

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

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		5. Lease Serial No. 6. If Indian, Allottee or Tribe Name 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. 30-025-50387
3a. Address	3b. Phone No. (include area code)	10. Field and Pool, or Exploratory
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 07/12/2022

SL

(Continued on page 2)



Approval Date: 05/26/2021

KZ
07/27/2022

*(Instructions on page 2)

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

WC-025 G-08 S253235G; LWR
BONE SPRIN

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-025	² Pool Code 97991 97903	³ Pool Name WC-025 G-06 S253329D; Upper Bone Spring
⁴ Property Code 319775	⁵ Property Name VACA DRAW 20-17 FEDERAL	⁶ Well Number 14H
⁷ OGRID No. 215099	⁸ Operator Name CIMAREX ENERGY CO.	⁹ Elevation 3423.9'

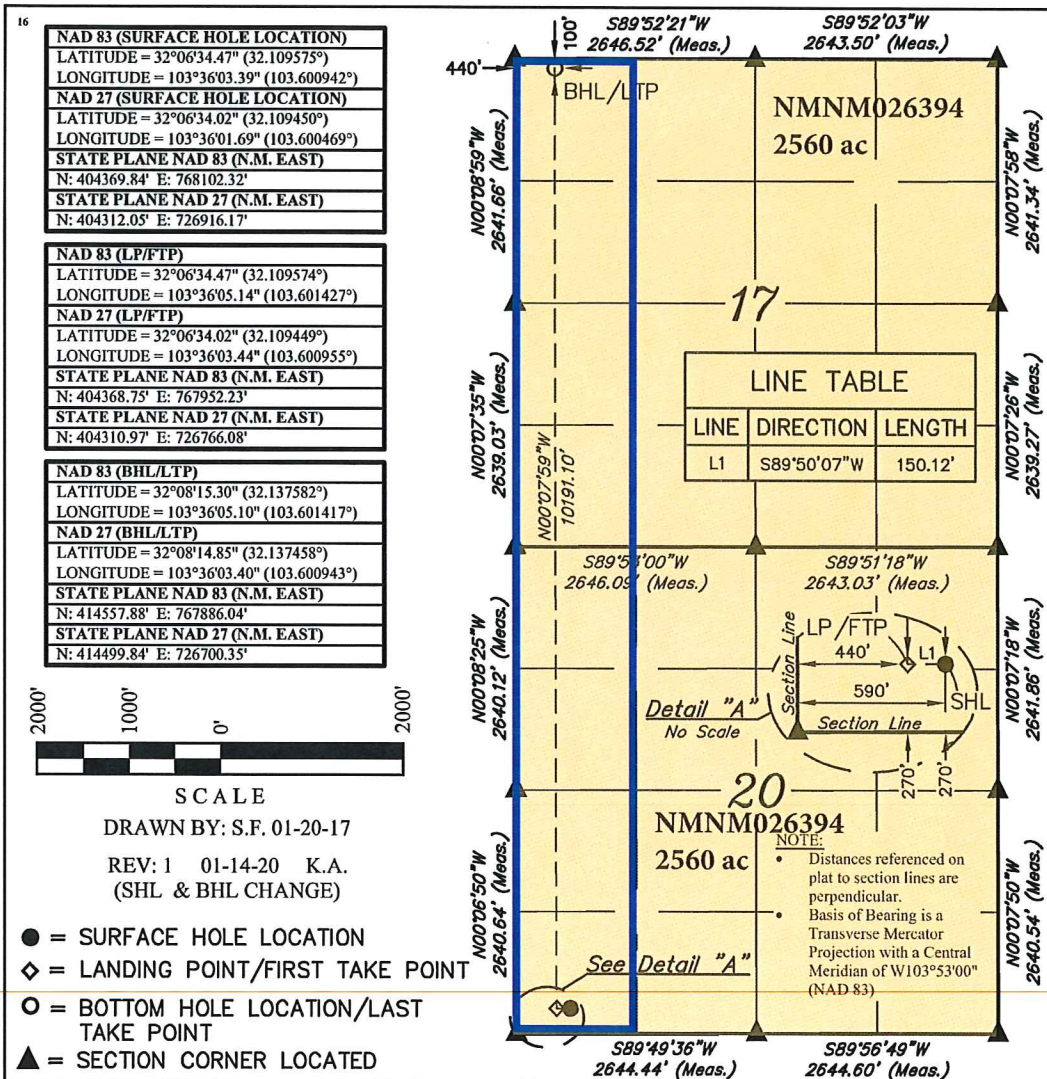
¹⁰ Surface Location

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	590	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	440	WEST	LEA
¹² Dedicated Acres 320		¹³ Joint or Infill		¹⁴ Consolidation Code		¹⁵ Order No.			

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.



TARGET LOWER BS PER DIRECTIONAL DRILL PLAN KZ

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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 AP Number 30-025-50387	2 Pool Code 97903	3 Pool Name WC-025 G-08 S253235G; LWR BONE SPRIN
4 Property Code	5 Property Name VACA DRAW 20-17 FEDERAL	6 Well Number 14H
7 OGRID No. 215099	8 Operator Name CIMAREX ENERGY CO.	9 Elevation 3423.9'

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	590	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	440	WEST	LEA

12 Dedicated Acres 320	13 Joint or Infill	14 Consolidation Code	15 Order No.
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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°36'03.39" (103.600942°) NAD 27 (SURFACE HOLE LOCATION) LATITUDE = 32°06'34.02" (32.109450°) LONGITUDE = 103°36'01.69" (103.600469°) STATE PLANE NAD 83 (N.M. EAST) N: 404369.84' E: 768102.32' STATE PLANE NAD 27 (N.M. EAST) N: 404312.05' E: 726916.17' NAD 83 (LP/FTP) LATITUDE = 32°06'34.47" (32.109574°) LONGITUDE = 103°36'05.14" (103.601427°) NAD 27 (LP/FTP) LATITUDE = 32°06'34.02" (32.109449°) LONGITUDE = 103°36'03.44" (103.600955°) STATE PLANE NAD 83 (N.M. EAST) N: 404368.75' E: 767952.23' STATE PLANE NAD 27 (N.M. EAST) N: 404310.97' E: 726766.08' NAD 83 (BHL/LTP) LATITUDE = 32°08'15.30" (32.137582°) LONGITUDE = 103°36'05.10" (103.601417°) NAD 27 (BHL/LTP) LATITUDE = 32°08'14.85" (32.137458°) LONGITUDE = 103°36'03.40" (103.600943°) STATE PLANE NAD 83 (N.M. EAST) N: 414557.88' E: 767886.04' STATE PLANE NAD 27 (N.M. EAST) N: 414499.84' E: 726700.35' 2000' 1000' 0' 2000' SCALE DRAWN BY: S.F. 01-20-17 REV: 1 01-14-20 K.A. (SHL & BHL CHANGE) ● = SURFACE HOLE LOCATION ◆ = LANDING POINT/FIRST TAKE POINT ○ = BOTTOM HOLE LOCATION/LAST TAKE POINT ▲ = SECTION CORNER LOCATED	LINE TABLE <table border="1"> <thead> <tr> <th>LINE</th> <th>DIRECTION</th> <th>LENGTH</th> </tr> </thead> <tbody> <tr> <td>L1</td> <td>S89°50'07"W</td> <td>150.12'</td> </tr> </tbody> </table> NOTE: Distances referenced on plat to section lines are perpendicular. Basis of Bearing is a Transverse Mercator Projection with a Central Meridian of W103°53'00" (NAD 83)	LINE	DIRECTION	LENGTH	L1	S89°50'07"W	150.12'	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. <i>Hope Knauls</i> 3-6-20 Signature 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:
LINE	DIRECTION	LENGTH						
L1	S89°50'07"W	150.12'						



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

Application Data Report

10/19/2021

APD ID: 10400037997

Submission Date: 01/17/2019

Highlighted data
reflects the most
recent changes

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL

Well Number: 14H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

Section 1 - General

APD ID: 10400037997

Tie to previous NOS? Y

Submission Date: 01/17/2019

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:

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: 14H

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: BONE SPRING

Pool Name: UPPER BONE
SPRING SHALE

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:** 14H**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 **Number:** W2W2 PAD 1
DRAW 20-17 FEDERAL**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:** 26.5 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_14H_C102_BLM_Lease_20200318161556.pdf

Vaca_Draw_20_17_Fed_14H_C102_20200318161558.pdf

Well work start Date: 06/18/2020**Duration:** 30 DAYS**Section 3 - Well Location Table****Survey Type:** RECTANGULAR**Describe Survey Type:****Datum:** NAD83**Vertical Datum:** NAVD88**Survey number:****Reference Datum:**

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this lease?
SHL Leg #1	270	FSL	590	FW L	25S	33E	20	Aliquot SWS W	32.109575	- 103.600942	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 26394	3423	0	0	
KOP Leg #1	271	FSL	441	FW L	25S	33E	20	Aliquot NWS W	32.124025	- 103.64285	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 26394	- 6399	9827	9822	

Operator Name: CIMAREX ENERGY COMPANY**Well Name:** VACA DRAW 20-17 FEDERAL**Well Number:** 14H

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	271	FSL	441	FW L	25S	33E	20	Aliquot SWNE	32.1305306	- 103.6427778	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 26394	- 5877	11500	9300	
EXIT Leg #1	100	FNL	440	FW L	25S	33E	17	Aliquot NWN W	32.137582	- 103.601417	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 26394	- 6877	20290	10300	
BHL Leg #1	100	FNL	440	FW L	25S	33E	17	Aliquot NWN W	32.137582	- 103.601417	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 26394	- 6877	20290	10300	



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

Drilling Plan Data Report

10/19/2021

APD ID: 10400037997

Submission Date: 01/17/2019

Highlighted data
reflects the most
recent changes

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL

Well Number: 14H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1504039	RUSTLER	3333	1001	1001		USEABLE WATER	N
3631206	TOP SALT	1992	1341	1341		NONE	N
3643542	BASE OF SALT	-1567	4900	4900		NONE	N
3643595	LAMAR	-1602	4935	4935		NONE	N
3643840	BELL CANYON	-1637	4970	4970		NONE	N
3643899	CHERRY CANYON	-2715	6048	6048		NATURAL GAS, OIL	N
3644025	BRUSHY CANYON	-4192	7525	7525		NATURAL GAS, OIL	N
3644091	BONE SPRING	-5781	9114	9114		NATURAL GAS, OIL	N
3644261	UPPER AVALON SHALE	-6026	9359	9359		NATURAL GAS, OIL	N
3644292	BONE SPRING 1ST	-6751	10084	10084		NATURAL GAS, OIL	N
3644458	BONE SPRING 2ND	-6939	10272	10272		NATURAL GAS, OIL	Y

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 5000 psi will be installed on the wellhead system and will be

Operator Name: CIMAREX ENERGY COMPANY**Well Name:** VACA DRAW 20-17 FEDERAL**Well Number:** 14H

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. 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_14H_Choke_2M3M_20210412122748.pdf

BOP Diagram Attachment:

Vaca_Draw_20_17_Fed_14H_BOP_2M_20210412122700.pdf

Pressure Rating (PSI): 3M**Rating Depth:** 10470

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 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. 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_14H_Choke_2M3M_20210412122913.pdf

BOP Diagram Attachment:

Vaca_Draw_20_17_Fed_14H_BOP_3M_20210412123008.pdf

Operator Name: CIMAREX ENERGY COMPANY**Well Name:** VACA DRAW 20-17 FEDERAL**Well Number:** 14H**Pressure Rating (PSI):** 5M**Rating Depth:** 20298

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 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. 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_14H_Choke_5M_20200407095207.pdf

BOP Diagram Attachment:

Vaca_Draw_20_17_Fed_14H_BOP_5M_20210412123124.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	1050	0	1050			1050	H-40	48	ST&C	1.63	3.8	BUOY	6.39	BUOY	6.39
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	4915	0	4915			4915	J-55	40	BUTT	1.4	1.5	BUOY	3.2	BUOY	3.2
3	PRODUCTION	8.75	7.0	NEW	API	N	0	8927	0	8927	0		8927	P-110	26	LT&C	1.49	2.38	BUOY	2.59	BUOY	2.59
4	PRODUCTION	8.75	7.0	NEW	API	N	8927	10470	8927	10272			1543	L-80	26	BUTT	1.13	1.51	BUOY	17.27	BUOY	17.27

Operator Name: CIMAREX ENERGY COMPANY**Well Name:** VACA DRAW 20-17 FEDERAL**Well Number:** 14H

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
5	COMPLETION SYSTEM	6	4.5	NEW	API	N	8827	20290	8827	10300			11463	P-110	13.5	BUTT	2.22	2.58	BUOY	21.22	BUOY	21.22

Casing Attachments**Casing ID:** 1 **String Type:** SURFACE**Inspection Document:****Spec Document:**

Vaca_Draw_20_17_Fed_14H_Spec_Sheet_20200407133201.pdf

Tapered String Spec:**Casing Design Assumptions and Worksheet(s):**

Vaca_Draw_20_17_Fed_14H_Casing_Assumptions_20200408083854.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_14H_Casing_Assumptions_20200408083919.pdf

Operator Name: CIMAREX ENERGY COMPANY**Well Name:** VACA DRAW 20-17 FEDERAL**Well Number:** 14H**Casing Attachments**

Casing ID: 3 **String Type:** PRODUCTION**Inspection Document:****Spec Document:****Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**Vaca_Draw_20_17_Fed_14H_Casing_Assumptions_20200408084012.pdf

Casing ID: 4 **String Type:** PRODUCTION**Inspection Document:****Spec Document:****Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**Vaca_Draw_20_17_Fed_14H_Casing_Assumptions_20200408084034.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_14H_Casing_Assumptions_20200916143911.pdf

Section 4 - Cement

Operator Name: CIMAREX ENERGY COMPANY**Well Name:** VACA DRAW 20-17 FEDERAL**Well Number:** 14H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Lead		0	0	0	0	0	0	0	0	0

SURFACE	Lead		0	1050	509	1.72	13.5	875	50	Class C	Bentonite
SURFACE	Tail		0	1050	136	1.34	14.8	182	25	Class C	LCM
INTERMEDIATE	Lead		0	4915	931	1.88	12.9	1750	50	35:65 (Poz:C)	Salt, Bentonite
INTERMEDIATE	Tail		0	4915	287	1.34	14.8	384	25	Class C	LCM
PRODUCTION	Lead		0	1047 0	263	3.64	10.3	955	25	Tuned Light	LCM
PRODUCTION	Tail		0	1047 0	94	1.3	14.2	121	25	50:50 (Poz:H)	Salt, Bentonite, Fluid Loss, Dispersant, SMS
COMPLETION SYSTEM	Lead		8827	2029 0	730	1.3	14.2	949	10	50:50 (POZ H)	Salt Bentonite Fluid Loss Dispersant SMS

Section 5 - Circulating Medium

Mud System Type: Closed**Will an air or gas system be Used?** NO**Description of the equipment for the circulating system in accordance with Onshore Order #2:****Diagram of the equipment for the circulating system in accordance with Onshore Order #2:**

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

Describe the mud monitoring system utilized: PVT/Pason/Visual Monitoring

Circulating Medium Table

Operator Name: CIMAREX ENERGY COMPANY**Well Name:** VACA DRAW 20-17 FEDERAL**Well Number:** 14H

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	1050	OTHER : Fresh Water	7.83	8.33							
1050	4915	OTHER : Brine Water	9.8	10.3							
4915	10470	OTHER : Cut Brine or OBM	8.5	9							
10470	20290	OIL-BASED MUD	8.5	9							

Section 6 - Test, Logging, Coring

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

No DST Planned

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

CNL,DS,GR

Coring operation description for the well:

N/A

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 4820

Anticipated Surface Pressure: 2554

Anticipated Bottom Hole Temperature(F): 172

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

Describe:

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

Contingency Plans geohazards description:

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

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

Vaca_Draw_20_17_Fed_14H_H2S_Plan_20200408084932.pdf

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL

Well Number: 14H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Vaca_Draw_20_17_Fed_14H_AC_Report_20200319090353.pdf

Vaca_Draw_20_17_Fed_14H_Directional_Survey_20200319090355.pdf

Other proposed operations facets description:

Other proposed operations facets attachment:

Vaca_Draw_20_17_Fed_14H_Gas_Capture_Plan_20200319090509.pdf

Vaca_Draw_20_17_Fed_14H_Flex_Hose_20200319090509.pdf

Vaca_Draw_20_17_Fed_14H_Drilling_Plan_20210412123400.pdf

Other Variance attachment:

Vaca_Draw_20_17_Fed_14H_Multibowl_wellhead_20200408085515.pdf

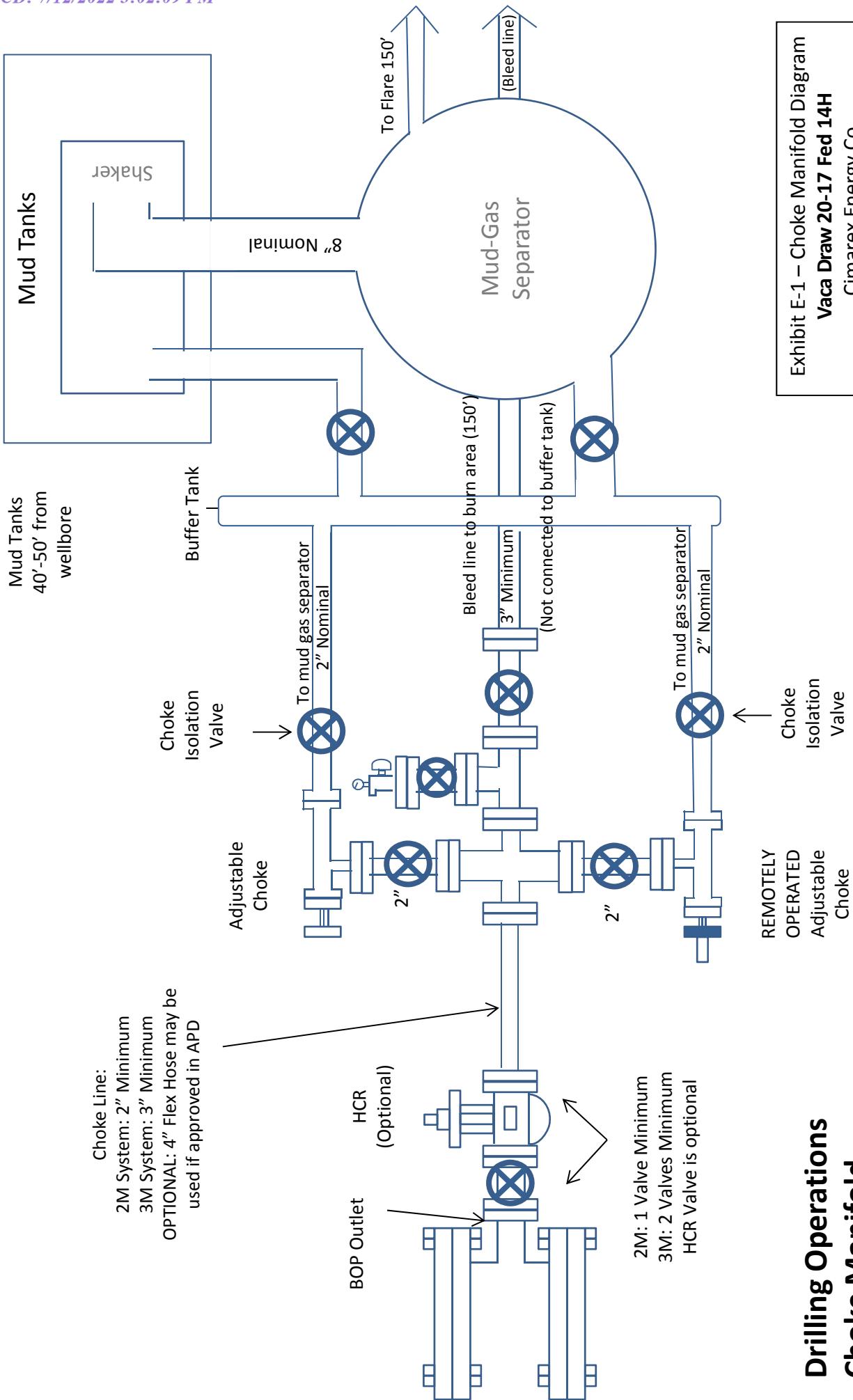


Exhibit E-1 – Choke Manifold Diagram
Vaca Draw 20-17 Fed 14H
 Cimarex Energy Co.
 20-25S-33E
 Lea County, NM

