cimarex Vaca Draw 20-17 Federal #15H Rev0 RM 20Jan20 (Non-Def Plan)													Warning Alert
	20.03	16.28	18.74	3.75	N/A	MAS = 4.96 (m)	0.00	0.00	CtCt<=15m<15.00			Enter Alert	
	20.03	16.28	18.74	3.75	42182.60	MAS = 4.96 (m)	26.00	26.00				WRP	
	20.03	19.55	6.57	0.48	1.54	OSF1.50	2000.00	2000.00				MinPt-CtCt	
	20.05	19.62	6.54	0.43	1.54	OSF1.50	2010.00	2010.00				MINPT-O-EOU	
	20.10	19.69	6.55	0.41	1.53	OSF1.50	2020.00	2020.00				MinPts	
	72.26	22.80	56.63	49.46	4.95	OSF1.50	2580.00	2576.90	OSF>5.00			Exit Alert	
	199.22	49.17	166.01	150.05	6.20	OSF1.50	6520.00	6477.40				MinPt-O-SF	
	212.03	58.44	172.64	153.58	5.53	OSF1.50	8980.00	8935.53				MINPT-O-EOU	

Results highlighted: Sep-Factor separation <= 1.50 ft

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		
	212.15	58.58	172.66	153.56	5.52	OSF1.50	9000.00	8955.22				MinPt-O-ADP	
	213.02	58.95	173.30	154.08	5.51	OSF1.50	9050.00	9003.68				MinPt-O-SF	
	693.01	208.90	553.31	484.11	5.00	OSF1.50	15560.00	9340.00	OSF<5.00			Enter Alert	
	693.01	326.06	475.21	366.95	3.19	OSF1.50	19368.65	9340.00				MinPts	
Cimarex Vaca Draw 20-17 Federal #14H Rev0 RM 20Jan20 (Non-Def Plan)													Warning Alert
	40.02	32.28	38.74	7.75	N/A	MAS = 9.84 (m)	0.00	0.00	CtCt<=15m<15.00			Enter Alert	
	40.02	32.28	38.73	7.75	17434.12	MAS = 9.84 (m)	26.00	26.00				WRP	
	40.02	32.28	26.62	7.75	3.20	MAS = 9.84 (m)	1990.00	1990.00				MinPts	
	40.02	32.28	26.56	7.75	3.18	MAS = 9.84 (m)	2000.00	2000.00				MINPT-O-EOU	
	40.06	32.28	26.57	7.79	3.18	MAS = 9.84 (m)	2010.00	2010.00				MinPt-O-SF	
	63.14	32.28	49.31	30.87	4.93	MAS = 9.84 (m)	2260.00	2259.64	OSF>5.00			Exit Alert	
	803.15	47.76	770.88	755.39	25.88	OSF1.50	6542.83	6500.00				MinPt-O-SF	
	832.02	62.80	789.72	769.22	20.26	OSF1.50	9030.00	8984.45				MINPT-O-EOU	
	832.15	62.96	789.75	769.19	20.21	OSF1.50	9050.00	9003.68				MinPt-O-ADP	
	840.24	64.42	796.87	775.82	19.93	OSF1.50	9250.00	9177.00				MinPt-O-SF	
	1269.53	334.81	1045.89	934.71	5.70	OSF1.50	19368.65	9340.00				MinPts	
Final Surveys - Cimarex Vaca Draw 20-17 Federal #8H MWD 0ft-22328ft (Surcon Corrected) (Def Survey)													Warning Alert
	100.03	32.81	98.90	67.22	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	99.98	32.81	98.85	67.17	52373.91	MAS = 10.00 (m)	26.00	26.00				WRP	
	99.56	32.81	97.43	66.76	98.13	MAS = 10.00 (m)	270.00	270.00				MinPts	
	98.71	32.81	93.88	65.90	26.42	MAS = 10.00 (m)	820.00	820.00				MinPts	
	99.13	32.81	93.61	66.32	22.32	MAS = 10.00 (m)	1020.00	1020.00				MINPT-O-EOU	
	102.71	32.81	93.07	69.90	11.94	MAS = 10.00 (m)	1900.00	1900.00				MinPts	
	102.72	32.81	93.06	69.92	11.90	MAS = 10.00 (m)	1910.00	1910.00				MINPT-O-EOU	
	103.98	32.81	94.01	71.17	11.64	MAS = 10.00 (m)	2000.00	2000.00				MinPt-O-SF	
	60.41	32.81	47.35	27.60	4.97	MAS = 10.00 (m)	3550.00	3537.17	OSF<5.00			Enter Alert	
	52.62	32.81	38.59	19.82	3.99	MAS = 10.00 (m)	3840.00	3824.27				MinPts	
	52.65	32.81	38.54	19.84	3.97	MAS = 10.00 (m)	3860.00	3844.07				MINPT-O-EOU	
	53.33	32.81	38.95	20.52	3.94	MAS = 10.00 (m)	3930.00	3913.37				MinPt-O-SF	
	83.99	32.81	66.25	51.18	4.99	MAS = 10.00 (m)	4830.00	4804.34	OSF>5.00			Exit Alert	
	128.79	39.66	101.97	89.13	4.97	OSF1.50	8210.00	8165.82	OSF<5.00			Enter Alert	
	60.59	43.80	31.01	16.79	2.09	OSF1.50	9140.00	9086.64				MinPts	
	142.57	45.50	111.85	97.06	4.78	OSF1.50	9340.00	9238.75	OSF>5.00			Exit Alert	
	3019.74	100.41	2952.47	2919.33	45.54	OSF1.50	12580.00	9340.00				MinPt-CtCt	
	3019.56	106.00	2948.57	2913.56	43.12	OSF1.50	12770.00	9340.00				MinPt-CtCt	
	3018.00	120.47	2937.36	2897.54	37.88	OSF1.50	13260.00	9340.00				MinPt-CtCt	
	3015.65	127.84	2930.09	2887.80	35.65	OSF1.50	13510.00	9340.00				MinPt-CtCt	
	3016.37	130.06	2929.33	2886.31	35.04	OSF1.50	13600.00	9340.00				MINPT-O-EOU	
	3018.41	134.13	2928.66	2884.28	33.99	OSF1.50	13740.00	9340.00				MINPT-O-EOU	
	3019.71	135.65	2928.95	2884.06	33.62	OSF1.50	13800.00	9340.00				MinPt-O-ADP	
	3021.38	148.93	2921.77	2872.45	30.62	OSF1.50	14220.00	9340.00				MinPt-CtCt	
	3009.21	163.02	2900.20	2846.18	27.85	OSF1.50	14690.00	9340.00				MinPt-CtCt	
	3009.91	165.19	2899.46	2844.72	27.49	OSF1.50	14780.00	9340.00				MINPT-O-EOU	
	3010.71	166.14	2899.63	2844.57	27.34	OSF1.50	14820.00	9340.00				MinPt-O-ADP	
	3054.74	184.47	2931.44	2870.28	24.96	OSF1.50	15410.00	9340.00				MinPt-CtCt	
	3053.73	192.85	2924.84	2860.88	23.87	OSF1.50	15690.00	9340.00				MinPt-CtCt	
	3054.24	194.47	2924.26	2859.77	23.67	OSF1.50	15760.00	9340.00				MINPT-O-EOU	
	3054.95	195.51	2924.28	2859.44	23.55	OSF1.50	15800.00	9340.00				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		
	3056.22	200.60	2922.16	2855.62	22.96	OSF1.50	15950.00	9340.00				MinPt-CtCt	
	3042.52	218.86	2896.29	2823.66	20.94	OSF1.50	16560.00	9340.00				MinPt-CtCt	
	3040.96	223.97	2891.32	2816.99	20.45	OSF1.50	16730.00	9340.00				MinPt-CtCt	
	3038.47	230.38	2884.56	2808.09	19.86	OSF1.50	16940.00	9340.00				MinPt-CtCt	
	3039.56	233.75	2883.40	2805.82	19.58	OSF1.50	17070.00	9340.00				MINPT-O-EOU	
	3029.96	248.38	2864.05	2781.58	18.37	OSF1.50	17540.00	9340.00				MinPt-CtCt	
	3030.84	250.82	2863.30	2780.02	18.19	OSF1.50	17640.00	9340.00				MINPT-O-EOU	
	3028.62	259.74	2855.13	2768.88	17.55	OSF1.50	17920.00	9340.00				MinPt-CtCt	
	3029.33	261.88	2854.41	2767.45	17.41	OSF1.50	18010.00	9340.00				MINPT-O-EOU	
	3027.32	270.50	2846.66	2756.82	16.84	OSF1.50	18280.00	9340.00				MinPt-CtCt	
	3005.97	300.21	2805.50	2705.76	15.06	OSF1.50	19270.00	9340.00				MinPt-CtCt	
	3006.65	302.70	2804.52	2703.95	14.94	OSF1.50	19368.65	9340.00				MinPts	
Cimarex Vaca Draw 20-17 Federal #29H Rev0 RM 19Sept18 (Non-Def Plan)													Warning Alert
	623.51	32.81	621.53	590.70	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	623.51	32.81	621.53	590.70	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	102.53	32.81	80.04	69.72	4.98	MAS = 10.00 (m)	4410.00	4388.55	OSF<5.00			Enter Alert	
	62.71	35.42	38.44	27.29	2.72	OSF1.50	4750.00	4725.15				MinPts	
	62.78	35.50	38.45	27.27	2.72	OSF1.50	4760.00	4735.04				MinPts	
	123.42	38.52	97.08	84.91	4.99	OSF1.50	5190.00	5160.73	OSF>5.00			Exit Alert	
	476.94	60.09	436.23	416.86	12.26	OSF1.50	9156.72	9101.27				MinPt-CtCt	
	476.94	60.10	436.22	416.84	12.26	OSF1.50	9160.00	9104.10				MINPT-O-EOU	
	476.99	60.16	436.22	416.83	12.25	OSF1.50	9170.00	9112.68				MinPt-O-ADP	
	478.74	60.53	437.72	418.20	12.21	OSF1.50	9230.00	9161.68				MinPt-O-SF	
	768.18	231.84	612.96	536.34	5.00	OSF1.50	16260.00	9340.00	OSF<5.00			Enter Alert	
	768.18	328.49	548.53	439.69	3.52	OSF1.50	19368.65	9340.00				MinPts	
Cimarex Vaca Draw 20-17 Federal #6H MWD Final(Surcon Corrected) (Def Survey)													Warning Alert
	120.01	32.81	118.03	87.20	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	119.98	32.81	118.00	87.17	16322.34	MAS = 10.00 (m)	26.00	26.00				WRP	
	107.97	32.81	99.20	75.16	15.61	MAS = 10.00 (m)	1590.00	1590.00				MinPts	
	107.99	32.81	98.08	75.19	13.37	MAS = 10.00 (m)	1840.00	1840.00				MinPts	
	108.42	32.81	97.46	75.61	11.86	MAS = 10.00 (m)	2100.00	2099.98				MINPT-O-EOU	
	111.54	32.81	100.00	78.74	11.45	MAS = 10.00 (m)	2450.00	2448.20				MinPt-O-SF	
	686.90	35.90	662.30	651.00	30.29	OSF1.50	7170.00	7125.82				MinPt-CtCt	
	686.94	36.04	662.25	650.89	30.16	OSF1.50	7230.00	7185.82				MINPT-O-EOU	
	686.97	36.09	662.25	650.88	30.12	OSF1.50	7250.00	7205.82				MinPt-O-ADP	
	702.04	41.53	673.69	660.50	26.55	OSF1.50	8790.00	8745.82				MinPt-O-SF	
	897.78	51.30	862.92	846.48	27.24	OSF1.50	9960.00	9340.00				MinPt-CtCt	
	897.87	51.55	862.84	846.32	27.11	OSF1.50	9980.00	9340.00				MINPT-O-EOU	
	897.98	51.68	862.87	846.30	27.04	OSF1.50	9990.00	9340.00				MinPt-O-ADP	
	911.64	62.09	869.59	849.55	22.70	OSF1.50	10520.00	9340.00				MinPt-CtCt	
	911.97	63.00	869.32	848.98	22.37	OSF1.50	10570.00	9340.00				MINPT-O-EOU	
	888.81	74.03	838.80	814.78	18.46	OSF1.50	11050.00	9340.00				MinPt-CtCt	
	889.04	74.57	838.67	814.47	18.33	OSF1.50	11080.00	9340.00				MINPT-O-EOU	
	889.20	74.75	838.70	814.45	18.29	OSF1.50	11090.00	9340.00				MinPt-O-ADP	
	870.15	103.87	800.24	766.28	12.78	OSF1.50	12180.00	9340.00				MinPt-CtCt	
	870.31	104.23	800.16	766.08	12.74	OSF1.50	12200.00	9340.00				MINPT-O-EOU	
	870.46	104.41	800.20	766.05	12.72	OSF1.50	12210.00	9340.00				MinPt-O-ADP	
	894.69	117.35	815.80	777.34	11.61	OSF1.50	12660.00	9340.00				MinPt-CtCt	
	896.07	128.47	809.77	767.60	10.60	OSF1.50	13050.00	9340.00				MinPt-CtCt	

