

Well Name: VACA DRAW 20-17 FEDERAL	Well Location: T25S / R33E / SEC 20 / SESE / 32.109732 / -103.588417	County or Parish/State: LEA / NM
Well Number: 61H	Type of Well: OIL WELL	Allottee or Tribe Name:
Lease Number: NMNM026394, NMNM26394	Unit or CA Name:	Unit or CA Number:
US Well Number: 3002547961	Well Status: Drilling Well	Operator: CIMAREX ENERGY COMPANY

Notice of Intent

Sundry ID: 2633743

Type of Submission: Notice of Intent Type of Action: Other

Date Sundry Submitted: 09/13/2021 Time Sundry Submitted: 10:56

Date proposed operation will begin: 09/12/2021

Procedure Description: Cimarex respectfully requests approval to change SHL, BHL, Target Formation, casing design and perform offline cementing for the Vaca Draw 20-17 Federal 61H well. Proposed SHL: 390' FSL & 860' FEL Sec 20 25S 33E. Proposed BHL: 100' FNL & 698' FEL Sec 17 25S 33E. Proposed formation: Wolfcamp. Offline Cementing procedure: (1) Land casing on solid body mandrel hanger (1a) Engage packoff and lockring (2) Install BPV (3) Skid rig (4) Check for pressure and remove BPV (5) Circulate down casing, taking returns through casing valves (6) Pump lead and tail cement (7) Displace cement and bump the plug (8) Ensure floats are holding pressure (9) RD cement crew (10) Install BPV and TA cap. Additional Attachments: C102, BOP, choke Manifold & Multibowl WH, Directional Plan, Drilling Plan, wellsite layout and OLC plan.

Surface Disturbance

Is any additional surface disturbance proposed?: No

NOI Attachments

Procedure Description

- Vaca_Draw_20_17_Federal_61H_Driectional_and_AC_20210913105519.pdf
- Vaca_Draw_20_17_Fed_61H_Drilling_Plan_20210913105509.pdf
- Vaca_Draw_20_17_Fed_61H_WH_BOP_Ck_Manifold_20210913105500.pdf
- Vaca_Draw_20_17_Federal_61H_Updated_Wellsite_Layout_20210913105450.pdf
- Vaca_Draw_20_17_Federal_61H_C102_20210913105432.pdf

Received by OCD: 11/8/2021 9:39:09 AM

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US Well Number: 3002547961	Well Status: Drilling Well	Operator: CIMAREX ENERGY COMPANY

Conditions of Approval

Additional Reviews

Vaca_Draw_12_17_Fed_61H_COA_20210915083149.pdf

Vaca_Draw_61H_DNA_COAs_20210914082907.docx

Operator Certification

I certify that the foregoing is true and correct. 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. Electronic submission of Sundry Notices through this system satisfies regulations requiring a submission of Form 3160-5 or a Sundry Notice.

Operator Electronic Signature: AMITHY CRAWFORD	Signed on: SEP 13, 2021 10:52 AM
Name: CIMAREX ENERGY COMPANY	
Title: Regulatory Analyst	
Street Address: 600 N MARIENFELD STE 600	
City: MIDLAND	State: TX
Phone: (432) 620-1909	
Email address: acrawford@cimarex.com	

Field Representative

Representative Name:		
Street Address:		
City:	State:	Zip:
Phone:		
Email address:		

BLM Point of Contact

BLM POC Name: CHRISTOPHER WALLS	BLM POC Title: Petroleum Engineer
BLM POC Phone: 5752342234	BLM POC Email Address: cwalls@blm.gov
Disposition: Approved	Disposition Date: 09/15/2021
Signature: Chris Walls	

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

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

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

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-025-47961	² Pool Code 98180	³ Pool Name WC-025 G-09 S253309P; UPR WOLFCAMP
⁴ Property Code 319775	⁵ Property Name VACA DRAW 20-17 FEDERAL	⁶ Well Number 61H
⁷ OGRID No. 215099	⁸ Operator Name CIMAREX ENERGY CO.	⁹ Elevation 3398.3'

¹⁰ Surface Location

UL or lot no. P	Section 20	Township 25S	Range 33E	Lot Idn	Feet from the 390	North/South line SOUTH	Feet from the 860	East/West line EAST	County LEA
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¹¹ Bottom Hole Location If Different From Surface

UL or lot no. A	Section 17	Township 25S	Range 33E	Lot Idn	Feet from the 100	North/South line NORTH	Feet from the 698	East/West line EAST	County LEA
¹² Dedicated Acres 640		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.

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- = SURFACE HOLE LOCATION
 ◆ = LANDING POINT/FIRST TAKE POINT
 ○ = BOTTOM HOLE LOCATION/
 LAST TAKE POINT
 ▲ = SECTION CORNER LOCATED



SCALE

DRAWN BY: T.A. 08-08-19
REV: 2 02-18-21 C.D. (LP & BHL CHANGE)

LINE TABLE		
LINE	DIRECTION	LENGTH
L1	S89°56'49"W	2644.60'
L2	N89°56'44"E	162.00'

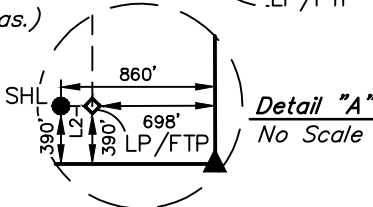
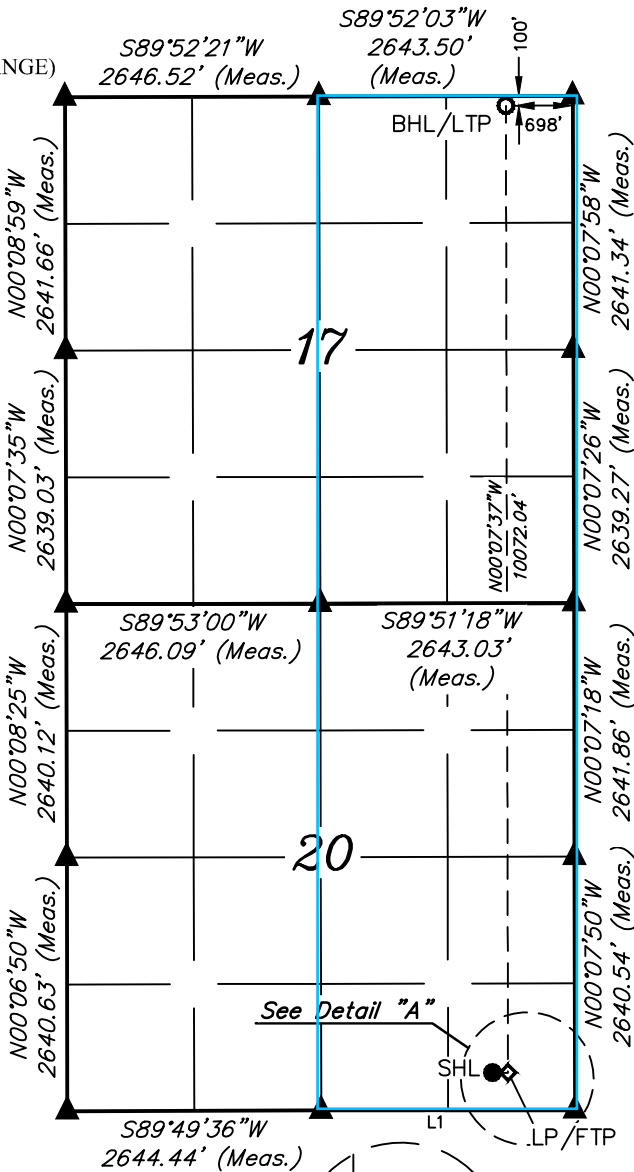
NAD 83 (SURFACE HOLE LOCATION)
LATITUDE = 32°06'35.63" (32.109897°)
LONGITUDE = 103°35'18.77" (103.588546°)
NAD 27 (SURFACE HOLE LOCATION)
LATITUDE = 32°06'35.18" (32.109773°)
LONGITUDE = 103°35'17.07" (103.588075°)
STATE PLANE NAD 83 (N.M. EAST)
N: 404513.69' E: 771939.65'
STATE PLANE NAD 27 (N.M. EAST)
N: 404455.91' E: 730753.47'