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

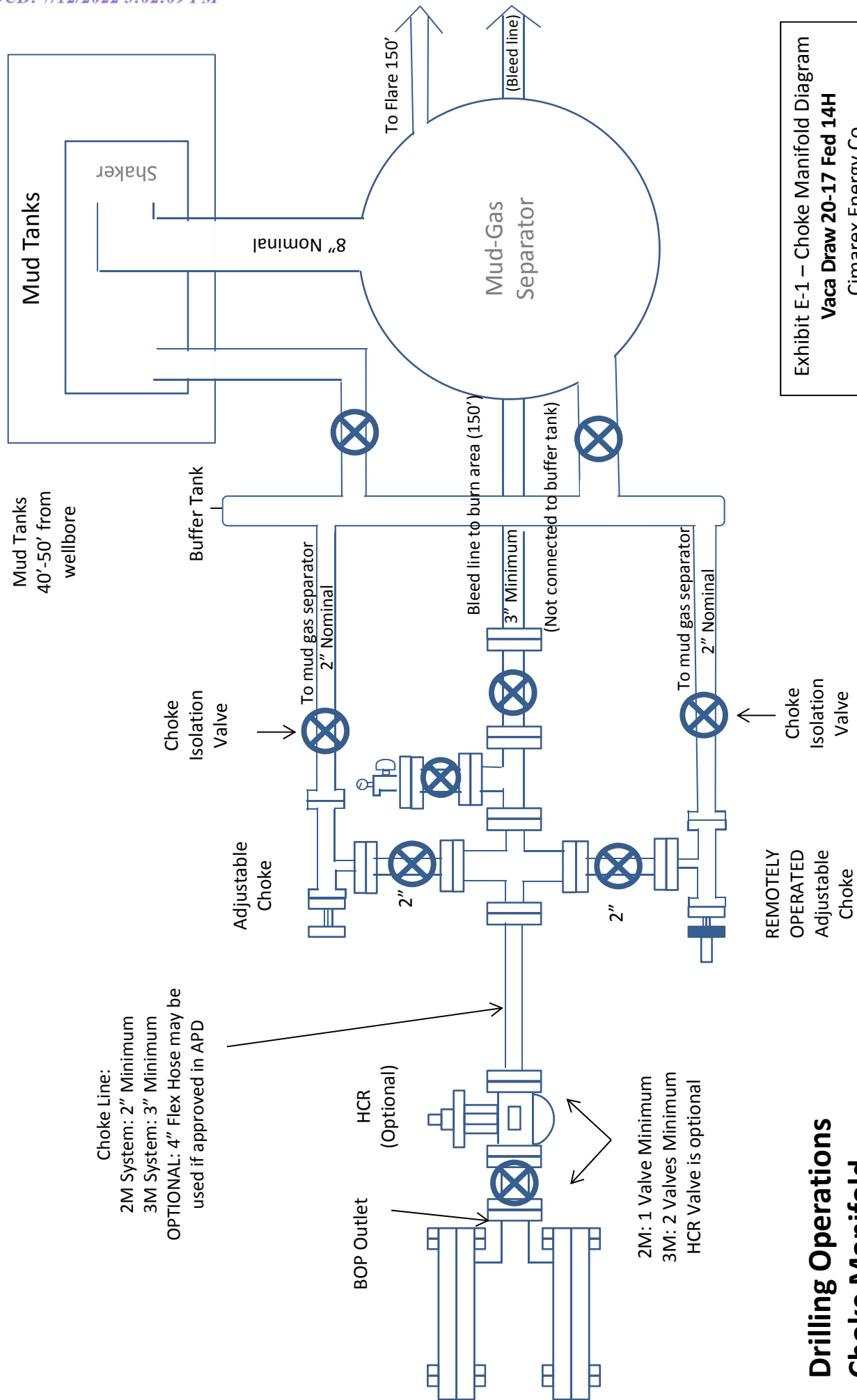
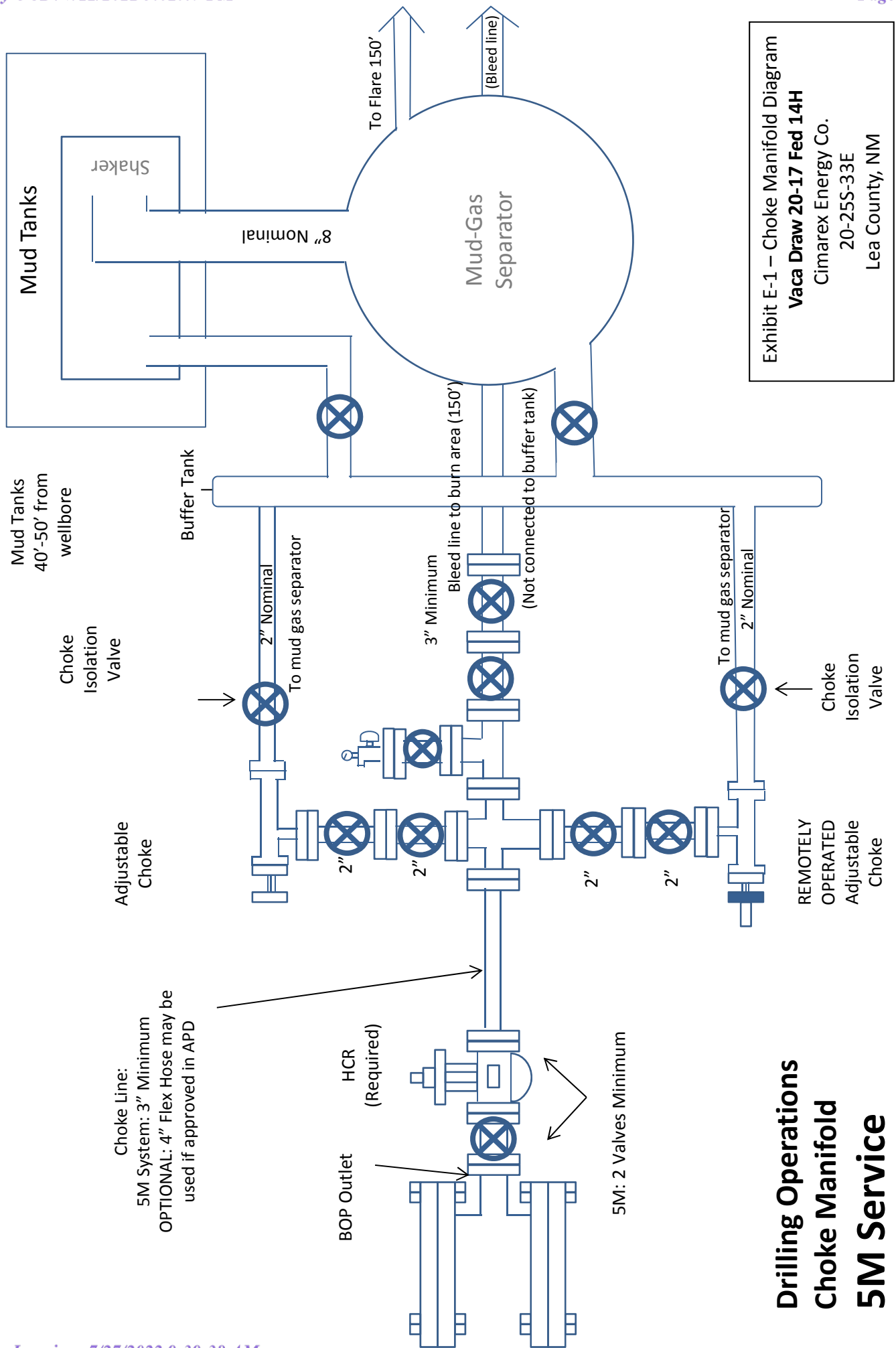


Exhibit E-1 – Choke Manifold Diagram
Vaca Draw 20-17 Fed 14H
 Cimarex Energy Co.
 20-25S-33E
 Lea County, NM

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



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

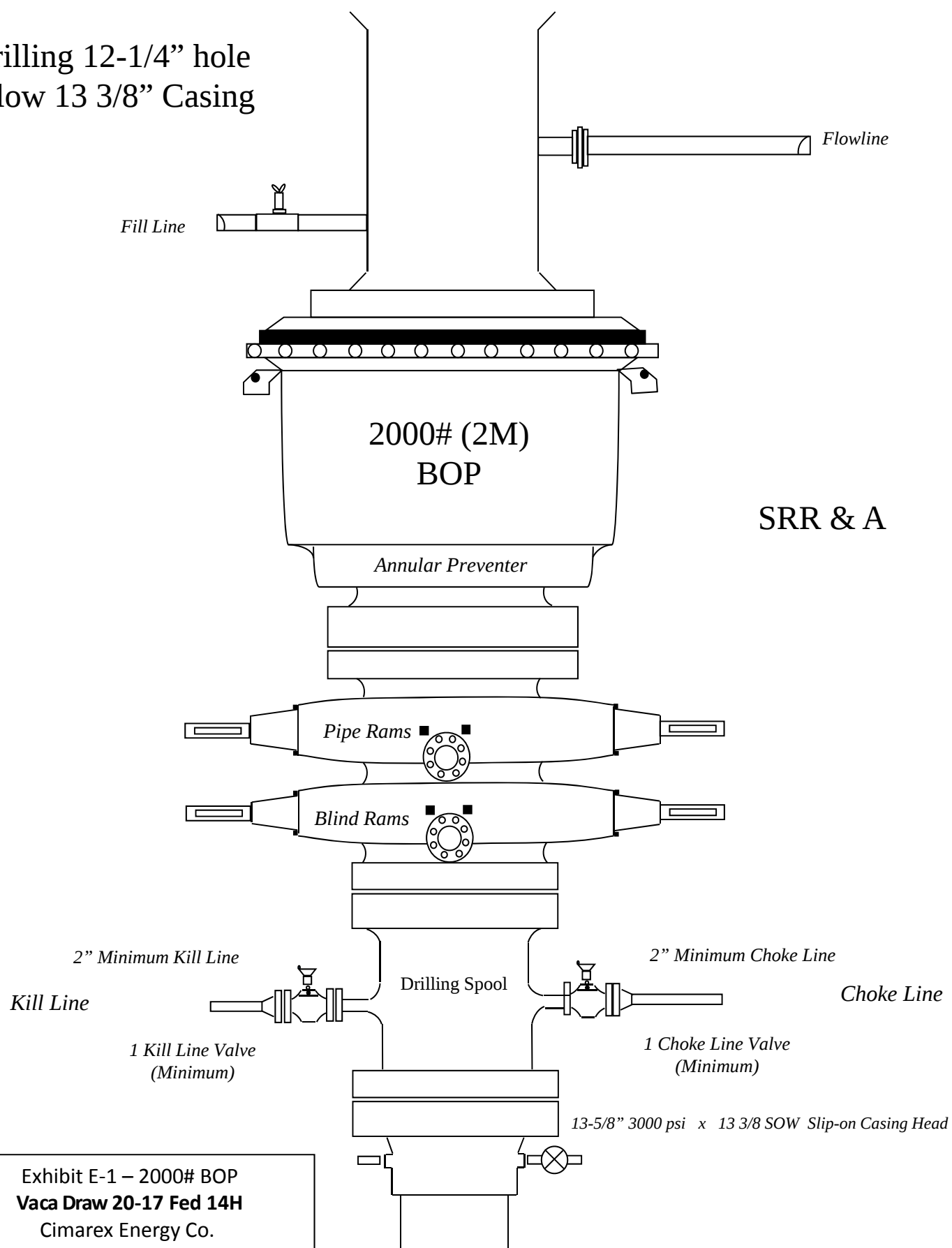


Exhibit E-1 – 2000# BOP
Vaca Draw 20-17 Fed 14H
Cimarex Energy Co.
20-25S-33E
Lea County, NM

4" hole
Casing

Flowline

Fill Line

3000# (3M)
BOP

Annular Preventer

SRR & A

Pipe Rams

Blind Rams

um Kill Line

3" minimum choke line

Choke Line

Drilling Spool

2 Valves Minimum

Minimum
(1 check valve)

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

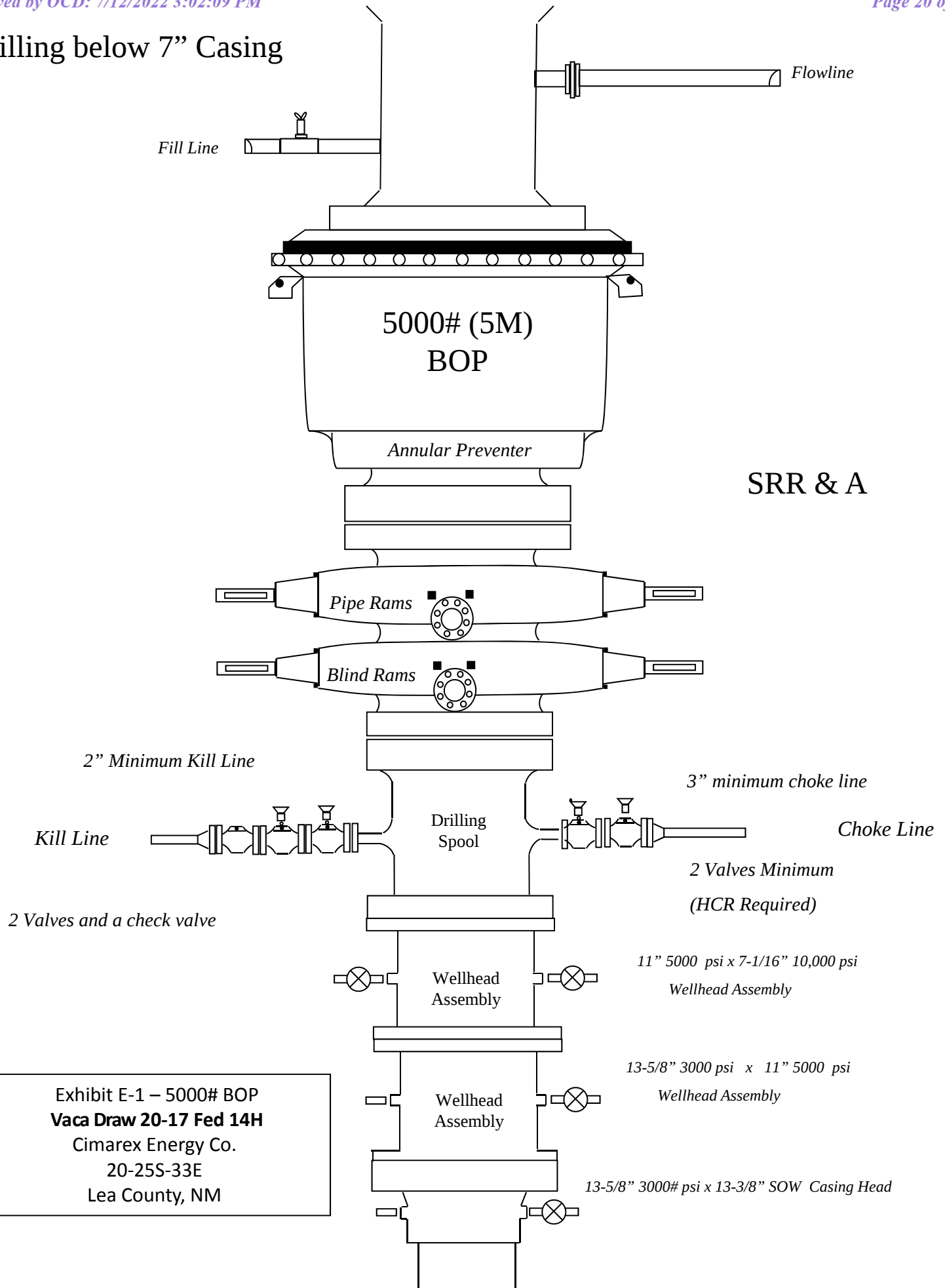
Wellhead Assembly

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

OP
7 Fed 14H
rgy Co.
3E
NM

3000# BOP
Vaca Draw 20-17 Fed 14H
 Cimarex Energy Co.
 20-25S-33E
 Lea Co., NM

Drilling below 7" Casing



[Print](#)



Vaca Draw 20-17 Fed #14H

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 14H

Casing Assumptions

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	1050	1050	13-3/8"	48.00	H-40/J-55 Hybrid	ST&C	1.63	3.80	6.39
12 1/4	0	4915	4915	9-5/8"	40.00	J-55	BT&C	1.40	1.50	3.20
8 3/4	0	8927	8927	7"	26.00	P-110	LT&C	1.49	2.38	2.59
8 3/4	8927	10470	10272	7"	26.00	L-80	BT&C	1.13	1.51	17.27
6	8827	20290	10300	4-1/2"	13.50	P-110	BT&C	2.22	2.58	21.22
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

Vaca Draw 20-17 Fed 14H

Casing Assumptions

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
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12 1/4	0	4915	4915	9-5/8"	40.00	J-55	BT&C	1.40	1.50	3.20
8 3/4	0	8927	8927	7"	26.00	P-110	LT&C	1.49	2.38	2.59
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Vaca Draw 20-17 Fed 14H
Casing Assumptions

2. Casing Program

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8 3/4	8927	10470	10272	7"	26.00	L-80	BT&C	1.13	1.51	17.27
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Casing Assumptions

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Vaca Draw 20-17 Fed 14H

Casing Assumptions

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
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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

Vaca Draw 20-17 Federal 14H

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

H₂S Detection and Alarm Systems:

 - A. H₂S sensors/detectors to be located on the drilling rig floor, in the base of the sub structure/cellar area, on the mud pits in the shale shaker area. Additional H₂S detectors may be placed as deemed necessary.
 - B. An audio alarm system will be installed on the derrick floor and in the top doghouse.
- 3 Windsock and/or wind streamers:
 - A. Windsock at mudpit area should be high enough to be visible.
 - B. Windsock on the rig floor and / or top doghouse should be high enough to be visible.
- 4 Condition Flags and Signs
 - A. Warning sign on access road to location.
 - B. Flags to be displayed on sign at entrance to location. Green flag indicates normal safe condition. Yellow flag indicates potential pressure and danger. Red flag indicates danger (H₂S present in dangerous concentration). Only H₂S trained and certified personnel admitted to location.
- 5 Well control equipment:
 - A. See exhibit "E-1"
- 6 Communication:
 - A. While working under masks chalkboards will be used for communication.
 - B. Hand signals will be used where chalk board is inappropriate.
 - C. Two way radio will be used to communicate off location in case of emergency help is required. In most cases cellular telephones will be available at most drilling foreman's trailer or living quarters.
- 7 Drillstem Testing:

No DSTs or cores are planned at this time.
- 8 Drilling contractor supervisor will be required to be familiar with the effects H₂S has on tubular goods and other mechanical equipment.
- 9 If H₂S is encountered, mud system will be altered if necessary to maintain control of formation. A mud gas separator will be brought into service along with H₂S scavengers if necessary.

H₂S Contingency Plan
Vaca Draw 20-17 Federal 14H
Cimarex Energy Co.
UL: M, Sec. 20, 25S, 33E
Lea Co., NM

Emergency Procedures

In the event of a release of gas containing H₂S, the first responder(s) must:

- « Isolate the area and prevent entry by other persons into the 100 ppm ROE.
- « Evacuate any public places encompassed by the 100 ppm ROE.
- « Be equipped with H₂S monitors and air packs in order to control the release.
- « Use the "buddy system" to ensure no injuries occur during the 432-620-1975
- « Take precautions to avoid personal injury during this operation.
- « Contact operator and/or local officials to aid in operation. See list of phone numbers attached.
- « Have received training in the:
 - Detection of H₂S, and
 - Measures for protection against the gas,
 - Equipment used for protection and emergency response.

Ignition of Gas Source

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (SO₂). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally, the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever there is an ignition of the gas.

Characteristics of H₂S and SO₂

Please see attached International Chemical Safety Cards.