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		
	897.49	148.79	797.63	748.70	9.15	OSF1.50	13750.00	9340.00				MinPt-CtCt	
	897.89	150.24	797.07	747.65	9.06	OSF1.50	13810.00	9340.00				MINPT-O-EOU	
	898.46	150.94	797.17	747.52	9.03	OSF1.50	13840.00	9340.00				MinPt-O-ADP	
	902.44	162.44	793.49	740.00	8.42	OSF1.50	14220.00	9340.00				MinPt-CtCt	
	895.61	202.41	760.01	693.20	6.69	OSF1.50	15580.00	9340.00				MinPt-CtCt	
	888.81	234.90	731.55	653.91	5.71	OSF1.50	16670.00	9340.00				MinPt-CtCt	
	889.58	237.51	730.59	652.08	5.65	OSF1.50	16770.00	9340.00				MINPT-O-EOU	
	897.71	250.05	730.35	647.66	5.42	OSF1.50	17190.00	9340.00				MINPT-O-EOU	
	901.39	255.12	730.65	646.27	5.33	OSF1.50	17360.00	9340.00				MINPT-O-EOU	
	903.72	272.67	721.28	631.05	5.00	OSF1.50	17920.00	9340.00	OSF<5.00			Enter Alert	
	889.13	309.02	682.46	580.11	4.33	OSF1.50	19140.00	9340.00				MinPts	
	889.20	309.07	682.50	580.13	4.33	OSF1.50	19150.00	9340.00				MinPt-O-SF	
	918.31	301.03	716.96	617.28	4.60	OSF1.50	19368.65	9340.00				TD	
Final Surveys - Cimarex Vaca Draw 20-17 Federal #13H MWD 0ft-22542ft (Surcon Corrected) (Def Survey)													Warning Alert
	116.65	32.81	114.67	83.84	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	116.61	32.81	114.63	83.80	49275.34	MAS = 10.00 (m)	26.00	26.00				WRP	
	116.29	32.81	113.63	83.48	169.93	MAS = 10.00 (m)	190.00	190.00				MINPT-O-EOU	
	115.14	32.81	111.71	82.33	49.50	MAS = 10.00 (m)	560.00	560.00				MinPts	
	115.37	32.81	111.45	82.56	40.90	MAS = 10.00 (m)	660.00	660.00				MINPT-O-EOU	
	138.00	32.81	129.28	105.19	18.05	MAS = 10.00 (m)	1640.00	1640.00				MinPt-O-SF	
	168.43	32.81	150.47	135.62	9.94	MAS = 10.00 (m)	4620.00	4596.45				MinPts	
	116.87	35.92	92.52	80.94	5.00	OSF1.50	6070.00	6031.91	OSF<5.00			Enter Alert	
	113.82	37.21	88.61	76.61	4.69	OSF1.50	6240.00	6200.21				MinPt-CtCt	
	113.87	37.38	88.55	76.49	4.67	OSF1.50	6260.00	6220.01				MINPT-O-EOU	
	114.00	37.54	88.58	76.46	4.66	OSF1.50	6280.00	6239.81				MinPt-O-ADP	
	118.57	39.60	91.78	78.97	4.58	OSF1.50	6542.83	6500.00				MinPt-O-SF	
	126.98	39.16	100.48	87.82	4.97	OSF1.50	6730.00	6686.03	OSF>5.00			Exit Alert	
	354.29	46.70	322.78	307.59	11.62	OSF1.50	9110.00	9059.73				MinPt-O-SF	
	3234.90	97.31	3169.70	3137.60	50.36	OSF1.50	12550.00	9340.00				MINPT-O-EOU	
	3239.62	110.79	3165.44	3128.84	44.24	OSF1.50	13010.00	9340.00				MINPT-O-EOU	
	3237.04	121.09	3155.99	3115.95	40.41	OSF1.50	13340.00	9340.00				MinPt-CtCt	
	3235.42	134.18	3145.63	3101.23	36.42	OSF1.50	13780.00	9340.00				MinPt-CtCt	
	3236.09	136.06	3145.06	3100.03	35.92	OSF1.50	13860.00	9340.00				MINPT-O-EOU	
	3236.68	136.76	3145.18	3099.92	35.75	OSF1.50	13890.00	9340.00				MinPt-O-ADP	
	3236.84	148.51	3137.51	3088.33	32.90	OSF1.50	14260.00	9340.00				MinPt-CtCt	
	3221.72	177.08	3103.33	3044.63	27.43	OSF1.50	15220.00	9340.00				MinPt-CtCt	
	3220.82	184.27	3097.64	3036.55	26.35	OSF1.50	15460.00	9340.00				MinPt-CtCt	
	3222.09	195.35	3091.53	3026.75	24.86	OSF1.50	15830.00	9340.00				MinPt-CtCt	
	3223.45	199.58	3090.08	3023.88	24.34	OSF1.50	15990.00	9340.00				MINPT-O-EOU	
	3217.66	230.13	3063.91	2987.53	21.06	OSF1.50	16990.00	9340.00				MinPt-CtCt	
	3203.82	258.36	3031.26	2945.46	18.67	OSF1.50	17930.00	9340.00				MinPt-CtCt	
	3203.83	263.75	3027.67	2940.08	18.28	OSF1.50	18110.00	9340.00				MinPt-CtCt	
	3197.95	297.38	2999.37	2900.57	16.18	OSF1.50	19230.00	9340.00				MinPt-CtCt	
	3197.53	301.88	2995.95	2895.66	15.94	OSF1.50	19368.65	9340.00				MinPts	
Cimarex Vaca Draw 20-17 Federal #31H Rev0 RM 19Sept18 (Non-Def Plan)													Warning Alert
	663.35	32.81	661.37	630.54	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	663.34	32.81	661.36	630.53	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	353.95	61.19	312.35	292.76	8.97	OSF1.50	9150.00	9095.43				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		
	353.98	61.23	312.36	292.75	8.96	OSF1.50	9156.72	9101.27				MinPt-O-ADP	
	354.67	61.41	312.94	293.26	8.95	OSF1.50	9190.00	9129.49				MinPt-O-SF	
	698.52	211.08	557.14	487.44	5.00	OSF1.50	16080.00	9340.00	OSF<5.00			Enter Alert	
	698.52	312.68	489.41	385.84	3.36	OSF1.50	19368.65	9340.00				MinPts	
Final Surveys - Cimarex Vaca Draw 20-17 Federal #7H MWD 0ft-22544ft (Surcon Corrected) (Def Survey)													Pass
	84.88	32.81	83.70	52.07	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	84.82	32.81	83.64	52.02	9218.42	MAS = 10.00 (m)	26.00	26.00				WRP	
	69.22	32.81	61.48	36.41	10.19	MAS = 10.00 (m)	1450.00	1450.00				MinPts	
	69.37	32.81	60.98	36.56	9.31	MAS = 10.00 (m)	1610.00	1610.00				MinPts	
	69.48	32.81	60.88	36.67	9.06	MAS = 10.00 (m)	1660.00	1660.00				MINPT-O-EOU	
	57.82	32.81	46.94	25.01	5.77	MAS = 10.00 (m)	2720.00	2715.49				MinPts	
	57.96	32.81	47.02	25.15	5.76	MAS = 10.00 (m)	2750.00	2745.19				MinPt-O-SF	
	480.87	37.21	455.71	443.65	19.90	OSF1.50	7800.00	7755.82				MinPt-CtCt	
	480.90	37.31	455.68	443.60	19.85	OSF1.50	7830.00	7785.82				MINPT-O-EOU	
	480.93	37.34	455.69	443.59	19.84	OSF1.50	7840.00	7795.82				MinPt-O-ADP	
	481.50	37.84	455.92	443.66	19.59	OSF1.50	7980.00	7935.82				MINPT-O-EOU	
	481.61	37.98	455.94	443.63	19.52	OSF1.50	8020.00	7975.82				MinPt-O-ADP	
	482.05	38.51	456.02	443.54	19.26	OSF1.50	8160.00	8115.82				MINPT-O-EOU	
	482.07	38.54	456.03	443.53	19.24	OSF1.50	8170.00	8125.82				MinPt-O-ADP	
	500.02	42.63	471.25	457.39	18.00	OSF1.50	9160.00	9104.10				MinPt-O-SF	
	3223.95	102.15	3155.52	3121.80	47.79	OSF1.50	12520.00	9340.00				MinPt-CtCt	
	3224.70	104.53	3154.68	3120.16	46.70	OSF1.50	12620.00	9340.00				MINPT-O-EOU	
	3224.40	108.24	3151.91	3116.16	45.08	OSF1.50	12730.00	9340.00				MinPt-CtCt	
	3224.79	109.55	3151.43	3115.24	44.54	OSF1.50	12790.00	9340.00				MINPT-O-EOU	
	3225.51	110.41	3151.57	3115.10	44.20	OSF1.50	12830.00	9340.00				MinPt-O-ADP	
	3229.09	114.70	3152.30	3114.39	42.58	OSF1.50	12970.00	9340.00				MINPT-O-EOU	
	3229.66	115.38	3152.41	3114.28	42.34	OSF1.50	13000.00	9340.00				MinPt-O-ADP	
	3234.21	129.15	3147.78	3105.05	37.84	OSF1.50	13440.00	9340.00				MinPt-CtCt	
	3232.87	133.00	3143.87	3099.86	36.72	OSF1.50	13570.00	9340.00				MinPt-CtCt	
	3233.32	134.32	3143.44	3099.00	36.36	OSF1.50	13630.00	9340.00				MINPT-O-EOU	
	3233.84	134.97	3143.53	3098.87	36.19	OSF1.50	13660.00	9340.00				MinPt-O-ADP	
	3263.90	179.25	3144.08	3084.65	27.46	OSF1.50	15120.00	9340.00				MinPt-CtCt	
	3263.03	184.03	3140.02	3079.00	26.73	OSF1.50	15280.00	9340.00				MinPt-CtCt	
	3263.08	197.75	3130.92	3065.33	24.87	OSF1.50	15740.00	9340.00				MinPt-CtCt	
	3260.92	211.90	3119.33	3049.02	23.18	OSF1.50	16210.00	9340.00				MinPt-CtCt	
	3259.50	227.16	3107.73	3032.34	21.61	OSF1.50	16720.00	9340.00				MinPt-CtCt	
	3254.26	255.68	3083.48	2998.58	19.16	OSF1.50	17670.00	9340.00				MinPt-CtCt	
	3255.22	261.71	3080.42	2993.51	18.72	OSF1.50	17870.00	9340.00				MinPt-CtCt	
	3255.30	270.09	3074.91	2985.20	18.14	OSF1.50	18150.00	9340.00				MinPt-CtCt	
	3252.73	283.00	3063.73	2969.72	17.30	OSF1.50	18580.00	9340.00				MinPt-CtCt	
	3251.25	291.71	3056.45	2959.54	16.77	OSF1.50	18870.00	9340.00				MinPt-CtCt	
	3251.53	295.64	3054.11	2955.89	16.55	OSF1.50	19000.00	9340.00				MinPt-CtCt	
	3251.68	302.86	3049.44	2948.82	16.15	OSF1.50	19240.00	9340.00				MinPt-CtCt	
	3251.88	306.74	3047.05	2945.13	15.95	OSF1.50	19368.65	9340.00				MinPts	
Cimarex Vaca Draw 20-17 Federal #5H Final MWD(Surcon Corrected) (Def Survey)													Pass
	121.66	32.81	119.69	88.86	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	121.65	32.81	119.67	88.84	94267.74	MAS = 10.00 (m)	26.00	26.00				WRP	

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		
	121.55	32.81	118.95	88.74	193.93	MAS = 10.00 (m)	180.00	180.00				MinPts	
	121.89	32.81	118.72	89.08	100.53	MAS = 10.00 (m)	300.00	300.00				MINPT-O-EOU	
	122.92	32.81	117.82	90.11	38.78	MAS = 10.00 (m)	760.00	760.00				MinPts	
	123.29	32.81	117.41	90.48	31.16	MAS = 10.00 (m)	920.00	920.00				MINPT-O-EOU	
	129.84	32.81	119.24	97.03	14.83	MAS = 10.00 (m)	2000.00	2000.00				MINPT-O-EOU	
	130.73	32.81	119.90	97.93	14.53	MAS = 10.00 (m)	2100.00	2099.98				MinPt-O-SF	
	684.20	34.51	660.54	649.69	31.46	OSF1.50	6150.00	6111.11				MinPt-O-SF	
	788.44	40.27	760.94	748.18	30.81	OSF1.50	8420.00	8375.82				MinPt-CtCt	
	788.50	40.70	760.71	747.80	30.47	OSF1.50	8530.00	8485.82				MinPt-CtCt	
	788.72	41.28	760.54	747.44	30.03	OSF1.50	8670.00	8625.82				MINPT-O-EOU	
	788.90	41.52	760.57	747.39	29.85	OSF1.50	8730.00	8685.82				MinPt-O-ADP	
	784.61	43.64	754.85	740.97	28.18	OSF1.50	9240.00	9169.40				MinPts	
	784.65	43.69	754.86	740.96	28.14	OSF1.50	9250.00	9177.00				MinPt-O-ADP	
	791.33	44.41	761.06	746.92	27.90	OSF1.50	9380.00	9262.03				MinPt-O-SF	
	1091.70	59.43	1051.41	1032.26	28.45	OSF1.50	10400.00	9340.00				MinPt-CtCt	
	1091.68	62.41	1049.42	1029.27	27.05	OSF1.50	10530.00	9340.00				MinPt-CtCt	
	1092.36	64.84	1048.47	1027.52	26.02	OSF1.50	10640.00	9340.00				MINPT-O-EOU	
	1092.92	65.50	1048.59	1027.42	25.76	OSF1.50	10670.00	9340.00				MinPt-O-ADP	
	1095.69	86.42	1037.42	1009.27	19.43	OSF1.50	11470.00	9340.00				MinPt-CtCt	
	1096.42	88.94	1036.47	1007.48	18.88	OSF1.50	11570.00	9340.00				MINPT-O-EOU	
	1096.78	89.40	1036.52	1007.38	18.78	OSF1.50	11590.00	9340.00				MinPt-O-ADP	
	1098.76	107.18	1026.65	991.58	15.64	OSF1.50	12220.00	9340.00				MinPt-CtCt	
	1099.27	108.65	1026.17	990.62	15.43	OSF1.50	12280.00	9340.00				MINPT-O-EOU	
	1099.90	109.38	1026.32	990.52	15.33	OSF1.50	12310.00	9340.00				MinPt-O-ADP	
	1098.50	156.79	993.31	941.71	10.62	OSF1.50	13930.00	9340.00				MinPt-CtCt	
	1102.14	166.50	990.48	935.64	10.03	OSF1.50	14270.00	9340.00				MINPT-O-EOU	
	1100.57	187.80	974.71	912.77	8.87	OSF1.50	14980.00	9340.00				MinPt-CtCt	
	1094.87	201.24	960.05	893.63	8.23	OSF1.50	15430.00	9340.00				MinPt-CtCt	
	1105.07	229.66	951.30	875.41	7.27	OSF1.50	16390.00	9340.00				MINPT-O-EOU	
	1104.92	234.74	947.77	870.18	7.11	OSF1.50	16550.00	9340.00				MinPt-CtCt	
	1101.45	262.95	925.49	838.50	6.32	OSF1.50	17490.00	9340.00				MinPt-CtCt	
	1095.23	280.04	907.88	815.19	5.90	OSF1.50	18060.00	9340.00				MinPt-CtCt	
	1102.00	296.01	904.00	805.99	5.61	OSF1.50	18600.00	9340.00				MINPT-O-EOU	
	1102.61	296.76	904.11	805.85	5.60	OSF1.50	18630.00	9340.00				MinPt-O-ADP	
	1093.85	312.52	884.85	781.33	5.27	OSF1.50	19140.00	9340.00				MinPt-CtCt	
	1093.91	312.67	884.81	781.24	5.27	OSF1.50	19150.00	9340.00				MinPts	
	1094.31	312.90	885.05	781.41	5.27	OSF1.50	19170.00	9340.00				MinPt-O-SF	
	1117.87	309.83	910.66	808.04	5.44	OSF1.50	19368.65	9340.00				TD	
Cimarex Vaca Draw 20-17 Federal #1H Surcon 0ft-12740 (Def Survey)													Pass
	126.50	32.81	124.52	93.69	583552.88	MAS = 10.00 (m)	0.00	0.00				MinPts	
	126.51	32.81	124.53	93.71	17428.68	MAS = 10.00 (m)	26.00	26.00				WRP	
	126.59	32.81	124.50	93.78	1130.16	MAS = 10.00 (m)	60.00	60.00				MINPT-O-EOU	
	157.44	32.81	146.48	124.63	17.32	MAS = 10.00 (m)	2100.00	2099.98				MinPt-O-SF	
	936.01	41.18	907.90	894.83	35.74	OSF1.50	8380.00	8335.82				MINPT-O-EOU	
	936.53	41.82	907.99	894.71	35.18	OSF1.50	8540.00	8495.82				MinPt-O-ADP	
	935.18	44.32	904.98	890.86	33.06	OSF1.50	9220.00	9153.82				MinPt-CtCt	
	935.20	44.37	904.96	890.83	33.02	OSF1.50	9230.00	9161.68				MINPT-O-EOU	
	935.24	44.43	904.96	890.81	32.98	OSF1.50	9240.00	9169.40				MinPt-O-ADP	
	944.10	45.42	913.16	898.68	32.53	OSF1.50	9410.00	9277.66				MinPt-O-SF	
	10121.27	47.12	10089.20	10074.15	336.27	OSF1.50	19368.65	9340.00				TD	