NAD 83 (LP/FTP)
LATITUDE = 32°06'35.63" (32.109896°)
LONGITUDE = 103°35'16.88" (103.588023°)
NAD 27 (LP/FTP)
LATITUDE = 32°06'35.18" (32.109772°)
LONGITUDE = 103°35'15.19" (103.587551°)
STATE PLANE NAD 83 (N.M. EAST)
N: 404514.52' E: 772101.62'
STATE PLANE NAD 27 (N.M. EAST)
N: 404456.74' E: 730915.43'

NAD 83 (BHL/LTP)
LATITUDE = 32°08'15.28" (32.137578°)
LONGITUDE = 103°35'16.82" (103.588006°)
NAD 27 (BHL/LTP)
LATITUDE = 32°08'14.83" (32.137453°)
LONGITUDE = 103°35'15.12" (103.587533°)
STATE PLANE NAD 83 (N.M. EAST)
N: 414584.63' E: 772037.22'
STATE PLANE NAD 27 (N.M. EAST)
N: 414526.60' E: 730851.51'

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)



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.

Amithy Crawford 3/1/21
Signature Date

Amithy Crawford
Printed Name

acrawford@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.

July 27, 2018

Date of Survey _____
Signature and Seal of Professional Surveyor: _____



Certificate Number:

1. Geological Formations

TVD of target 12,925

Pilot Hole TD N/A

MD at TD 22,936

Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
Rustler	935	N/A	
Top of Salt	1298	N/A	
Base of Salt	4714	N/A	
Lamar	4909	N/A	
Bell Canyon	4937	N/A	
Cherry Canyon	5990	N/A	
Brushy Canyon	7536	N/A	
Bone Spring	9032	N/A	
Leonard Shale	9087	N/A	
Avalon Shale	9312	N/A	
1st Bone Spring Sand	10011	N/A	
2nd Bone Spring Carb	10223	N/A	
2nd Bone Spring Sand	10583	N/A	
3rd Bone Spring Carb	11071	N/A	
3rd Bone Spring Sand	11722	N/A	
Wolfcamp	12189	N/A	
Wolfcamp Y Sand	12302	N/A	
Wolfcamp A1 Shale	12341	N/A	

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
14 3/4	0	985	985	10-3/4"	40.50	J-55	BT&C	3.70	7.34	15.77
9 7/8	0	13049	12876	7"	29.00	L-80	BT&C	1.17	1.35	1.81
6 3/4	0	12400	12400	5-1/2"	23.00	L-80	BT&C	1.35	1.09	2.39
6 3/4	12400	22937	12295	5"	18.00	P-110	BT&C	1.64	1.66	(306.88)
BLM Minimum Safety Factor								1.125	1	1.6 Dry 1.8 Wet

TVD was used on all calculations.

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

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

Cimarex Energy Co., Vaca Draw 20-17 Federal 61H

	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.	Y
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	N
Is well within the designated 4 string boundary.	N
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	N
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	N
Is 2nd string set 100' to 600' below the base of salt?	N
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	N
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	N
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	N
Is AC Report included?	N

3. Cementing Program

Casing	# Sk	Wt. lb/gal	Yld ft ³ /sack	H ₂ O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	332	13.50	1.72	9.15	15.5	Lead: Class C + Bentonite
	156	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate Stage 1	780	10.30	3.64	22.18		Lead: Tuned Light + LCM
	243	14.80	1.36	6.57	9.5	Tail: Class C + Retarder
Intermediate Stage 2	976	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
Production	1014	14.20	1.30	5.86	14:30	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS

DV tool with possible annular casing packer as needed is proposed at a depth of +/- 4,900'.

Casing String	TOC	% Excess
Surface	0	42
Intermediate Stage 1	4900	47
Intermediate Stage 2	0	40
Production	12849	25

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

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

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

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

5. Mud Program

Depth	Type	Weight (ppg)	Viscosity	Water Loss
0' to 985'	Fresh Water	7.83 - 8.33	28	N/C
985' to 13049'	Brine Diesel Emulsion	8.50 - 9.00	30-35	N/C
13049' to 22937'	OBM	12.30 - 12.80	50-70	N/C

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

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

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

Logging, Coring and Testing	
	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
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7. Drilling Conditions

Condition	
BH Pressure at deepest TVD	8183 psi
Abnormal Temperature	No

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

X	H ₂ S is present
X	H ₂ S plan is attached

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

A multi-bowl wellhead system will be utilized.

After running the 10-3/4" surface casing, a 13 5/8" BOP/BOPE system with a minimum working pressure of 10000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 10000 psi test. Annular will be tested to 50% of working pressure. The pressure test will be repeated at least every 30 days, as per Onshore Order No. 2.

The multi-bowl wellhead will be installed by vendor's representative. A copy of the installation instructions has been sent to the BLM field office.

The wellhead will be installed by a third-party welder while being monitored by the wellhead vendor representative.

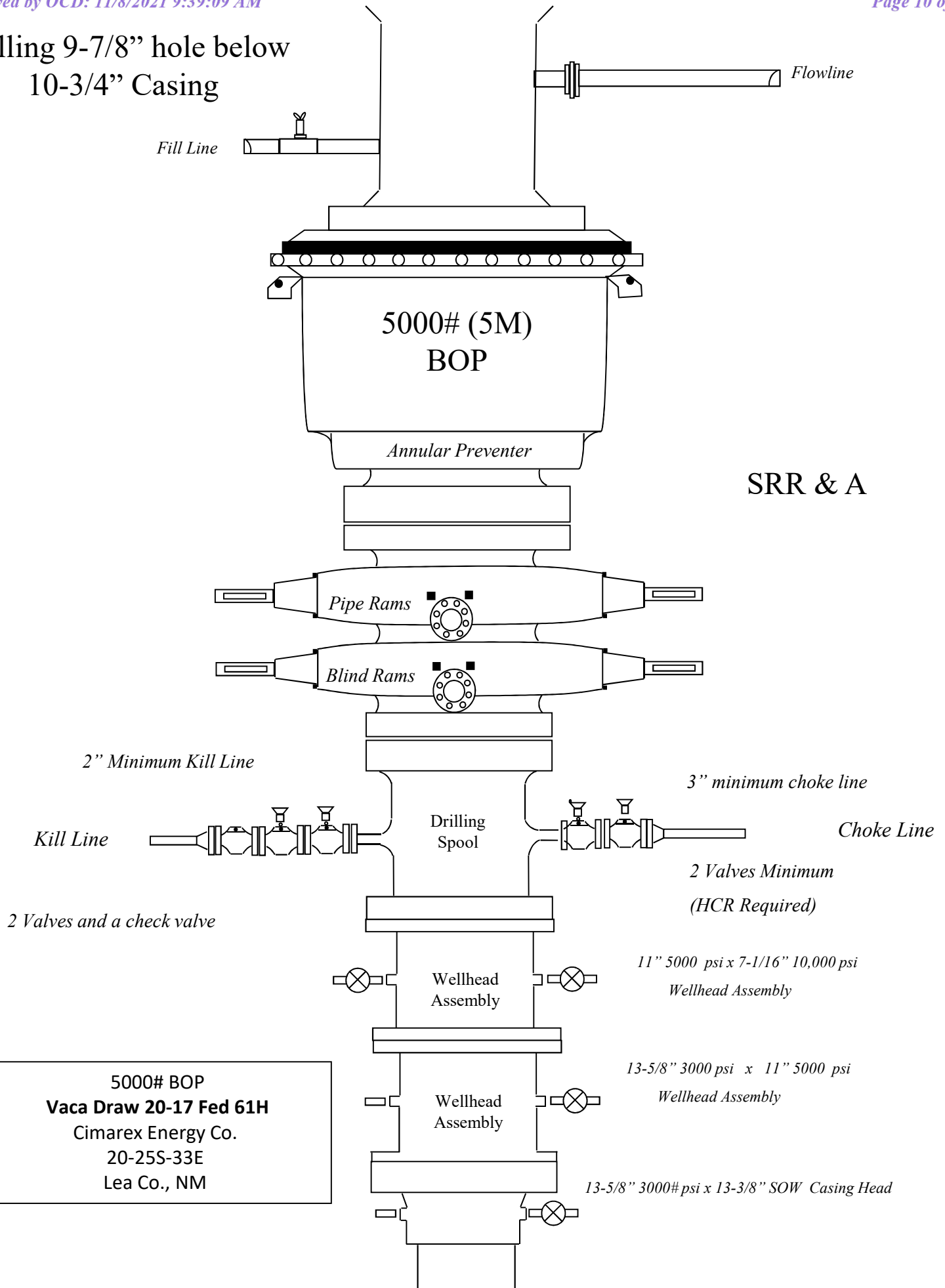
All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type.