Contacting Authorities

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

H₂S Contingency Plan Emergency Contacts**Vaca Draw 20-17 Federal 14H**

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
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Medical

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

Other

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



Cimarex Vaca Draw 20-17 Federal #14H Rev0 RM 20Jan20 Anti-Collision Summary Report

Analysis Date-24hr Time: January 21, 2020 - 08:20
Client: Cimarex Energy
Field: NM Lea County (NAD 83)
Structure: Cimarex Vaca Draw 20-17 Federal #14H
Slot: New Slot
Well: Vaca Draw 20-17 Federal #14H
Borehole: Vaca Draw 20-17 Federal #14H
Scan MD Range: 0.00ft ~ 20290.10ft

Analysis Method: 3D Least Distance
Reference Trajectory: Cimarex Vaca Draw 20-17 Federal #14H Rev0 RM 20Jan20 (Non-Def Plan)
Depth Interval: Every 10.00 Measured Depth (ft)
Rule Set: NAL Procedure: D&M AntiCollision Standard S002
Min Pts: All local minima indicated.
Version / Patch: 2.10.787.0
Database \ Project: us1153APP452.DIR.SLB.COMDRILLING-NM Lea County 2.10

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: Restricted within 61300.6 ft
 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 Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		

Results highlighted: Sep-Factor separation <= 1.50 ft

Cimarex Vaca Draw 20-17
 Federal #15H Rev0 RM
 20Jan20 (Non-Def Plan)

Warning Alert

20.01	16.25	18.72	3.76	N/A	MAS = 4.95 (m)	0.00	0.00	CtCt<=15m<15.00	Enter Alert
19.99	16.25	18.70	3.74	N/A	MAS = 4.95 (m)	26.00	26.00		WRP
19.99	19.54	6.53	0.45	1.54	OSF1.50	2000.00	2000.00		MinPt-CtCt
20.01	19.61	6.50	0.40	1.53	OSF1.50	2010.00	2010.00		MINPT-O-EOU
20.06	19.68	6.51	0.38	1.53	OSF1.50	2020.00	2020.00		MinPts
72.46	22.96	56.72	49.50	4.93	OSF1.50	2710.00	2708.41	OSF>5.00	Exit Alert
605.32	46.07	574.18	559.25	20.23	OSF1.50	6570.00	6564.57		MinPt-O-SF
620.10	68.16	574.24	551.95	13.88	OSF1.50	9650.00	9644.57		MINPT-O-EOU
620.17	68.24	574.25	551.93	13.87	OSF1.50	9660.00	9654.57		MinPt-O-ADP
624.06	69.31	577.42	554.75	13.73	OSF1.50	9800.00	9794.57		MinPt-O-SF
688.34	207.53	549.56	480.82	5.00	OSF1.50	15850.00	10300.00	OSF<5.00	Enter Alert
688.34	346.24	457.08	342.10	2.99	OSF1.50	20290.00	10300.00		MinPt-CtCt
688.34	346.24	457.08	342.10	2.99	OSF1.50	20290.10	10300.00		MinPts

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

Warning Alert

40.03	32.28	38.75	7.76	N/A	MAS = 9.84 (m)	0.00	0.00	CtCt<=15m<15.00	Enter Alert
40.02	32.28	38.74	7.75	N/A	MAS = 9.84 (m)	26.00	26.00		WRP
40.02	32.28	26.57	7.75	3.18	MAS = 9.84 (m)	2000.00	2000.00		MinPts
40.05	32.28	26.56	7.78	3.18	MAS = 9.84 (m)	2010.00	2010.00		MinPts
62.90	32.28	49.08	30.63	4.91	MAS = 9.84 (m)	2260.00	2259.67	OSF>5.00	Exit Alert
811.14	48.17	778.60	762.97	25.91	OSF1.50	6620.00	6614.57		MinPt-O-SF
832.06	62.87	789.72	769.19	20.23	OSF1.50	9000.00	8994.57		MINPT-O-EOU

Offset Trajectory	Separation			Allow	Sep.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.		MD (ft)	TVD (ft)	Alert	Minor	Major		
832.12	62.95	789.73	769.17	20.21		OSF1.50	9010.00	9004.57				MinPt-O-ADP	
839.82	64.47	796.40	775.34	19.91		OSF1.50	9220.00	9214.57				MinPt-O-SF	
1269.52	54.27	1232.91	1215.25	35.90		OSF1.50	10580.00	10300.00				MinPt-CtCt	
1269.53	334.81	1045.89	934.71	5.70		OSF1.50	20290.10	10300.00				MinPts	

Cimarex Vaca Draw 20-17
Federal #1H ST01 0ft-21966ft
(Def Survey)

Warning Alert

119.96	32.81	118.83	87.15	556059.79	MAS = 10.00 (m)	0.00	0.00						MinPts	
119.99	32.81	118.84	87.18	11583.45	MAS = 10.00 (m)	26.00	26.00						WRP	
120.02	32.81	118.84	87.21	2474.33	MAS = 10.00 (m)	40.00	40.00						MINPT-O-EOU	
139.39	32.81	130.72	106.58	18.35	MAS = 10.00 (m)	1630.00	1630.00						MINPT-O-EOU	
142.35	32.81	132.17	109.54	15.60	MAS = 10.00 (m)	2240.00	2239.73						MinPts	
142.35	32.81	132.17	109.55	15.59	MAS = 10.00 (m)	2250.00	2249.70						MINPT-O-EOU	
142.39	32.81	132.19	109.58	15.58	MAS = 10.00 (m)	2280.00	2279.62						MinPt-O-SF	
128.41	32.81	115.48	95.60	10.79	MAS = 10.00 (m)	3710.00	3705.60						MinPts	
128.43	32.81	115.44	95.62	10.73	MAS = 10.00 (m)	3730.00	3725.55						MINPT-O-EOU	
132.06	32.81	118.12	99.25	10.22	MAS = 10.00 (m)	4005.23	4000.00						MinPt-O-SF	
101.44	32.81	82.73	68.63	5.72	MAS = 10.00 (m)	5680.00	5674.57						MinPts	
101.51	32.81	82.66	68.70	5.68	MAS = 10.00 (m)	5710.00	5704.57						MINPT-O-EOU	
108.80	32.81	88.23	75.99	5.54	MAS = 10.00 (m)	6140.00	6134.57						MinPt-O-SF	
112.47	32.81	91.24	79.67	5.54	MAS = 10.00 (m)	6320.00	6314.57						MinPt-O-SF	
115.23	32.81	93.49	82.42	5.54	MAS = 10.00 (m)	6440.00	6434.57						MinPt-O-SF	
148.39	45.33	117.79	103.06	5.00	OSF1.50	8490.00	8484.57		OSF<5.00				Enter Alert	
150.02	47.61	117.91	102.41	4.81	OSF1.50	8900.00	8894.57						MINPT-O-EOU	
150.19	47.79	117.95	102.39	4.79	OSF1.50	8930.00	8924.57						MinPt-O-ADP	
151.71	50.86	117.42	100.85	4.54	OSF1.50	9410.00	9404.57						MinPt-CtCt	
97.58	55.57	60.16	42.01	2.66	OSF1.50	10160.00	10128.45						MinPts	
181.15	56.92	142.83	124.24	4.84	OSF1.50	10350.00	10246.61		OSF>5.00				Exit Alert	
2085.41	68.90	2039.10	2016.51	46.13	OSF1.50	12360.00	10300.00						MinPt-CtCt	
2085.93	70.42	2038.61	2015.51	45.13	OSF1.50	12420.00	10300.00						MINPT-O-EOU	
2086.59	71.18	2038.75	2015.40	44.66	OSF1.50	12450.00	10300.00						MinPt-O-ADP	
2090.66	84.31	2034.08	2006.35	37.68	OSF1.50	12900.00	10300.00						MinPt-CtCt	
2093.91	91.55	2032.50	2002.36	34.72	OSF1.50	13160.00	10300.00						MINPT-O-EOU	
2095.89	94.06	2032.81	2001.83	33.81	OSF1.50	13250.00	10300.00						MinPt-O-ADP	
2103.91	102.29	2035.34	2001.62	31.18	OSF1.50	13520.00	10300.00						MinPt-CtCt	
2104.94	105.89	2033.97	1999.05	30.12	OSF1.50	13650.00	10300.00						MINPT-O-EOU	
2096.18	119.69	2016.01	1976.49	26.51	OSF1.50	14110.00	10300.00						MinPt-CtCt	
2096.85	121.82	2015.26	1975.03	26.05	OSF1.50	14190.00	10300.00						MINPT-O-EOU	
2097.74	122.88	2015.45	1974.87	25.83	OSF1.50	14230.00	10300.00						MinPt-O-ADP	
2101.41	131.81	2013.16	1969.60	24.11	OSF1.50	14520.00	10300.00						MinPt-CtCt	
2102.64	135.40	2011.99	1967.23	23.48	OSF1.50	14650.00	10300.00						MINPT-O-EOU	
2104.04	137.05	2012.30	1967.00	23.21	OSF1.50	14710.00	10300.00						MinPt-O-ADP	
2113.05	157.92	2007.39	1955.13	20.20	OSF1.50	15400.00	10300.00						MinPt-CtCt	
2111.65	175.19	1994.49	1936.47	18.19	OSF1.50	15980.00	10300.00						MinPt-CtCt	
2100.48	189.25	1973.93	1911.22	16.74	OSF1.50	16450.00	10300.00						MinPt-CtCt	
2101.94	194.09	1972.17	1907.85	16.33	OSF1.50	16620.00	10300.00						MINPT-O-EOU	
2102.37	194.59	1972.27	1907.79	16.29	OSF1.50	16640.00	10300.00						MinPt-O-ADP	
2128.04	217.92	1982.38	1910.11	14.72	OSF1.50	17410.00	10300.00						MinPt-CtCt	
2114.69	238.06	1955.61	1876.63	13.38	OSF1.50	18080.00	10300.00						MinPt-CtCt	
2097.84	276.44	1913.18	1821.41	11.42	OSF1.50	19360.00	10300.00						MinPt-CtCt	
2099.06	280.35	1911.79	1818.72	11.27	OSF1.50	19500.00	10300.00						MINPT-O-EOU	
2100.43	284.20	1910.59	1816.23	11.12	OSF1.50	19620.00	10300.00						MinPt-CtCt	
2100.83	285.49	1910.13	1815.34	11.08	OSF1.50	19670.00	10300.00						MINPT-O-EOU	
2101.43	286.23	1910.23	1815.20	11.05	OSF1.50	19700.00	10300.00						MinPt-O-ADP	

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
	2101.87	297.41	1903.22	1804.46	10.64	OSF1.50	20060.00	10300.00				MinPt-CtCt	
	2102.11	298.10	1902.99	1804.00	10.61	OSF1.50	20090.00	10300.00				MINPT-O-EOU	
	2102.28	298.32	1903.02	1803.96	10.61	OSF1.50	20100.00	10300.00				MinPt-O-ADP	
	2109.68	300.69	1908.84	1808.99	10.56	OSF1.50	20240.00	10300.00				MinPt-O-SF	
	2114.57	301.23	1913.38	1813.34	10.56	OSF1.50	20290.10	10300.00				TD	

Cimarex Vaca Draw 20-17
Federal #1H Surcon 0ft-12740
(Def Survey)

Warning Alert

119.96	32.81	117.98	87.15	552087.03	MAS = 10.00 (m)	0.00	0.00						MinPts	
119.99	32.81	118.00	87.18	11500.71	MAS = 10.00 (m)	26.00	26.00						WRP	
120.02	32.81	117.99	87.21	2456.68	MAS = 10.00 (m)	40.00	40.00						MINPT-O-EOU	
139.39	32.81	129.87	106.58	18.23	MAS = 10.00 (m)	1630.00	1630.00						MINPT-O-EOU	
142.35	32.81	131.32	109.54	15.51	MAS = 10.00 (m)	2240.00	2239.73						MinPts	
142.35	32.81	131.32	109.55	15.50	MAS = 10.00 (m)	2250.00	2249.70						MINPT-O-EOU	
142.39	32.81	131.34	109.58	15.48	MAS = 10.00 (m)	2280.00	2279.62						MinPt-O-SF	
128.41	32.81	114.63	95.60	10.71	MAS = 10.00 (m)	3710.00	3705.60						MinPts	
128.43	32.81	114.59	95.62	10.66	MAS = 10.00 (m)	3730.00	3725.55						MINPT-O-EOU	
132.06	32.81	117.27	99.25	10.16	MAS = 10.00 (m)	4005.23	4000.00						MinPt-O-SF	
101.44	32.81	81.88	68.63	5.67	MAS = 10.00 (m)	5680.00	5674.57						MinPts	
101.51	32.81	81.81	68.70	5.63	MAS = 10.00 (m)	5710.00	5704.57						MINPT-O-EOU	
108.80	32.81	87.38	75.99	5.50	MAS = 10.00 (m)	6140.00	6134.57						MinPt-O-SF	
112.25	32.81	90.21	79.44	5.50	MAS = 10.00 (m)	6310.00	6304.57						MinPt-O-SF	
115.00	32.83	92.45	82.17	5.50	OSF1.50	6430.00	6424.57						MinPt-O-SF	
148.20	45.87	116.96	102.33	5.00	OSF1.50	8440.00	8434.57		OSF<5.00				Enter Alert	
148.39	46.18	116.94	102.21	4.97	OSF1.50	8490.00	8484.57						MINPT-O-EOU	
150.02	48.46	117.06	101.57	4.78	OSF1.50	8900.00	8894.57						MINPT-O-EOU	
150.19	48.64	117.10	101.54	4.76	OSF1.50	8930.00	8924.57						MinPt-O-ADP	
151.71	51.71	116.57	100.00	4.52	OSF1.50	9410.00	9404.57						MinPt-CtCt	
97.58	56.42	59.31	41.16	2.63	OSF1.50	10160.00	10128.45						MinPts	
181.15	57.77	141.98	123.39	4.82	OSF1.50	10350.00	10246.61		OSF>5.00				Exit Alert	
10085.25	59.28	10045.08	10025.98	263.98	OSF1.50	20290.10	10300.00						TD	

Cimarex Vaca Draw 20-17
Federal #5H Final
MWD(Surcon Corrected) (Def
Survey)

Warning Alert

121.64	32.81	119.66	88.83	N/A	MAS = 10.00 (m)	0.00	0.00						Surface	
121.61	32.81	119.63	88.80	N/A	MAS = 10.00 (m)	10.00	10.00						MinPts	
121.61	32.81	119.63	88.80	301290.05	MAS = 10.00 (m)	26.00	26.00						WRP	
121.94	32.81	118.97	89.13	120.62	MAS = 10.00 (m)	260.00	260.00						MINPT-O-EOU	
123.49	32.81	118.39	90.68	38.97	MAS = 10.00 (m)	760.00	760.00						MinPts	
123.80	32.81	117.73	90.99	29.81	MAS = 10.00 (m)	960.00	960.00						MINPT-O-EOU	
124.71	32.81	117.77	91.90	24.74	MAS = 10.00 (m)	1160.00	1160.00						MINPT-O-EOU	
127.44	32.81	116.65	94.63	14.25	MAS = 10.00 (m)	2080.00	2079.99						MinPts	
127.46	32.81	116.62	94.65	14.17	MAS = 10.00 (m)	2100.00	2099.98						MINPT-O-EOU	
128.78	32.81	117.82	95.97	14.11	MAS = 10.00 (m)	2260.00	2259.67						MinPt-O-SF	
131.56	32.81	120.42	98.75	14.14	MAS = 10.00 (m)	2450.00	2449.14						MinPt-O-SF	
132.80	32.81	121.56	99.99	14.14	MAS = 10.00 (m)	2550.00	2548.86						MinPt-O-SF	
133.11	32.81	121.72	100.30	13.93	MAS = 10.00 (m)	2710.00	2708.41						MinPts	
133.16	32.81	121.66	100.35	13.78	MAS = 10.00 (m)	2780.00	2778.21						MINPT-O-EOU	
144.19	32.81	130.21	111.38	11.85	MAS = 10.00 (m)	3780.00	3775.41						MinPt-O-SF	
130.91	32.81	113.55	98.10	8.38	MAS = 10.00 (m)	5190.00	5184.57						MinPts	
130.98	32.81	113.47	98.17	8.30	MAS = 10.00 (m)	5230.00	5224.57						MINPT-O-EOU	
141.24	32.88	118.66	108.37	6.76	OSF1.50	6520.00	6514.57						MinPt-CtCt	
141.52	34.79	117.67	106.73	6.38	OSF1.50	6830.00	6824.57						MinPt-CtCt	

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
138.41	39.79	111.23	98.62	5.41		OSF1.50	7630.00	7624.57				MinPt-CtCt	
137.90	42.81	108.70	95.09	4.99		OSF1.50	8090.00	8084.57	OSF<5.00			Enter Alert	
127.92	51.30	93.06	76.62	3.83		OSF1.50	9430.00	9424.57				MinPt-CtCt	
127.96	51.43	93.01	76.53	3.82		OSF1.50	9450.00	9444.57				MINPT-O-EOU	
128.02	51.50	93.03	76.53	3.82		OSF1.50	9460.00	9454.57				MinPt-O-ADP	
128.23	51.63	93.15	76.60	3.81		OSF1.50	9480.00	9474.57				MinPt-O-SF	
163.13	50.80	128.60	112.33	4.95		OSF1.50	9690.00	9684.57	OSF>5.00			Exit Alert	
330.66	34.36	307.09	296.30	15.23		OSF1.50	10910.00	10300.00				MinPt-CtCt	
330.78	34.75	306.96	296.03	15.05		OSF1.50	10940.00	10300.00				MINPT-O-EOU	
330.90	34.88	306.99	296.02	15.00		OSF1.50	10950.00	10300.00				MinPt-O-ADP	
325.27	52.72	289.46	272.55	9.56		OSF1.50	11680.00	10300.00				MinPt-CtCt	
321.50	66.54	276.48	254.96	7.42		OSF1.50	12180.00	10300.00				MinPt-CtCt	
316.17	82.63	260.42	233.54	5.84		OSF1.50	12730.00	10300.00				MinPt-CtCt	
316.86	84.62	259.78	232.23	5.71		OSF1.50	12810.00	10300.00				MINPT-O-EOU	
318.77	89.29	258.58	229.48	5.44		OSF1.50	12970.00	10300.00				MinPt-CtCt	
315.35	96.36	250.46	219.00	4.98		OSF1.50	13190.00	10300.00	OSF<5.00			Enter Alert	
309.42	100.99	241.43	208.43	4.66		OSF1.50	13380.00	10300.00				MinPt-CtCt	
309.94	116.69	231.49	193.25	4.03		OSF1.50	13900.00	10300.00				MinPt-CtCt	
310.65	118.76	230.82	191.89	3.96		OSF1.50	13980.00	10300.00				MINPT-O-EOU	
311.51	119.78	230.99	191.72	3.94		OSF1.50	14020.00	10300.00				MinPt-O-ADP	
311.82	157.99	205.83	153.83	2.98		OSF1.50	15300.00	10300.00				MinPt-CtCt	
311.52	168.94	198.24	142.58	2.78		OSF1.50	15670.00	10300.00				MinPt-CtCt	
310.08	177.77	190.91	132.31	2.63		OSF1.50	15970.00	10300.00				MinPt-CtCt	
310.67	187.72	184.86	122.94	2.49		OSF1.50	16310.00	10300.00				MinPt-CtCt	
311.65	202.51	175.98	109.14	2.32		OSF1.50	16800.00	10300.00				MinPt-CtCt	
312.88	218.44	166.59	94.44	2.15		OSF1.50	17320.00	10300.00				MinPt-CtCt	
313.34	219.95	166.05	93.39	2.14		OSF1.50	17380.00	10300.00				MINPT-O-EOU	
315.44	245.12	151.37	70.33	1.93		OSF1.50	18210.00	10300.00				MinPt-CtCt	
313.75	254.54	143.39	59.20	1.85		OSF1.50	18530.00	10300.00				MinPt-CtCt	
314.03	257.81	141.49	56.22	1.83		OSF1.50	18640.00	10300.00				MinPt-CtCt	
323.51	285.56	132.48	37.95	1.70		OSF1.50	19570.00	10300.00				MINPT-O-EOU	
324.30	300.31	123.43	23.99	1.62		OSF1.50	20060.00	10300.00				MinPts	
397.90	241.69	236.12	156.22	2.48		OSF1.50	20290.10	10300.00				TD	

Cimarex Vaca Draw 20-17
Federal #29H Rev0 RM
19Sept18 (Non-Def Plan)

Warning Alert

663.36	32.81	661.38	630.55	N/A	MAS = 10.00 (m)	0.00	0.00					Surface	
663.35	32.81	661.37	630.54	N/A	MAS = 10.00 (m)	26.00	26.00					WRP	
663.35	32.81	649.21	630.54	54.38	MAS = 10.00 (m)	2000.00	2000.00					MinPts	
360.66	67.49	314.87	293.17	8.25	OSF1.50	9470.00	9464.57					MinPt-CtCt	
360.72	67.64	314.83	293.08	8.24	OSF1.50	9490.00	9484.57					MinPts	
362.36	68.17	316.12	294.19	8.21	OSF1.50	9570.00	9564.57					MinPt-O-SF	
503.27	54.17	466.49	449.10	14.41	OSF1.50	10650.00	10300.00					MinPt-CtCt	
503.28	152.59	400.89	350.69	4.99	OSF1.50	14710.00	10300.00	OSF<5.00				Enter Alert	
503.28	324.41	286.35	178.87	2.33	OSF1.50	20290.10	10300.00					MinPts	

Cimarex Vaca Draw 20-17
Federal #30H Rev0 RM
19Sept18 (Non-Def Plan)

Warning Alert

683.29	32.81	681.31	650.48	N/A	MAS = 10.00 (m)	0.00	0.00					Surface	
683.29	32.81	681.31	650.48	N/A	MAS = 10.00 (m)	26.00	26.00					WRP	
683.29	32.81	669.14	650.48	56.01	MAS = 10.00 (m)	2000.00	2000.00					MinPts	
683.30	32.81	669.11	650.50	55.80	MAS = 10.00 (m)	2010.00	2010.00					MINPT-O-EOU	
820.18	84.50	763.18	735.68	14.87	OSF1.50	9780.00	9774.57					MinPts	
821.18	84.75	764.02	736.43	14.85	OSF1.50	9827.96	9822.54					MinPt-O-SF	