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 Vaca Draw 20-17 Federal #1H ST01 0ft-21966ft (Def Survey)													Pass
	126.50	32.81	125.37	93.69	587531.56	MAS = 10.00 (m)	0.00	0.00				MinPts	
	126.51	32.81	125.38	93.71	17547.45	MAS = 10.00 (m)	26.00	26.00				WRP	
	126.59	32.81	125.35	93.78	1137.85	MAS = 10.00 (m)	60.00	60.00				MINPT-O-EOU	
	157.44	32.81	147.33	124.63	17.41	MAS = 10.00 (m)	2100.00	2099.98				MinPt-O-SF	
	936.01	40.33	908.75	895.68	35.77	OSF1.50	8380.00	8335.82				MINPT-O-EOU	
	936.53	40.97	908.84	895.56	35.22	OSF1.50	8540.00	8495.82				MinPt-O-ADP	
	935.18	43.47	905.83	891.71	33.09	OSF1.50	9220.00	9153.82				MinPt-CtCt	
	935.20	43.52	905.81	891.67	33.05	OSF1.50	9230.00	9161.68				MINPT-O-EOU	
	935.24	43.58	905.81	891.66	33.01	OSF1.50	9240.00	9169.40				MinPt-O-ADP	
	944.10	44.57	914.01	899.53	32.56	OSF1.50	9410.00	9277.66				MinPt-O-SF	
	3188.13	100.36	3120.84	3087.77	48.18	OSF1.50	12340.00	9340.00				MINPT-O-EOU	
	3190.51	103.18	3121.34	3087.32	46.88	OSF1.50	12440.00	9340.00				MinPt-O-ADP	
	3190.77	110.27	3116.88	3080.50	43.84	OSF1.50	12660.00	9340.00				MinPt-CtCt	
	3177.44	125.98	3093.08	3051.46	38.16	OSF1.50	13200.00	9340.00				MinPt-CtCt	
	3178.14	128.07	3092.39	3050.07	37.54	OSF1.50	13290.00	9340.00				MINPT-O-EOU	
	3178.72	128.76	3092.50	3049.96	37.34	OSF1.50	13320.00	9340.00				MinPt-O-ADP	
	3183.11	136.89	3091.48	3046.22	35.16	OSF1.50	13570.00	9340.00				MinPt-CtCt	
	3184.32	140.46	3090.30	3043.85	34.27	OSF1.50	13710.00	9340.00				MINPT-O-EOU	
	3185.35	141.71	3090.50	3043.64	33.98	OSF1.50	13760.00	9340.00				MinPt-O-ADP	
	3192.42	147.33	3093.82	3045.08	32.74	OSF1.50	13960.00	9340.00				MinPt-O-ADP	
	3198.67	156.82	3093.74	3041.85	30.81	OSF1.50	14240.00	9340.00				MinPt-CtCt	
	3198.56	163.38	3089.26	3035.17	29.56	OSF1.50	14460.00	9340.00				MinPt-CtCt	
	3200.64	168.71	3087.79	3031.94	28.64	OSF1.50	14660.00	9340.00				MINPT-O-EOU	
	3183.59	195.80	3052.67	2987.78	24.52	OSF1.50	15550.00	9340.00				MinPt-CtCt	
	3183.64	198.76	3050.76	2984.89	24.16	OSF1.50	15650.00	9340.00				MinPt-CtCt	
	3184.10	200.03	3050.36	2984.06	24.00	OSF1.50	15710.00	9340.00				MINPT-O-EOU	
	3184.44	200.45	3050.43	2983.99	23.96	OSF1.50	15730.00	9340.00				MinPt-O-ADP	
	3214.82	223.94	3065.14	2990.87	21.63	OSF1.50	16490.00	9340.00				MinPt-CtCt	
	3214.84	229.34	3061.57	2985.51	21.12	OSF1.50	16670.00	9340.00				MinPt-CtCt	
	3192.85	254.99	3022.48	2937.86	18.86	OSF1.50	17530.00	9340.00				MinPt-CtCt	
	3192.05	260.14	3018.25	2931.91	18.48	OSF1.50	17700.00	9340.00				MinPt-CtCt	
	3182.16	282.12	2993.70	2900.03	16.98	OSF1.50	18430.00	9340.00				MinPt-CtCt	
	3183.24	285.71	2992.39	2897.53	16.77	OSF1.50	18570.00	9340.00				MINPT-O-EOU	
	3184.45	287.20	2992.61	2897.25	16.69	OSF1.50	18630.00	9340.00				MinPt-O-ADP	
	3185.60	289.91	2991.95	2895.69	16.54	OSF1.50	18690.00	9340.00				MinPt-CtCt	
	3186.01	291.22	2991.49	2894.79	16.47	OSF1.50	18750.00	9340.00				MINPT-O-EOU	
	3186.53	291.85	2991.58	2894.67	16.44	OSF1.50	18780.00	9340.00				MinPt-O-ADP	
	3187.76	303.43	2985.09	2884.33	15.81	OSF1.50	19140.00	9340.00				MinPt-CtCt	
	3188.04	304.17	2984.88	2883.87	15.77	OSF1.50	19180.00	9340.00				MINPT-O-EOU	
	3188.19	304.35	2984.91	2883.84	15.77	OSF1.50	19190.00	9340.00				MinPt-O-ADP	
	3196.14	307.05	2991.06	2889.09	15.67	OSF1.50	19368.65	9340.00				MinPt-O-SF	
Final Surveys - Cimarex Vaca Draw 20-17 Federal #2H MWD 0ft-22179ft (Surcon Corrected) (Def Survey)													Pass
	1285.43	32.81	1284.41	1252.62	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	1285.41	32.81	1284.38	1252.60	N/A	MAS = 10.00 (m)	10.00	10.00				MinPts	
	1285.41	32.81	1284.39	1252.60	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	1285.89	32.81	1279.63	1253.08	245.30	MAS = 10.00 (m)	1240.00	1240.00				MinPts	
	744.14	37.62	718.50	706.51	30.97	OSF1.50	6640.00	6596.41				MinPt-O-SF	
	732.00	36.59	707.05	695.42	31.38	OSF1.50	6890.00	6845.82				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		
	732.00	36.55	707.07	695.45	31.42	OSF1.50	6900.00	6855.82				MinPt-CtCt	
	733.06	36.47	708.18	696.58	31.53	OSF1.50	6980.00	6935.82				MinPt-O-SF	
	766.30	44.15	736.33	722.15	26.96	OSF1.50	9230.00	9161.68				MinPt-CtCt	
	766.31	44.20	736.31	722.11	26.93	OSF1.50	9240.00	9169.40				MinPts	
	772.69	44.79	742.32	727.90	26.74	OSF1.50	9370.00	9256.47				MinPt-O-SF	
	3128.81	87.79	3069.96	3041.02	54.05	OSF1.50	12330.00	9340.00				MinPts	
	3138.05	111.65	3063.30	3026.41	42.52	OSF1.50	13120.00	9340.00				MinPt-CtCt	
	3144.06	149.91	3043.79	2994.15	31.66	OSF1.50	14410.00	9340.00				MinPt-CtCt	
	3144.76	152.13	3043.01	2992.63	31.20	OSF1.50	14500.00	9340.00				MINPT-O-EOU	
	3145.77	153.35	3043.21	2992.42	30.96	OSF1.50	14550.00	9340.00				MinPt-O-ADP	
	3149.27	160.02	3042.26	2989.25	29.69	OSF1.50	14750.00	9340.00				MinPt-CtCt	
	3144.45	177.09	3026.07	2967.37	26.78	OSF1.50	15320.00	9340.00				MinPt-CtCt	
	3146.92	185.58	3022.88	2961.34	25.56	OSF1.50	15620.00	9340.00				MINPT-O-EOU	
	3147.92	186.81	3023.05	2961.11	25.40	OSF1.50	15670.00	9340.00				MinPt-O-ADP	
	3151.77	191.50	3023.78	2960.28	24.81	OSF1.50	15820.00	9340.00				MINPT-O-EOU	
	3153.04	193.01	3024.04	2960.03	24.62	OSF1.50	15880.00	9340.00				MinPt-O-ADP	
	3158.40	203.71	3022.26	2954.68	23.36	OSF1.50	16230.00	9340.00				MINPT-O-EOU	
	3154.50	219.85	3007.60	2934.65	21.61	OSF1.50	16750.00	9340.00				MinPt-CtCt	
	3155.28	222.34	3006.73	2932.94	21.37	OSF1.50	16850.00	9340.00				MINPT-O-EOU	
	3156.10	223.28	3006.91	2932.82	21.29	OSF1.50	16890.00	9340.00				MinPt-O-ADP	
	3153.91	237.27	2995.40	2916.64	20.02	OSF1.50	17330.00	9340.00				MinPt-CtCt	
	3154.91	240.32	2994.36	2914.58	19.77	OSF1.50	17450.00	9340.00				MINPT-O-EOU	
	3156.39	242.09	2994.66	2914.29	19.63	OSF1.50	17520.00	9340.00				MinPt-O-ADP	
	3156.64	244.12	2993.56	2912.52	19.47	OSF1.50	17560.00	9340.00				MinPt-CtCt	
	3137.32	274.46	2954.02	2862.86	17.20	OSF1.50	18570.00	9340.00				MinPt-CtCt	
	3120.18	289.99	2926.53	2830.20	16.19	OSF1.50	19090.00	9340.00				MinPt-CtCt	
	3120.84	291.90	2925.92	2828.95	16.09	OSF1.50	19170.00	9340.00				MINPT-O-EOU	
	3121.63	292.83	2926.08	2828.80	16.04	OSF1.50	19210.00	9340.00				MinPt-O-ADP	
	3121.72	298.79	2922.19	2822.92	15.72	OSF1.50	19368.65	9340.00				MinPts	
Cimarex Vaca Draw 20-17 Federal #10H Rev0 RM 1May17 (Non-Def Plan)													Pass
	1381.11	32.81	1379.13	1348.30	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	1381.09	32.81	1379.11	1348.28	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	738.03	75.65	686.68	662.37	15.13	OSF1.50	9150.00	9095.43				MinPt-CtCt	
	738.04	75.72	686.65	662.32	15.11	OSF1.50	9160.00	9104.10				MINPT-O-EOU	
	738.09	75.79	686.65	662.30	15.10	OSF1.50	9170.00	9112.68				MinPt-O-ADP	
	741.41	76.43	689.55	664.98	15.03	OSF1.50	9270.00	9191.77				MinPt-O-SF	
	3218.10	327.63	2999.02	2890.47	14.81	OSF1.50	19190.00	9340.00				MINPT-O-EOU	
	3218.48	328.08	2999.10	2890.40	14.80	OSF1.50	19210.00	9340.00				MinPt-O-ADP	
	3225.90	331.25	3004.41	2894.65	14.69	OSF1.50	19368.65	9340.00				MinPt-O-SF	
Cimarex Vaca Draw 20-17 Federal #11H Rev0 RM 1May17 (Non-Def Plan)													Pass
	1401.10	32.81	1399.12	1368.29	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	1401.07	32.81	1399.09	1368.27	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	758.03	75.65	706.68	682.38	15.54	OSF1.50	9150.00	9095.43				MinPt-CtCt	
	758.04	75.72	706.65	682.32	15.52	OSF1.50	9160.00	9104.10				MINPT-O-EOU	
	758.09	75.79	706.65	682.30	15.51	OSF1.50	9170.00	9112.68				MinPt-O-ADP	
	761.32	76.43	709.46	684.89	15.44	OSF1.50	9270.00	9191.77				MinPt-O-SF	
	3270.56	333.64	3047.48	2936.93	14.78	OSF1.50	19190.00	9340.00				MINPT-O-EOU	
	3270.94	334.09	3047.55	2936.85	14.76	OSF1.50	19210.00	9340.00				MinPt-O-ADP	
	3278.24	337.30	3052.72	2940.94	14.66	OSF1.50	19368.65	9340.00				MinPt-O-SF	

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 Vaca Draw 20-17 Federal #12H Rev0 RM 1May17 (Non-Def Plan)													Pass
	1421.06	32.81	1419.08	1388.25	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	1421.04	32.81	1419.06	1388.23	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	778.01	75.65	726.66	702.36	15.95	OSF1.50	9150.00	9095.43				MinPt-CtCt	
	778.02	75.72	726.63	702.30	15.94	OSF1.50	9160.00	9104.10				MINPT-O-EOU	
	778.07	75.79	726.63	702.28	15.92	OSF1.50	9170.00	9112.68				MinPt-O-ADP	
	781.88	76.50	729.98	705.38	15.84	OSF1.50	9280.00	9198.94				MinPt-O-SF	
	3312.76	338.27	3086.59	2974.49	14.77	OSF1.50	19190.00	9340.00				MINPT-O-EOU	
	3313.13	338.73	3086.65	2974.41	14.75	OSF1.50	19210.00	9340.00				MinPt-O-ADP	
	3320.34	341.96	3091.71	2978.38	14.64	OSF1.50	19368.65	9340.00				MinPt-O-SF	
Final Surveys - Cimarex Vaca Draw 20-17 Federal #3H MWD 0ft-22454' (Surcon Corrected) (Def Survey)													Pass
	1305.36	32.81	1304.23	1272.56	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	1305.34	32.81	1304.21	1272.53	N/A	MAS = 10.00 (m)	10.00	10.00				MinPts	
	1305.35	32.81	1304.21	1272.54	263713.05	MAS = 10.00 (m)	26.00	26.00				WRP	
	1305.42	32.81	1304.19	1272.61	13464.61	MAS = 10.00 (m)	60.00	60.00				MINPT-O-EOU	
	1301.99	32.81	1298.22	1269.19	472.87	MAS = 10.00 (m)	650.00	650.00				MinPts	
	1302.03	32.81	1298.18	1269.22	460.23	MAS = 10.00 (m)	670.00	670.00				MINPT-O-EOU	
	1309.16	32.81	1301.01	1276.35	183.54	MAS = 10.00 (m)	1640.00	1640.00				MinPts	
	1309.29	32.81	1300.88	1276.48	177.06	MAS = 10.00 (m)	1700.00	1700.00				MINPT-O-EOU	
	1031.28	37.66	1005.73	993.62	42.54	OSF1.50	6600.00	6556.68				MinPt-O-SF	
	1029.62	37.29	1004.31	992.33	42.92	OSF1.50	6690.00	6646.17				MinPts	
	1029.62	37.26	1004.33	992.36	42.96	OSF1.50	6700.00	6656.13				MinPt-CtCt	
	1187.74	44.49	1157.74	1143.25	40.96	OSF1.50	9220.00	9153.82				MinPt-CtCt	
	1187.76	44.53	1157.73	1143.23	40.91	OSF1.50	9230.00	9161.68				MinPts	
	1222.35	46.59	1190.95	1175.76	40.21	OSF1.50	9570.00	9332.15				MinPt-O-SF	
	3445.14	99.87	3378.23	3345.27	52.24	OSF1.50	12730.00	9340.00				MINPT-O-EOU	
	3446.32	103.59	3376.93	3342.72	50.37	OSF1.50	12840.00	9340.00				MinPt-CtCt	
	3448.01	110.48	3374.02	3337.52	47.22	OSF1.50	13090.00	9340.00				MINPT-O-EOU	
	3449.01	111.71	3374.21	3337.30	46.71	OSF1.50	13140.00	9340.00				MinPt-O-ADP	
	3453.75	116.01	3376.08	3337.73	45.03	OSF1.50	13290.00	9340.00				MinPt-O-ADP	
	3453.50	146.81	3355.29	3306.68	35.51	OSF1.50	14300.00	9340.00				MinPt-CtCt	
	3446.49	163.20	3337.36	3283.29	31.86	OSF1.50	14850.00	9340.00				MinPt-CtCt	
	3448.03	168.00	3335.70	3280.03	30.96	OSF1.50	15030.00	9340.00				MINPT-O-EOU	
	3444.90	179.04	3325.21	3265.86	29.01	OSF1.50	15380.00	9340.00				MinPt-CtCt	
	3446.15	187.10	3321.09	3259.05	27.77	OSF1.50	15650.00	9340.00				MinPt-CtCt	
	3451.56	239.82	3291.35	3211.74	21.67	OSF1.50	17410.00	9340.00				MinPt-CtCt	
	3447.39	260.82	3273.18	3186.57	19.90	OSF1.50	18110.00	9340.00				MinPt-CtCt	
	3448.51	270.12	3268.10	3178.39	19.21	OSF1.50	18420.00	9340.00				MinPt-CtCt	
	3444.75	299.07	3245.04	3145.68	17.33	OSF1.50	19368.65	9340.00				MinPts	
Final Surveys - Cimarex Vaca Draw 20-17 Federal #4H MWD 0ft-12228ft (Surcon Corrected) (Def Survey)													Pass
	1325.25	32.81	1323.27	1292.44	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	1325.21	32.81	1323.23	1292.40	339052.62	MAS = 10.00 (m)	26.00	26.00				WRP	
	1323.67	32.81	1320.06	1290.86	808.08	MAS = 10.00 (m)	420.00	420.00				MinPts	
	1323.76	32.81	1319.96	1290.95	728.79	MAS = 10.00 (m)	460.00	460.00				MINPT-O-EOU	
	1413.54	32.81	1401.83	1380.73	145.16	MAS = 10.00 (m)	2380.00	2378.89				MinPt-O-SF	

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		
	1364.44	32.81	1345.61	1331.63	80.86	MAS = 10.00 (m)	4720.00	4695.45				MinPts	
	1364.51	32.81	1345.54	1331.70	80.18	MAS = 10.00 (m)	4750.00	4725.15				MINPT-O-EOU	
	1348.36	34.13	1324.95	1314.24	62.86	OSF1.50	5690.00	5655.72				MinPt-CtCt	
	1348.10	35.19	1323.98	1312.91	60.84	OSF1.50	5840.00	5804.22				MinPt-CtCt	
	1341.27	40.17	1313.82	1301.10	52.65	OSF1.50	6600.00	6556.68				MinPts	
	1439.47	41.39	1411.22	1398.08	54.71	OSF1.50	7560.00	7515.82				MinPt-O-SF	
	1727.64	53.05	1691.61	1674.59	50.68	OSF1.50	9920.00	9340.00				MinPt-O-SF	
	10225.27	73.07	10175.90	10152.20	215.71	OSF1.50	19368.65	9340.00				TD	
Final Surveys - Cimarex Vaca Draw 20-17 Federal #4H ST01 MWD 0ft-22279ft (Surcon Corrected) (Def Survey)													Pass
	1325.25	32.81	1324.07	1292.44	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	1325.21	32.81	1324.03	1292.40	339258.14	MAS = 10.00 (m)	26.00	26.00				WRP	
	1323.67	32.81	1320.86	1290.86	808.57	MAS = 10.00 (m)	420.00	420.00				MinPts	
	1323.76	32.81	1320.77	1290.95	729.24	MAS = 10.00 (m)	460.00	460.00				MINPT-O-EOU	
	1413.54	32.81	1402.72	1380.73	144.59	MAS = 10.00 (m)	2380.00	2378.89				MinPt-O-SF	
	1364.44	32.81	1346.51	1331.63	80.78	MAS = 10.00 (m)	4720.00	4695.45				MinPts	
	1364.51	32.81	1346.45	1331.70	80.12	MAS = 10.00 (m)	4750.00	4725.15				MINPT-O-EOU	
	1348.36	33.24	1325.85	1315.12	62.81	OSF1.50	5690.00	5655.72				MinPt-CtCt	
	1348.10	34.29	1324.89	1313.81	60.82	OSF1.50	5840.00	5804.22				MinPt-CtCt	
	1341.27	39.26	1314.74	1302.01	52.65	OSF1.50	6600.00	6556.68				MinPts	
	1429.34	40.18	1402.20	1389.16	54.75	OSF1.50	7480.00	7435.82				MinPt-O-SF	
	1439.47	40.45	1412.15	1399.02	54.75	OSF1.50	7560.00	7515.82				MinPt-O-SF	
	1727.64	52.13	1692.54	1675.51	50.70	OSF1.50	9920.00	9340.00				MinPt-O-SF	
	3451.76	92.84	3389.54	3358.92	56.35	OSF1.50	12470.00	9340.00				MinPt-CtCt	
	3451.27	148.24	3352.12	3303.03	35.15	OSF1.50	14350.00	9340.00				MinPt-CtCt	
	3406.43	198.53	3273.75	3207.90	25.86	OSF1.50	16040.00	9340.00				MinPt-CtCt	
	3407.20	200.75	3273.04	3206.45	25.58	OSF1.50	16130.00	9340.00				MINPT-O-EOU	
	3408.00	201.72	3273.19	3206.28	25.46	OSF1.50	16170.00	9340.00				MinPt-O-ADP	
	3415.56	208.74	3276.07	3206.82	24.65	OSF1.50	16410.00	9340.00				MinPt-O-ADP	
	3424.19	217.07	3279.14	3207.11	23.76	OSF1.50	16690.00	9340.00				MinPt-O-ADP	
	3436.54	226.12	3285.46	3210.42	22.89	OSF1.50	17000.00	9340.00				MinPt-O-ADP	
	3435.86	253.34	3266.64	3182.52	20.42	OSF1.50	17870.00	9340.00				MinPt-CtCt	
	3439.20	271.65	3257.77	3167.54	19.05	OSF1.50	18480.00	9340.00				MinPt-CtCt	
	3436.68	284.85	3246.46	3151.84	18.16	OSF1.50	18920.00	9340.00				MinPt-CtCt	
	3440.06	297.98	3241.08	3142.08	17.37	OSF1.50	19368.65	9340.00				MinPts	

Schlumberger

Cimarex Vaca Draw 20-17 Federal #16H Rev0 RM 20Jan20 Proposal
Geodetic Report
(Non-Def Plan)