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

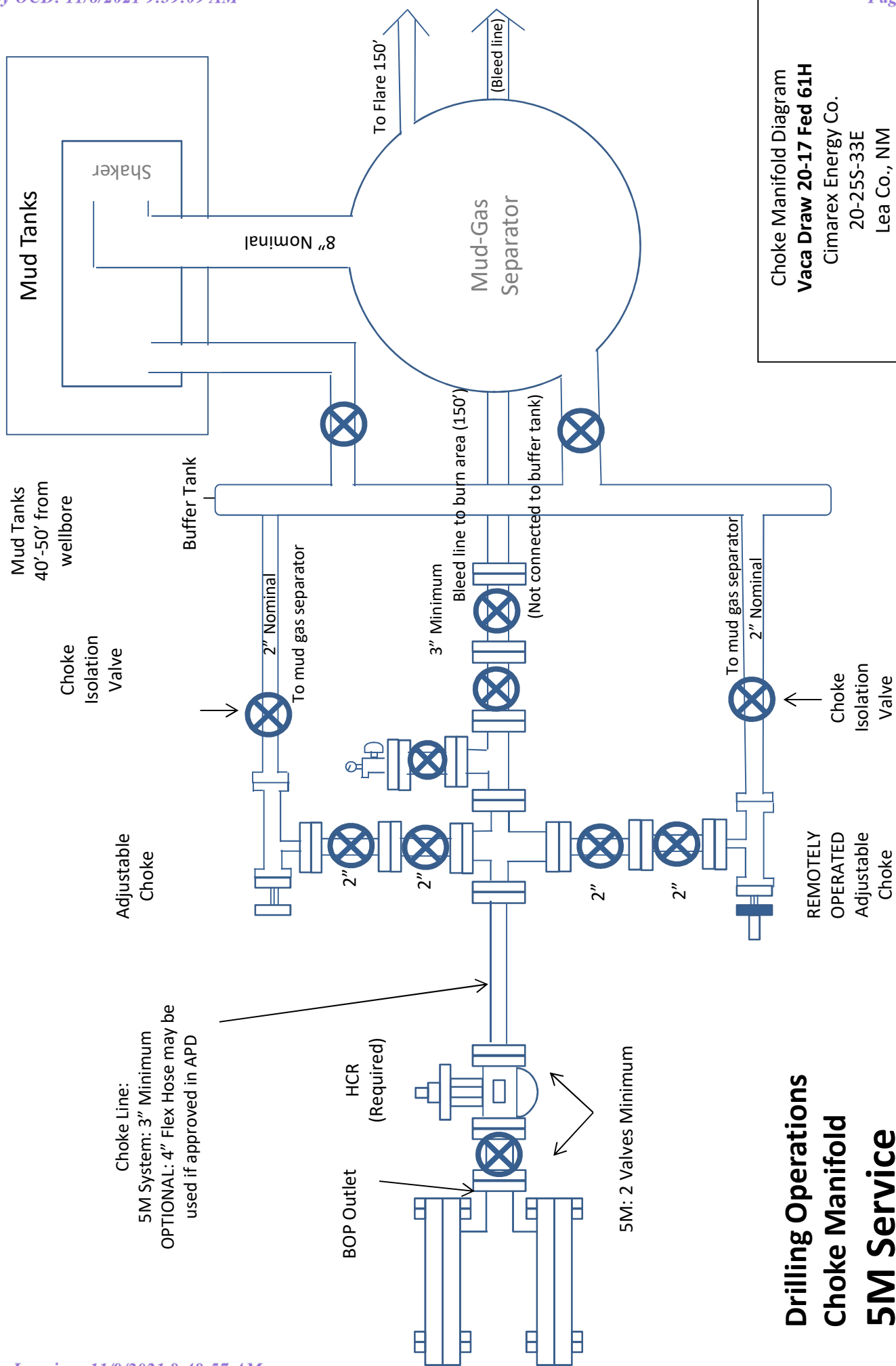
All casing strings will be tested as per Onshore Order No.2 to at least 0.22 psi/ft or 1,500 whichever is greater and not to exceed 70% of casing burst.

If well conditions dictate conventional slips will be set and BOPE will be tested to appropriate pressures based on permitted pressure requirements.