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
	849.61	82.37	794.04	767.25	15.82	OSF1.50	10650.00	10300.00				MinPt-CtCt	
	849.62	256.44	678.01	593.19	5.00	OSF1.50	17360.00	10300.00	OSF<5.00			Enter Alert	
	849.63	347.58	617.25	502.05	3.68	OSF1.50	20290.10	10300.00				MinPts	

Final Surveys - Cimarex Vaca
Draw 20-17 Federal #7H MWD
0ft-22544ft (Surcon Corrected)
(Def Survey)

Pass

116.66	32.81	115.48	83.85	N/A	MAS = 10.00 (m)	0.00	0.00					Surface	
116.58	32.81	115.40	83.78	13382.55	MAS = 10.00 (m)	26.00	26.00					WRP	
95.27	32.81	87.53	62.46	14.08	MAS = 10.00 (m)	1450.00	1450.00					MinPts	
95.34	32.81	87.48	62.53	13.85	MAS = 10.00 (m)	1480.00	1480.00					MINPT-O-EOU	
101.95	32.81	91.84	69.15	11.13	MAS = 10.00 (m)	2020.00	2020.00					MinPt-O-SF	
290.40	32.81	276.28	257.60	22.12	MAS = 10.00 (m)	4480.00	4474.57					MinPts	
290.42	32.81	276.27	257.62	22.07	MAS = 10.00 (m)	4490.00	4484.57					MINPT-O-EOU	
285.97	32.81	270.14	253.16	19.27	MAS = 10.00 (m)	4980.00	4974.57					MinPts	
285.99	32.81	270.12	253.18	19.22	MAS = 10.00 (m)	4990.00	4984.57					MINPT-O-EOU	
349.04	34.80	325.49	314.24	15.46	OSF1.50	6960.00	6954.57					MinPt-O-ADP	
352.76	37.52	327.40	315.24	14.46	OSF1.50	7400.00	7394.57					MinPt-O-ADP	
325.71	52.02	290.68	273.69	9.55	OSF1.50	9690.00	9684.57					MinPt-CtCt	
325.15	53.84	288.91	271.31	9.21	OSF1.50	9980.00	9972.02					MinPt-CtCt	
325.18	53.95	288.87	271.23	9.19	OSF1.50	10000.00	9990.87					MinPts	
326.13	54.24	289.62	271.89	9.17	OSF1.50	10050.00	10036.66					MinPt-O-SF	
2247.68	67.37	2202.44	2180.31	50.76	OSF1.50	12350.00	10300.00					MinPt-O-ADP	
2255.18	76.82	2203.64	2178.37	44.59	OSF1.50	12680.00	10300.00					MINPT-O-EOU	
2255.23	84.20	2198.76	2171.02	40.63	OSF1.50	12930.00	10300.00					MinPt-CtCt	
2254.58	89.39	2194.66	2165.19	38.24	OSF1.50	13110.00	10300.00					MinPt-CtCt	
2254.31	98.15	2188.55	2156.16	34.79	OSF1.50	13410.00	10300.00					MinPt-CtCt	
2255.08	100.53	2187.73	2154.54	33.97	OSF1.50	13500.00	10300.00					MINPT-O-EOU	
2255.93	101.58	2187.88	2154.35	33.62	OSF1.50	13540.00	10300.00					MinPt-O-ADP	
2257.74	104.66	2187.64	2153.08	32.65	OSF1.50	13630.00	10300.00					MinPt-CtCt	
2258.21	106.15	2187.12	2152.06	32.20	OSF1.50	13690.00	10300.00					MINPT-O-EOU	
2258.85	106.89	2187.26	2151.96	31.98	OSF1.50	13720.00	10300.00					MinPt-O-ADP	
2265.79	111.37	2191.21	2154.42	30.78	OSF1.50	13870.00	10300.00					MINPT-O-EOU	
2266.04	111.64	2191.29	2154.40	30.71	OSF1.50	13880.00	10300.00					MinPt-O-ADP	
2272.46	116.70	2194.33	2155.76	29.45	OSF1.50	14050.00	10300.00					MINPT-O-EOU	
2270.36	130.43	2183.08	2139.93	26.30	OSF1.50	14500.00	10300.00					MinPt-CtCt	
2270.93	132.21	2182.47	2138.72	25.95	OSF1.50	14570.00	10300.00					MINPT-O-EOU	
2276.78	138.74	2183.96	2138.04	24.78	OSF1.50	14800.00	10300.00					MinPt-O-ADP	
2295.26	166.58	2183.88	2128.68	20.78	OSF1.50	15720.00	10300.00					MinPt-CtCt	
2297.09	180.04	2176.74	2117.05	19.24	OSF1.50	16170.00	10300.00					MinPt-CtCt	
2299.57	195.63	2168.82	2103.94	17.71	OSF1.50	16690.00	10300.00					MinPt-CtCt	
2294.08	211.74	2152.59	2082.34	16.32	OSF1.50	17230.00	10300.00					MinPt-CtCt	
2293.72	222.84	2144.83	2070.88	15.50	OSF1.50	17600.00	10300.00					MinPt-CtCt	
2286.72	255.18	2116.28	2031.54	13.49	OSF1.50	18680.00	10300.00					MinPt-CtCt	
2286.77	258.47	2114.12	2028.30	13.32	OSF1.50	18790.00	10300.00					MinPt-CtCt	
2287.96	273.49	2105.30	2014.46	12.59	OSF1.50	19290.00	10300.00					MinPt-CtCt	
2287.14	279.53	2100.46	2007.61	12.31	OSF1.50	19490.00	10300.00					MinPt-CtCt	
2283.78	294.51	2087.11	1989.27	11.67	OSF1.50	19990.00	10300.00					MinPt-CtCt	
2283.50	299.32	2083.62	1984.17	11.48	OSF1.50	20150.00	10300.00					MinPt-CtCt	
2283.94	303.45	2081.31	1980.48	11.32	OSF1.50	20290.10	10300.00					MinPts	

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
Cimarex Vaca Draw 20-17 Federal #6H MWD Final(Surcon Corrected) (Def Survey)													
	126.47	32.81	124.49	93.66	N/A	MAS = 10.00 (m)	0.00	0.00					Pass
	126.44	32.81	124.46	93.63	32299.71	MAS = 10.00 (m)	26.00	26.00					Surface
	115.21	32.81	106.57	82.40	17.00	MAS = 10.00 (m)	1560.00	1560.00					WRP
	116.19	32.81	105.90	83.38	13.76	MAS = 10.00 (m)	1920.00	1920.00					MinPts
	117.95	32.81	107.00	85.15	12.92	MAS = 10.00 (m)	2100.00	2099.98					MINPT-O-EOU
	172.22	32.81	159.97	139.41	16.58	MAS = 10.00 (m)	3030.00	3027.51					MinPt-O-SF
	201.12	32.81	187.48	168.31	17.08	MAS = 10.00 (m)	3580.00	3575.97					MinPt-O-SF
	208.48	32.81	194.44	175.67	17.12	MAS = 10.00 (m)	3750.00	3745.49					MinPt-O-SF
	215.78	32.81	201.28	182.97	17.08	MAS = 10.00 (m)	3870.00	3865.15					MinPt-O-SF
	230.64	32.81	215.72	197.84	17.66	MAS = 10.00 (m)	4420.00	4414.57					MinPts
	230.73	32.81	215.61	197.93	17.41	MAS = 10.00 (m)	4470.00	4464.57					MINPT-O-EOU
	189.88	35.43	165.60	154.45	8.43	OSF1.50	6940.00	6934.57					MinPt-CtCt
	170.13	47.57	137.75	122.55	5.53	OSF1.50	8870.00	8864.57					MinPts
	170.20	47.65	137.77	122.55	5.52	OSF1.50	8880.00	8874.57					MinPt-O-ADP
	170.41	47.72	137.94	122.69	5.52	OSF1.50	8890.00	8884.57					MinPt-O-SF
	1029.61	32.81	1007.13	996.81	50.13	MAS = 10.00 (m)	10950.00	10300.00					MinPt-CtCt
	1031.22	39.17	1004.44	992.05	41.51	OSF1.50	11230.00	10300.00					MINPT-O-EOU
	1031.91	40.02	1004.58	991.90	40.62	OSF1.50	11270.00	10300.00					MinPt-O-ADP
	1044.55	52.47	1008.91	992.08	30.97	OSF1.50	11740.00	10300.00					MINPT-O-EOU
	1046.01	66.08	1001.30	979.93	24.43	OSF1.50	12210.00	10300.00					MinPt-CtCt
	1035.88	91.88	973.96	944.00	17.25	OSF1.50	13110.00	10300.00					MinPt-CtCt
	1029.90	138.28	937.05	891.62	11.31	OSF1.50	14670.00	10300.00					MinPt-CtCt
	1029.41	152.29	927.22	877.12	10.25	OSF1.50	15140.00	10300.00					MinPt-CtCt
	1028.49	161.85	919.93	866.64	9.63	OSF1.50	15460.00	10300.00					MinPt-CtCt
	1030.67	228.18	877.89	802.49	6.82	OSF1.50	17680.00	10300.00					MinPt-CtCt
	1030.41	233.58	874.03	796.82	6.66	OSF1.50	17860.00	10300.00					MinPt-CtCt
	1030.16	238.42	870.56	791.75	6.52	OSF1.50	18020.00	10300.00					MinPt-CtCt
	1030.02	245.05	865.99	784.97	6.34	OSF1.50	18240.00	10300.00					MinPt-CtCt
	1028.74	255.90	857.47	772.83	6.07	OSF1.50	18600.00	10300.00					MinPt-CtCt
	1026.37	274.78	842.52	751.59	5.63	OSF1.50	19230.00	10300.00					MinPt-CtCt
	1029.18	297.83	829.97	731.35	5.21	OSF1.50	20000.00	10300.00					MinPt-CtCt
	1029.39	299.63	828.98	729.76	5.18	OSF1.50	20070.00	10300.00					MinPts
	1054.66	292.83	858.78	761.83	5.43	OSF1.50	20290.10	10300.00					TD
Final Surveys - Cimarex Vaca Draw 20-17 Federal #8H MWD 0ft-22328ft (Surcon Corrected) (Def Survey)													
	134.21	32.81	133.08	101.40	N/A	MAS = 10.00 (m)	0.00	0.00					Pass
	134.15	32.81	133.01	101.34	68406.89	MAS = 10.00 (m)	26.00	26.00					Surface
	133.67	32.81	131.50	100.86	126.87	MAS = 10.00 (m)	280.00	280.00					WRP
	132.31	32.81	127.49	99.50	35.51	MAS = 10.00 (m)	820.00	820.00					MinPts
	132.36	32.81	127.42	99.55	34.41	MAS = 10.00 (m)	850.00	850.00					MinPts
	135.96	32.81	126.32	103.15	15.85	MAS = 10.00 (m)	1900.00	1900.00					MINPT-O-EOU
	135.97	32.81	126.30	103.16	15.79	MAS = 10.00 (m)	1910.00	1910.00					MinPts
	137.46	32.81	127.49	104.65	15.42	MAS = 10.00 (m)	2000.00	2000.00					MINPT-O-EOU
	443.27	32.81	429.14	410.46	34.00	MAS = 10.00 (m)	4340.00	4334.57					MinPt-O-SF
	453.43	32.81	439.00	420.62	34.00	MAS = 10.00 (m)	4450.00	4444.57					MinPt-O-SF
	765.84	55.01	728.79	710.84	21.29	OSF1.50	10010.00	10000.20					MinPt-CtCt
	765.88	55.11	728.76	710.77	21.25	OSF1.50	10030.00	10018.60					MINPT-O-EOU
	765.94	55.17	728.78	710.77	21.23	OSF1.50	10040.00	10027.67					MinPt-O-ADP

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
771.42	56.00	733.71	715.42	21.06	OSF1.50	10190.00	10150.87					MinPt-O-SF	
2196.46	71.90	2148.20	2124.56	46.44	OSF1.50	12400.00	10300.00					MinPt-CtCt	
2196.26	75.21	2145.79	2121.05	44.36	OSF1.50	12520.00	10300.00					MinPt-CtCt	
2197.17	78.09	2144.78	2119.08	42.73	OSF1.50	12630.00	10300.00					MINPT-O-EOU	
2199.17	83.03	2143.48	2116.13	40.19	OSF1.50	12800.00	10300.00					MinPt-CtCt	
2200.00	93.52	2137.33	2106.48	35.64	OSF1.50	13170.00	10300.00					MinPt-CtCt	
2199.27	103.00	2130.27	2096.27	32.32	OSF1.50	13500.00	10300.00					MinPt-CtCt	
2199.01	109.96	2125.38	2089.06	30.26	OSF1.50	13740.00	10300.00					MinPt-CtCt	
2198.27	122.53	2116.25	2075.74	27.12	OSF1.50	14170.00	10300.00					MinPt-CtCt	
2196.57	129.89	2109.65	2066.68	25.55	OSF1.50	14420.00	10300.00					MinPt-CtCt	
2197.30	132.27	2108.80	2065.04	25.09	OSF1.50	14510.00	10300.00					MINPT-O-EOU	
2199.50	135.47	2108.85	2064.02	24.52	OSF1.50	14620.00	10300.00					MINPT-O-EOU	
2201.60	137.98	2109.29	2063.63	24.10	OSF1.50	14710.00	10300.00					MinPt-O-ADP	
2204.11	143.13	2108.36	2060.98	23.25	OSF1.50	14870.00	10300.00					MinPt-CtCt	
2186.03	167.28	2074.18	2018.75	19.71	OSF1.50	15690.00	10300.00					MinPt-CtCt	
2186.64	169.34	2073.42	2017.30	19.47	OSF1.50	15770.00	10300.00					MINPT-O-EOU	
2187.28	170.09	2073.56	2017.19	19.39	OSF1.50	15800.00	10300.00					MinPt-O-ADP	
2230.75	187.10	2105.69	2043.66	17.97	OSF1.50	16370.00	10300.00					MINPT-O-EOU	
2229.65	195.45	2099.02	2034.19	17.19	OSF1.50	16640.00	10300.00					MinPt-CtCt	
2230.47	197.83	2098.25	2032.64	16.99	OSF1.50	16730.00	10300.00					MINPT-O-EOU	
2231.58	199.13	2098.49	2032.44	16.89	OSF1.50	16780.00	10300.00					MinPt-O-ADP	
2233.99	203.81	2097.79	2030.18	16.51	OSF1.50	16930.00	10300.00					MINPT-O-EOU	
2209.21	234.51	2052.54	1974.70	14.18	OSF1.50	17950.00	10300.00					MinPt-CtCt	
2209.15	238.07	2050.11	1971.08	13.97	OSF1.50	18070.00	10300.00					MinPt-CtCt	
2199.20	249.43	2032.58	1949.77	13.27	OSF1.50	18450.00	10300.00					MinPt-CtCt	
2199.82	251.22	2032.01	1948.60	13.18	OSF1.50	18520.00	10300.00					MINPT-O-EOU	
2200.45	251.97	2032.14	1948.48	13.14	OSF1.50	18550.00	10300.00					MinPt-O-ADP	
2202.98	260.61	2028.91	1942.37	12.72	OSF1.50	18820.00	10300.00					MinPt-CtCt	
2203.67	262.70	2028.21	1940.97	12.62	OSF1.50	18900.00	10300.00					MINPT-O-EOU	
2204.52	263.73	2028.37	1940.79	12.58	OSF1.50	18940.00	10300.00					MinPt-O-ADP	
2204.46	269.95	2024.16	1934.51	12.29	OSF1.50	19130.00	10300.00					MinPt-CtCt	
2186.25	302.13	1984.50	1884.12	10.88	OSF1.50	20200.00	10300.00					MinPt-CtCt	
2186.72	304.62	1983.31	1882.10	10.80	OSF1.50	20290.10	10300.00					MinPts	

Final Surveys - Cimarex Vaca
Draw 20-17 Federal #13H
MWD 0ft-22542ft (Surcon
Corrected) (Def Survey)

Pass

152.36	32.81	150.38	119.55	N/A	MAS = 10.00 (m)	0.00	0.00					Surface	
152.30	32.81	150.32	119.50	73750.40	MAS = 10.00 (m)	26.00	26.00					WRP	
151.99	32.81	149.34	119.18	223.35	MAS = 10.00 (m)	190.00	190.00					MINPT-O-EOU	
150.91	32.81	147.56	118.10	67.54	MAS = 10.00 (m)	540.00	540.00					MinPts	
151.11	32.81	147.34	118.31	56.77	MAS = 10.00 (m)	630.00	630.00					MINPT-O-EOU	
183.70	32.81	174.61	150.89	22.94	MAS = 10.00 (m)	1710.00	1710.00					MinPt-O-SF	
1186.61	58.48	1147.24	1128.13	31.00	OSF1.50	10130.00	10104.83					MinPt-CtCt	
1186.62	58.54	1147.21	1128.08	30.97	OSF1.50	10140.00	10112.83					MINPT-O-EOU	
1186.66	58.60	1147.22	1128.07	30.94	OSF1.50	10150.00	10120.71					MinPt-O-ADP	
1197.34	59.67	1157.18	1137.67	30.65	OSF1.50	10330.00	10237.05					MinPt-O-SF	
2529.27	83.98	2472.95	2445.29	45.69	OSF1.50	12720.00	10300.00					MINPT-O-EOU	
2531.21	86.33	2473.33	2444.88	44.47	OSF1.50	12810.00	10300.00					MinPt-O-ADP	
2548.98	101.84	2480.76	2447.15	37.90	OSF1.50	13350.00	10300.00					MinPt-CtCt	
2549.94	104.68	2479.82	2445.26	36.87	OSF1.50	13460.00	10300.00					MINPT-O-EOU	
2557.32	117.35	2478.76	2439.97	32.95	OSF1.50	13900.00	10300.00					MINPT-O-EOU	
2546.28	141.37	2451.71	2404.91	27.20	OSF1.50	14720.00	10300.00					MinPt-CtCt	

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
2544.53	153.95	2441.56	2390.57	24.94		OSF1.50	15150.00	10300.00				MinPt-CtCt	
2545.36	156.59	2440.64	2388.77	24.53		OSF1.50	15250.00	10300.00				MINPT-O-EOU	
2542.79	166.49	2431.46	2376.30	23.04		OSF1.50	15570.00	10300.00				MinPt-CtCt	
2540.06	185.53	2416.05	2354.53	20.64		OSF1.50	16210.00	10300.00				MinPt-CtCt	
2539.64	190.60	2412.25	2349.04	20.08		OSF1.50	16380.00	10300.00				MinPt-CtCt	
2538.85	204.21	2402.38	2334.64	18.73		OSF1.50	16840.00	10300.00				MinPt-CtCt	
2539.62	206.55	2401.59	2333.07	18.52		OSF1.50	16930.00	10300.00				MINPT-O-EOU	
2536.13	225.41	2385.53	2310.72	16.94		OSF1.50	17550.00	10300.00				MinPt-CtCt	
2520.56	264.54	2343.87	2256.01	14.34		OSF1.50	18860.00	10300.00				MinPt-CtCt	
2520.41	269.92	2340.13	2250.49	14.05		OSF1.50	19040.00	10300.00				MinPt-CtCt	
2517.76	302.97	2315.45	2214.79	12.50		OSF1.50	20140.00	10300.00				MinPt-CtCt	
2517.24	307.70	2311.78	2209.54	12.31		OSF1.50	20290.10	10300.00				MinPts	

Cimarex Vaca Draw 20-17
Federal #31H Rev0 RM
19Sept18 (Non-Def Plan)

Pass

703.21	32.81	701.23	670.40	N/A	MAS = 10.00 (m)	0.00	0.00					Surface	
703.20	32.81	701.22	670.39	N/A	MAS = 10.00 (m)	26.00	26.00					WRP	
703.20	32.81	689.06	670.39	57.65	MAS = 10.00 (m)	2000.00	2000.00					MinPts	
703.23	32.81	689.05	670.42	57.49	MAS = 10.00 (m)	2010.00	2010.00					MINPT-O-EOU	
707.61	32.81	693.15	674.80	56.54	MAS = 10.00 (m)	2120.00	2119.96					MinPt-O-SF	
1017.88	32.81	998.42	985.07	58.10	MAS = 10.00 (m)	4005.23	4000.00					MinPt-O-SF	
1032.38	32.81	1012.69	999.57	58.18	MAS = 10.00 (m)	4100.00	4094.61					MinPt-O-SF	
1183.57	39.51	1156.57	1144.06	47.23	OSF1.50	5670.00	5664.57					MinPt-O-SF	
1187.44	68.52	1141.11	1118.93	26.73	OSF1.50	9530.00	9524.57					MINPT-O-EOU	
1187.58	68.68	1141.13	1118.90	26.66	OSF1.50	9550.00	9544.57					MinPt-O-ADP	
1202.54	71.00	1154.55	1131.54	26.09	OSF1.50	9890.00	9884.40					MinPt-O-SF	
1238.33	74.49	1188.01	1163.83	25.57	OSF1.50	10640.00	10300.00					MinPt-CtCt	
1238.35	348.73	1005.20	889.62	5.35	OSF1.50	20290.10	10300.00					MinPts	