CIMAREX

Report Date:	January 21, 2020 - 09:14 AM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	Cimarex Energy	**Vertical Section Azimuth:**	359.628 ° (Grid North)
Field:	NM Lea County (NAD 83)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Cimarex Vaca Draw 20-17 Federal #16H / New Slot	**TVD Reference Datum:**	RKB
Well:	Vaca Draw 20-17 Federal #16H	**TVD Reference Elevation:**	3448.900 ft above MSL
Borehole:	Vaca Draw 20-17 Federal #16H	**Seabed / Ground Elevation:**	3422.900 ft above MSL
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	6.583 °
Survey Name:	Cimarex Vaca Draw 20-17 Federal #16H Rev0 RM 20Jan20	**Total Gravity Field Strength:**	998.4291mgn (9.80665 Based)
Survey Date:	January 20, 2020	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	106.239 ° / 10831.110 ft / 6.378 / 1.160	**Total Magnetic Field Strength:**	47707.386 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	59.694 °
Location Lat / Long:	N 32° 6' 34.46658", W 103° 36' 2.92643"	**Declination Date:**	January 20, 2020
Location Grid N/E Y/X:	N 404370.090 ftUS, E 768142.340 ftUS	**Magnetic Declination Model:**	HDGM 2019
CRS Grid Convergence Angle:	0.3894 °	**North Reference:**	Grid North
Grid Scale Factor:	0.99996801	**Grid Convergence Used:**	0.3894 °
Version / Patch:	2.10.787.0	**Total Corr Mag North->Grid North:**	6.1932 °
		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 [270' FSL, 630' FWL]	0.00	0.00	3.23	0.00	0.00	0.00	0.00	N/A	404370.09	768142.34	N 32 6 34.47	W 103 36 2.93
	100.00	0.00	89.62	100.00	0.00	0.00	0.00	0.00	404370.09	768142.34	N 32 6 34.47	W 103 36 2.93
	200.00	0.00	89.62	200.00	0.00	0.00	0.00	0.00	404370.09	768142.34	N 32 6 34.47	W 103 36 2.93
	300.00	0.00	89.62	300.00	0.00	0.00	0.00	0.00	404370.09	768142.34	N 32 6 34.47	W 103 36 2.93
	400.00	0.00	89.62	400.00	0.00	0.00	0.00	0.00	404370.09	768142.34	N 32 6 34.47	W 103 36 2.93
	500.00	0.00	89.62	500.00	0.00	0.00	0.00	0.00	404370.09	768142.34	N 32 6 34.47	W 103 36 2.93
	600.00	0.00	89.62	600.00	0.00	0.00	0.00	0.00	404370.09	768142.34	N 32 6 34.47	W 103 36 2.93
	700.00	0.00	89.62	700.00	0.00	0.00	0.00	0.00	404370.09	768142.34	N 32 6 34.47	W 103 36 2.93
	800.00	0.00	89.62	800.00	0.00	0.00	0.00	0.00	404370.09	768142.34	N 32 6 34.47	W 103 36 2.93
	900.00	0.00	89.62	900.00	0.00	0.00	0.00	0.00	404370.09	768142.34	N 32 6 34.47	W 103 36 2.93
	1000.00	0.00	89.62	1000.00	0.00	0.00	0.00	0.00	404370.09	768142.34	N 32 6 34.47	W 103 36 2.93
Rustler	*1001.00*	*0.00*	*89.62*	*1001.00*	*0.00*	*0.00*	*0.00*	*0.00*	*404370.09*	*768142.34*	*N 32 6 34.47*	*W 103 36 2.93*
	1100.00	0.00	89.62	1100.00	0.00	0.00	0.00	0.00	404370.09	768142.34	N 32 6 34.47	W 103 36 2.93
	1200.00	0.00	89.62	1200.00	0.00	0.00	0.00	0.00	404370.09	768142.34	N 32 6 34.47	W 103 36 2.93
	1300.00	0.00	89.62	1300.00	0.00	0.00	0.00	0.00	404370.09	768142.34	N 32 6 34.47	W 103 36 2.93
Top of Salt	*1341.00*	*0.00*	*89.62*	*1341.00*	*0.00*	*0.00*	*0.00*	*0.00*	*404370.09*	*768142.34*	*N 32 6 34.47*	*W 103 36 2.93*
	1400.00	0.00	89.62	1400.00	0.00	0.00	0.00	0.00	404370.09	768142.34	N 32 6 34.47	W 103 36 2.93
	1500.00	0.00	89.62	1500.00	0.00	0.00	0.00	0.00	404370.09	768142.34	N 32 6 34.47	W 103 36 2.93
	1600.00	0.00	89.62	1600.00	0.00	0.00	0.00	0.00	404370.09	768142.34	N 32 6 34.47	W 103 36 2.93
	1700.00	0.00	89.62	1700.00	0.00	0.00	0.00	0.00	404370.09	768142.34	N 32 6 34.47	W 103 36 2.93
	1800.00	0.00	89.62	1800.00	0.00	0.00	0.00	0.00	404370.09	768142.34	N 32 6 34.47	W 103 36 2.93
	1900.00	0.00	89.62	1900.00	0.00	0.00	0.00	0.00	404370.09	768142.34	N 32 6 34.47	W 103 36 2.93
Nudge 2°/100' DLS	2000.00	0.00	89.62	2000.00	0.00	0.00	0.00	0.00	404370.09	768142.34	N 32 6 34.47	W 103 36 2.93
	2100.00	2.00	89.62	2099.98	0.00	0.01	1.75	2.00	404370.10	768144.09	N 32 6 34.47	W 103 36 2.91
	2200.00	4.00	89.62	2199.84	0.00	0.05	6.98	2.00	404370.14	768149.32	N 32 6 34.47	W 103 36 2.85
	2300.00	6.00	89.62	2299.45	0.00	0.10	15.69	2.00	404370.19	768158.03	N 32 6 34.47	W 103 36 2.74
	2400.00	8.00	89.62	2398.70	0.00	0.19	27.88	2.00	404370.28	768170.22	N 32 6 34.47	W 103 36 2.60

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 ° ' ")
Hold Nudge	2405.98	8.12	89.62	2404.62	0.01	0.19	28.72	2.00	404370.28	768171.06	N 32 6 34.47	W 103 36 2.59
	2500.00	8.12	89.62	2497.70	0.01	0.28	42.00	0.00	404370.37	768184.34	N 32 6 34.47	W 103 36 2.44
	2600.00	8.12	89.62	2596.70	0.01	0.37	56.12	0.00	404370.46	768198.46	N 32 6 34.47	W 103 36 2.27
	2700.00	8.12	89.62	2695.70	0.01	0.47	70.24	0.00	404370.56	768212.58	N 32 6 34.47	W 103 36 2.11
	2800.00	8.12	89.62	2794.69	0.01	0.56	84.37	0.00	404370.65	768226.70	N 32 6 34.47	W 103 36 1.95
	2900.00	8.12	89.62	2893.69	0.02	0.66	98.49	0.00	404370.75	768240.83	N 32 6 34.47	W 103 36 1.78
	3000.00	8.12	89.62	2992.69	0.02	0.75	112.61	0.00	404370.84	768254.95	N 32 6 34.47	W 103 36 1.62
	3100.00	8.12	89.62	3091.69	0.02	0.84	126.74	0.00	404370.93	768269.07	N 32 6 34.47	W 103 36 1.45
	3200.00	8.12	89.62	3190.68	0.02	0.94	140.86	0.00	404371.03	768283.20	N 32 6 34.47	W 103 36 1.29
	3300.00	8.12	89.62	3289.68	0.03	1.03	154.98	0.00	404371.12	768297.32	N 32 6 34.47	W 103 36 1.12
	3400.00	8.12	89.62	3388.68	0.03	1.13	169.11	0.00	404371.22	768311.44	N 32 6 34.47	W 103 36 0.96
	3500.00	8.12	89.62	3487.68	0.03	1.22	183.23	0.00	404371.31	768325.57	N 32 6 34.47	W 103 36 0.80
	3600.00	8.12	89.62	3586.67	0.03	1.32	197.36	0.00	404371.41	768339.69	N 32 6 34.47	W 103 36 0.63
	3700.00	8.12	89.62	3685.67	0.04	1.41	211.48	0.00	404371.50	768353.81	N 32 6 34.47	W 103 36 0.47
	3800.00	8.12	89.62	3784.67	0.04	1.50	225.60	0.00	404371.59	768367.93	N 32 6 34.47	W 103 36 0.30
	3900.00	8.12	89.62	3883.67	0.04	1.60	239.73	0.00	404371.69	768382.06	N 32 6 34.47	W 103 36 0.14
	4000.00	8.12	89.62	3982.66	0.04	1.69	253.85	0.00	404371.78	768396.18	N 32 6 34.47	W 103 35 59.98
	4100.00	8.12	89.62	4081.66	0.05	1.79	267.97	0.00	404371.88	768410.30	N 32 6 34.47	W 103 35 59.81
	4200.00	8.12	89.62	4180.66	0.05	1.88	282.10	0.00	404371.97	768424.43	N 32 6 34.47	W 103 35 59.65
	4300.00	8.12	89.62	4279.66	0.05	1.97	296.22	0.00	404372.06	768438.55	N 32 6 34.47	W 103 35 59.48
	4400.00	8.12	89.62	4378.65	0.05	2.07	310.34	0.00	404372.16	768452.67	N 32 6 34.47	W 103 35 59.32
	4500.00	8.12	89.62	4477.65	0.06	2.16	324.47	0.00	404372.25	768466.80	N 32 6 34.47	W 103 35 59.15
	4600.00	8.12	89.62	4576.65	0.06	2.26	338.59	0.00	404372.35	768480.92	N 32 6 34.47	W 103 35 58.99
	4700.00	8.12	89.62	4675.65	0.06	2.35	352.71	0.00	404372.44	768495.04	N 32 6 34.47	W 103 35 58.83
Base of Salt	*4719.55*	*8.12*	*89.62*	*4695.00*	*0.06*	*2.37*	*355.47*	*0.00*	*404372.46*	*768497.80*	*N 32 6 34.47*	*W 103 35 58.79*
	4800.00	8.12	89.62	4774.64	0.06	2.45	366.84	0.00	404372.54	768509.16	N 32 6 34.47	W 103 35 58.66
	4900.00	8.12	89.62	4873.64	0.07	2.54	380.96	0.00	404372.63	768523.29	N 32 6 34.47	W 103 35 58.50
Bell Canyon	*4996.32*	*8.12*	*89.62*	*4969.00*	*0.07*	*2.63*	*394.57*	*0.00*	*404372.72*	*768536.89*	*N 32 6 34.47*	*W 103 35 58.34*
	5000.00	8.12	89.62	4972.64	0.07	2.63	395.08	0.00	404372.72	768537.41	N 32 6 34.47	W 103 35 58.33
	5100.00	8.12	89.62	5071.64	0.07	2.73	409.21	0.00	404372.82	768551.53	N 32 6 34.47	W 103 35 58.17
	5200.00	8.12	89.62	5170.63	0.07	2.82	423.33	0.00	404372.91	768565.66	N 32 6 34.47	W 103 35 58.00
	5300.00	8.12	89.62	5269.63	0.08	2.92	437.45	0.00	404373.01	768579.78	N 32 6 34.47	W 103 35 57.84
	5400.00	8.12	89.62	5368.63	0.08	3.01	451.58	0.00	404373.10	768593.90	N 32 6 34.47	W 103 35 57.68
	5500.00	8.12	89.62	5467.63	0.08	3.10	465.70	0.00	404373.19	768608.03	N 32 6 34.47	W 103 35 57.51
	5600.00	8.12	89.62	5566.62	0.08	3.20	479.83	0.00	404373.29	768622.15	N 32 6 34.47	W 103 35 57.35
	5700.00	8.12	89.62	5665.62	0.09	3.29	493.95	0.00	404373.38	768636.27	N 32 6 34.47	W 103 35 57.18
	5800.00	8.12	89.62	5764.62	0.09	3.39	508.07	0.00	404373.48	768650.39	N 32 6 34.47	W 103 35 57.02
	5900.00	8.12	89.62	5863.62	0.09	3.48	522.20	0.00	404373.57	768664.52	N 32 6 34.47	W 103 35 56.86
	6000.00	8.12	89.62	5962.61	0.09	3.58	536.32	0.00	404373.67	768678.64	N 32 6 34.47	W 103 35 56.69
Cherry Canyon	*6086.25*	*8.12*	*89.62*	*6048.00*	*0.10*	*3.66*	*548.50*	*0.00*	*404373.75*	*768690.82*	*N 32 6 34.47*	*W 103 35 56.55*
	6100.00	8.12	89.62	6061.61	0.10	3.67	550.44	0.00	404373.76	768692.76	N 32 6 34.47	W 103 35 56.53
	6200.00	8.12	89.62	6160.61	0.10	3.76	564.57	0.00	404373.85	768706.89	N 32 6 34.47	W 103 35 56.36
	6300.00	8.12	89.62	6259.61	0.10	3.86	578.69	0.00	404373.95	768721.01	N 32 6 34.47	W 103 35 56.20
	6400.00	8.12	89.62	6358.61	0.10	3.95	592.81	0.00	404374.04	768735.13	N 32 6 34.47	W 103 35 56.03
	6500.00	8.12	89.62	6457.60	0.11	4.05	606.94	0.00	404374.14	768749.26	N 32 6 34.47	W 103 35 55.87
Drop to Vertical 2°/100' DLS	6542.83	8.12	89.62	6500.00	0.11	4.09	612.99	0.00	404374.18	768755.30	N 32 6 34.47	W 103 35 55.80
	6600.00	6.98	89.62	6556.68	0.11	4.14	620.49	2.00	404374.23	768762.81	N 32 6 34.47	W 103 35 55.71
	6700.00	4.98	89.62	6656.13	0.11	4.21	630.91	2.00	404374.30	768773.22	N 32 6 34.47	W 103 35 55.59
	6800.00	2.98	89.62	6755.88	0.11	4.25	637.84	2.00	404374.34	768780.16	N 32 6 34.47	W 103 35 55.51
	6900.00	0.98	89.62	6855.82	0.11	4.28	641.29	2.00	404374.37	768783.60	N 32 6 34.47	W 103 35 55.47
Hold Vertical	6948.80	0.00	89.62	6904.62	0.11	4.28	641.70	2.00	404374.37	768784.02	N 32 6 34.47	W 103 35 55.47
	7000.00	0.00	89.62	6955.82	0.11	4.28	641.70	0.00	404374.37	768784.02	N 32 6 34.47	W 103 35 55.47
	7100.00	0.00	89.62	7055.82	0.11	4.28	641.70	0.00	404374.37	768784.02	N 32 6 34.47	W 103 35 55.47
	7200.00	0.00	89.62	7155.82	0.11	4.28	641.70	0.00	404374.37	768784.02	N 32 6 34.47	W 103 35 55.47
	7300.00	0.00	89.62	7255.82	0.11	4.28	641.70	0.00	404374.37	768784.02	N 32 6 34.47	W 103 35 55.47
	7400.00	0.00	89.62	7355.82	0.11	4.28	641.70	0.00	404374.37	768784.02	N 32 6 34.47	W 103 35 55.47
	7500.00	0.00	89.62	7455.82	0.11	4.28	641.70	0.00	404374.37	768784.02	N 32 6 34.47	W 103 35 55.47
Brushy Canyon	*7569.18*	*0.00*	*89.62*	*7525.00*	*0.11*	*4.28*	*641.70*	*0.00*	*404374.37*	*768784.02*	*N 32 6 34.47*	*W 103 35 55.47*