Drilling 9-7/8" hole below
10-3/4" Casing

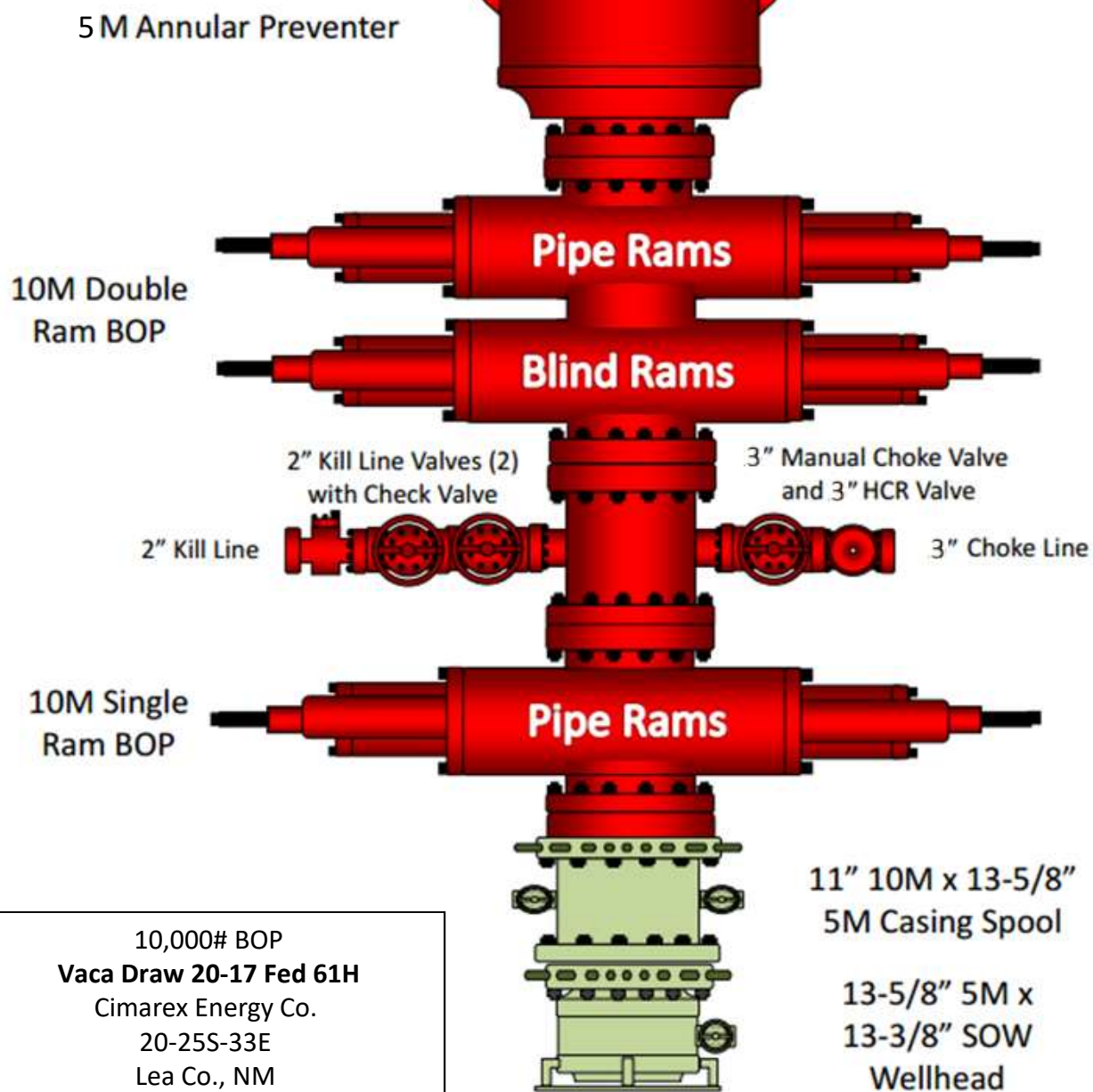


5000# BOP
Vaca Draw 20-17 Fed 61H
Cimarex Energy Co.
20-25S-33E
Lea Co., NM



Drilling Operations Choke Manifold 5M Service

Drilling 6 3/4" Hole
below 7" Casing



10,000# BOP
Vaca Draw 20-17 Fed 61H
Cimarex Energy Co.
20-25S-33E
Lea Co., NM





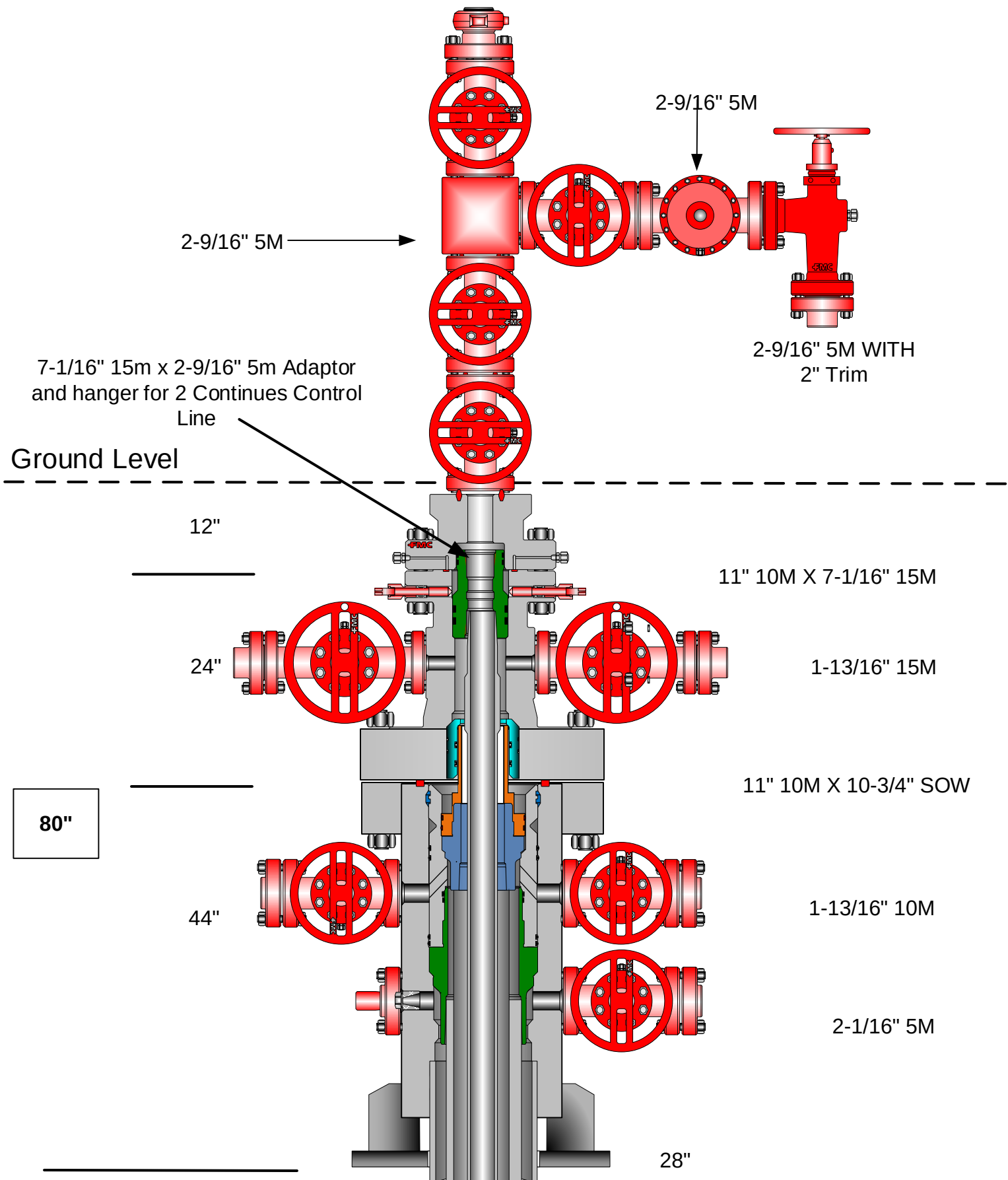
CACTUS FOR SERVICE
WEARBUSHING
IN CASING HEAD &
CASING SPOOL

LEA CO., NM

Multi-bowl Wellhead Diagram

Vaca Draw 20-17 Fed 61H
Cimarex Energy Co.

20-25S-33E
Lea Co., NM



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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9 7/8	0	13049	12876	7"	29.00	L-80	BT&C	1.17	1.35	1.81
6 3/4	0	12400	12400	5-1/2"	23.00	L-80	BT&C	1.35	1.09	2.39
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BLM Minimum Safety Factor								1.125	1	1.6 Dry 1.8 Wet



Cimarex Vaca Draw 20-17 Federal #61H Rev1 RM 24Feb21 Proposal

Geodetic Report

(Def Plan)