Final Surveys - Cimarex Vaca
Draw 20-17 Federal #2H MWD
0ft-22179ft (Surcon Corrected)
(Def Survey)

Pass

1325.28	32.81	1324.26	1292.47	N/A	MAS = 10.00 (m)	0.00	0.00					Surface	
1325.25	32.81	1324.23	1292.45	N/A	MAS = 10.00 (m)	10.00	10.00					MinPts	
1325.26	32.81	1324.23	1292.45	N/A	MAS = 10.00 (m)	26.00	26.00					WRP	
1325.74	32.81	1319.48	1292.93	252.92	MAS = 10.00 (m)	1240.00	1240.00					MinPts	
1325.05	32.81	1314.92	1292.25	145.38	MAS = 10.00 (m)	2000.00	2000.00					MinPts	
1325.07	32.81	1314.91	1292.26	144.93	MAS = 10.00 (m)	2010.00	2010.00					MINPT-O-EOU	
1331.66	32.81	1321.16	1298.85	140.47	MAS = 10.00 (m)	2190.00	2189.86					MinPt-O-SF	
1333.51	32.81	1323.00	1300.70	140.49	MAS = 10.00 (m)	2214.68	2214.47					MinPt-O-SF	
1417.44	32.81	1404.93	1384.63	123.27	MAS = 10.00 (m)	3090.00	3087.34					MinPt-O-SF	
1505.15	32.81	1490.07	1472.34	106.96	MAS = 10.00 (m)	4005.23	4000.00					MinPt-O-SF	
1603.45	51.15	1569.01	1552.30	47.95	OSF1.50	9490.00	9484.57					MINPT-O-EOU	
1603.59	51.31	1569.04	1552.27	47.80	OSF1.50	9520.00	9514.57					MinPt-O-ADP	
1604.18	55.31	1566.96	1548.87	44.30	OSF1.50	10160.00	10128.45					MinPt-CtCt	
1604.23	55.44	1566.93	1548.79	44.19	OSF1.50	10180.00	10143.53					MinPts	
1638.23	57.84	1599.33	1580.39	43.22	OSF1.50	10540.00	10298.49					MinPt-O-SF	
2613.96	80.48	2559.98	2533.48	49.31	OSF1.50	12450.00	10300.00					MinPt-CtCt	
2615.11	83.61	2559.04	2531.50	47.46	OSF1.50	12580.00	10300.00					MINPT-O-EOU	
2615.15	89.93	2554.86	2525.21	44.08	OSF1.50	12810.00	10300.00					MinPt-CtCt	
2615.89	92.08	2554.17	2523.81	43.06	OSF1.50	12900.00	10300.00					MINPT-O-EOU	
2619.90	98.20	2554.11	2521.70	40.41	OSF1.50	13120.00	10300.00					MINPT-O-EOU	
2621.17	99.70	2554.38	2521.47	39.81	OSF1.50	13180.00	10300.00					MinPt-O-ADP	

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
2627.21	124.93	2543.60	2502.29	31.78		OSF1.50	14060.00	10300.00				MinPt-CtCt	
2632.98	140.08	2539.26	2492.90	28.38		OSF1.50	14600.00	10300.00				MINPT-O-EOU	
2638.04	151.10	2536.98	2486.94	26.35		OSF1.50	14980.00	10300.00				MINPT-O-EOU	
2631.11	162.81	2522.24	2468.30	24.38		OSF1.50	15370.00	10300.00				MinPt-CtCt	
2631.60	164.22	2521.79	2467.38	24.17		OSF1.50	15430.00	10300.00				MINPT-O-EOU	
2632.17	164.92	2521.89	2467.25	24.08		OSF1.50	15460.00	10300.00				MinPt-O-ADP	
2629.30	193.70	2499.84	2435.60	20.46		OSF1.50	16420.00	10300.00				MinPt-CtCt	
2629.99	196.27	2498.81	2433.72	20.19		OSF1.50	16520.00	10300.00				MINPT-O-EOU	
2630.76	197.23	2498.95	2433.54	20.10		OSF1.50	16560.00	10300.00				MinPt-O-ADP	
2641.92	210.58	2501.20	2431.34	18.90		OSF1.50	16990.00	10300.00				MinPt-CtCt	
2644.34	217.19	2499.22	2427.15	18.34		OSF1.50	17230.00	10300.00				MINPT-O-EOU	
2639.78	231.96	2484.81	2407.82	17.14		OSF1.50	17710.00	10300.00				MinPt-CtCt	
2640.39	233.90	2484.13	2406.49	17.00		OSF1.50	17790.00	10300.00				MINPT-O-EOU	
2641.19	234.85	2484.29	2406.34	16.93		OSF1.50	17830.00	10300.00				MinPt-O-ADP	
2636.71	247.37	2471.47	2389.35	16.05		OSF1.50	18230.00	10300.00				MinPt-CtCt	
2637.38	249.37	2470.80	2388.01	15.92		OSF1.50	18310.00	10300.00				MINPT-O-EOU	
2637.72	249.89	2470.80	2387.84	15.89		OSF1.50	18330.00	10300.00				MINPT-O-EOU	
2641.86	255.28	2471.34	2386.58	15.58		OSF1.50	18510.00	10300.00				MINPT-O-EOU	
2643.39	257.15	2471.63	2386.24	15.47		OSF1.50	18580.00	10300.00				MinPt-O-ADP	
2621.37	284.77	2431.20	2336.60	13.85		OSF1.50	19480.00	10300.00				MinPt-CtCt	
2621.79	286.18	2430.68	2335.61	13.78		OSF1.50	19540.00	10300.00				MINPT-O-EOU	
2623.68	288.53	2431.00	2335.15	13.68		OSF1.50	19630.00	10300.00				MinPt-O-ADP	
2614.84	301.41	2413.57	2313.43	13.05		OSF1.50	20030.00	10300.00				MinPt-CtCt	
2615.41	303.08	2413.03	2312.33	12.98		OSF1.50	20100.00	10300.00				MINPT-O-EOU	
2616.22	304.02	2413.21	2312.20	12.95		OSF1.50	20140.00	10300.00				MinPt-O-ADP	
2620.69	309.43	2414.08	2311.27	12.74		OSF1.50	20290.10	10300.00				MinPts	

Final Surveys - Cimarex Vaca
Draw 20-17 Federal #3H MWD
0ft-22454' (Surcon Corrected)
(Def Survey)

Pass

1345.22	32.81	1344.09	1312.42	N/A	MAS = 10.00 (m)	0.00	0.00	Surface
1345.19	32.81	1344.06	1312.39	N/A	MAS = 10.00 (m)	10.00	10.00	MinPts
1345.20	32.81	1344.07	1312.39	291392.15	MAS = 10.00 (m)	26.00	26.00	WRP
1345.27	32.81	1344.05	1312.46	14082.27	MAS = 10.00 (m)	60.00	60.00	MINPT-O-EOU
1341.84	32.81	1338.07	1309.03	487.28	MAS = 10.00 (m)	650.00	650.00	MinPts
1341.91	32.81	1338.02	1309.10	467.92	MAS = 10.00 (m)	680.00	680.00	MINPT-O-EOU
1348.99	32.81	1340.85	1316.19	189.13	MAS = 10.00 (m)	1640.00	1640.00	MinPts
1349.12	32.81	1340.71	1316.31	182.45	MAS = 10.00 (m)	1700.00	1700.00	MINPT-O-EOU
1357.20	32.81	1347.29	1324.39	152.62	MAS = 10.00 (m)	2100.00	2099.98	MinPt-O-SF
1636.85	32.81	1623.13	1604.04	128.82	MAS = 10.00 (m)	4005.23	4000.00	MinPt-O-SF
2004.61	56.49	1966.61	1948.12	54.18	OSF1.50	10200.00	10158.05	MinPt-CtCt
2004.62	56.55	1966.58	1948.07	54.12	OSF1.50	10210.00	10165.09	MINPT-O-EOU
2004.67	56.61	1966.59	1948.06	54.06	OSF1.50	10220.00	10171.98	MinPt-O-ADP
2076.56	60.31	2036.01	2016.25	52.51	OSF1.50	10760.00	10300.00	MinPt-O-SF
3028.03	93.92	2965.09	2934.11	48.86	OSF1.50	12880.00	10300.00	MinPt-CtCt
3029.03	96.81	2964.16	2932.22	47.40	OSF1.50	13000.00	10300.00	MINPT-O-EOU
3031.66	99.85	2964.76	2931.81	45.98	OSF1.50	13120.00	10300.00	MinPt-O-ADP
3041.01	117.99	2962.02	2923.02	38.97	OSF1.50	13750.00	10300.00	MinPt-CtCt
3041.53	122.83	2959.31	2918.69	37.43	OSF1.50	13920.00	10300.00	MinPt-CtCt
3042.34	125.26	2958.51	2917.08	36.71	OSF1.50	14020.00	10300.00	MINPT-O-EOU
3043.14	126.22	2958.66	2916.91	36.44	OSF1.50	14060.00	10300.00	MinPt-O-ADP
3047.05	130.11	2959.98	2916.94	35.38	OSF1.50	14200.00	10300.00	MinPt-O-ADP
3054.53	141.86	2959.62	2912.66	32.51	OSF1.50	14600.00	10300.00	MINPT-O-EOU

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
	3043.25	176.57	2925.20	2866.68	25.99	OSF1.50	15770.00	10300.00				MinPt-CtCt	
	3042.83	192.54	2914.14	2850.29	23.82	OSF1.50	16310.00	10300.00				MinPt-CtCt	
	3043.82	200.80	2909.63	2843.02	22.84	OSF1.50	16590.00	10300.00				MinPt-CtCt	
	3041.48	263.56	2865.45	2777.93	17.37	OSF1.50	18700.00	10300.00				MinPt-CtCt	
	3045.56	280.31	2858.36	2765.25	16.35	OSF1.50	19260.00	10300.00				MinPt-CtCt	
	3038.39	311.53	2830.38	2726.87	14.67	OSF1.50	20290.10	10300.00				MinPts	

Final Surveys - Cimarex Vaca
Draw 20-17 Federal #4H MWD
0ft-12228ft (Surcon Corrected)
(Def Survey)

Pass

1365.11	32.81	1363.13	1332.30	N/A	MAS = 10.00 (m)	0.00	0.00	Surface
1365.07	32.81	1363.09	1332.26	373704.16	MAS = 10.00 (m)	26.00	26.00	WRP
1363.53	32.81	1359.91	1330.72	832.52	MAS = 10.00 (m)	420.00	420.00	MinPts
1363.61	32.81	1359.82	1330.80	750.83	MAS = 10.00 (m)	460.00	460.00	MINPT-O-EOU
1482.83	32.81	1471.20	1450.02	153.48	MAS = 10.00 (m)	2310.00	2309.53	MinPt-O-SF
1497.96	32.81	1486.23	1465.15	153.48	MAS = 10.00 (m)	2380.00	2379.34	MinPt-O-SF
1575.39	32.81	1563.11	1542.59	152.74	MAS = 10.00 (m)	2760.00	2758.27	MinPt-O-SF
1816.51	32.81	1800.93	1783.70	133.37	MAS = 10.00 (m)	4005.23	4000.00	MinPt-O-SF
2428.26	56.08	2390.21	2372.18	67.27	OSF1.50	9670.00	9664.57	MinPt-CtCt
2428.30	56.26	2390.14	2372.04	67.04	OSF1.50	9700.00	9694.57	MINPT-O-EOU
2428.40	56.39	2390.15	2372.02	66.90	OSF1.50	9720.00	9714.57	MinPt-O-ADP
2426.29	58.96	2386.33	2367.34	63.82	OSF1.50	10170.00	10136.06	MinPt-CtCt
2426.33	59.07	2386.29	2367.27	63.70	OSF1.50	10190.00	10150.87	MINPT-O-EOU
2426.38	59.12	2386.30	2367.26	63.64	OSF1.50	10200.00	10158.05	MinPt-O-ADP
2552.49	64.71	2508.69	2487.78	60.99	OSF1.50	10990.00	10300.00	MinPt-O-SF
2565.27	65.03	2521.25	2500.24	60.98	OSF1.50	11030.00	10300.00	MinPt-O-SF
10384.31	81.84	10329.09	10302.47	195.01	OSF1.50	20290.10	10300.00	TD

Final Surveys - Cimarex Vaca
Draw 20-17 Federal #4H ST01
MWD 0ft-22279ft (Surcon
Corrected) (Def Survey)

Pass

1365.11	32.81	1363.93	1332.30	N/A	MAS = 10.00 (m)	0.00	0.00	Surface
1365.07	32.81	1363.89	1332.26	373924.06	MAS = 10.00 (m)	26.00	26.00	WRP
1363.53	32.81	1360.72	1330.72	833.01	MAS = 10.00 (m)	420.00	420.00	MinPts
1363.61	32.81	1360.62	1330.80	751.28	MAS = 10.00 (m)	460.00	460.00	MINPT-O-EOU
1482.83	32.81	1472.08	1450.02	152.64	MAS = 10.00 (m)	2310.00	2309.53	MinPt-O-SF
1575.39	32.81	1563.99	1542.59	151.97	MAS = 10.00 (m)	2760.00	2758.27	MinPt-O-SF
1816.51	32.81	1801.86	1783.70	133.43	MAS = 10.00 (m)	4005.23	4000.00	MinPt-O-SF
2428.26	55.17	2391.13	2373.09	67.27	OSF1.50	9670.00	9664.57	MinPt-CtCt
2428.30	55.35	2391.05	2372.95	67.04	OSF1.50	9700.00	9694.57	MINPT-O-EOU
2428.40	55.48	2391.07	2372.93	66.90	OSF1.50	9720.00	9714.57	MinPt-O-ADP
2426.29	58.03	2387.26	2368.26	63.84	OSF1.50	10170.00	10136.06	MinPt-CtCt
2426.33	58.15	2387.22	2368.19	63.71	OSF1.50	10190.00	10150.87	MINPT-O-EOU
2426.38	58.20	2387.23	2368.18	63.65	OSF1.50	10200.00	10158.05	MinPt-O-ADP
2552.49	63.79	2509.62	2488.70	61.00	OSF1.50	10990.00	10300.00	MinPt-O-SF
2565.27	64.11	2522.18	2501.15	60.99	OSF1.50	11030.00	10300.00	MinPt-O-SF
3211.64	95.42	3147.70	3116.22	51.00	OSF1.50	12790.00	10300.00	MinPt-CtCt
3212.50	98.01	3146.84	3114.49	49.65	OSF1.50	12900.00	10300.00	MINPT-O-EOU
3214.67	111.92	3139.73	3102.75	43.45	OSF1.50	13400.00	10300.00	MinPt-CtCt
3219.36	126.88	3134.45	3092.48	38.35	OSF1.50	13950.00	10300.00	MINPT-O-EOU
3222.15	141.19	3127.70	3080.97	34.46	OSF1.50	14440.00	10300.00	MinPt-CtCt
3220.85	155.71	3116.72	3065.14	31.21	OSF1.50	14940.00	10300.00	MinPt-CtCt

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
3219.06	164.73	3108.91	3054.33	29.48		OSF1.50	15250.00	10300.00				MinPt-CtCt	
3179.06	215.49	3035.08	2963.58	22.22		OSF1.50	16980.00	10300.00				MinPt-CtCt	
3179.60	217.12	3034.53	2962.48	22.06		OSF1.50	17050.00	10300.00				MINPT-O-EOU	
3180.37	218.04	3034.68	2962.33	21.97		OSF1.50	17090.00	10300.00				MinPt-O-ADP	
3195.71	232.56	3040.34	2963.15	20.69		OSF1.50	17580.00	10300.00				MINPT-O-EOU	
3195.93	232.79	3040.41	2963.14	20.67		OSF1.50	17590.00	10300.00				MinPt-O-ADP	
3212.86	242.25	3051.04	2970.61	19.97		OSF1.50	17920.00	10300.00				MinPts	
3200.79	269.07	3021.09	2931.73	17.90		OSF1.50	18790.00	10300.00				MinPt-CtCt	
3201.95	272.45	3019.99	2929.50	17.69		OSF1.50	18920.00	10300.00				MINPT-O-EOU	
3203.66	274.52	3020.32	2929.15	17.56		OSF1.50	19000.00	10300.00				MinPt-O-ADP	
3205.35	279.01	3019.02	2926.35	17.29		OSF1.50	19140.00	10300.00				MINPT-O-EOU	
3206.37	280.24	3019.21	2926.13	17.22		OSF1.50	19190.00	10300.00				MinPt-O-ADP	
3202.65	300.44	3002.03	2902.21	16.04		OSF1.50	19840.00	10300.00				MinPt-CtCt	
3207.51	313.41	2998.24	2894.10	15.40		OSF1.50	20290.10	10300.00				MinPts	

Cimarex Vaca Draw 20-17
Federal #10H Rev0 RM
1May17 (Non-Def Plan)

Pass

1421.10	32.81	1419.12	1388.29	N/A	MAS = 10.00 (m)	0.00	0.00					Surface	
1421.07	32.81	1419.10	1388.27	N/A	MAS = 10.00 (m)	26.00	26.00					WRP	
1421.07	32.81	1406.95	1388.27	116.82	MAS = 10.00 (m)	2000.00	2000.00					MinPts	
1421.09	32.81	1406.92	1388.28	116.36	MAS = 10.00 (m)	2010.00	2010.00					MINPT-O-EOU	
1569.89	87.06	1511.20	1482.84	27.64	OSF1.50	10070.00	10054.34					MinPt-CtCt	
1569.96	87.30	1511.10	1482.66	27.57	OSF1.50	10100.00	10080.09					MINPT-O-EOU	
1570.02	87.38	1511.10	1482.64	27.54	OSF1.50	10110.00	10088.46					MinPt-O-ADP	
1583.35	89.20	1523.22	1494.15	27.20	OSF1.50	10360.00	10251.11					MinPt-O-SF	
2810.43	398.98	2543.78	2411.45	10.61	OSF1.50	20100.00	10300.00					MINPT-O-EOU	
2810.59	399.18	2543.81	2411.41	10.61	OSF1.50	20110.00	10300.00					MinPt-O-ADP	
2818.75	401.75	2550.25	2416.99	10.57	OSF1.50	20280.00	10300.00					MinPt-O-SF	
2819.55	401.86	2550.98	2417.69	10.57	OSF1.50	20290.10	10300.00					TD	

Cimarex Vaca Draw 20-17
Federal #11H Rev0 RM
1May17 (Non-Def Plan)

Pass

1441.09	32.81	1439.11	1408.28	N/A	MAS = 10.00 (m)	0.00	0.00					Surface	
1441.06	32.81	1439.08	1408.25	N/A	MAS = 10.00 (m)	26.00	26.00					WRP	
1441.06	32.81	1426.93	1408.25	118.46	MAS = 10.00 (m)	2000.00	2000.00					MinPts	
1441.08	32.81	1426.90	1408.27	118.01	MAS = 10.00 (m)	2010.00	2010.00					MINPT-O-EOU	
1589.90	87.06	1531.20	1502.84	28.00	OSF1.50	10070.00	10054.34					MinPt-CtCt	
1589.96	87.30	1531.10	1502.66	27.92	OSF1.50	10100.00	10080.09					MINPT-O-EOU	
1590.02	87.38	1531.10	1502.64	27.89	OSF1.50	10110.00	10088.46					MinPt-O-ADP	
1603.18	89.20	1543.05	1513.98	27.54	OSF1.50	10360.00	10251.11					MinPt-O-SF	
2913.47	405.65	2642.37	2507.82	10.82	OSF1.50	20100.00	10300.00					MINPT-O-EOU	
2913.81	406.04	2642.46	2507.77	10.81	OSF1.50	20120.00	10300.00					MinPt-O-ADP	
2922.27	408.66	2649.17	2513.60	10.77	OSF1.50	20290.10	10300.00					MinPt-O-SF	

Cimarex Vaca Draw 20-17
Federal #12H Rev0 RM
1May17 (Non-Def Plan)

Pass

1461.05	32.81	1459.07	1428.24	N/A	MAS = 10.00 (m)	0.00	0.00					Surface	
1461.02	32.81	1459.04	1428.21	N/A	MAS = 10.00 (m)	26.00	26.00					WRP	
1461.02	32.81	1446.89	1428.21	120.11	MAS = 10.00 (m)	2000.00	2000.00					MinPts	
1461.04	32.81	1446.86	1428.23	119.64	MAS = 10.00 (m)	2010.00	2010.00					MINPT-O-EOU	
1609.88	87.06	1551.18	1522.82	28.35	OSF1.50	10070.00	10054.34					MinPt-CtCt	
1609.94	87.30	1551.08	1522.64	28.27	OSF1.50	10100.00	10080.09					MINPT-O-EOU	
1610.08	87.46	1551.11	1522.62	28.22	OSF1.50	10120.00	10096.70					MinPt-O-ADP	