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	89.62	7555.82	0.11	4.28	641.70	0.00	404374.37	768784.02	N 32 6 34.47	W 103 35 55.47
	7700.00	0.00	89.62	7655.82	0.11	4.28	641.70	0.00	404374.37	768784.02	N 32 6 34.47	W 103 35 55.47
	7800.00	0.00	89.62	7755.82	0.11	4.28	641.70	0.00	404374.37	768784.02	N 32 6 34.47	W 103 35 55.47
	7900.00	0.00	89.62	7855.82	0.11	4.28	641.70	0.00	404374.37	768784.02	N 32 6 34.47	W 103 35 55.47
	8000.00	0.00	89.62	7955.82	0.11	4.28	641.70	0.00	404374.37	768784.02	N 32 6 34.47	W 103 35 55.47
	8100.00	0.00	89.62	8055.82	0.11	4.28	641.70	0.00	404374.37	768784.02	N 32 6 34.47	W 103 35 55.47
	8200.00	0.00	89.62	8155.82	0.11	4.28	641.70	0.00	404374.37	768784.02	N 32 6 34.47	W 103 35 55.47
	8300.00	0.00	89.62	8255.82	0.11	4.28	641.70	0.00	404374.37	768784.02	N 32 6 34.47	W 103 35 55.47
	8400.00	0.00	89.62	8355.82	0.11	4.28	641.70	0.00	404374.37	768784.02	N 32 6 34.47	W 103 35 55.47
	8500.00	0.00	89.62	8455.82	0.11	4.28	641.70	0.00	404374.37	768784.02	N 32 6 34.47	W 103 35 55.47
	8600.00	0.00	89.62	8555.82	0.11	4.28	641.70	0.00	404374.37	768784.02	N 32 6 34.47	W 103 35 55.47
	8700.00	0.00	89.62	8655.82	0.11	4.28	641.70	0.00	404374.37	768784.02	N 32 6 34.47	W 103 35 55.47
	8800.00	0.00	89.62	8755.82	0.11	4.28	641.70	0.00	404374.37	768784.02	N 32 6 34.47	W 103 35 55.47
	8900.00	0.00	89.62	8855.82	0.11	4.28	641.70	0.00	404374.37	768784.02	N 32 6 34.47	W 103 35 55.47
KOP- Build 12°/100' DLS	8906.72	0.00	89.62	8862.54	0.11	4.28	641.70	0.00	404374.37	768784.02	N 32 6 34.47	W 103 35 55.47
	9000.00	11.19	359.63	8955.22	9.20	13.36	641.64	12.00	404383.45	768783.96	N 32 6 34.56	W 103 35 55.47
	9100.00	23.19	359.63	9050.58	38.70	42.87	641.45	12.00	404412.96	768783.77	N 32 6 34.85	W 103 35 55.47
Bone Spring Lime	*9171.56*	*31.78*	*359.63*	*9114.00*	*71.70*	*75.86*	*641.24*	*12.00*	*404445.95*	*768783.56*	*N 32 6 35.17*	*W 103 35 55.47*
	9200.00	35.19	359.63	9137.72	87.39	91.55	641.14	12.00	404461.64	768783.45	N 32 6 35.33	W 103 35 55.47
Leonard Shale	*9215.20*	*37.02*	*359.63*	*9150.00*	*96.35*	*100.51*	*641.08*	*12.00*	*404470.60*	*768783.40*	*N 32 6 35.42*	*W 103 35 55.47*
	9300.00	47.19	359.63	9212.83	153.13	157.29	640.71	12.00	404527.38	768783.03	N 32 6 35.98	W 103 35 55.47
	9400.00	59.19	359.63	9272.63	233.05	237.21	640.19	12.00	404607.29	768782.51	N 32 6 36.77	W 103 35 55.46
	9500.00	71.19	359.63	9314.51	323.66	327.82	639.60	12.00	404697.89	768781.92	N 32 6 37.67	W 103 35 55.46
	9600.00	83.19	359.63	9336.64	420.99	425.15	638.97	12.00	404795.22	768781.29	N 32 6 38.63	W 103 35 55.46
Leonard Target Landing Point	9656.72	90.00	359.63	9340.00	477.58	481.73	638.60	12.00	404851.81	768780.92	N 32 6 39.19	W 103 35 55.46
	9700.00	90.00	359.63	9340.00	520.86	525.01	638.32	0.00	404895.09	768780.64	N 32 6 39.62	W 103 35 55.46
	9800.00	90.00	359.63	9340.00	620.86	625.01	637.67	0.00	404995.08	768779.99	N 32 6 40.61	W 103 35 55.46
	9900.00	90.00	359.63	9340.00	720.86	725.01	637.02	0.00	405095.07	768779.34	N 32 6 41.60	W 103 35 55.46
	10000.00	90.00	359.63	9340.00	820.86	825.01	636.37	0.00	405195.07	768778.69	N 32 6 42.59	W 103 35 55.46
	10100.00	90.00	359.63	9340.00	920.86	925.00	635.72	0.00	405295.06	768778.04	N 32 6 43.58	W 103 35 55.46
	10200.00	90.00	359.63	9340.00	1020.86	1025.00	635.08	0.00	405395.06	768777.39	N 32 6 44.57	W 103 35 55.46
	10300.00	90.00	359.63	9340.00	1120.86	1125.00	634.43	0.00	405495.05	768776.74	N 32 6 45.56	W 103 35 55.46
	10400.00	90.00	359.63	9340.00	1220.86	1225.00	633.78	0.00	405595.05	768776.10	N 32 6 46.55	W 103 35 55.46
	10500.00	90.00	359.63	9340.00	1320.86	1325.00	633.13	0.00	405695.04	768775.45	N 32 6 47.53	W 103 35 55.46
	10600.00	90.00	359.63	9340.00	1420.86	1424.99	632.48	0.00	405795.04	768774.80	N 32 6 48.52	W 103 35 55.46
	10700.00	90.00	359.63	9340.00	1520.86	1524.99	631.83	0.00	405895.03	768774.15	N 32 6 49.51	W 103 35 55.46
	10800.00	90.00	359.63	9340.00	1620.86	1624.99	631.18	0.00	405995.02	768773.50	N 32 6 50.50	W 103 35 55.46
	10900.00	90.00	359.63	9340.00	1720.86	1724.99	630.53	0.00	406095.02	768772.85	N 32 6 51.49	W 103 35 55.46
	11000.00	90.00	359.63	9340.00	1820.86	1824.99	629.88	0.00	406195.01	768772.20	N 32 6 52.48	W 103 35 55.46
	11100.00	90.00	359.63	9340.00	1920.86	1924.98	629.23	0.00	406295.01	768771.55	N 32 6 53.47	W 103 35 55.46
	11200.00	90.00	359.63	9340.00	2020.86	2024.98	628.58	0.00	406395.00	768770.90	N 32 6 54.46	W 103 35 55.46
	11300.00	90.00	359.63	9340.00	2120.86	2124.98	627.93	0.00	406495.00	768770.25	N 32 6 55.45	W 103 35 55.46
	11400.00	90.00	359.63	9340.00	2220.86	2224.98	627.28	0.00	406594.99	768769.60	N 32 6 56.44	W 103 35 55.46
	11500.00	90.00	359.63	9340.00	2320.86	2324.97	626.64	0.00	406694.99	768768.95	N 32 6 57.43	W 103 35 55.46
	11600.00	90.00	359.63	9340.00	2420.86	2424.97	625.99	0.00	406794.98	768768.30	N 32 6 58.42	W 103 35 55.46
	11700.00	90.00	359.63	9340.00	2520.86	2524.97	625.34	0.00	406894.97	768767.66	N 32 6 59.41	W 103 35 55.46
	11800.00	90.00	359.63	9340.00	2620.86	2624.97	624.69	0.00	406994.97	768767.01	N 32 7 0.40	W 103 35 55.46
	11900.00	90.00	359.63	9340.00	2720.86	2724.97	624.04	0.00	407094.96	768766.36	N 32 7 1.39	W 103 35 55.46
	12000.00	90.00	359.63	9340.00	2820.86	2824.96	623.39	0.00	407194.96	768765.71	N 32 7 2.38	W 103 35 55.46
	12100.00	90.00	359.63	9340.00	2920.86	2924.96	622.74	0.00	407294.95	768765.06	N 32 7 3.37	W 103 35 55.45
	12200.00	90.00	359.63	9340.00	3020.86	3024.96	622.09	0.00	407394.95	768764.41	N 32 7 4.36	W 103 35 55.45
	12300.00	90.00	359.63	9340.00	3120.86	3124.96	621.44	0.00	407494.94	768763.76	N 32 7 5.35	W 103 35 55.45
	12400.00	90.00	359.63	9340.00	3220.86	3224.96	620.79	0.00	407594.94	768763.11	N 32 7 6.34	W 103 35 55.45
	12500.00	90.00	359.63	9340.00	3320.86	3324.95	620.14	0.00	407694.93	768762.46	N 32 7 7.33	W 103 35 55.45
	12600.00	90.00	359.63	9340.00	3420.86	3424.95	619.49	0.00	407794.93	768761.81	N 32 7 8.32	W 103 35 55.45
	12700.00	90.00	359.63	9340.00	3520.86	3524.95	618.84	0.00	407894.92	768761.16	N 32 7 9.30	W 103 35 55.45

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	359.63	9340.00	3620.86	3624.95	618.20	0.00	407994.91	768760.51	N 32 7 10.29	W 103 35 55.45
	12900.00	90.00	359.63	9340.00	3720.86	3724.95	617.55	0.00	408094.91	768759.87	N 32 7 11.28	W 103 35 55.45
	13000.00	90.00	359.63	9340.00	3820.86	3824.94	616.90	0.00	408194.90	768759.22	N 32 7 12.27	W 103 35 55.45
	13100.00	90.00	359.63	9340.00	3920.86	3924.94	616.25	0.00	408294.90	768758.57	N 32 7 13.26	W 103 35 55.45
	13200.00	90.00	359.63	9340.00	4020.86	4024.94	615.60	0.00	408394.89	768757.92	N 32 7 14.25	W 103 35 55.45
	13300.00	90.00	359.63	9340.00	4120.86	4124.94	614.95	0.00	408494.89	768757.27	N 32 7 15.24	W 103 35 55.45
	13400.00	90.00	359.63	9340.00	4220.86	4224.93	614.30	0.00	408594.88	768756.62	N 32 7 16.23	W 103 35 55.45
	13500.00	90.00	359.63	9340.00	4320.86	4324.93	613.65	0.00	408694.88	768755.97	N 32 7 17.22	W 103 35 55.45
	13600.00	90.00	359.63	9340.00	4420.86	4424.93	613.00	0.00	408794.87	768755.32	N 32 7 18.21	W 103 35 55.45
	13700.00	90.00	359.63	9340.00	4520.86	4524.93	612.35	0.00	408894.86	768754.67	N 32 7 19.20	W 103 35 55.45
	13800.00	90.00	359.63	9340.00	4620.86	4624.93	611.70	0.00	408994.86	768754.02	N 32 7 20.19	W 103 35 55.45
	13900.00	90.00	359.63	9340.00	4720.86	4724.92	611.05	0.00	409094.85	768753.37	N 32 7 21.18	W 103 35 55.45
	14000.00	90.00	359.63	9340.00	4820.86	4824.92	610.40	0.00	409194.85	768752.72	N 32 7 22.17	W 103 35 55.45
	14100.00	90.00	359.63	9340.00	4920.86	4924.92	609.76	0.00	409294.84	768752.07	N 32 7 23.16	W 103 35 55.45
	14200.00	90.00	359.63	9340.00	5020.86	5024.92	609.11	0.00	409394.84	768751.43	N 32 7 24.15	W 103 35 55.45
	14300.00	90.00	359.63	9340.00	5120.86	5124.92	608.46	0.00	409494.83	768750.78	N 32 7 25.14	W 103 35 55.45
	14400.00	90.00	359.63	9340.00	5220.86	5224.91	607.81	0.00	409594.83	768750.13	N 32 7 26.13	W 103 35 55.45
	14500.00	90.00	359.63	9340.00	5320.86	5324.91	607.16	0.00	409694.82	768749.48	N 32 7 27.12	W 103 35 55.45
	14600.00	90.00	359.63	9340.00	5420.86	5424.91	606.51	0.00	409794.82	768748.83	N 32 7 28.11	W 103 35 55.45
	14700.00	90.00	359.63	9340.00	5520.86	5524.91	605.86	0.00	409894.81	768748.18	N 32 7 29.10	W 103 35 55.44
	14800.00	90.00	359.63	9340.00	5620.86	5624.91	605.21	0.00	409994.80	768747.53	N 32 7 30.08	W 103 35 55.44
	14900.00	90.00	359.63	9340.00	5720.86	5724.90	604.56	0.00	410094.80	768746.88	N 32 7 31.07	W 103 35 55.44
	15000.00	90.00	359.63	9340.00	5820.86	5824.90	603.91	0.00	410194.79	768746.23	N 32 7 32.06	W 103 35 55.44
	15100.00	90.00	359.63	9340.00	5920.86	5924.90	603.26	0.00	410294.79	768745.58	N 32 7 33.05	W 103 35 55.44
	15200.00	90.00	359.63	9340.00	6020.86	6024.90	602.61	0.00	410394.78	768744.93	N 32 7 34.04	W 103 35 55.44
	15300.00	90.00	359.63	9340.00	6120.86	6124.89	601.96	0.00	410494.78	768744.28	N 32 7 35.03	W 103 35 55.44
	15400.00	90.00	359.63	9340.00	6220.86	6224.89	601.32	0.00	410594.77	768743.63	N 32 7 36.02	W 103 35 55.44
	15500.00	90.00	359.63	9340.00	6320.86	6324.89	600.67	0.00	410694.77	768742.99	N 32 7 37.01	W 103 35 55.44
	15600.00	90.00	359.63	9340.00	6420.86	6424.89	600.02	0.00	410794.76	768742.34	N 32 7 38.00	W 103 35 55.44
	15700.00	90.00	359.63	9340.00	6520.86	6524.89	599.37	0.00	410894.75	768741.69	N 32 7 38.99	W 103 35 55.44
	15800.00	90.00	359.63	9340.00	6620.86	6624.88	598.72	0.00	410994.75	768741.04	N 32 7 39.98	W 103 35 55.44
	15900.00	90.00	359.63	9340.00	6720.86	6724.88	598.07	0.00	411094.74	768740.39	N 32 7 40.97	W 103 35 55.44
	16000.00	90.00	359.63	9340.00	6820.86	6824.88	597.42	0.00	411194.74	768739.74	N 32 7 41.96	W 103 35 55.44
	16100.00	90.00	359.63	9340.00	6920.86	6924.88	596.77	0.00	411294.73	768739.09	N 32 7 42.95	W 103 35 55.44
	16200.00	90.00	359.63	9340.00	7020.86	7024.88	596.12	0.00	411394.73	768738.44	N 32 7 43.94	W 103 35 55.44
	16300.00	90.00	359.63	9340.00	7120.86	7124.87	595.47	0.00	411494.72	768737.79	N 32 7 44.93	W 103 35 55.44
	16400.00	90.00	359.63	9340.00	7220.86	7224.87	594.82	0.00	411594.72	768737.14	N 32 7 45.92	W 103 35 55.44
	16500.00	90.00	359.63	9340.00	7320.86	7324.87	594.17	0.00	411694.71	768736.49	N 32 7 46.91	W 103 35 55.44
	16600.00	90.00	359.63	9340.00	7420.86	7424.87	593.52	0.00	411794.71	768735.84	N 32 7 47.90	W 103 35 55.44
	16700.00	90.00	359.63	9340.00	7520.86	7524.87	592.88	0.00	411894.70	768735.20	N 32 7 48.89	W 103 35 55.44
	16800.00	90.00	359.63	9340.00	7620.86	7624.86	592.23	0.00	411994.69	768734.55	N 32 7 49.88	W 103 35 55.44
	16900.00	90.00	359.63	9340.00	7720.86	7724.86	591.58	0.00	412094.69	768733.90	N 32 7 50.86	W 103 35 55.44
	17000.00	90.00	359.63	9340.00	7820.86	7824.86	590.93	0.00	412194.68	768733.25	N 32 7 51.85	W 103 35 55.44
	17100.00	90.00	359.63	9340.00	7920.86	7924.86	590.28	0.00	412294.68	768732.60	N 32 7 52.84	W 103 35 55.44
	17200.00	90.00	359.63	9340.00	8020.86	8024.85	589.63	0.00	412394.67	768731.95	N 32 7 53.83	W 103 35 55.44
	17300.00	90.00	359.63	9340.00	8120.86	8124.85	588.98	0.00	412494.67	768731.30	N 32 7 54.82	W 103 35 55.44
	17400.00	90.00	359.63	9340.00	8220.86	8224.85	588.33	0.00	412594.66	768730.65	N 32 7 55.81	W 103 35 55.43
	17500.00	90.00	359.63	9340.00	8320.86	8324.85	587.68	0.00	412694.66	768730.00	N 32 7 56.80	W 103 35 55.43
	17600.00	90.00	359.63	9340.00	8420.86	8424.85	587.03	0.00	412794.65	768729.35	N 32 7 57.79	W 103 35 55.43
	17700.00	90.00	359.63	9340.00	8520.86	8524.84	586.38	0.00	412894.64	768728.70	N 32 7 58.78	W 103 35 55.43
	17800.00	90.00	359.63	9340.00	8620.86	8624.84	585.73	0.00	412994.64	768728.05	N 32 7 59.77	W 103 35 55.43
	17900.00	90.00	359.63	9340.00	8720.86	8724.84	585.08	0.00	413094.63	768727.40	N 32 8 0.76	W 103 35 55.43
	18000.00	90.00	359.63	9340.00	8820.86	8824.84	584.44	0.00	413194.63	768726.76	N 32 8 1.75	W 103 35 55.43
	18100.00	90.00	359.63	9340.00	8920.86	8924.84	583.79	0.00	413294.62	768726.11	N 32 8 2.74	W 103 35 55.43
	18200.00	90.00	359.63	9340.00	9020.86	9024.83	583.14	0.00	413394.62	768725.46	N 32 8 3.73	W 103 35 55.43
	18300.00	90.00	359.63	9340.00	9120.86	9124.83	582.49	0.00	413494.61	768724.81	N 32 8 4.72	W 103 35 55.43
	18400.00	90.00	359.63	9340.00	9220.86	9224.83	581.84	0.00	413594.61	768724.16	N 32 8 5.71	W 103 35 55.43
	18500.00	90.00	359.63	9340.00	9320.86	9324.83	581.19	0.00	413694.60	768723.51	N 32 8 6.70	W 103 35 55.43
	18600.00	90.00	359.63	9340.00	9420.86	9424.83	580.54	0.00	413794.59	768722.86	N 32 8 7.69	W 103 35 55.43

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 ° ' ")
	18700.00	90.00	359.63	9340.00	9520.86	9524.82	579.89	0.00	413894.59	768722.21	N 32 8 8.68	W 103 35 55.43
	18800.00	90.00	359.63	9340.00	9620.86	9624.82	579.24	0.00	413994.58	768721.56	N 32 8 9.67	W 103 35 55.43
	18900.00	90.00	359.63	9340.00	9720.86	9724.82	578.59	0.00	414094.58	768720.91	N 32 8 10.66	W 103 35 55.43
	19000.00	90.00	359.63	9340.00	9820.86	9824.82	577.94	0.00	414194.57	768720.26	N 32 8 11.64	W 103 35 55.43
	19100.00	90.00	359.63	9340.00	9920.86	9924.81	577.29	0.00	414294.57	768719.61	N 32 8 12.63	W 103 35 55.43
	19200.00	90.00	359.63	9340.00	10020.86	10024.81	576.64	0.00	414394.56	768718.96	N 32 8 13.62	W 103 35 55.43
	19300.00	90.00	359.63	9340.00	10120.86	10124.81	576.00	0.00	414494.56	768718.32	N 32 8 14.61	W 103 35 55.43
Cimarex Vaca Draw 20-17 Federal #16H - PBHL [100' FNL,1272' FWL]	19368.65	90.00	359.63	9340.00	10189.50	10193.46	575.55	0.00	414563.20	768717.87	N 32 8 15.29	W 103 35 55.43