Report Date: February 24, 2021 - 03:34 PM
Client: Cimarex Energy
Field: NM Lea County (NAD 83)
Structure / Slot: Cimarex Vaca Draw 20-17 Federal #61H / New Slot
Well: Vaca Draw 20-17 Federal #61H
Borehole: Vaca Draw 20-17 Federal #61H
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Vaca Draw 20-17 Federal #61H Rev1 RM 24Feb21
Survey Date: February 24, 2021
Tort / AHD / DDI / ERD Ratio: 100.000 ° / 10468.432 ft / 6.269 / 0.810
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 6' 35.63006", W 103° 35' 18.76651"
Location Grid N/E Y/X: N 404513.690 ftUS, E 771939.650 ftUS
CRS Grid Convergence Angle: 0.3959 °
Grid Scale Factor: 0.99997
Version / Patch: 2.10.824.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 359.634 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3421.300 ft above MSL
Seabed / Ground Elevation: 3398.300 ft above MSL
Magnetic Declination: 6.449 °
Total Gravity Field Strength: 998.4331mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 47594.875 nT
Magnetic Dip Angle: 59.675 °
Declination Date: February 24, 2021
Magnetic Declination Model: HDGM 2020
North Reference: Grid North
Grid Convergence Used: 0.3959 °
Total Corr Mag North->Grid North: 6.0531 °
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 [390° FSL, 860° FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	404513.69	771939.65	N 32.1099	W 103.5885
	100.00	0.00	135.34	100.00	0.00	0.00	0.00	0.00	404513.69	771939.65	N 32.1099	W 103.5885
	200.00	0.00	135.34	200.00	0.00	0.00	0.00	0.00	404513.69	771939.65	N 32.1099	W 103.5885
	300.00	0.00	135.34	300.00	0.00	0.00	0.00	0.00	404513.69	771939.65	N 32.1099	W 103.5885
	400.00	0.00	135.34	400.00	0.00	0.00	0.00	0.00	404513.69	771939.65	N 32.1099	W 103.5885
	500.00	0.00	135.34	500.00	0.00	0.00	0.00	0.00	404513.69	771939.65	N 32.1099	W 103.5885
	600.00	0.00	135.34	600.00	0.00	0.00	0.00	0.00	404513.69	771939.65	N 32.1099	W 103.5885
	700.00	0.00	135.34	700.00	0.00	0.00	0.00	0.00	404513.69	771939.65	N 32.1099	W 103.5885
	800.00	0.00	135.34	800.00	0.00	0.00	0.00	0.00	404513.69	771939.65	N 32.1099	W 103.5885
	900.00	0.00	135.34	900.00	0.00	0.00	0.00	0.00	404513.69	771939.65	N 32.1099	W 103.5885
	1000.00	0.00	135.34	1000.00	0.00	0.00	0.00	0.00	404513.69	771939.65	N 32.1099	W 103.5885
	1100.00	0.00	135.34	1100.00	0.00	0.00	0.00	0.00	404513.69	771939.65	N 32.1099	W 103.5885
	1200.00	0.00	135.34	1200.00	0.00	0.00	0.00	0.00	404513.69	771939.65	N 32.1099	W 103.5885
	1300.00	0.00	135.34	1300.00	0.00	0.00	0.00	0.00	404513.69	771939.65	N 32.1099	W 103.5885
	1400.00	0.00	135.34	1400.00	0.00	0.00	0.00	0.00	404513.69	771939.65	N 32.1099	W 103.5885
	1500.00	0.00	135.34	1500.00	0.00	0.00	0.00	0.00	404513.69	771939.65	N 32.1099	W 103.5885
	1600.00	0.00	135.34	1600.00	0.00	0.00	0.00	0.00	404513.69	771939.65	N 32.1099	W 103.5885
	1700.00	0.00	135.34	1700.00	0.00	0.00	0.00	0.00	404513.69	771939.65	N 32.1099	W 103.5885
	1800.00	0.00	135.34	1800.00	0.00	0.00	0.00	0.00	404513.69	771939.65	N 32.1099	W 103.5885
	1900.00	0.00	135.34	1900.00	0.00	0.00	0.00	0.00	404513.69	771939.65	N 32.1099	W 103.5885
Nudge 2°/100' DLS	2000.00	0.00	135.34	2000.00	0.00	0.00	0.00	0.00	404513.69	771939.65	N 32.1099	W 103.5885
	2100.00	2.00	135.34	2099.98	-1.25	-1.24	1.23	2.00	404512.45	771940.88	N 32.1099	W 103.5885
	2200.00	4.00	135.34	2199.84	-5.00	-4.96	4.90	2.00	404508.73	771944.55	N 32.1099	W 103.5885
Hold Nudge	2250.00	5.00	135.34	2249.68	-7.80	-7.75	7.66	2.00	404505.94	771947.31	N 32.1099	W 103.5885
	2300.00	5.00	135.34	2299.49	-10.92	-10.85	10.73	0.00	404502.84	771950.37	N 32.1099	W 103.5885
	2400.00	5.00	135.34	2399.11	-17.16	-17.05	16.85	0.00	404496.64	771956.50	N 32.1099	W 103.5885
	2500.00	5.00	135.34	2498.73	-23.40	-23.25	22.98	0.00	404490.44	771962.63	N 32.1098	W 103.5885
	2600.00	5.00	135.34	2598.35	-29.64	-29.45	29.10	0.00	404484.24	771968.75	N 32.1098	W 103.5885
	2700.00	5.00	135.34	2697.97	-35.88	-35.65	35.23	0.00	404478.04	771974.88	N 32.1098	W 103.5884
	2800.00	5.00	135.34	2797.59	-42.12	-41.85	41.35	0.00	404471.84	771981.00	N 32.1098	W 103.5884
	2900.00	5.00	135.34	2897.21	-48.35	-48.05	47.48	0.00	404465.64	771987.13	N 32.1098	W 103.5884
	3000.00	5.00	135.34	2996.83	-54.59	-54.25	53.61	0.00	404459.44	771993.25	N 32.1097	W 103.5884
	3100.00	5.00	135.34	3096.45	-60.83	-60.45	59.73	0.00	404453.24	771999.38	N 32.1097	W 103.5884
	3200.00	5.00	135.34	3196.07	-67.07	-66.65	65.86	0.00	404447.04	772005.51	N 32.1097	W 103.5883
	3300.00	5.00	135.34	3295.69	-73.31	-72.85	71.98	0.00	404440.84	772011.63	N 32.1097	W 103.5883
	3400.00	5.00	135.34	3395.31	-79.55	-79.05	78.11	0.00	404434.64	772017.76	N 32.1097	W 103.5883
	3500.00	5.00	135.34	3494.93	-85.79	-85.25	84.24	0.00	404428.44	772023.88	N 32.1097	W 103.5883
	3600.00	5.00	135.34	3594.55	-92.03	-91.45	90.36	0.00	404422.24	772030.01	N 32.1096	W 103.5883
	3700.00	5.00	135.34	3694.17	-98.26	-97.65	96.49	0.00	404416.04	772036.13	N 32.1096	W 103.5882
	3800.00	5.00	135.34	3793.78	-104.50	-103.85	102.61	0.00	404409.84	772042.26	N 32.1096	W 103.5882
	3900.00	5.00	135.34	3893.40	-110.74	-110.05	108.74	0.00	404403.64	772048.39	N 32.1096	W 103.5882
	4000.00	5.00	135.34	3993.02	-116.98	-116.25	114.86	0.00	404397.45	772054.51	N 32.1096	W 103.5882
	4100.00	5.00	135.34	4092.64	-123.22	-122.45	120.99	0.00	404391.25	772060.64	N 32.1096	W 103.5882
	4200.00	5.00	135.34	4192.26	-129.46	-128.65	127.12	0.00	404385.05	772066.76	N 32.1095	W 103.5881
	4300.00	5.00	135.34	4291.88	-135.70	-134.85	133.24	0.00	404378.85	772072.89	N 32.1095	W 103.5881
	4400.00	5.00	135.34	4391.50	-141.93	-141.05	139.37	0.00	404372.65	772079.01	N 32.1095	W 103.5881
	4500.00	5.00	135.34	4491.12	-148.17	-147.25	145.49	0.00	404366.45	772085.14	N 32.1095	W 103.5881
	4600.00	5.00	135.34	4590.74	-154.41	-153.45	151.62	0.00	404360.25	772091.27	N 32.1095	W 103.5881
Drop to Vertical 2°/100' DLS	4661.28	5.00	135.34	4651.78	-158.23	-157.25	155.37	0.00	404356.45	772095.02	N 32.1095	W 103.5880
	4700.00	4.23	135.34	4690.38	-160.46	-159.46	157.56	2.00	404354.23	772097.21	N 32.1095	W 103.5880
	4800.00	2.23	135.34	4790.22	-164.49	-163.46	161.52	2.00	404350.23	772101.16	N 32.1094	W 103.5880
	4900.00	0.23	135.34	4890.19	-166.02	-164.98	163.02	2.00	404348.71	772102.67	N 32.1094	W 103.5880
Hold Vertical	4911.28	0.00	135.34	4901.47	-166.04	-165.00	163.04	2.00	404348.70	772102.68	N 32.1094	W 103.5880
	5000.00	0.00	135.34	4990.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	5100.00	0.00	135.34	5090.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	5200.00	0.00	135.34	5190.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	5300.00	0.00	135.34	5290.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	5400.00	0.00	135.34	5390.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	5500.00	0.00	135.34	5490.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	5600.00	0.00	135.34	5590.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	5700.00	0.00	135.34	5690.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	5800.00	0.00	135.34	5790.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	5900.00	0.00	135.34	5890.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	6000.00	0.00	135.34	5990.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	6100.00	0.00	135.34	6090.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	6200.00	0.00	135.34	6190.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	6300.00	0.00	135.34	6290.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	6400.00	0.00	135.34	6390.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	6500.00	0.00	135.34	6490.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	6600.00	0.00	135.34	6590.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	6700.00	0.00	135.34	6690.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	6800.00	0.00	135.34	6790.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	6900.00	0.00	135.34	6890.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	7000.00	0.00	135.34	6990.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	7100.00	0.00	135.34	7090.19								