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
1624.17	89.26	1564.00	1534.90	27.88		OSF1.50	10370.00	10255.42				MinPt-O-SF	
2991.50	410.18	2717.39	2581.32	10.99		OSF1.50	20100.00	10300.00				MINPT-O-EOU	
2991.83	410.58	2717.46	2581.25	10.98		OSF1.50	20120.00	10300.00				MinPt-O-ADP	
3000.07	413.29	2723.89	2586.79	10.93		OSF1.50	20290.10	10300.00				MinPt-O-SF	



Cimarex Vaca Draw 20-17 Federal #14H Rev0 RM 20Jan20 Proposal

Geodetic Report

(Non-Def Plan)



Report Date: January 21, 2020 - 08:20 AM
Client: Cimarex Energy
Field: NM Lea County (NAD 83)
Structure / Slot: Cimarex Vaca Draw 20-17 Federal #14H / New Slot
Well: Vaca Draw 20-17 Federal #14H
Borehole: Vaca Draw 20-17 Federal #14H
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Vaca Draw 20-17 Federal #14H Rev0 RM 20Jan20
Survey Date: January 20, 2020
Tort / AHD / DDI / ERD Ratio: 98.587 ° / 10339.732 ft / 6.303 / 1.004
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 6' 34.46680", W 103° 36' 3.39173"
Location Grid N/E Y/X: N 404369.840 ftUS, E 768102.320 ftUS
CRS Grid Convergence Angle: 0.3893 °
Grid Scale Factor: 0.99996799
Version / Patch: 2.10.787.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 359.628 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3449.900 ft above MSL
Seabed / Ground Elevation: 3423.900 ft above MSL
Magnetic Declination: 6.583 °
Total Gravity Field Strength: 998.4290mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 47707.390 nT
Magnetic Dip Angle: 59.694 °
Declination Date: January 20, 2020
Magnetic Declination Model: HDGM 2019
North Reference: Grid North
Grid Convergence Used: 0.3893 °
Total Corr Mag North->Grid North: 6.1933 °
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, 590' FWL]	0.00	0.00	358.78	0.00	0.00	0.00	0.00	N/A	404369.84	768102.32	N 32 6 34.47 W 103 36	3.39
	100.00	0.00	269.62	100.00	0.00	0.00	0.00	0.00	404369.84	768102.32	N 32 6 34.47 W 103 36	3.39
	200.00	0.00	269.62	200.00	0.00	0.00	0.00	0.00	404369.84	768102.32	N 32 6 34.47 W 103 36	3.39
	300.00	0.00	269.62	300.00	0.00	0.00	0.00	0.00	404369.84	768102.32	N 32 6 34.47 W 103 36	3.39
	400.00	0.00	269.62	400.00	0.00	0.00	0.00	0.00	404369.84	768102.32	N 32 6 34.47 W 103 36	3.39
	500.00	0.00	269.62	500.00	0.00	0.00	0.00	0.00	404369.84	768102.32	N 32 6 34.47 W 103 36	3.39
	600.00	0.00	269.62	600.00	0.00	0.00	0.00	0.00	404369.84	768102.32	N 32 6 34.47 W 103 36	3.39
	700.00	0.00	269.62	700.00	0.00	0.00	0.00	0.00	404369.84	768102.32	N 32 6 34.47 W 103 36	3.39
	800.00	0.00	269.62	800.00	0.00	0.00	0.00	0.00	404369.84	768102.32	N 32 6 34.47 W 103 36	3.39
	900.00	0.00	269.62	900.00	0.00	0.00	0.00	0.00	404369.84	768102.32	N 32 6 34.47 W 103 36	3.39
	1000.00	0.00	269.62	1000.00	0.00	0.00	0.00	0.00	404369.84	768102.32	N 32 6 34.47 W 103 36	3.39
Rustler	1001.00	0.00	269.62	1001.00	0.00	0.00	0.00	0.00	404369.84	768102.32	N 32 6 34.47 W 103 36	3.39
	1100.00	0.00	269.62	1100.00	0.00	0.00	0.00	0.00	404369.84	768102.32	N 32 6 34.47 W 103 36	3.39
	1200.00	0.00	269.62	1200.00	0.00	0.00	0.00	0.00	404369.84	768102.32	N 32 6 34.47 W 103 36	3.39
	1300.00	0.00	269.62	1300.00	0.00	0.00	0.00	0.00	404369.84	768102.32	N 32 6 34.47 W 103 36	3.39
Top of Salt	1341.00	0.00	269.62	1341.00	0.00	0.00	0.00	0.00	404369.84	768102.32	N 32 6 34.47 W 103 36	3.39
	1400.00	0.00	269.62	1400.00	0.00	0.00	0.00	0.00	404369.84	768102.32	N 32 6 34.47 W 103 36	3.39
	1500.00	0.00	269.62	1500.00	0.00	0.00	0.00	0.00	404369.84	768102.32	N 32 6 34.47 W 103 36	3.39
	1600.00	0.00	269.62	1600.00	0.00	0.00	0.00	0.00	404369.84	768102.32	N 32 6 34.47 W 103 36	3.39
	1700.00	0.00	269.62	1700.00	0.00	0.00	0.00	0.00	404369.84	768102.32	N 32 6 34.47 W 103 36	3.39
	1800.00	0.00	269.62	1800.00	0.00	0.00	0.00	0.00	404369.84	768102.32	N 32 6 34.47 W 103 36	3.39
	1900.00	0.00	269.62	1900.00	0.00	0.00	0.00	0.00	404369.84	768102.32	N 32 6 34.47 W 103 36	3.39
Nudge 2°/100' DLS	2000.00	0.00	269.62	2000.00	0.00	0.00	0.00	0.00	404369.84	768102.32	N 32 6 34.47 W 103 36	3.39
	2100.00	2.00	269.62	2099.98	0.00	-0.01	-1.75	2.00	404369.83	768100.57	N 32 6 34.47 W 103 36	3.41
	2200.00	4.00	269.62	2199.84	0.00	-0.05	-6.98	2.00	404369.79	768095.34	N 32 6 34.47 W 103 36	3.47
Hold Nudge	2214.68	4.29	269.62	2214.47	0.00	-0.05	-8.04	2.00	404369.79	768094.28	N 32 6 34.47 W 103 36	3.49
	2300.00	4.29	269.62	2299.56	0.00	-0.10	-14.43	0.00	404369.74	768087.89	N 32 6 34.47 W 103 36	3.56

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 ° ' ")
	2400.00	4.29	269.62	2399.28	0.00	-0.15	-21.91	0.00	404369.69	768080.41	N 32 6 34.47 W 103 36	3.65
	2500.00	4.29	269.62	2499.00	-0.01	-0.20	-29.40	0.00	404369.64	768072.92	N 32 6 34.47 W 103 36	3.73
	2600.00	4.29	269.62	2598.72	-0.01	-0.25	-36.89	0.00	404369.59	768065.43	N 32 6 34.47 W 103 36	3.82
	2700.00	4.29	269.62	2698.44	-0.01	-0.30	-44.37	0.00	404369.54	768057.95	N 32 6 34.47 W 103 36	3.91
	2800.00	4.29	269.62	2798.16	-0.01	-0.35	-51.86	0.00	404369.49	768050.46	N 32 6 34.47 W 103 36	3.99
	2900.00	4.29	269.62	2897.88	-0.01	-0.40	-59.35	0.00	404369.44	768042.98	N 32 6 34.47 W 103 36	4.08
	3000.00	4.29	269.62	2997.60	-0.01	-0.45	-66.83	0.00	404369.39	768035.49	N 32 6 34.47 W 103 36	4.17
	3100.00	4.29	269.62	3097.31	-0.01	-0.50	-74.32	0.00	404369.34	768028.00	N 32 6 34.47 W 103 36	4.26
	3200.00	4.29	269.62	3197.03	-0.01	-0.55	-81.80	0.00	404369.29	768020.52	N 32 6 34.47 W 103 36	4.34
	3300.00	4.29	269.62	3296.75	-0.02	-0.60	-89.29	0.00	404369.24	768013.03	N 32 6 34.47 W 103 36	4.43
	3400.00	4.29	269.62	3396.47	-0.02	-0.65	-96.78	0.00	404369.19	768005.55	N 32 6 34.47 W 103 36	4.52
	3500.00	4.29	269.62	3496.19	-0.02	-0.70	-104.26	0.00	404369.14	767998.06	N 32 6 34.47 W 103 36	4.60
	3600.00	4.29	269.62	3595.91	-0.02	-0.75	-111.75	0.00	404369.09	767990.57	N 32 6 34.47 W 103 36	4.69
	3700.00	4.29	269.62	3695.63	-0.02	-0.79	-119.24	0.00	404369.05	767983.09	N 32 6 34.47 W 103 36	4.78
	3800.00	4.29	269.62	3795.35	-0.02	-0.84	-126.72	0.00	404369.00	767975.60	N 32 6 34.47 W 103 36	4.87
	3900.00	4.29	269.62	3895.07	-0.02	-0.89	-134.21	0.00	404368.95	767968.12	N 32 6 34.47 W 103 36	4.95
	4000.00	4.29	269.62	3994.79	-0.02	-0.94	-141.70	0.00	404368.90	767960.63	N 32 6 34.47 W 103 36	5.04
Drop to Vertical 2°/100' DLS	4005.23	4.29	269.62	4000.00	-0.02	-0.95	-142.09	0.00	404368.89	767960.24	N 32 6 34.47 W 103 36	5.04
	4100.00	2.40	269.62	4094.61	-0.03	-0.98	-147.62	2.00	404368.86	767954.71	N 32 6 34.47 W 103 36	5.11
	4200.00	0.40	269.62	4194.57	-0.03	-1.00	-150.06	2.00	404368.84	767952.27	N 32 6 34.47 W 103 36	5.14
Hold Vertical	4219.90	0.00	269.62	4214.47	-0.03	-1.00	-150.13	2.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	4300.00	0.00	269.62	4294.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	4400.00	0.00	269.62	4394.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	4500.00	0.00	269.62	4494.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	4600.00	0.00	269.62	4594.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	4700.00	0.00	269.62	4694.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	4800.00	0.00	269.62	4794.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	4900.00	0.00	269.62	4894.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
Base of Salt	4905.43	0.00	269.62	4900.00	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
Lamar	4940.43	0.00	269.62	4935.00	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
Bell Canyon	4975.43	0.00	269.62	4970.00	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	5000.00	0.00	269.62	4994.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	5100.00	0.00	269.62	5094.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	5200.00	0.00	269.62	5194.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	5300.00	0.00	269.62	5294.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	5400.00	0.00	269.62	5394.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	5500.00	0.00	269.62	5494.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	5600.00	0.00	269.62	5594.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	5700.00	0.00	269.62	5694.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	5800.00	0.00	269.62	5794.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	5900.00	0.00	269.62	5894.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
Cherry Canyon	6000.00	0.00	269.62	5994.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	6053.43	0.00	269.62	6048.00	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	6100.00	0.00	269.62	6094.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	6200.00	0.00	269.62	6194.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	6300.00	0.00	269.62	6294.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	6400.00	0.00	269.62	6394.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	6500.00	0.00	269.62	6494.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	6600.00	0.00	269.62	6594.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	6700.00	0.00	269.62	6694.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	6800.00	0.00	269.62	6794.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	6900.00	0.00	269.62	6894.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	7000.00	0.00	269.62	6994.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	7100.00	0.00	269.62	7094.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	7200.00	0.00	269.62	7194.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	7300.00	0.00	269.62	7294.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	7400.00	0.00	269.62	7394.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14
	7500.00	0.00	269.62	7494.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36	5.14

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 ° ' ")
Brushy Canyon	7530.43	0.00	269.62	7525.00	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36 5.14	
	7600.00	0.00	269.62	7594.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36 5.14	
	7700.00	0.00	269.62	7694.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36 5.14	
	7800.00	0.00	269.62	7794.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36 5.14	
	7900.00	0.00	269.62	7894.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36 5.14	
	8000.00	0.00	269.62	7994.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36 5.14	
	8100.00	0.00	269.62	8094.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36 5.14	
	8200.00	0.00	269.62	8194.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36 5.14	
	8300.00	0.00	269.62	8294.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36 5.14	
	8400.00	0.00	269.62	8394.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36 5.14	
	8500.00	0.00	269.62	8494.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36 5.14	
	8600.00	0.00	269.62	8594.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36 5.14	
	8700.00	0.00	269.62	8694.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36 5.14	
	8800.00	0.00	269.62	8794.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36 5.14	
	8900.00	0.00	269.62	8894.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36 5.14	
	9000.00	0.00	269.62	8994.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36 5.14	
	9100.00	0.00	269.62	9094.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36 5.14	
Bone Spring Lime	9119.43	0.00	269.62	9114.00	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36 5.14	
Leonard Shale	9155.43	0.00	269.62	9150.00	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36 5.14	
	9200.00	0.00	269.62	9194.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36 5.14	
	9300.00	0.00	269.62	9294.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36 5.14	
Avalon Shale	9364.43	0.00	269.62	9359.00	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36 5.14	
	9400.00	0.00	269.62	9394.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36 5.14	
	9500.00	0.00	269.62	9494.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36 5.14	
	9600.00	0.00	269.62	9594.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36 5.14	
	9700.00	0.00	269.62	9694.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36 5.14	
	9800.00	0.00	269.62	9794.57	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36 5.14	
KOP - Build 12°/100' DLS	9827.96	0.00	269.62	9822.54	-0.03	-1.00	-150.13	0.00	404368.84	767952.20	N 32 6 34.47 W 103 36 5.14	
	9900.00	8.64	359.63	9894.30	5.40	4.42	-150.16	12.00	404374.26	767952.16	N 32 6 34.52 W 103 36 5.14	
	10000.00	20.64	359.63	9990.87	30.63	29.66	-150.33	12.00	404399.50	767952.00	N 32 6 34.77 W 103 36 5.14	
	10100.00	32.64	359.63	10080.09	75.40	74.42	-150.62	12.00	404444.26	767951.71	N 32 6 35.21 W 103 36 5.14	
1st Bone Spring Sand	10104.66	33.20	359.63	10084.00	77.93	76.95	-150.63	12.00	404446.79	767951.69	N 32 6 35.24 W 103 36 5.14	
	10200.00	44.64	359.63	10158.05	137.73	136.75	-151.02	12.00	404506.59	767951.30	N 32 6 35.83 W 103 36 5.14	
	10300.00	56.64	359.63	10221.35	214.91	213.93	-151.52	12.00	404583.77	767950.80	N 32 6 36.59 W 103 36 5.14	
	10400.00	68.64	359.63	10267.22	303.57	302.59	-152.10	12.00	404672.42	767950.23	N 32 6 37.47 W 103 36 5.14	
2nd Bone Spring Carb	10413.63	70.28	359.63	10272.00	316.34	315.35	-152.18	12.00	404685.18	767950.14	N 32 6 37.60 W 103 36 5.14	
	10500.00	80.64	359.63	10293.65	399.82	398.84	-152.72	12.00	404768.67	767949.60	N 32 6 38.42 W 103 36 5.14	
2nd Carb-Shale Target	10577.96	90.00	359.63	10300.00	477.44	476.45	-153.23	12.00	404846.28	767949.10	N 32 6 39.19 W 103 36 5.14	
Landing Point												
	10600.00	90.00	359.63	10300.00	499.48	498.49	-153.37	0.00	404868.31	767948.96	N 32 6 39.41 W 103 36 5.14	
	10700.00	90.00	359.63	10300.00	599.48	598.49	-154.02	0.00	404968.31	767948.31	N 32 6 40.40 W 103 36 5.14	
	10800.00	90.00	359.63	10300.00	699.48	698.49	-154.67	0.00	405068.30	767947.66	N 32 6 41.39 W 103 36 5.13	
	10900.00	90.00	359.63	10300.00	799.48	798.49	-155.32	0.00	405168.30	767947.01	N 32 6 42.38 W 103 36 5.13	
	11000.00	90.00	359.63	10300.00	899.48	898.48	-155.97	0.00	405268.29	767946.36	N 32 6 43.37 W 103 36 5.13	
	11100.00	90.00	359.63	10300.00	999.48	998.48	-156.62	0.00	405368.29	767945.71	N 32 6 44.36 W 103 36 5.13	
	11200.00	90.00	359.63	10300.00	1099.48	1098.48	-157.27	0.00	405468.28	767945.06	N 32 6 45.35 W 103 36 5.13	
	11300.00	90.00	359.63	10300.00	1199.48	1198.48	-157.91	0.00	405568.28	767944.41	N 32 6 46.34 W 103 36 5.13	
	11400.00	90.00	359.63	10300.00	1299.48	1298.47	-158.56	0.00	405668.27	767943.76	N 32 6 47.33 W 103 36 5.13	
	11500.00	90.00	359.63	10300.00	1399.48	1398.47	-159.21	0.00	405768.27	767943.11	N 32 6 48.32 W 103 36 5.13	
	11600.00	90.00	359.63	10300.00	1499.48	1498.47	-159.86	0.00	405868.26	767942.46	N 32 6 49.31 W 103 36 5.13	
	11700.00	90.00	359.63	10300.00	1599.48	1598.47	-160.51	0.00	405968.25	767941.81	N 32 6 50.29 W 103 36 5.13	
	11800.00	90.00	359.63	10300.00	1699.48	1698.47	-161.16	0.00	406068.25	767941.16	N 32 6 51.28 W 103 36 5.13	
	11900.00	90.00	359.63	10300.00	1799.48	1798.46	-161.81	0.00	406168.24	767940.51	N 32 6 52.27 W 103 36 5.13	
	12000.00	90.00	359.63	10300.00	1899.48	1898.46	-162.46	0.00	406268.24	767939.87	N 32 6 53.26 W 103 36 5.13	