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	17.500	13.375		NAL_MWD_IFR1+MS-Depth Only	Vaca Draw 20-17 Federal #16H / Cimarex Vaca Draw 20-17 Federal #16H Rev0 RM 20Jan20
	1	26.000	19368.647	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS	Vaca Draw 20-17 Federal #16H / Cimarex Vaca Draw 20-17

Schlumberger

Cimarex Energy

Rev 0

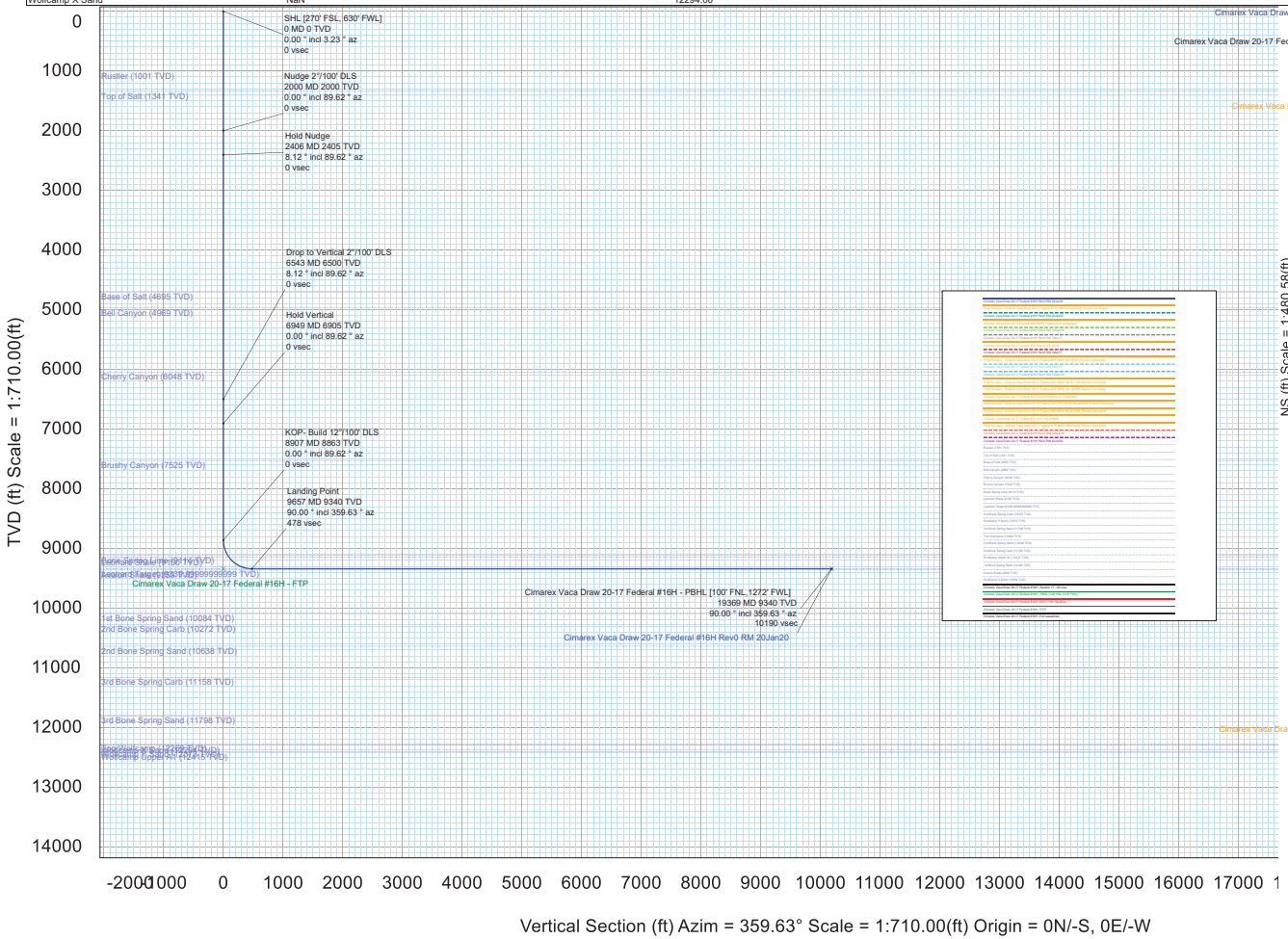
CIMAREX

Borehole:	Well:	Field:	Structure:
Vaca Draw 20-17 Federal #16H	Vaca Draw 20-17 Federal #16H	NM Lea County (NAD 83)	Cimarex Vaca Draw 20-17 Federal #16H

Gravity & Magnetic Parameters						Surface Location	NAD83 New Mexico State Plane, Eastern Zone, US Feet					Miscellaneous			
Model:	HDGM 2019	Dip:	59.694°	Date:	20-Jan-2020	Lat:	N 32 6 34.47	Northing:	404370.09ftUS	Grid Conv:	0.3894°	Slot:	New Slot	TVD Ref:	RKB(3448.9ft above MSL)
MagDec:	6.583°	FS:	47707.386nT	Gravity FS:	998.429mgn (9.80665 Based)	Lon:	W 103 36 2.93	Easting:	768142.34ftUS	Scale Fact:	0.99996801	Plan:	Cimarex Vaca Draw 20-17 Federal #16H Rev0 RM 20Jan20		

Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL [270' FSL, 630' FWL]	0.00	0.00	3.23	0.00	0.00	0.00	0.00	
Rustler	1001.00	0.00	89.62	1001.00	0.00	0.00	0.00	0.00
Top of Salt	1341.00	0.00	89.62	1341.00	0.00	0.00	0.00	0.00
Nudge 2°/100' DLS	2000.00	0.00	89.62	2000.00	0.00	0.00	0.00	0.00
Hold Nudge	2405.98	8.12	89.62	2404.62	0.01	0.19	28.72	2.00
Base of Salt	4719.55	8.12	89.62	4695.00	0.06	2.37	355.47	0.00
Bell Canyon	4996.32	8.12	89.62	4969.00	0.07	2.63	394.57	0.00
Cherry Canyon	6086.25	8.12	89.62	6048.00	0.10	3.66	548.50	0.00
Drop to Vertical 2°/100' DLS	6542.83	8.12	89.62	6500.00	0.11	4.09	612.99	0.00
Hold Vertical	6948.80	0.00	89.62	6904.62	0.11	4.28	641.70	2.00
Brushy Canyon	7569.18	0.00	89.62	7525.00	0.11	4.28	641.70	0.00
KOP- Build 12°/100' DLS	8906.72	0.00	89.62	8862.54	0.11	4.28	641.70	0.00
Bone Spring Lime	9171.56	31.78	359.63	9114.00	71.70	75.86	641.24	12.00
Leonard Shale	9215.20	37.02	359.63	9150.00	96.35	100.51	641.08	12.00
Landing Point	9656.72	90.00	359.63	9340.00	477.58	481.73	638.60	12.00
Leonard Target	9656.72	90.00	359.63	9340.00	477.58	481.73	638.60	12.00
Cimarex Vaca Draw 20-17 Federal #16H - PBHL [100' FNL,1272' FWL]	19368.65	90.00	359.63	9340.00	10189.50	10193.46	575.55	0.00
2nd Bone Spring Carb	NaN			10272.00				
Wolfcamp Y Sand	NaN			12373.00				
3rd Bone Spring Sand	NaN			11798.00				
Top Wolfcamp	NaN			12269.00				
2nd Bone Spring Sand	NaN			10638.00				
3rd Bone Spring Carb	NaN			11158.00				
Wolfcamp Upper A1	NaN			12415.00				
1st Bone Spring Sand	NaN			10084.00				
Avalon Shale	NaN			9359.00				
Wolfcamp X Sand	NaN			12294.00				



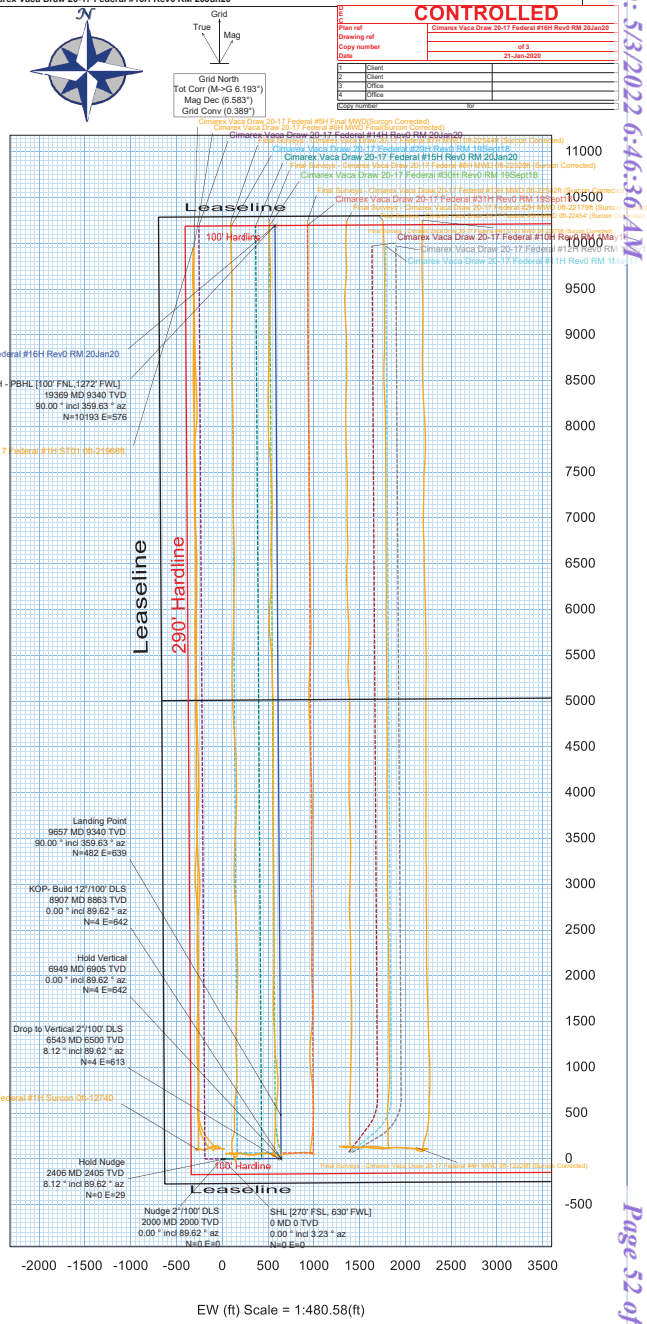


Exhibit F – Co-Flex Hose
Vaca Draw 20-17 Fed 16H
Cimarex Energy Co.
20-25S-33E
Lea County, NM

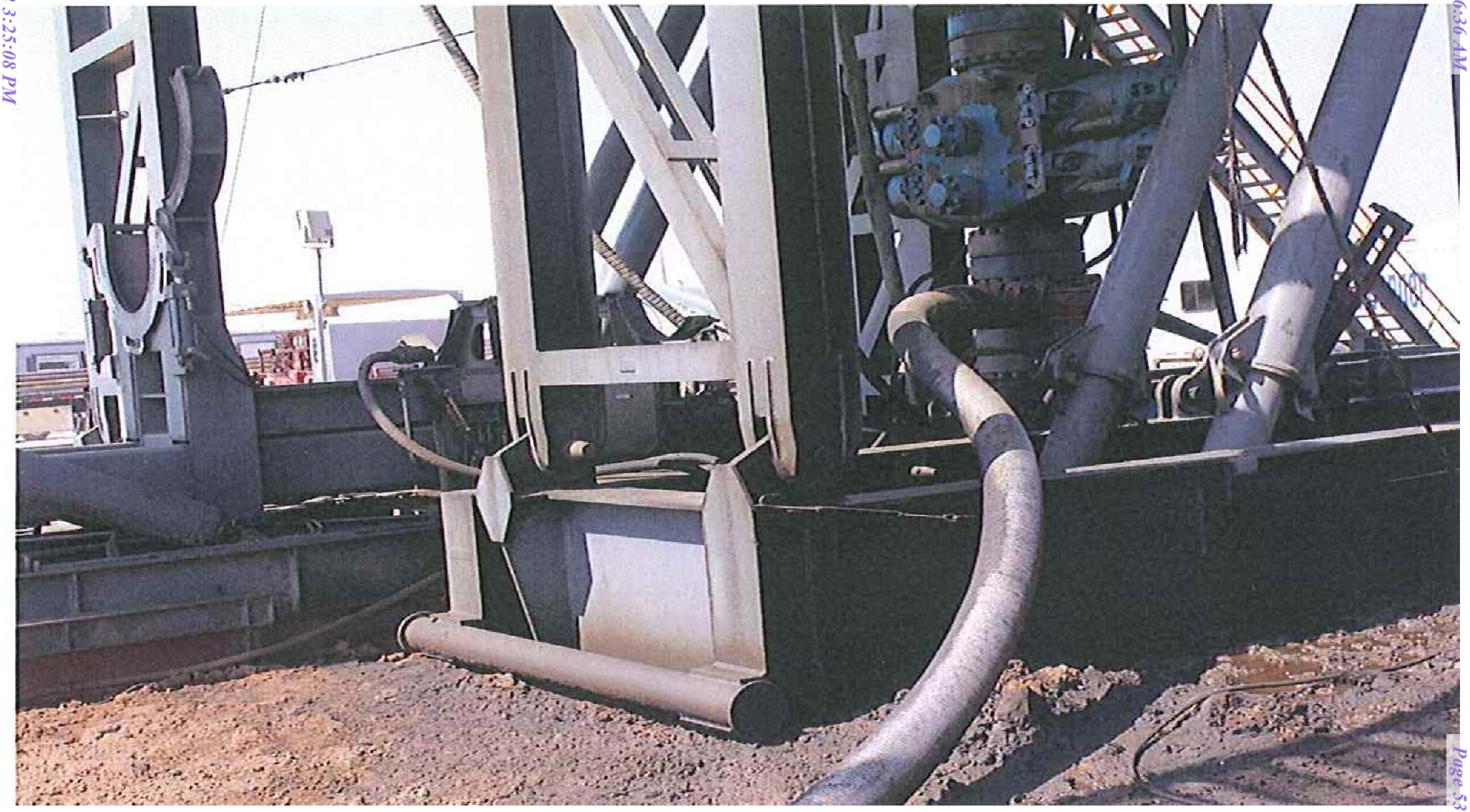


Exhibit F-1 –
Co-Flex Hose Hydrostatic Test
Vaca Draw 20-17 Fed 16H
Cimarex Energy Co.
20-25S-33E
Lea County, NM

Midwest Hose & Specialty, Inc.

INTERNAL HYDROSTATIC TEST REPORT

Customer:	P.O. Number:
Oderco Inc	odyd-271

HOSE SPECIFICATIONS

Type: Stainless Steel Armor Choke & Kill Hose	Hose Length: 45'ft.
I.D. 4 INCHES	O.D. 9 INCHES

WORKING PRESSURE	TEST PRESSURE	BURST PRESSURE
10,000 PSI	15,000 PSI	0 PSI

COUPLINGS

Stem Part No.	Ferrule No.
OKC OKC	OKC OKC
Type of Coupling: Swage-It	

PROCEDURE

Hose assembly pressure tested with water at ambient temperature.

TIME HELD AT TEST PRESSURE	ACTUAL BURST PRESSURE:
15 MIN.	0 PSI
Hose Assembly Serial Number:	Hose Serial Number:
79793	OKC

Comments:

Date:	Tested:	Approved:
3/8/2011	A. Jaime Sanchez	

Midwest Hose & Specialty, Inc.