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 °)
	7200.00	0.00	135.34	7190.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	7300.00	0.00	135.34	7290.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	7400.00	0.00	135.34	7390.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	7500.00	0.00	135.34	7490.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	7600.00	0.00	135.34	7590.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	7700.00	0.00	135.34	7690.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	7800.00	0.00	135.34	7790.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	7900.00	0.00	135.34	7890.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	8000.00	0.00	135.34	7990.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	8100.00	0.00	135.34	8090.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	8200.00	0.00	135.34	8190.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	8300.00	0.00	135.34	8290.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	8400.00	0.00	135.34	8390.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	8500.00	0.00	135.34	8490.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	8600.00	0.00	135.34	8590.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	8700.00	0.00	135.34	8690.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	8800.00	0.00	135.34	8790.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	8900.00	0.00	135.34	8890.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	9000.00	0.00	135.34	8990.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	9100.00	0.00	135.34	9090.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	9200.00	0.00	135.34	9190.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	9300.00	0.00	135.34	9290.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	9400.00	0.00	135.34	9390.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	9500.00	0.00	135.34	9490.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	9600.00	0.00	135.34	9590.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	9700.00	0.00	135.34	9690.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	9800.00	0.00	135.34	9790.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	9900.00	0.00	135.34	9890.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	10000.00	0.00	135.34	9990.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	10100.00	0.00	135.34	10090.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	10200.00	0.00	135.34	10190.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	10300.00	0.00	135.34	10290.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	10400.00	0.00	135.34	10390.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	10500.00	0.00	135.34	10490.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	10600.00	0.00	135.34	10590.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	10700.00	0.00	135.34	10690.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	10800.00	0.00	135.34	10790.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	10900.00	0.00	135.34	10890.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	11000.00	0.00	135.34	10990.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	11100.00	0.00	135.34	11090.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	11200.00	0.00	135.34	11190.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	11300.00	0.00	135.34	11290.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	11400.00	0.00	135.34	11390.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	11500.00	0.00	135.34	11490.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	11600.00	0.00	135.34	11590.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	11700.00	0.00	135.34	11690.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	11800.00	0.00	135.34	11790.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	11900.00	0.00	135.34	11890.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	12000.00	0.00	135.34	11990.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	12100.00	0.00	135.34	12090.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	12200.00	0.00	135.34	12190.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	12300.00	0.00	135.34	12290.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	12400.00	0.00	135.34	12390.19	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
KOP - Build 12°/100' DLS	12424.81	0.00	135.34	12415.00	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
	12500.00	9.02	359.63	12489.88	-160.13	-159.09	163.00	12.00	404354.60	772102.64	N 32.1095	W 103.5880
	12600.00	21.02	359.63	12586.29	-134.26	-133.22	162.83	12.00	404380.48	772102.48	N 32.1095	W 103.5880
	12700.00	33.02	359.63	12675.20	-88.90	-87.87	162.54	12.00	404425.83	772102.19	N 32.1097	W 103.5880
	12800.00	45.02	359.63	12752.75	-26.06	-25.02	162.14	12.00	404488.67	772101.79	N 32.1098	W 103.5880
FTP [390' FSL, 698' FEL]	12835.25	49.25	359.63	12776.72	-0.22	0.81	161.98	12.00	404514.50	772101.62	N 32.1099	W 103.5880
	12900.00	57.02	359.63	12815.54	51.54	52.58	161.64	12.00	404566.26	772101.29	N 32.1100	W 103.5880
	13000.00	69.02	359.63	12860.82	140.50	141.53	161.08	12.00	404655.22	772100.72	N 32.1103	W 103.5880
Build 4°/100' DLS	13049.81	75.00	359.63	12876.19	187.85	188.88	160.77	12.00	404702.56	772100.42	N 32.1104	W 103.5880
	13100.00	77.01	359.63	12888.33	236.55	237.58	160.46	4.00	404751.26	772100.11	N 32.1105	W 103.5880
	13200.00	81.01	359.63	12907.40	334.70	335.72	159.83	4.00	404849.40	772099.48	N 32.1108	W 103.5880
	13300.00	85.01	359.63	12919.57	433.93	434.96	159.20	4.00	404948.63	772098.84	N 32.1111	W 103.5880
	13400.00	89.01	359.63	12924.79	533.78	534.80	158.56	4.00	405048.47	772098.21	N 32.1114	W 103.5880
Landing Point	13424.81	90.00	359.63	12925.00	558.58	559.60	158.40	4.00	405073.28	772098.05	N 32.1114	W 103.5880
	13500.00	90.00	359.63	12925.00	633.77	634.80	157.92	0.00	405148.47	772097.57	N 32.1116	W 103.5880
	13600.00	90.00	359.63	12925.00	733.77	734.79	157.28	0.00	405248.46	772096.93	N 32.1119	W 103.5880
	13700.00	90.00	359.63	12925.00	833.77	834.79	156.64	0.00	405348.45	772096.29	N 32.1122	W 103.5880
	13800.00	90.00	359.63	12925.00	933.77	934.79	156.00	0.00	405448.45	772095.65	N 32.1125	W 103.5880
	13900.00	90.00	359.63	12925.00	1033.77	1034.79	155.36	0.00	405548.44	772095.01	N 32.1127	W 103.5880
	14000.00	90.00	359.63	12925.00	1133.77	1134.79	154.72	0.00	405648.44	772094.37	N 32.1130	W 103.5880
	14100.00	90.00	359.63	12925.00	1233.77	1234.78	154.08	0.00	405748.43	772093.73	N 32.1133	W 103.5880
	14200.00	90.00	359.63	12925.00	1333.77	1334.78	153.44	0.00	405848.43	772093.09	N 32.1136	W 103.5880
	14300.00	90.00	359.63	12925.00	1433.77	1434.78	152.81	0.00	405948.42	772092.45	N 32.1138	W 103.5880
	14400.00	90.00	359.63	12925.00	1533.77	1534.78	152.17	0.00	406048.42	772091.81	N 32.1141	W 103.5880
	14500.00	90.00	359.63	12925.00	1633.77	1634.78	151.53	0.00	406148.41	772091.17	N 32.1144	W 103.5880
	14600.00	90.00	359.63	12925.00	1733.77	1734.77	150.89	0.00	406248.41	772090.53	N 32.1147	W 103.5880