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 ° ' ")
	12100.00	90.00	359.63	10300.00	1999.48	1998.46	-163.11	0.00	406368.23	767939.22	N 32 6 54.25 W	103 36 5.13
	12200.00	90.00	359.63	10300.00	2099.48	2098.46	-163.76	0.00	406468.23	767938.57	N 32 6 55.24 W	103 36 5.13
	12300.00	90.00	359.63	10300.00	2199.48	2198.46	-164.41	0.00	406568.22	767937.92	N 32 6 56.23 W	103 36 5.13
	12400.00	90.00	359.63	10300.00	2299.48	2298.45	-165.06	0.00	406668.22	767937.27	N 32 6 57.22 W	103 36 5.13
	12500.00	90.00	359.63	10300.00	2399.48	2398.45	-165.71	0.00	406768.21	767936.62	N 32 6 58.21 W	103 36 5.13
	12600.00	90.00	359.63	10300.00	2499.48	2498.45	-166.36	0.00	406868.20	767935.97	N 32 6 59.20 W	103 36 5.13
	12700.00	90.00	359.63	10300.00	2599.48	2598.45	-167.01	0.00	406968.20	767935.32	N 32 7 0.19 W	103 36 5.13
	12800.00	90.00	359.63	10300.00	2699.48	2698.45	-167.65	0.00	407068.19	767934.67	N 32 7 1.18 W	103 36 5.13
	12900.00	90.00	359.63	10300.00	2799.48	2798.44	-168.30	0.00	407168.19	767934.02	N 32 7 2.17 W	103 36 5.13
	13000.00	90.00	359.63	10300.00	2899.48	2898.44	-168.95	0.00	407268.18	767933.37	N 32 7 3.16 W	103 36 5.13
	13100.00	90.00	359.63	10300.00	2999.48	2998.44	-169.60	0.00	407368.18	767932.72	N 32 7 4.15 W	103 36 5.13
	13200.00	90.00	359.63	10300.00	3099.48	3098.44	-170.25	0.00	407468.17	767932.07	N 32 7 5.14 W	103 36 5.13
	13300.00	90.00	359.63	10300.00	3199.48	3198.43	-170.90	0.00	407568.17	767931.42	N 32 7 6.13 W	103 36 5.13
	13400.00	90.00	359.63	10300.00	3299.48	3298.43	-171.55	0.00	407668.16	767930.78	N 32 7 7.12 W	103 36 5.13
	13500.00	90.00	359.63	10300.00	3399.48	3398.43	-172.20	0.00	407768.15	767930.13	N 32 7 8.11 W	103 36 5.13
	13600.00	90.00	359.63	10300.00	3499.48	3498.43	-172.85	0.00	407868.15	767929.48	N 32 7 9.10 W	103 36 5.13
	13700.00	90.00	359.63	10300.00	3599.48	3598.43	-173.50	0.00	407968.14	767928.83	N 32 7 10.09 W	103 36 5.12
	13800.00	90.00	359.63	10300.00	3699.48	3698.42	-174.15	0.00	408068.14	767928.18	N 32 7 11.07 W	103 36 5.12
	13900.00	90.00	359.63	10300.00	3799.48	3798.42	-174.80	0.00	408168.13	767927.53	N 32 7 12.06 W	103 36 5.12
	14000.00	90.00	359.63	10300.00	3899.48	3898.42	-175.45	0.00	408268.13	767926.88	N 32 7 13.05 W	103 36 5.12
	14100.00	90.00	359.63	10300.00	3999.48	3998.42	-176.10	0.00	408368.12	767926.23	N 32 7 14.04 W	103 36 5.12
	14200.00	90.00	359.63	10300.00	4099.48	4098.42	-176.74	0.00	408468.12	767925.58	N 32 7 15.03 W	103 36 5.12
	14300.00	90.00	359.63	10300.00	4199.48	4198.41	-177.39	0.00	408568.11	767924.93	N 32 7 16.02 W	103 36 5.12
	14400.00	90.00	359.63	10300.00	4299.48	4298.41	-178.04	0.00	408668.11	767924.28	N 32 7 17.01 W	103 36 5.12
	14500.00	90.00	359.63	10300.00	4399.48	4398.41	-178.69	0.00	408768.10	767923.63	N 32 7 18.00 W	103 36 5.12
	14600.00	90.00	359.63	10300.00	4499.48	4498.41	-179.34	0.00	408868.09	767922.98	N 32 7 18.99 W	103 36 5.12
	14700.00	90.00	359.63	10300.00	4599.48	4598.41	-179.99	0.00	408968.09	767922.34	N 32 7 19.98 W	103 36 5.12
	14800.00	90.00	359.63	10300.00	4699.48	4698.40	-180.64	0.00	409068.08	767921.69	N 32 7 20.97 W	103 36 5.12
	14900.00	90.00	359.63	10300.00	4799.48	4798.40	-181.29	0.00	409168.08	767921.04	N 32 7 21.96 W	103 36 5.12
	15000.00	90.00	359.63	10300.00	4899.48	4898.40	-181.94	0.00	409268.07	767920.39	N 32 7 22.95 W	103 36 5.12
	15100.00	90.00	359.63	10300.00	4999.48	4998.40	-182.59	0.00	409368.07	767919.74	N 32 7 23.94 W	103 36 5.12
	15200.00	90.00	359.63	10300.00	5099.48	5098.39	-183.24	0.00	409468.06	767919.09	N 32 7 24.93 W	103 36 5.12
	15300.00	90.00	359.63	10300.00	5199.48	5198.39	-183.89	0.00	409568.06	767918.44	N 32 7 25.92 W	103 36 5.12
	15400.00	90.00	359.63	10300.00	5299.48	5298.39	-184.54	0.00	409668.05	767917.79	N 32 7 26.91 W	103 36 5.12
	15500.00	90.00	359.63	10300.00	5399.48	5398.39	-185.19	0.00	409768.04	767917.14	N 32 7 27.90 W	103 36 5.12
	15600.00	90.00	359.63	10300.00	5499.48	5498.39	-185.83	0.00	409868.04	767916.49	N 32 7 28.89 W	103 36 5.12
	15700.00	90.00	359.63	10300.00	5599.48	5598.38	-186.48	0.00	409968.03	767915.84	N 32 7 29.88 W	103 36 5.12
	15800.00	90.00	359.63	10300.00	5699.48	5698.38	-187.13	0.00	410068.03	767915.19	N 32 7 30.87 W	103 36 5.12
	15900.00	90.00	359.63	10300.00	5799.48	5798.38	-187.78	0.00	410168.02	767914.54	N 32 7 31.85 W	103 36 5.12
	16000.00	90.00	359.63	10300.00	5899.48	5898.38	-188.43	0.00	410268.02	767913.89	N 32 7 32.84 W	103 36 5.12
	16100.00	90.00	359.63	10300.00	5999.48	5998.38	-189.08	0.00	410368.01	767913.25	N 32 7 33.83 W	103 36 5.12
	16200.00	90.00	359.63	10300.00	6099.48	6098.37	-189.73	0.00	410468.01	767912.60	N 32 7 34.82 W	103 36 5.12
	16300.00	90.00	359.63	10300.00	6199.48	6198.37	-190.38	0.00	410568.00	767911.95	N 32 7 35.81 W	103 36 5.12
	16400.00	90.00	359.63	10300.00	6299.48	6298.37	-191.03	0.00	410668.00	767911.30	N 32 7 36.80 W	103 36 5.12
	16500.00	90.00	359.63	10300.00	6399.48	6398.37	-191.68	0.00	410767.99	767910.65	N 32 7 37.79 W	103 36 5.11
	16600.00	90.00	359.63	10300.00	6499.48	6498.37	-192.33	0.00	410867.98	767910.00	N 32 7 38.78 W	103 36 5.11
	16700.00	90.00	359.63	10300.00	6599.48	6598.36	-192.98	0.00	410967.98	767909.35	N 32 7 39.77 W	103 36 5.11
	16800.00	90.00	359.63	10300.00	6699.48	6698.36	-193.63	0.00	411067.97	767908.70	N 32 7 40.76 W	103 36 5.11
	16900.00	90.00	359.63	10300.00	6799.48	6798.36	-194.28	0.00	411167.97	767908.05	N 32 7 41.75 W	103 36 5.11
	17000.00	90.00	359.63	10300.00	6899.48	6898.36	-194.92	0.00	411267.96	767907.40	N 32 7 42.74 W	103 36 5.11
	17100.00	90.00	359.63	10300.00	6999.48	6998.35	-195.57	0.00	411367.96	767906.75	N 32 7 43.73 W	103 36 5.11
	17200.00	90.00	359.63	10300.00	7099.48	7098.35	-196.22	0.00	411467.95	767906.10	N 32 7 44.72 W	103 36 5.11
	17300.00	90.00	359.63	10300.00	7199.48	7198.35	-196.87	0.00	411567.95	767905.45	N 32 7 45.71 W	103 36 5.11
	17400.00	90.00	359.63	10300.00	7299.48	7298.35	-197.52	0.00	411667.94	767904.80	N 32 7 46.70 W	103 36 5.11
	17500.00	90.00	359.63	10300.00	7399.48	7398.35	-198.17	0.00	411767.93	767904.16	N 32 7 47.69 W	103 36 5.11
	17600.00	90.00	359.63	10300.00	7499.48	7498.34	-198.82	0.00	411867.93	767903.51	N 32 7 48.68 W	103 36 5.11
	17700.00	90.00	359.63	10300.00	7599.48	7598.34	-199.47	0.00	411967.92	767902.86	N 32 7 49.67 W	103 36 5.11
	17800.00	90.00	359.63	10300.00	7699.48	7698.34	-200.12	0.00	412067.92	767902.21	N 32 7 50.66 W	103 36 5.11
	17900.00	90.00	359.63	10300.00	7799.48	7798.34	-200.77	0.00	412167.91	767901.56	N 32 7 51.65 W	103 36 5.11

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 ° ' ")	
	18000.00	90.00	359.63	10300.00	7899.48	7898.34	-201.42	0.00	412267.91	767900.91	N 32	7 52.64 W	103 36	5.11
	18100.00	90.00	359.63	10300.00	7999.48	7998.33	-202.07	0.00	412367.90	767900.26	N 32	7 53.62 W	103 36	5.11
	18200.00	90.00	359.63	10300.00	8099.48	8098.33	-202.72	0.00	412467.90	767899.61	N 32	7 54.61 W	103 36	5.11
	18300.00	90.00	359.63	10300.00	8199.48	8198.33	-203.37	0.00	412567.89	767898.96	N 32	7 55.60 W	103 36	5.11
	18400.00	90.00	359.63	10300.00	8299.48	8298.33	-204.02	0.00	412667.88	767898.31	N 32	7 56.59 W	103 36	5.11
	18500.00	90.00	359.63	10300.00	8399.48	8398.33	-204.66	0.00	412767.88	767897.66	N 32	7 57.58 W	103 36	5.11
	18600.00	90.00	359.63	10300.00	8499.48	8498.32	-205.31	0.00	412867.87	767897.01	N 32	7 58.57 W	103 36	5.11
	18700.00	90.00	359.63	10300.00	8599.48	8598.32	-205.96	0.00	412967.87	767896.36	N 32	7 59.56 W	103 36	5.11
	18800.00	90.00	359.63	10300.00	8699.48	8698.32	-206.61	0.00	413067.86	767895.71	N 32	8 0.55 W	103 36	5.11
	18900.00	90.00	359.63	10300.00	8799.48	8798.32	-207.26	0.00	413167.86	767895.07	N 32	8 1.54 W	103 36	5.11
	19000.00	90.00	359.63	10300.00	8899.48	8898.31	-207.91	0.00	413267.85	767894.42	N 32	8 2.53 W	103 36	5.11
	19100.00	90.00	359.63	10300.00	8999.48	8998.31	-208.56	0.00	413367.85	767893.77	N 32	8 3.52 W	103 36	5.11
	19200.00	90.00	359.63	10300.00	9099.48	9098.31	-209.21	0.00	413467.84	767893.12	N 32	8 4.51 W	103 36	5.11
	19300.00	90.00	359.63	10300.00	9199.48	9198.31	-209.86	0.00	413567.84	767892.47	N 32	8 5.50 W	103 36	5.11
	19400.00	90.00	359.63	10300.00	9299.48	9298.31	-210.51	0.00	413667.83	767891.82	N 32	8 6.49 W	103 36	5.10
	19500.00	90.00	359.63	10300.00	9399.48	9398.30	-211.16	0.00	413767.82	767891.17	N 32	8 7.48 W	103 36	5.10
	19600.00	90.00	359.63	10300.00	9499.48	9498.30	-211.81	0.00	413867.82	767890.52	N 32	8 8.47 W	103 36	5.10
	19700.00	90.00	359.63	10300.00	9599.48	9598.30	-212.46	0.00	413967.81	767889.87	N 32	8 9.46 W	103 36	5.10
	19800.00	90.00	359.63	10300.00	9699.48	9698.30	-213.11	0.00	414067.81	767889.22	N 32	8 10.45 W	103 36	5.10
	19900.00	90.00	359.63	10300.00	9799.48	9798.30	-213.75	0.00	414167.80	767888.57	N 32	8 11.44 W	103 36	5.10
	20000.00	90.00	359.63	10300.00	9899.48	9898.29	-214.40	0.00	414267.80	767887.92	N 32	8 12.43 W	103 36	5.10
	20100.00	90.00	359.63	10300.00	9999.48	9998.29	-215.05	0.00	414367.79	767887.27	N 32	8 13.42 W	103 36	5.10
	20200.00	90.00	359.63	10300.00	10099.48	10098.29	-215.70	0.00	414467.79	767886.62	N 32	8 14.40 W	103 36	5.10
Cimarex Vaca Draw 20-17 Federal #14H - PBHL [100' FNL, 440' FWL]	20290.10	90.00	359.63	10300.00	10189.58	10188.39	-216.29	0.00	414557.88	767886.04	N 32	8 15.30 W	103 36	5.10

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 #14H / Cimarex Vaca Draw 20-17
	1	26.000	20290.099	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS	Federal #14H Rev0 RM 20Jan20 Vaca Draw 20-17 Federal #14H / Cimarex Vaca Draw 20-17



Cimarex Energy

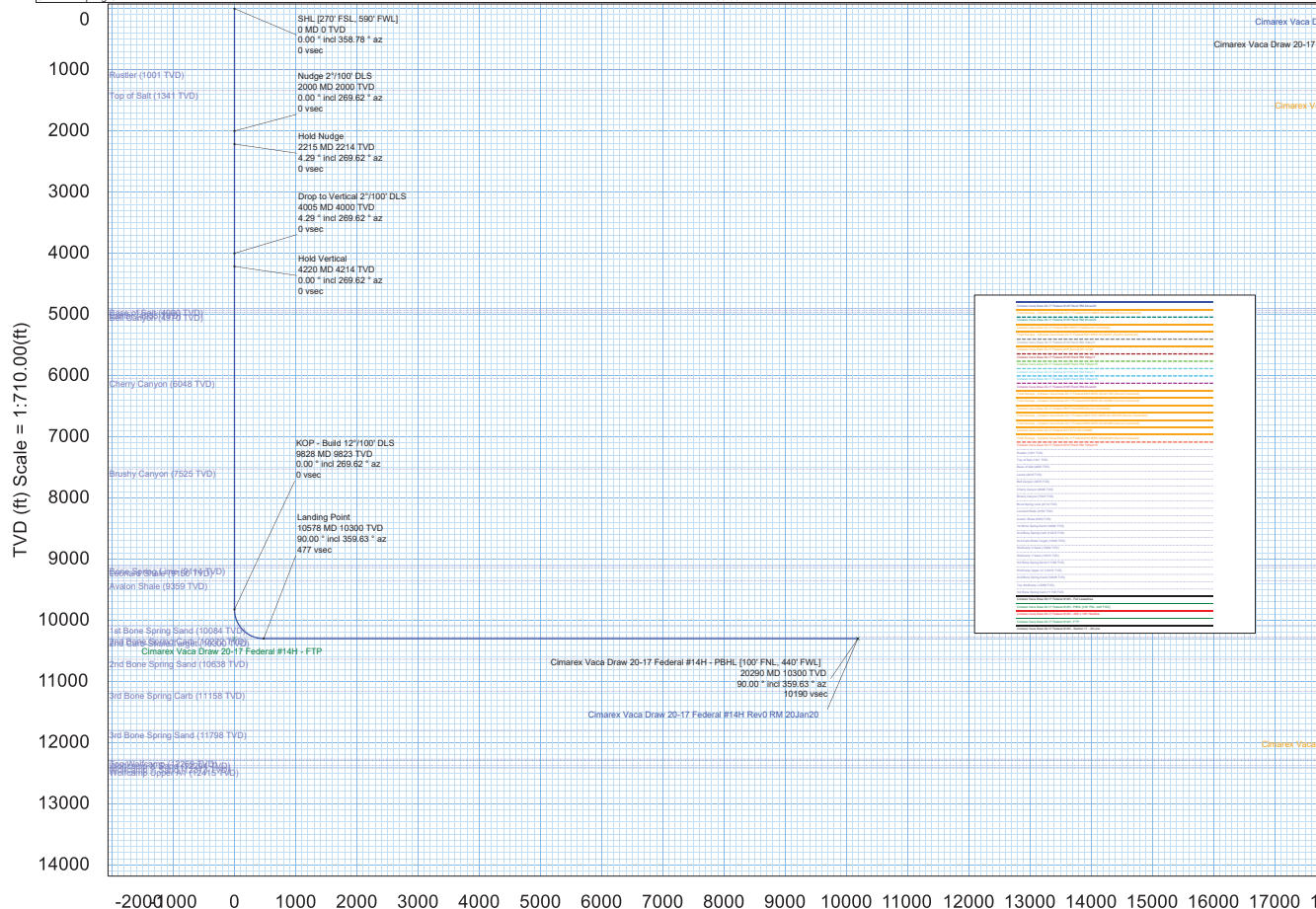
Rev 0



Borehole:	Well:	Field:	Structure:
Vaca Draw 20-17 Federal #14H	Vaca Draw 20-17 Federal #14H	NM Lea County (NAD 83)	Cimarex Vaca Draw 20-17 Federal #14H

Gravity & Magnetic Parameters	Dip: 59.694°	Date: 20-Jan-2020	Surface Location	NAD83 New Mexico State Plane, Eastern Zone, US Feet	Grid Conv:	0.3893°	Miscellaneous
Model: HDGM 2019	FS: 47707.39NT	Gravity FS: 998.429mgn (8.80665 Based)	Lat: N 32 6 34.47	North: 404369.84HUS	Scale Fact: 0.99996799	Plan: New Slot	Slot: Cimarex Vaca Draw 20-17 Federal #14H Rev0 RM 20Jan20
MagDec: 6.583°			Long: W 103 36 3.39	East: 768102.32HUS			TVD Ref: RKB(3449.5ft above MSL)

Critical Point	MD	INCL	AZIM	Critical Points	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL (270° FSL, 590° FWL)	0.00	0.00	358.78	0.00	0.00	0.00	0.00	0.00	0.00
Rustler	1001.00	0.00	269.62	1001.00	0.00	0.00	0.00	0.00	0.00
Top of Salt	1341.00	0.00	269.62	1341.00	0.00	0.00	0.00	0.00	0.00
Nudge 2°/100° DLS	2000.00	0.00	269.62	2000.00	0.00	0.00	0.00	0.00	0.00
Hold Nudge	2214.68	4.29	269.62	2214.47	0.00	-0.05	-0.05	-8.04	2.00
Drop to Vertical 2°/100° DLS	4005.23	0.00	269.62	4000.00	-0.02	-0.95	-0.95	-142.09	0.00
Hold Vertical	4219.90	0.00	269.62	4214.47	-0.03	-1.00	-1.00	-150.13	2.00
Base of Salt	4905.43	0.00	269.62	4900.00	-0.03	-1.00	-1.00	-150.13	0.00
Lamar	4940.43	0.00	269.62	4935.00	-0.03	-1.00	-1.00	-150.13	0.00
Bell Canyon	4975.43	0.00	269.62	4970.00	-0.03	-1.00	-1.00	-150.13	0.00
Cherry Canyon	6053.43	0.00	269.62	6048.00	-0.03	-1.00	-1.00	-150.13	0.00
Brushy Canyon	7530.43	0.00	269.62	7525.00	-0.03	-1.00	-1.00	-150.13	0.00
Bone Spring Lime	9119.43	0.00	269.62	9114.00	-0.03	-1.00	-1.00	-150.13	0.00
Leonard Shale	9155.43	0.00	269.62	9150.00	-0.03	-1.00	-1.00	-150.13	0.00
Avalon Shale	9364.43	0.00	269.62	9359.00	-0.03	-1.00	-1.00	-150.13	0.00
KOP - Build 12°/100° DLS	9827.96	0.00	269.62	9822.54	-0.03	-1.00	-1.00	-150.13	0.00
1st Bone Spring Sand	10104.66	33.20	359.63	10084.00	77.93	76.95	-152.63	12.00	12.00
2nd Bone Spring Carb	10413.63	70.28	359.63	10272.00	316.34	316.35	-152.18	12.00	12.00
Landing Point	10577.96	90.00	359.63	10300.00	477.44	476.45	-153.23	12.00	12.00
2nd Bone Spring Sand	10577.96	90.00	359.63	10300.00	477.44	476.45	-153.23	12.00	12.00
Wolfcamp Upper A1	10577.96	90.00	359.63	10300.00	477.44	476.45	-153.23	12.00	12.00
2nd Bone Spring Sand	10577.96	90.00	359.63	10300.00	477.44	476.45	-153.23	12.00	12.00
Top Wolfcamp	10577.96	90.00	359.63	10300.00	477.44	476.45	-153.23	12.00	12.00
3rd Bone Spring Carb	10577.96	90.00	359.63	10300.00	477.44	476.45	-153.23	12.00	12.00



Vertical Section (ft) Azim = 359.63° Scale = 1:710.00(ft) Origin = 0N/-S, 0E/-W

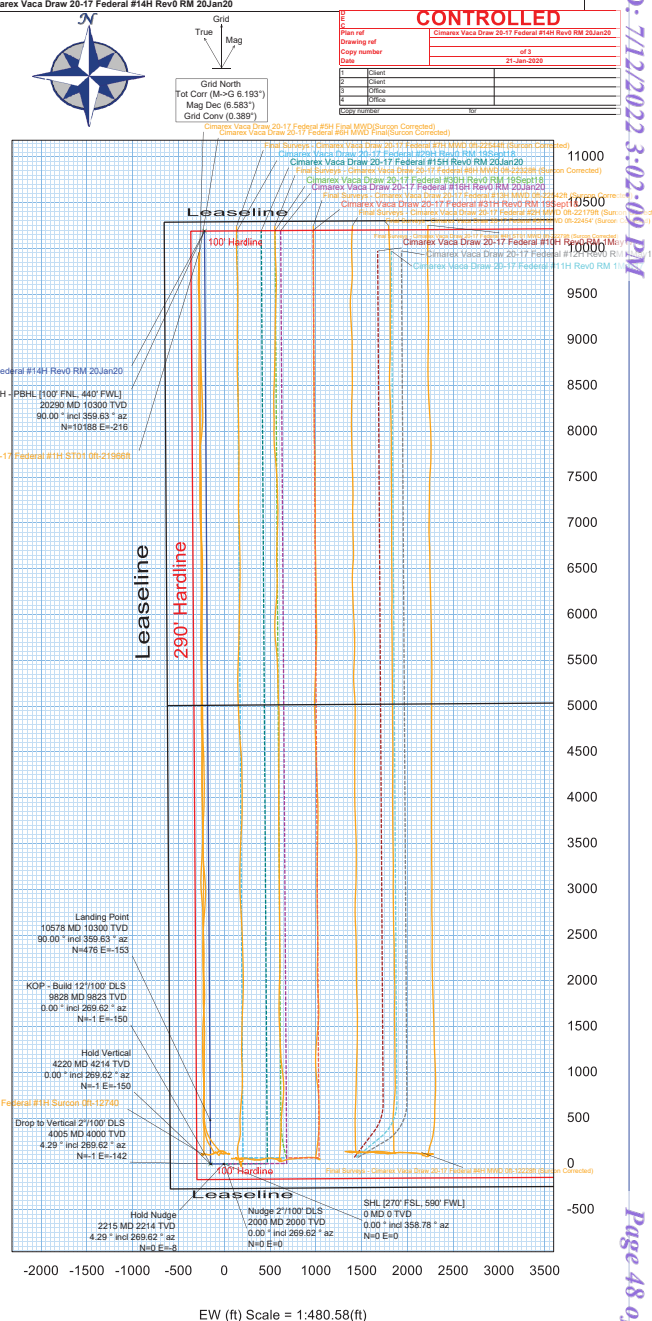


Exhibit F – Co-Flex Hose
Vaca Draw 20-17 Fed 14H
Cimarex Energy Co.
20-25S-33E
Lea County, NM