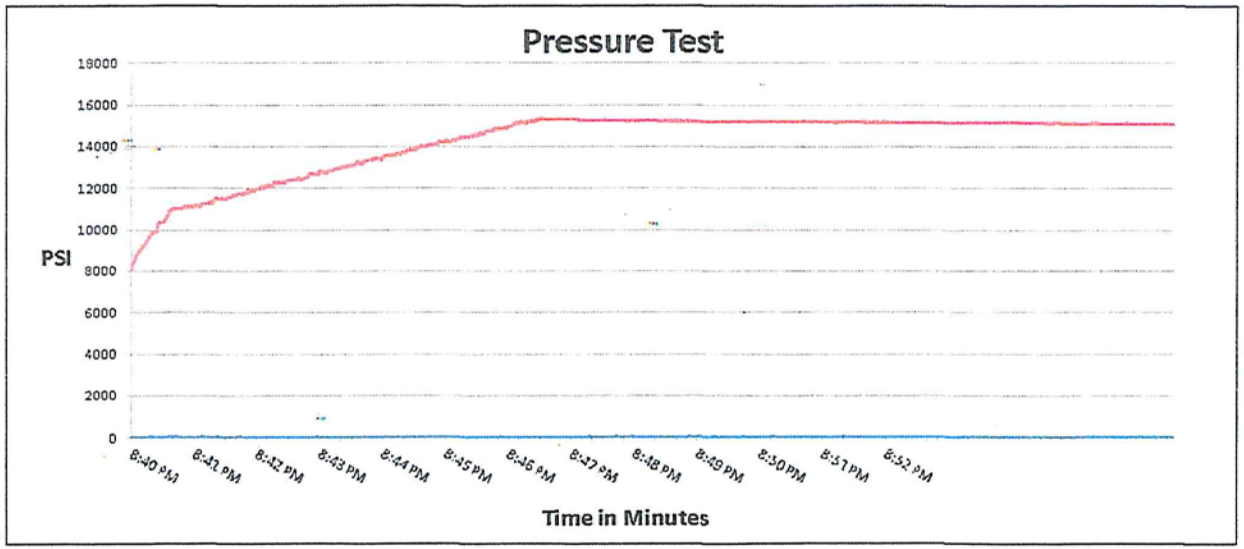
Internal Hydrostatic Test Graph

March 3, 2011

Customer: Houston

Pick Ticket #: 94260

Hose Specifications		Verification	
Hose Type	Length	Type of Fitting	Coupling Method
C & K	45'	4 1/16 10K	Swage
I.D.	O.D.	Die Size	Final O.D.
4"	6.09"	6.38"	6.25"
Working Pressure	Burst Pressure	Hose Serial #	Hose Assembly Serial #
10000 PSI	Standard Safety Multiplier Applies	5544	79793



Test Pressure	Time Held at Test Pressure	Actual Burst Pressure	Peak Pressure
15000 PSI	11 Minutes		15483 PSI

Comments: Hose assembly pressure tested with water at ambient temperature.

Tested By: *Zac Mcconnell*

Approved By: *Kim Thomas*

Exhibit F-1 – Co-Flex Hose Hydrostatic Test
Vaca Draw 20-17 Fed 16H
Cimarex Energy Co.
20-25S-33E
Lea County, NM

Exhibit F-2 – Co-Flex Hose
Vaca Draw 20-17 Fed 16H
Cimarex Energy Co.
20-25S-33E
Lea County, NM

Midwest Hose
& Specialty, Inc.

Certificate of Conformity	
Customer: DEM	**PO** ODYD-271
SPECIFICATIONS	
Sales Order 79793	**Dated:** 3/8/2011

We hereby cerify that the material supplied for the referenced purchase order to be true according to the requirements of the purchase order and current industry standards

Supplier:
Midwest Hose & Specialty, Inc.
10640 Tanner Road
Houston, Texas 77041

Comments:	
Approved: Jamal Garcia	**Date:** 3/8/2011

Exhibit F -3– Co-Flex Hose
Vaca Draw 20-17 Fed 16H
Cimarex Energy Co.
20-25S-33E
Lea County, NM

Midwest Hose & Specialty, Inc.

Specification Sheet
Choke & Kill Hose

The Midwest Hose & Specialty Choke & Kill hose is manufactured with only premium componets.The reinforcement cables, inner liner and cover are made of the highest quality material to handle the tough drilling applications of today's industry. The end connections are available with API flanges, API male threads, hubs, hammer unions or other special fittings upon request. Hose assembly is manufactured to API 7K. This assembly is wrapped with fire resistant vermculite coated fiberglass insulation, rated at 2000 degrees with stainless steel armor cover.

Working Pressure:	5,000 or 10,000 psi working pressure
Test Pressure:	10,000 or 15,000 psi test pressure
Reinforcement:	Multiple steel cables
Cover:	Stainless Steel Armor
Inner Tube:	Petroleum resistant, Abrasion resistant
End Fitting:	API flanges, API male threads, threaded or butt weld hammer unions, unibolt and other special connections
Maximum Length:	110 Feet
ID:	2-1/2", 3", 3-1/2", 4"
Operating Temperature:	-22 deg F to +180 deg F (-30 deg C to +82 deg C)

P.O. Box 96558 – 1421 S.E. 29th St. Oklahoma City, OK 73143 * (405) 670-6718 * Fax: (405) 670-6816

1. Geological Formations

TVD of target 9,340
MD at TD 19,368

Pilot Hole TD N/A
Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
RUSTLER	1001	Usable Water	
TOP OF SALT	1341	N/A	
BASE OF SALT	4695	N/A	
BELL CANYON	4969	N/A	
CHERRY CANYON	6048	Hydrocarbons	
BRUSHY CANYON	7525	Hydrocarbons	
BONE SPRING	9114	Hydrocarbons	
UPPER AVALON SHALE	9340	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	1051	1051	13-3/8"	48.00	H-40/J-55 Hybrid	ST&C	1.63	3.80	6.38
12 1/4	0	4915	4915	9-5/8"	40.00	J-55	BT&C	1.54	1.50	3.20
8 3/4	0	8006	8006	7"	29.00	L-80	LT&C	1.87	2.18	2.17
8 3/4	8006	9550	9320	7"	29.00	L-80	BT&C	1.61	1.87	17.74
6	7906	19368	9340	4-1/2"	13.50	P-110	BT&C	2.00	2.32	21.80
					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

	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?	Y

3. Cementing Program

Casing	# Sks	Wt. lb/gal	Yld ft3/sack	H2O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	509	13.50	1.72	9.15	15.5	Lead: Class C + Bentonite
	137	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate	931	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
	287	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Production	215	10.30	3.64	22.18		Lead: Tuned Light + LCM
	91	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Completion System	729	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	4715	25
Completion System	9350	10

Cimarex request the ability to perform casing integrity tests after plug bump of cement job.

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	2M
			Blind Ram		
			Pipe Ram		
			Double Ram	X	
			Other		
8 3/4	13 5/8	2M	Annular	X	2M
			Blind Ram		
			Pipe Ram		
			Double Ram	X	
			Other		
6	13 5/8	5M	Annular	X	5M
			Blind Ram		
			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.

	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 1051'	Fresh Water	7.83 - 8.33	28	N/C
1051' to 4915'	Brine Water	9.80 - 10.30	30-32	N/C
4915' to 9550'	Cut Brine or OBM	8.50 - 9.00	27-70	N/C
9550' to 19368'	OBM	10.50 - 11.00	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.

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	5342 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.	
	H2S is present
	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 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 100% 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.

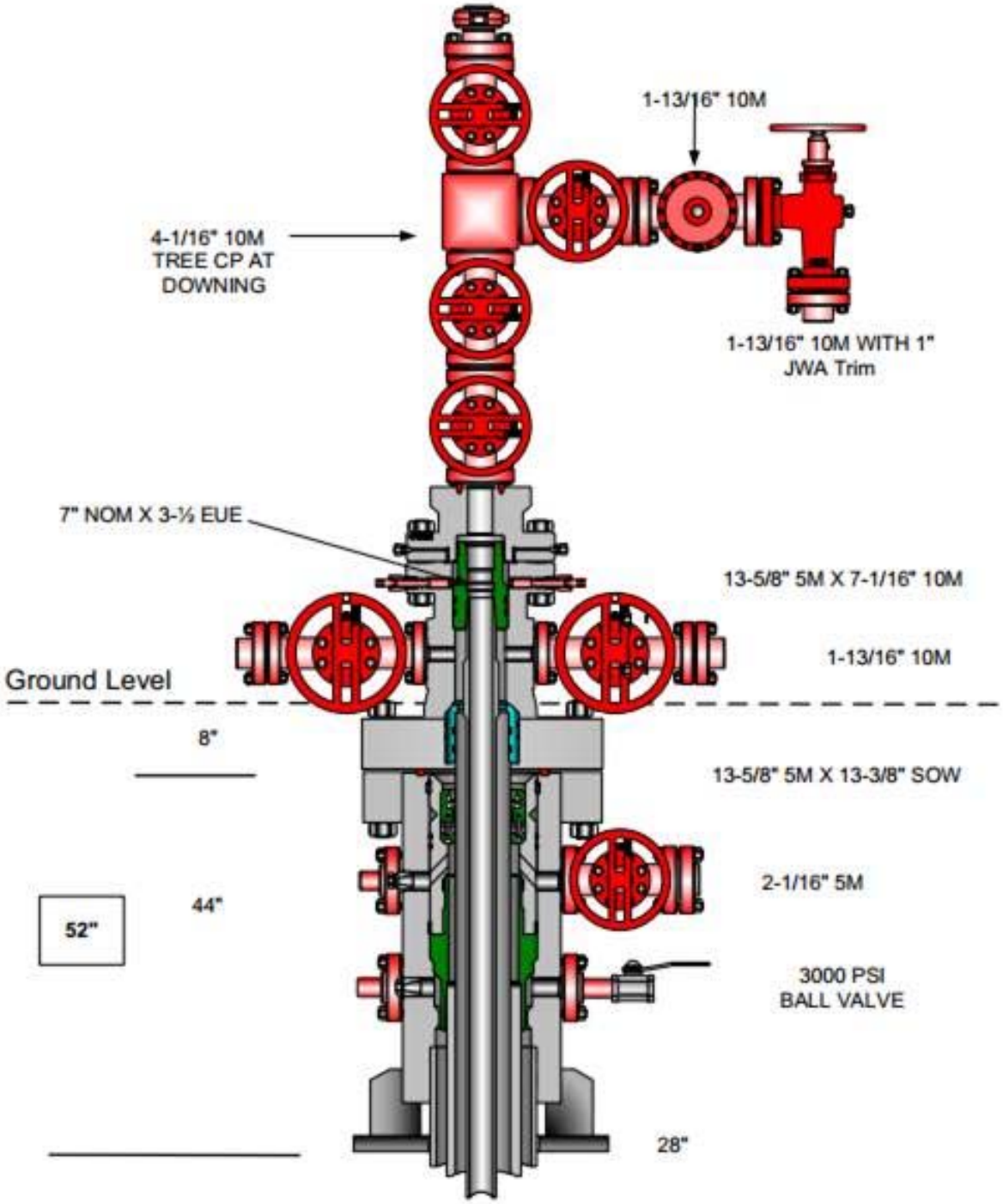
A solid steel body pack-off will be utilized after running and cementing the intermediate casing. After installation the pack-off and lower flange will be pressure tested to 5000 psi.

A solid steel body pack-off will be utilized after running and cementing the production casing. After installation the pack-off and lower flange will be pressure tested to 5000 psi.

All casing strings will be tested as per Onshore Order No.2 to atleast 0.22 psi/ft or 1,500 whichever is greater and not to exceed 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



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	1051	1051	13-3/8"	48.00	H-40/J-55 Hybrid	ST&C	1.63	3.80	6.38
12 1/4	0	4915	4915	9-5/8"	40.00	J-55	BT&C	1.54	1.50	3.20
8 3/4	0	8006	8006	7"	29.00	L-80	LT&C	1.87	2.18	2.17
8 3/4	8006	9550	9320	7"	29.00	L-80	BT&C	1.61	1.87	17.74
6	7906	19368	9340	4-1/2"	13.50	P-110	BT&C	2.00	2.32	21.80
						BLM Minimum Safety Factor		1.125	1	1.6 Dry 1.8 Wet

TVD may vary slightly due to rounding.
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

Multi-bowl Wellhead Diagram
Vaca Draw 20-17 Fed #16H
Cimarex Energy Co.
20-25S-33E
Lea County, NM

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

SUPO Data Report
05/27/2021

APD ID: 10400037875
Submission Date: 01/15/2019
Operator Name: CIMAREX ENERGY COMPANY
Well Name: VACA DRAW 20-17 FEDERAL
Well Number: 16H
Well Type: OIL WELL
Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

Vaca_Draw_20_17_Fed_W2W2_Existing__Access_20200916152921.pdf

Existing Road Purpose: ACCESS

Row(s) Exist? NO

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? NO

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

Vaca_Draw_20_17_Fed_16H_Mile_Radius_Exisiting_Wells_20200325125332.pdf

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL **Well Number:** 16H

Section 4 - Location of Existing and/or Proposed Production Facilities

Submit or defer a Proposed Production Facilities plan? SUBMIT

Production Facilities description: 500x 560 pad was staked with the BLM for construction and uses Vaca Draw 20-17 Fed CTB and Vaca Draw 20-17 Fed West CTB will be utilized for this project. Bulkline: 683' of 6" buried steel Bulk lines will be constructed along the proposed road buried in the same 60' trench. Please see Attachment M for route. All battery pads and flowline routes have been previously approved.

Production Facilities map:

Vaca_Draw_20_17_Fed_CTB_Layout_20200325125420.pdf

Vaca_Draw_20_17_Fed_16H_Flowline_Route_20200325125417.pdf

Vaca_Draw_20_17_Fed_West_CTB_Layout_20200325125423.pdf

Section 5 - Location and Types of Water Supply

Water Source Table

Water source type: MUNICIPAL

Water source use type: SURFACE CASING

INTERMEDIATE/PRODUCTION CASING

Source latitude:

Source longitude:

Source datum:

Water source permit type: WATER RIGHT

Permit Number:

Water source transport method: TRUCKING

Source land ownership: STATE

Source transportation land ownership: STATE

Water source volume (barrels): 5000

Source volume (acre-feet): 0.6444655

Source volume (gal): 210000

Water source and transportation map:

Vaca_Draw_20_17_Fed_W2w2_Drlg_water_route_20200916153000.pdf

Water source comments:

New water well? NO

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL **Well Number:** 16H

New Water Well Info

Well latitude: **Well Longitude:** **Well datum:**

Well target aquifer:

Est. depth to top of aquifer(ft): **Est thickness of aquifer:**

Aquifer comments:

Aquifer documentation:

Well depth (ft): **Well casing type:**

Well casing outside diameter (in.): **Well casing inside diameter (in.):**

New water well casing? **Used casing source:**

Drilling method: **Drill material:**

Grout material: **Grout depth:**

Casing length (ft.): **Casing top depth (ft.):**

Well Production type: **Completion Method:**

Water well additional information:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

Using any construction materials: YES

Construction Materials description: Caliche will be obtained from the actual well site if available. If not available onsite caliche will be obtained for a pit Sec. 16-25S-32E. Lea NM

Construction Materials source location attachment:

Section 7 - Methods for Handling Waste

Waste type: DRILLING

Waste content description: Drilling Fluids, drill cuttings, water and other waste produced from the well during drilling operations.

Amount of waste: 15000 barrels

Waste disposal frequency : Weekly

Safe containment description: N/A

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL

Disposal type description:

Disposal location description: Haul to R360 commercial disposal

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL **Well Number:** 16H

Waste type: SEWAGE

Waste content description: HUMAN WASTE

Amount of waste: 300 gallons

Waste disposal frequency : Weekly

Safe containment description: Waste will be properly contined and disposed of properly at a state approved disopal facility.

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** PRIVATE

Disposal type description:

Disposal location description: A licensed 3rd party contractor will be used to haul and dispose human waste to City of Toyah TX waste water facility.

Waste type: GARBAGE

Waste content description: garbage & trash produced during drilling & completion operations

Amount of waste: 32500 pounds

Waste disposal frequency : Weekly

Safe containment description: N/A

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL

Disposal type description:

Disposal location description: Windmill Spraying Service hauls trash to Lea County Landfill

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit?

Reserve pit length (ft.) **Reserve pit width (ft.)**

Reserve pit depth (ft.) **Reserve pit volume (cu. yd.)**

Is at least 50% of the reserve pit in cut?

Reserve pit liner

Reserve pit liner specifications and installation description

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? NO

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL **Well Number:** 16H

Description of cuttings location

Cuttings area length (ft.) **Cuttings area width (ft.)**

Cuttings area depth (ft.) **Cuttings area volume (cu. yd.)**

Is at least 50% of the cuttings area in cut?

WCuttings area liner

Cuttings area liner specifications and installation description

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: NO

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

Vaca_Draw_20_17_Fed_16H_Wellsite_Location_Layout_20200325130727.pdf

Comments:

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance **Multiple Well Pad Name:** VACA DRAW 20-17 FEDERAL

Multiple Well Pad Number: W2W2 PAD

Recontouring attachment:

Vaca_Draw_20_17_Fed_W2W2_Pad_Interim_Reclaimation_20200325130908.pdf

Drainage/Erosion control construction: To control and prevent potentially contaminated precipitation from leaving the pad site, a perimeter berm and settlement pond will be installed. Contaminated water will be removed from pond, stored in waste tanks, and disposed of at a state approved facility. Standing water or puddles will not be allowed. Drainage ditches would be established and maintained on the pad and along access roads to divert water away from operations. Natural drainage areas disturbed during construction would be re-contoured to near original condition prior to construction. Erosion Control Best Management Practices would be used where necessary and consist of seeding, fiber rolls, water bars, silt fences, and temporary diversion dikes. Areas disturbed during construction that are no longer needed for operations would be obliterated, re-contoured to near original condition prior to construction. Erosion Control Best Management Practices would be used where necessary and consist of seeding, fiber rolls, water bars, silt fences, and temporary diversion dikes. Areas disturbed during construction that are no longer needed for operations would be obliterated, re-contoured, and reclaimed to near original condition to re-establish natural drainage.

Drainage/Erosion control reclamation: All disturbed and re-contoured areas would be reseeded according to specifications. Approved seed mixtures would be certified weed free and consist of grasses, forbs, or shrubs similar to the surrounding area. Compacted soil areas may need to be obliterated and reclaimed to near natural conditions by re-contouring all slopes to facilitate and re-establish natural drainage.