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 °)
	17400.00	90.00	359.63	12925.00	4533.77	4534.72	132.98	0.00	409048.26	772072.63	N 32.1224	W 103.5880
	17500.00	90.00	359.63	12925.00	4633.77	4634.71	132.34	0.00	409148.26	772071.99	N 32.1226	W 103.5880
	17600.00	90.00	359.63	12925.00	4733.77	4734.71	131.70	0.00	409248.25	772071.35	N 32.1229	W 103.5880
	17700.00	90.00	359.63	12925.00	4833.77	4834.71	131.06	0.00	409348.25	772070.71	N 32.1232	W 103.5880
	17800.00	90.00	359.63	12925.00	4933.77	4934.71	130.42	0.00	409448.24	772070.07	N 32.1235	W 103.5880
	17900.00	90.00	359.63	12925.00	5033.77	5034.71	129.78	0.00	409548.23	772069.43	N 32.1237	W 103.5880
	18000.00	90.00	359.63	12925.00	5133.77	5134.70	129.14	0.00	409648.23	772068.79	N 32.1240	W 103.5880
	18100.00	90.00	359.63	12925.00	5233.77	5234.70	128.50	0.00	409748.22	772068.15	N 32.1243	W 103.5880
	18200.00	90.00	359.63	12925.00	5333.77	5334.70	127.86	0.00	409848.22	772067.51	N 32.1246	W 103.5880
	18300.00	90.00	359.63	12925.00	5433.77	5434.70	127.22	0.00	409948.21	772066.87	N 32.1248	W 103.5880
	18400.00	90.00	359.63	12925.00	5533.77	5534.70	126.59	0.00	410048.21	772066.23	N 32.1251	W 103.5880
	18500.00	90.00	359.63	12925.00	5633.77	5634.69	125.95	0.00	410148.20	772065.59	N 32.1254	W 103.5880
	18600.00	90.00	359.63	12925.00	5733.77	5734.69	125.31	0.00	410248.20	772064.95	N 32.1257	W 103.5880
	18700.00	90.00	359.63	12925.00	5833.77	5834.69	124.67	0.00	410348.19	772064.31	N 32.1259	W 103.5880
	18800.00	90.00	359.63	12925.00	5933.77	5934.69	124.03	0.00	410448.19	772063.67	N 32.1262	W 103.5880
	18900.00	90.00	359.63	12925.00	6033.77	6034.69	123.39	0.00	410548.18	772063.03	N 32.1265	W 103.5880
	19000.00	90.00	359.63	12925.00	6133.77	6134.68	122.75	0.00	410648.18	772062.39	N 32.1268	W 103.5880
	19100.00	90.00	359.63	12925.00	6233.77	6234.68	122.11	0.00	410748.17	772061.75	N 32.1270	W 103.5880
	19200.00	90.00	359.63	12925.00	6333.77	6334.68	121.47	0.00	410848.17	772061.12	N 32.1273	W 103.5880
	19300.00	90.00	359.63	12925.00	6433.77	6434.68	120.83	0.00	410948.16	772060.48	N 32.1276	W 103.5880
	19400.00	90.00	359.63	12925.00	6533.77	6534.67	120.19	0.00	411048.16	772059.84	N 32.1279	W 103.5880
	19500.00	90.00	359.63	12925.00	6633.77	6634.67	119.55	0.00	411148.15	772059.20	N 32.1281	W 103.5880
	19600.00	90.00	359.63	12925.00	6733.77	6734.67	118.91	0.00	411248.15	772058.56	N 32.1284	W 103.5880
	19700.00	90.00	359.63	12925.00	6833.77	6834.67	118.27	0.00	411348.14	772057.92	N 32.1287	W 103.5880
	19800.00	90.00	359.63	12925.00	6933.77	6934.67	117.63	0.00	411448.13	772057.28	N 32.1290	W 103.5880
	19900.00	90.00	359.63	12925.00	7033.77	7034.66	116.99	0.00	411548.13	772056.64	N 32.1292	W 103.5880
	20000.00	90.00	359.63	12925.00	7133.77	7134.66	116.35	0.00	411648.12	772056.00	N 32.1295	W 103.5880
	20100.00	90.00	359.63	12925.00	7233.77	7234.66	115.71	0.00	411748.12	772055.36	N 32.1298	W 103.5880
	20200.00	90.00	359.63	12925.00	7333.77	7334.66	115.07	0.00	411848.11	772054.72	N 32.1301	W 103.5880
	20300.00	90.00	359.63	12925.00	7433.77	7434.66	114.43	0.00	411948.11	772054.08	N 32.1303	W 103.5880
	20400.00	90.00	359.63	12925.00	7533.77	7534.65	113.80	0.00	412048.10	772053.44	N 32.1306	W 103.5880
	20500.00	90.00	359.63	12925.00	7633.77	7634.65	113.16	0.00	412148.10	772052.80	N 32.1309	W 103.5880
	20600.00	90.00	359.63	12925.00	7733.77	7734.65	112.52	0.00	412248.09	772052.16	N 32.1312	W 103.5880
	20700.00	90.00	359.63	12925.00	7833.77	7834.65	111.88	0.00	412348.09	772051.52	N 32.1314	W 103.5880
	20800.00	90.00	359.63	12925.00	7933.77	7934.65	111.24	0.00	412448.08	772050.88	N 32.1317	W 103.5880
	20900.00	90.00	359.63	12925.00	8033.77	8034.64	110.60	0.00	412548.08	772050.24	N 32.1320	W 103.5880
	21000.00	90.00	359.63	12925.00	8133.77	8134.64	109.96	0.00	412648.07	772049.60	N 32.1323	W 103.5880
	21100.00	90.00	359.63	12925.00	8233.77	8234.64	109.32	0.00	412748.07	772048.97	N 32.1325	W 103.5880
	21200.00	90.00	359.63	12925.00	8333.77	8334.64	108.68	0.00	412848.06	772048.33	N 32.1328	W 103.5880
	21300.00	90.00	359.63	12925.00	8433.77	8434.64	108.04	0.00	412948.06	772047.69	N 32.1331	W 103.5880
	21400.00	90.00	359.63	12925.00	8533.77	8534.63	107.40	0.00	413048.05	772047.05	N 32.1334	W 103.5880
	21500.00	90.00	359.63	12925.00	8633.77	8634.63	106.76	0.00	413148.05	772046.41	N 32.1336	W 103.5880
	21600.00	90.00	359.63	12925.00	8733.77	8734.63	106.12	0.00	413248.04	772045.77	N 32.1339	W 103.5880
	21700.00	90.00	359.63	12925.00	8833.77	8834.63	105.48	0.00	413348.04	772045.13	N 32.1342	W 103.5880
	21800.00	90.00	359.63	12925.00	8933.77	8934.63	104.84	0.00	413448.03	772044.49	N 32.1345	W 103.5880
	21900.00	90.00	359.63	12925.00	9033.77	9034.62	104.20	0.00	413548.02	772043.85	N 32.1347	W 103.5880
	22000.00	90.00	359.63	12925.00	9133.77	9134.62	103.56	0.00	413648.02	772043.21	N 32.1350	W 103.5880
	22100.00	90.00	359.63	12925.00	9233.77	9234.62	102.92	0.00	413748.01	772042.57	N 32.1353	W 103.5880
	22200.00	90.00	359.63	12925.00	9333.77	9334.62	102.28	0.00	413848.01	772041.93	N 32.1356	W 103.5880
	22300.00	90.00	359.63	12925.00	9433.77	9434.62	101.64	0.00	413948.00	772041.29	N 32.1358	W 103.5880
	22400.00	90.00	359.63	12925.00	9533.77	9534.61	101.01	0.00	414048.00	772040.65	N 32.1361	W 103.5880
	22500.00	90.00	359.63	12925.00	9633.77	9634.61	100.37	0.00	414147.99	772040.01	N 32.1364	W 103.5880
	22600.00	90.00	359.63	12925.00	9733.77	9734.61	99.73	0.00	414247.99	772039.37	N 32.1367	W 103.5880
	22700.00	90.00	359.63	12925.00	9833.77	9834.61	99.09	0.00	414347.98	772038.73	N 32.1369	W 103.5880
	22800.00	90.00	359.63	12925.00	9933.77	9934.61	98.45	0.00	414447.98	772038.09	N 32.1372	W 103.5880
	22900.00	90.00	359.63	12925.00	10033.77	10034.60	97.81	0.00	414547.97	772037.45	N 32.1375	W 103.5880
Cimarex Vaca Draw 20-17 Federal #61H - PBHL [100' FNL, 698' FEL]	22936.66	90.00	359.63	12925.00	10070.43	10071.26	97.57	0.00	414584.63	772037.22	N 32.1376	W 103.5880

Survey Type: Def Plan

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

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	23.000	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS-Depth Only	Vaca Draw 20-17 Federal #61H / Cimarex Vaca Draw 20-17 Federal #61H Rev1 RM 24Feb21
	1	23.000	22936.660	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS	Vaca Draw 20-17 Federal #61H / Cimarex Vaca Draw 20-17 Federal



Cimarex Vaca Draw 20-17 Federal #61H Rev1 RM 24Feb21 Anti-Collision Summary Report

Analysis Date-24hr Time: February 24, 2021 - 15:31

Client: Cimarex Energy

Field: NM Lea County (NAD 83)

Structure: Cimarex Vaca Draw 20-17 Federal #61H

Slot: New Slot

Well: Vaca Draw 20-17 Federal #61H

Borehole: Vaca Draw 20-17 Federal #61H

Scan MD Range: 0.00ft ~ 22936.66ft

Analysis Method: 3D Least Distance

Reference Trajectory: Cimarex Vaca Draw 20-17 Federal #61H Rev1 RM 24Feb21 (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: 2.10.824.0

Database \ Project: US1455VSM3115\DRILLING-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:

Selection filters:

Not performed!