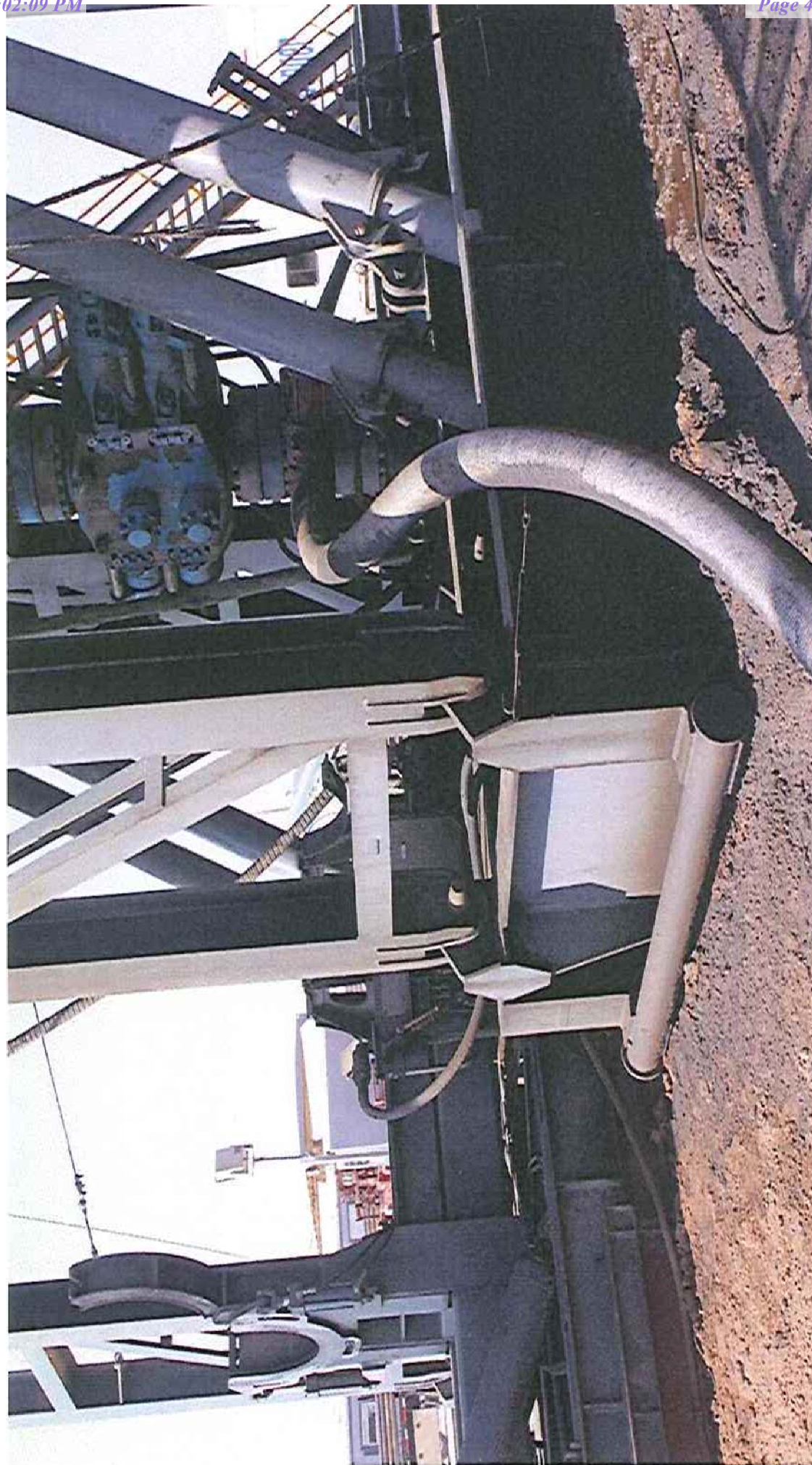


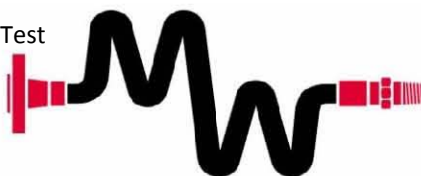
Exhibit F-1 – Co-Flex Hose Hydrostatic Test

Vaca Draw 20-17 Fed 14H

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			
<u>Hose assembly pressure tested with water at ambient temperature.</u>			
TIME HELD AT TEST PRESSURE		ACTUAL BURST PRESSURE:	
15 MIN.		0 PSI	
Hose Assembly Serial Number: 79793		Hose Serial Number: OKC	
Comments:			
Date:	Tested:	Approved:	
3/8/2011	<i>A. Joins</i>	<i>[Signature]</i>	

Exhibit F-1 – Co-Flex Hose Hydrostatic Test

Vaca Draw 20-17 Fed 14H

Cimarex Energy Co.

20-25S-33E

Lea County, NM

March 3, 2011

Internal Hydrostatic Test Graph

Customer: Houston

Pick Ticket #: 94260

Midwest Hose
& Specialty, Inc.Hose Specifications

Hose Type

C & K

Length

45'

I.D.

4"

O.D.

6.09"

Verification

Type of Fitting

4 1/16 10K

Coupling Method

Swage

Die Size

6.38"

Final O.D.

6.25"

Working Pressure

10000 PSI

Burst Pressure

Standard Safety Multiplier Applies

Hose Serial #

5544

Hose Assembly Serial #

79793

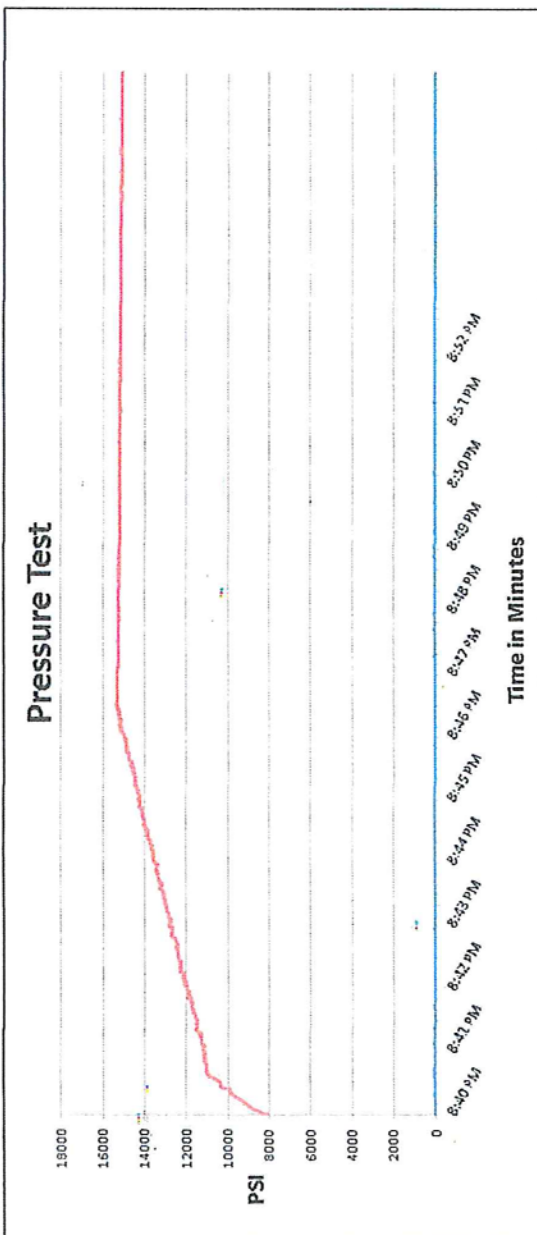
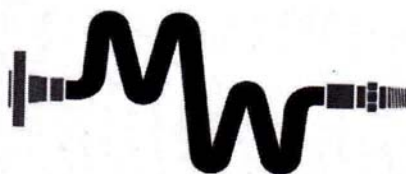
Test Pressure
15000 PSITime Held at Test Pressure
11 MinutesActual Burst PressurePeak Pressure
15483 PSI**Comments:** Hose assembly pressure tested with water at ambient temperature.**Tested By:** Zac McConnell**Approved By:** Kim Thomas

Exhibit F-2 – Co-Flex Hose
Vaca Draw 20-17 Fed 14H
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 certify 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:

Samuel Garcia

Date:

3/8/2011



Exhibit F -3- Co-Flex Hose
Vaca Draw 20-17 Fed 14H
Cimarex Energy Co.
20-25S-33E
Lea County, NM

Specification Sheet Choke & Kill Hose

The Midwest Hose & Specialty Choke & Kill hose is manufactured with only premium components. 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 vermiculite 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, unbolt 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 10,300

Pilot Hole TD N/A

MD at TD 20,290

Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
RUSTLER	1001	Useable Water	
TOP OF SALT	1341	N/A	
BASE OF SALT	4900	N/A	
LAMAR	4935	N/A	
BELL CANYON	4970	N/A	
CHERRY CANYON	6048	Hydrocarbons	
BRUSHY CANYON	7525	Hydrocarbons	
BONE SPRING	9114	Hydrocarbons	
UPPER AVALON SHALE	9359	Hydrocarbons	
1ST BONE SPRING	10084	Hydrocarbons	
2ND BONE SPRING	10272	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	1050	1050	13-3/8"	48.00	H-40/J-55 Hybrid	ST&C	1.63	3.80	6.39
12 1/4	0	4915	4915	9-5/8"	40.00	J-55	BT&C	1.40	1.50	3.20
8 3/4	0	8927	8927	7"	26.00	P-110	LT&C	1.49	2.38	2.59
8 3/4	8927	10470	10272	7"	26.00	L-80	BT&C	1.13	1.51	17.27
6	8827	20290	10300	4-1/2"	13.50	P-110	BT&C	2.22	2.58	21.22
BLM Minimum Safety Factor								1.125	1	1.6 Dry 1.8 Wet

TVD was used on all calculations.

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

Cimarex Energy Co., Vaca Draw 20-17 Federal 14H

	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	# Sk	Wt. lb/gal	Yld ft ³ /sack	H ₂ O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	509	13.50	1.72	9.15	15.5	Lead: Class C + Bentonite
	136	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	263	10.30	3.64	22.18		Lead: Tuned Light + LCM
	94	14.20	1.30	5.86	14:30	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS
Completion System	730	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	10270	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	3M	Annular	X	3M
			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.

X	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.				
X	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.				
N	Are anchors required by manufacturer?				

5. Mud Program

Depth	Type	Weight (ppg)	Viscosity	Water Loss
0' to 1050'	Fresh Water	7.83 - 8.33	28	N/C
1050' to 4915'	Brine Water	9.80 - 10.30	30-32	N/C
4915' to 10470'	Cut Brine or OBM	8.50 - 9.00	27-70	N/C
10470' to 20290'	OBM	8.50 - 9.00	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	
X	Will run GR/CNL from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
	No logs are planned based on well control or offset log information.
	Drill stem test?
	Coring?

Additional Logs Planned	Interval
-------------------------	----------

7. Drilling Conditions

Condition	
BH Pressure at deepest TVD	4820 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.

	H ₂ S is present
	H ₂ S 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.

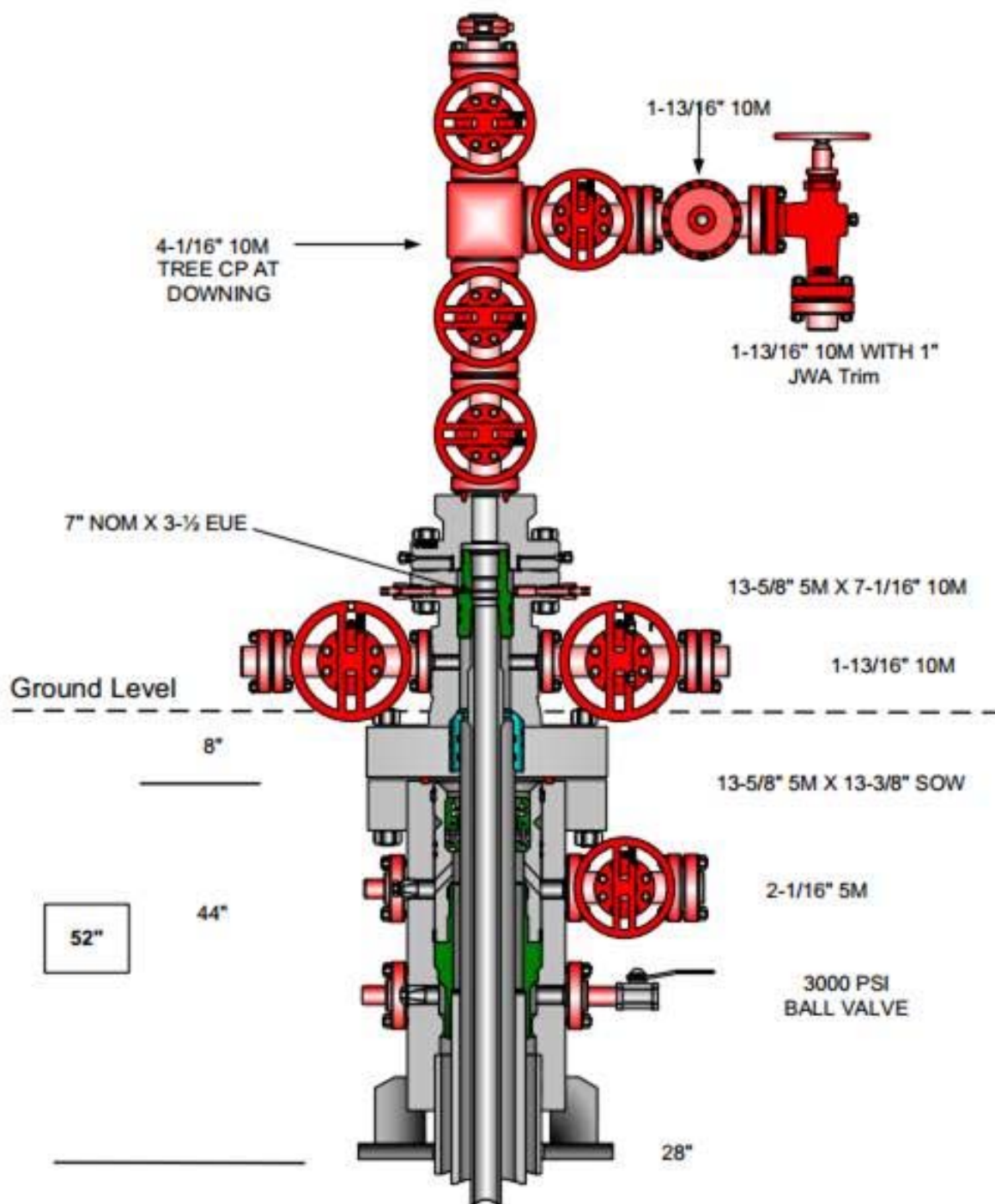
A solid steel body pack-off will be utilized after running and cementing the intermediate casing. After installation the pack-off and lower flange will be pressure tested to 5000 psi.

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 at least 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	1050	1050	13-3/8"	48.00	H-40/J-55 Hybrid	ST&C	1.63	3.80	6.39
12 1/4	0	4915	4915	9-5/8"	40.00	J-55	BT&C	1.40	1.50	3.20
8 3/4	0	8927	8927	7"	26.00	P-110	LT&C	1.49	2.38	2.59
8 3/4	8927	10470	10272	7"	26.00	L-80	BT&C	1.13	1.51	17.27
6	8927	20290	10300	4-1/2"	13.50	P-110	BT&C	2.22	2.58	21.22
BLM Minimum Safety Factor								1.125	1	1.6 Dry 1.8 Wet

Multi-bowl Wellhead Diagram
Vaca Draw 20-17 Fed #14H
 Cimarex Energy Co.
 20-25S-33E
 Lea County, NM



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

SUPO Data Report

10/19/2021

APD ID: 10400037997

Submission Date: 01/17/2019

Highlighted data
reflects the most
recent changes

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL

Well Number: 14H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

Vaca_Draw_20_17_Fed_W2W2_Existing__Access_20200916145021.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_14H_Mile_Radius_Exisiting_Wells_20200319091128.pdf

Operator Name: CIMAREX ENERGY COMPANY**Well Name:** VACA DRAW 20-17 FEDERAL**Well Number:** 14H

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

Submit or defer a Proposed Production Facilities plan? SUBMIT

Production Facilities description: *Please note: well pad, Battery pads, and Flowline routes have all been previously approved* 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. Battery pads have been previously approved. 682 ft of bull flowline has been previously approved.

Production Facilities map:

Vaca_Draw_20_17_Fed_West_CTB_Layout_20200319091247.pdf

Vaca_Draw_20_17_Fed_CTB_Layout_20200319091243.pdf

Vaca_Draw_20_17_Fed_14H_Bulk_Flowline_Route_20200408093627.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_14H_Drlg_water_route_20200916144742.pdf

Water source comments:**New water well?** NO

Operator Name: CIMAREX ENERGY COMPANY**Well Name:** VACA DRAW 20-17 FEDERAL**Well Number:** 14H

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 located in Sec.16-25S-32E Lea, NM.**Construction Materials source location attachment:**

Section 7 - Methods for Handling Waste

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

Operator Name: CIMAREX ENERGY COMPANY**Well Name:** VACA DRAW 20-17 FEDERAL**Well Number:** 14H**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**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 disopol 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.

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:** 14H**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_14H_Wellsite_Location_Layout_20200319151059.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 1**Recontouring attachment:**

Vaca_Draw_20_17_Fed_W2W2_Pad_Interim_Reclamation_20200319151154.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: 14H

Well pad proposed disturbance (acres): 7.263	Well pad interim reclamation (acres): 3.713	Well pad long term disturbance (acres): 3.55
Road proposed disturbance (acres): 6.907	Road interim reclamation (acres): 0	Road long term disturbance (acres): 0.759
Powerline proposed disturbance (acres): 0	Powerline interim reclamation (acres): 0	Powerline long term disturbance (acres): 0
Pipeline proposed disturbance (acres): 0.939	Pipeline interim reclamation (acres): 0	Pipeline long term disturbance (acres): 0.939
Other proposed disturbance (acres): 8.985	Other interim reclamation (acres): 0	Other long term disturbance (acres): 8.985
Total proposed disturbance: 24.094	Total interim reclamation: 3.713	Total long term disturbance: 14.233

Disturbance Comments: Bulk line: 683' Existing Access Road: 1102.83 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:** 14H**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: 14H

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:** 14H**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: 14H

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_W2W2_Pad_1_Well_list_20200323084831.docx

Vaca_Draw_20_17_Fed_14H_Bulk_Flowline_Route_20200408094044.pdf

Vaca_Draw_20_17_Fed_14H_SUPO_20200408094204.pdf

Vaca_Draw_20_17_Fed_14H_Road_Description_20200408094741.pdf



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

PWD Data Report

10/19/2021

APD ID: 10400037997

Submission Date: 01/17/2019

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL

Well Number: 14H

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:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL

Well Number: 14H

Lined pit Monitor description:

Lined pit Monitor attachment:

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

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD disturbance (acres):

PWD surface owner:

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

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

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

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

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

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

Operator Name: CIMAREX ENERGY COMPANY**Well Name:** VACA DRAW 20-17 FEDERAL**Well Number:** 14H**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: 14H

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:



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

Bond Info Data Report

10/19/2021

APD ID: 10400037997

Submission Date: 01/17/2019

Highlighted data
reflects the most
recent changes

Operator Name: CIMAREX ENERGY COMPANY

Well Name: VACA DRAW 20-17 FEDERAL

Well Number: 14H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB001188

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment:

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 / 3 / 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 14H		M, Sec 20, T25S, R33E	270 FSL/590 FWL	1200	1800	1300
30-025-50387						

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 20-17 Fed 14H		10/1/2022	12/1/2022	3/1/2023	5/1/2023	5/1/2023
30-025-50387						

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: 
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

Action 124772

CONDITIONS

Operator: CIMAREX ENERGY CO. 600 N. Marienfeld Street Midland, TX 79701	OGRID: 215099
	Action Number: 124772
	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	7/27/2022
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	7/27/2022
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	7/27/2022
pkautz	Cement is required to circulate on both surface and intermediate1 strings of casing	7/27/2022