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL **Well Number:** 16H

Well pad proposed disturbance (acres): 7.305
Road proposed disturbance (acres): 6.989
Powerline proposed disturbance (acres): 0
Pipeline proposed disturbance (acres): 0.939
Other proposed disturbance (acres): 8.985
Total proposed disturbance: 24.218

Well pad interim reclamation (acres): 3.753
Road interim reclamation (acres): 0
Powerline interim reclamation (acres): 0
Pipeline interim reclamation (acres): 0
Other interim reclamation (acres): 0
Total interim reclamation: 3.753

Well pad long term disturbance (acres): 3.55
Road long term disturbance (acres): 0.413
Powerline long term disturbance (acres): 0
Pipeline long term disturbance (acres): 0.939
Other long term disturbance (acres): 8.985
Total long term disturbance: 13.887

Disturbance Comments: 683' Existing Access Road: 600.01' We have been working on engineering solutions to reduce our footprint in the section to lower cost, disturbance, and our economic hurdle for other marginal benches within the section to increase our total mineral recovery. It turns out that simply changing our flowline / well approach and moving our separation to our drilling pads significantly reduces our foot print and cost. By placing our separation on our drill pads we can use 6-12 Group lines to gather the separated oil gas and water from the entire section instead of using up to 90 flowlines to move production to the tank batteries for separation. The Group line ability to gather the entire section helps us eliminate 2 batteries per section by simply utilizing the group line approach.

Reconstruction method: After well plugging, all disturbed areas would be returned to the original contour or a contour that blends with the surrounding landform including roads unless the surface owner requests that they be left intact. In consultation with the surface owners it will be determined if any gravel or similar materials used to reinforce an area are to be removed, buried, or left in place during final reclamation. Salvaged topsoil, if any, would be re-spread evenly over the surfaces to be re-vegetated. As necessary, the soil surface would be prepared to provide a seedbed for re-establishment of desirable vegetation. Site preparation may include gouging, scarifying, dozer track-walking, mulching, or fertilizing. Reclamation, Re-vegetation, and Drainage: All disturbed and re-contoured areas would be reseeded using techniques outlined under Phase I and II of this plan or as specified by the land owner. Approved seed mixtures would be certified weed free and consist of grasses, forbs, or shrubs similar to the surrounding area. Compacted soil areas may need to be obliterated and reclaimed to near natural conditions by re-contouring all slopes to facilitate and re-establish natural drainage.

Topsoil redistribution: The original stock piled topsoil, if any, will be spread evenly over the areas being reclaimed and the original landform will be restored for all disturbed areas including well pad, production facilities, roads, pipelines, and power line corridors as close as possible to the original topography. The location will then be seeded.

Soil treatment: The soil surface would be prepared to provide a seedbed for reestablishment of desirable vegetation. Establish control of erosion and invasion of non-native plants to reestablish plant community.

Existing Vegetation at the well pad:

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road:

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline:

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances:

Existing Vegetation Community at other disturbances attachment:

Non native seed used? NO

Non native seed description:

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL **Well Number:** 16H

Seedling transplant description:

Will seedlings be transplanted for this project? NO

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? NO

Seed harvest description:

Seed harvest description attachment:

Seed Management

Seed Table

Seed Summary

Total pounds/Acre:

Seed Type	Pounds/Acre

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

First Name: Amithy **Last Name:** Crawford

Phone: (432)620-1909 **Email:** acrawford@cimarex.com

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? NO

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Weed treatment plan description: na

Weed treatment plan attachment:

Monitoring plan description: na

Monitoring plan attachment:

Success standards: na

Pit closure description: na

Pit closure attachment:

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL **Well Number:** 16H

Section 11 - Surface Ownership

Disturbance type: WELL PAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Disturbance type: EXISTING ACCESS ROAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL **Well Number:** 16H

USFS Forest/Grassland: **USFS Ranger District:**

Disturbance type: PIPELINE

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Section 12 - Other Information

Right of Way needed? YES **Use APD as ROW?** YES

ROW Type(s): 281001 ROW - ROADS,288100 ROW – O&G Pipeline,288101 ROW – O&G Facility Sites,289001 ROW-O&G Well Pad,Other

ROW Applications

SUPO Additional Information:

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL **Well Number:** 16H

Use a previously conducted onsite? YES

Previous Onsite information: Onsite with BLM(Jeff Robertson) and Cimarex Barry Hunt on January 8, 2016

Other SUPO Attachment

Vaca_Draw_20_17_Fed_16H_Public_Access_20200325132618.pdf
Vaca_Draw_20_17_Fed_W2W2_Pad_1_Well_list_20200325132656.docx
Vaca_Draw_20_17_Fed_16H_SUPO_20200410092029.pdf
Vaca_Draw_20_17_Fed_16H_Road_Description_20200410092246.pdf

AFMSS

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

PWD Data Report

05/27/2021

APD ID: 10400037875 **Submission Date:** 01/15/2019

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL **Well Number:** 16H

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: VACA DRAW 20-17 FEDERAL **Well Number:** 16H

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: VACA DRAW 20-17 FEDERAL **Well Number:** 16H

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: VACA DRAW 20-17 FEDERAL **Well Number:** 16H

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

05/27/2021

APD ID: 10400037875

Submission Date: 01/15/2019

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL

Well Number: 16H

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:

State of New Mexico
Energy, Minerals and Natural Resources Department

Submit Electronically
Via E-permitting

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

NATURAL GAS MANAGEMENT PLAN

This Natural Gas Management Plan must be submitted with each Application for Permit to Drill (APD) for a new or recompleted well.

Section 1 – Plan Description
Effective May 25, 2021

I. Operator: Cimarex Energy Company **OGRID:** 215099 **Date:** 5 / 2 / 2022

II.Type: ☒ Original ☐ Amendment due to ☐ 19.15.27.9.D(6)(a) NMAC ☐ 19.15.27.9.D(6)(b) NMAC ☐ Other.

If Other, please describe: _____

III. Well(s): Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	ULSTR	Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water BBL/D
Vaca Draw 20-17 Fed 16H	30-025-50177	M, Sec 20, T25S, R33E	270 FSL/630 FWL	1200	1800	1300

IV. Central Delivery Point Name: Vaca Draw 20-17 5H CTB CDP Sales [See 19.15.27.9(D)(1) NMAC]

V. Anticipated Schedule: Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	Spud Date	TD Reached Date	Completion Commencement Date	Initial Flow Back Date	First Production Date
Vaca Draw 20-17Fed 16H	30-025-50177	10/1/2022	12/1/2022	3/1/2023	5/1/2023	5/1/2023

VI. Separation Equipment: ☒ Attach a complete description of how Operator will size separation equipment to optimize gas capture.

VII. Operational Practices: ☒ Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F of 19.15.27.8 NMAC.

VIII. Best Management Practices: ☒ Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.

Section 2 – Enhanced Plan

EFFECTIVE APRIL 1, 2022

Beginning April 1, 2022, an operator that is not in compliance with its statewide natural gas capture requirement for the applicable reporting area must complete this section.

☒ Operator certifies that it is not required to complete this section because Operator is in compliance with its statewide natural gas capture requirement for the applicable reporting area.

IX. Anticipated Natural Gas Production:

Well	API	Anticipated Average Natural Gas Rate MCF/D	Anticipated Volume of Natural Gas for the First Year MCF

X. Natural Gas Gathering System (NGGS):

Operator	System	ULSTR of Tie-in	Anticipated Gathering Start Date	Available Maximum Daily Capacity of System Segment Tie-in

XI. Map. ☐ Attach an accurate and legible map depicting the location of the well(s), the anticipated pipeline route(s) connecting the production operations to the existing or planned interconnect of the natural gas gathering system(s), and the maximum daily capacity of the segment or portion of the natural gas gathering system(s) to which the well(s) will be connected.

XII. Line Capacity. The natural gas gathering system ☐ will ☐ will not have capacity to gather 100% of the anticipated natural gas production volume from the well prior to the date of first production.

XIII. Line Pressure. Operator ☐ does ☐ does not anticipate that its existing well(s) connected to the same segment, or portion, of the natural gas gathering system(s) described above will continue to meet anticipated increases in line pressure caused by the new well(s).

☐ Attach Operator's plan to manage production in response to the increased line pressure.

XIV. Confidentiality: ☐ Operator asserts confidentiality pursuant to Section 71-2-8 NMSA 1978 for the information provided in Section 2 as provided in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and attaches a full description of the specific information for which confidentiality is asserted and the basis for such assertion.

Section 3 - Certifications

Effective May 25, 2021

Operator certifies that, after reasonable inquiry and based on the available information at the time of submittal:

☒ Operator will be able to connect the well(s) to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system; or

☐ Operator will not be able to connect to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system. ***If Operator checks this box, Operator will select one of the following:***

Well Shut-In. ☐ Operator will shut-in and not produce the well until it submits the certification required by Paragraph (4) of Subsection D of 19.15.27.9 NMAC; or

Venting and Flaring Plan. ☐ Operator has attached a venting and flaring plan that evaluates and selects one or more of the potential alternative beneficial uses for the natural gas until a natural gas gathering system is available, including:

- **(a)** power generation on lease;
- **(b)** power generation for grid;
- **(c)** compression on lease;
- **(d)** liquids removal on lease;
- **(e)** reinjection for underground storage;
- **(f)** reinjection for temporary storage;
- **(g)** reinjection for enhanced oil recovery;
- **(h)** fuel cell production; and
- **(i)** other alternative beneficial uses approved by the division.

Section 4 - Notices

1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

(a) Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised venting and flaring plan containing the information specified in Paragraph (5) of Subsection D of 19.15.27.9 NMAC; or

(b) Operator becomes aware that it has, cumulatively for the year, become out of compliance with its baseline natural gas capture rate or natural gas capture requirement, no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised Natural Gas Management Plan for each well it plans to spud during the next 90 days containing the information specified in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and shall file an update for each Natural Gas Management Plan until Operator is back in compliance with its baseline natural gas capture rate or natural gas capture requirement.

2. OCD may deny or conditionally approve an APD if Operator does not make a certification, fails to submit an adequate venting and flaring plan which includes alternative beneficial uses for the anticipated volume of natural gas produced, or if OCD determines that Operator will not have adequate natural gas takeaway capacity at the time a well will be spud.

I certify that, after reasonable inquiry, the statements in and attached to this Natural Gas Management Plan are true and correct to the best of my knowledge and acknowledge that a false statement may be subject to civil and criminal penalties under the Oil and Gas Act.

Signature:	Sarah Jordan
Printed Name:	Sarah Jordan
Title:	Regulatory Analyst
E-mail Address:	sarah.jordan@coterra.com
Date:	5/3/2022
Phone:	432/620-1909

OIL CONSERVATION DIVISION **(Only applicable when submitted as a standalone form)**
Approved By:
Title:
Approval Date:
Conditions of Approval:

From State of New Mexico, Natural Gas Management Plan

VI. Separation Equipment: Attach a complete description of how Operator will size separation equipment to optimize gas capture.

XEC Standard Response

Standard facility gas process flow begins at the inlet separator. These vessels are designed based off of forecasted rates and residence times in accordance with, and often greater than, API 12J. The separated gas is then routed to an additional separation vessel (ie sales scrubber) in order to extract liquids that may have carried over or developed due to the decrease in pressure. The sales scrubber is sized based on API 521. From the sales scrubber, the gas leaves the facility and enters the gas midstream gathering network.

Cimarex
VII. Operational Practices

Cimarex values the sustainable development of New Mexico's natural resources. Venting and flaring of natural gas is a source of waste in the industry, and Cimarex will ensure that its values are aligned with those of NMOCD. As such, Cimarex plans to take pointed steps to ensure compliance with Subsection A through F of 19.15.27.8 NMAC.

Specifically, below are the steps Cimarex will plan to follow under routine well commissioning and operations.

1. Capture or combust natural gas during drilling operations where technically feasible, using the best industry practices and control technologies.
    a. All flares during these operations will be a minimum of 100ft away from the nearest surface-hole location.
2. All gas present during post-completion drill-out and flow back will be routed through separation equipment, and, if technically feasible, flare unsellable vapors rather than vent. Lastly, formal sales separator commissioning to process well-stream fluids and send gas to a gas flow line/collection system or use the gas for on-site fuel or beneficial usage, gas as soon as is safe and technically feasible.
3. Cimarex will ensure the flare or combustion equipment is properly sized to handle expected flow rates, ensure this equipment is equipped with an automatic or continuous ignition source, and ensure this equipment is designed for proper combustion efficiency.
4. If Cimarex must flare because gas is not meeting pipeline specifications, Cimarex will limit flaring to <60 days, analyze gas composition at least twice per week, and route gas into a gathering pipeline as soon as pipeline specifications are met.
5. Under routine production operations, Cimarex will not flare/vent unless:
    a. Venting or flaring occurs due to an emergency or equipment malfunction.
    b. Venting or flaring occurs as a result of unloading practices, and an operator is onsite (or within 30 minutes of drive time and posts contact information at the wellsite) until the end of unloading practice.
    c. The venting or flaring occurs during automated plungerlift operations, in which case the Cimarex operator will work to optimize the plungerlift system to minimize venting/flaring.
    d. The venting or flaring occurs during downhole well maintenance, in which case Cimarex will work to minimize venting or flaring operations to the extent that it does not pose a risk to safe operations.
    e. The well is an exploratory well, the division has approved the well as an exploratory well, venting or flaring is limited to 12 months, as approved by the division, and venting/flaring does not cause Cimarex to breach its State-wide 98% gas capture requirement.
    f. Venting or flaring occurs because the stock tanks or other low-pressure vessels are being gauged, sampled, or liquids are being loaded out.
    g. The venting or flaring occurs because pressurized vessels are being maintained and are being blown-down or depressurized.
    h. Venting or flaring occurs as a result of normal dehydration unit operations.

i. Venting or flaring occurs as a result of bradenhead testing.
j. Venting or flaring occurs as a result of normal compressor operations, including general compressor operations, compressor engines and turbines.
k. Venting or flaring occurs as a result of a packer leakage test.
l. Venting or flaring occurs as a result of a production test lasting less than 24 hours unless otherwise approved by the division.
m. Venting or flaring occurs as a result of new equipment commissioning and is necessary to purge impurities from the pipeline or production equipment.

6. Cimarex will maintain its equipment in accordance with its Operations and Maintenance Program, to ensure venting or flaring events are minimized and that equipment is properly functioning.
7. Cimarex will install automatic tank gauging equipment on all production facilities constructed after May 25, 2021, to ensure minimal emissions from tank gauging practices.
8. By November 25, 2022, all Cimarex facilities equipped with flares or combustors will be equipped with continuous pilots or automatic igniters, and technology to ensure proper function, i.e. thermocouple, fire-eye, etc…
9. Cimarex will perform AVO (audio, visual, olfactory) facility inspections in accordance with NMOCD requirements. Specifically, Cimarex will:
    a. Perform weekly inspections during the first year of production, and so long as production is greater than 60 MCFD.
    b. If production is less than 60 MCFD, Cimarex will perform weekly AVO inspections when an operator is present on location, and inspections at least once per calendar month with at least 20 calendar days between inspections.
10. Cimarex will measure or estimate the volume of vented, flared or beneficially used natural gas, regardless of the reason or authorization for such venting or flaring.
11. On all facilities constructed after May 25, 2021, Cimarex will install metering where feasible and in accordance with available technology and best engineering practices, in an effort to measure how much gas could have been vented or flared.
    a. In areas where metering is not technically feasible, such as low-pressure/low volume venting or flaring applications, engineering estimates will be used such that the methodology could be independently verified.
12. Cimarex will fulfill the division's requirements for reporting and filing of venting or flaring that exceeds 50 MCF in volume or last eight hours or more cumulatively within any 24-hour period.

VIII. Best Management Practices to minimize venting during active and planned maintenance

Cimarex strives to ensure minimal venting occurs during active and planned maintenance activities. Below is a description of common maintenance practices, and the steps Cimarex takes to limit venting exposure.

- **Workovers:**
  - Always strive to kill well when performing downhole maintenance.
  - If vapors or trapped pressure is present and must be relieved then:
    - Initial blowdown to production facility:
      - Route vapors to LP flare if possible/applicable
    - Blowdown to portable gas buster tank:
      - Vent to existing or portable flare if applicable.

- **Stock tank servicing:**
  - Minimize time spent with thief hatches open.
  - When cleaning or servicing via manway, suck tank bottoms to ensure minimal volatiles exposed to atmosphere.
    - Connect vacuum truck to low pressure flare while cleaning bottoms to limit venting.
  - Isolate the vent lines and overflows on the tank being serviced from other tanks.

- **Pressure vessel/compressor servicing and associated blowdowns:**
  - Route to flare where possible.
  - Blow vessel down to minimum available pressure via pipeline, prior to venting vessel.
  - Preemptively changing anodes to reduce failures and extended corrosion related servicing.
  - When cleaning or servicing via manway, suck vessel bottoms to ensure minimal volatiles exposed to atmosphere.

- **Flare/combustor maintenance:**
  - Minimize downtime by coordinating with vendor and Cimarex staff travel logistics.
  - Utilizing preventative and predictive maintenance programs to replace high wear components before failure.
  - Because the flare/combustor is the primary equipment used to limit venting practices, ensure flare/combustor is properly maintained and fully operational at all times via routine maintenance, temperature telemetry, onsite visual inspections.

The Cimarex expectation is to limit all venting exposure. Equipment that may not be listed on this document is still expected to be maintained and associated venting during such maintenance minimized.

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Operator:	OGRID:
CIMAREX ENERGY CO. 600 N. Marienfeld Street Midland, TX 79701	215099
	Action Number: 103461
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

CONDITIONS

Created By	Condition	Condition Date
pkautz	Will require a File As Drilled C-102 and a Directional Survey with the C-104	5/27/2022
pkautz	Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string	5/27/2022
pkautz	Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system	5/27/2022
pkautz	Cement is required to circulate on both surface and intermediate1 strings of casing	5/27/2022