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 #59H Rev1 RM 09Feb21 (Def Plan)													
	19.94	16.35	17.96	3.59	N/A	MAS = 4.98 (m)	0.00	0.00	CtCt<=15m<15.00			Enter Alert	Fail Minor
	19.94	16.35	17.96	3.59	26947.13	MAS = 4.98 (m)	23.00	23.00				WRP	
	19.94	19.97	5.97	-0.03	1.50	OSF1.50	1970.00	1970.00		OSF<1.50		Enter Minor	
	19.94	20.25	5.78	-0.31	1.47	OSF1.50	2000.00	2000.00				MinPt-CtCt	
	19.95	20.31	5.75	-0.35	1.47	OSF1.50	2010.00	2010.00				MINPT-O-EQU	
	19.99	20.36	5.76	-0.37	1.47	OSF1.50	2020.00	2020.00				MinPts	
	20.55	20.63	6.13	-0.09	1.49	OSF1.50	2070.00	2069.99		OSF>1.50		Exit Minor	
	49.87	20.65	35.42	29.18	3.84	OSF1.50	3260.00	3255.84				MinPts	
	49.88	20.70	35.42	29.19	3.84	OSF1.50	3270.00	3265.80				MinPt-O-SF	
	68.43	22.02	53.09	46.41	4.97	OSF1.50	3880.00	3873.48		OSF>5.00		Exit Alert	
	343.13	73.96	293.16	269.17	7.11	OSF1.50	12100.00	12090.19				MINPT-O-EQU	
	343.27	74.13	293.19	269.14	7.10	OSF1.50	12120.00	12110.19				MinPt-O-ADP	
	344.98	74.80	294.45	270.18	7.07	OSF1.50	12200.00	12190.19				MinPt-O-SF	
	530.92	64.58	487.20	466.34	12.67	OSF1.50	13430.00	12925.00				MinPt-CtCt	
	530.93	160.74	423.11	370.19	5.00	OSF1.50	17100.00	12925.00		OSF<5.00		Enter Alert	
	530.93	339.80	303.74	191.13	2.35	OSF1.50	22936.66	12925.00				MinPts	

Cimarex Vaca Draw 20-17 Federal #58H Rev1 RM 09Feb21 (Def Plan)													
	39.94	32.21	38.66	7.73	N/A	MAS = 9.82 (m)	0.00	0.00	CtCt<=15m<15.00			Enter Alert	Warning Alert
	39.94	32.21	38.65	7.73	34795.82	MAS = 9.82 (m)	23.00	23.00				WRP	
	39.94	32.21	26.47	7.73	3.17	MAS = 9.82 (m)	2000.00	2000.00				MinPts	
	39.95	32.21	26.45	7.74	3.16	MAS = 9.82 (m)	2010.00	2010.00				MINPT-O-EQU	
	40.25	32.21	26.60	8.04	3.15	MAS = 9.82 (m)	2050.00	2050.00				MinPt-O-SF	
	67.02	32.21	52.52	34.80	4.98	MAS = 9.82 (m)	2500.00	2498.73		OSF>5.00		Exit Alert	
	341.11	32.21	326.97	308.90	26.49	MAS = 9.82 (m)	5000.00	4990.19				MinPt-O-SF	
	342.19	77.44	290.15	264.77	6.72	OSF1.50	11900.00	11890.19				MINPT-O-EQU	
	342.34	77.58	290.19	264.75	6.71	OSF1.50	11920.00	11910.19				MinPt-O-ADP	
	343.68	78.14	291.16	265.54	6.63	OSF1.50	11990.00	11980.19				MinPt-O-SF	
	691.03	208.40	551.67	482.63	5.00	OSF1.50	19160.00	12925.00		OSF<5.00		Enter Alert	
	691.03	323.96	474.63	367.08	3.21	OSF1.50	22930.00	12925.00				MinPt-CtCt	
	691.03	324.16	474.50	366.87	3.20	OSF1.50	22936.66	12925.00				MinPts	

Cimarex Vaca Draw 20-17 Federal #57H Rev1 RM 09Feb21 (Def Plan)													
	59.99	32.81	58.71	27.18	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	Warning Alert
	59.99	32.81	58.71	27.18	132112.09	MAS = 10.00 (m)	23.00	23.00				WRP	
	59.99	32.81	46.96	27.18	5.00	MAS = 10.00 (m)	1930.00	1930.00		OSF<5.00		Enter Alert	
	59.99	32.81	46.52	27.18	4.82	MAS = 10.00 (m)	2000.00	2000.00				MinPts	
	60.00	32.81	46.50	27.20	4.81	MAS = 10.00 (m)	2010.00	2010.00				MINPT-O-EQU	
	60.59	32.81	46.87	27.79	4.77	MAS = 10.00 (m)	2070.00	2069.99				MinPt-O-SF	
	64.55	32.81	50.61	31.75	5.00	MAS = 10.00 (m)	2190.00	2189.86		OSF>5.00		Exit Alert	
	1003.97	47.12	972.13	956.86	32.82	OSF1.50	7840.00	7830.19				MinPt-O-SF	
	1026.13	73.34	976.81	952.80	21.34	OSF1.50	12130.00	12120.19				MINPT-O-EQU	
	1026.25	73.49	976.83	952.78	21.29	OSF1.50	12150.00	12140.19				MinPt-O-ADP	
	1034.80	75.18	984.25	959.62	20.93	OSF1.50	12390.00	12380.19				MinPt-O-SF	
	1102.98	332.05	881.18	770.93	5.00	OSF1.50	22390.00	12925.00		OSF<5.00		Enter Alert	
	1102.98	349.26	869.71	753.72	4.75	OSF1.50	22936.66	12925.00				MinPts	

EOG Vaca Draw 20 Federal #1 (Offset) Plugged Inc. Only Off- 14200ft (Def Survey)													
	3335.89	32.81	3333.91	3303.08	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	Warning Alert
	3335.88	32.81	3333.47	3303.08	7668.87	MAS = 10.00 (m)	23.00	23.00				WRP	
	3333.66	32.81	3315.36	3300.85	204.18	MAS = 10.00 (m)	530.00	530.00				MinPts	
	3341.93	108.77	3268.76	3233.16	46.91	OSF1.50	2050.00	2050.00				MinPt-CtCt	
	3343.16	112.54	3267.47	3230.62	45.33	OSF1.50	2140.00	2139.94				MINPT-O-EQU	
	3344.59	114.21	3267.79	3230.38	44.68	OSF1.50	2180.00	2179.88				MinPt-O-ADP	
	3481.78	208.62	3342.04	3273.16	25.26	OSF1.50	3990.00	3983.06				MinPt-O-SF	
	3537.71	368.72	3291.24	3168.99	14.46	OSF1.50	7160.00	7150.19				MinPt-CtCt	
	3536.26	429.62	3249.19	3106.64	12.40	OSF1.50	8330.00	8320.19				MinPt-CtCt	
	3528.87	546.35	3163.98	2982.52	9.72	OSF1.50	10560.00	10550.19				MinPt-CtCt	
	3533.59	561.04	3158.90	2972.55	9.48	OSF1.50	10930.00	10920.19				MINPT-O-EQU	
	3520.56	624.70	3103.43	2895.85	8.48	OSF1.50	12050.00	12040.19				MinPt-CtCt	
	2212.78	669.22	1765.17	1543.56	4.98	OSF1.50	14110.00	12925.00		OSF<5.00		Enter Alert	
	959.92	675.66	508.82	284.26	2.13	OSF1.50	16100.00	12925.00				MinPt-CtCt	
	959.92	675.70	508.79	284.22	2.13	OSF1.50	16110.00	12925.00				MinPts	
	2240.27	675.26	1789.44	1565.01	4.99	OSF1.50	18130.00	12925.00		OSF>5.00		Exit Alert	
	6896.51	678.88	6443.26	6217.63	15.28	OSF1.50	22936.66	12925.00				TD	

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Cl-Cl (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
2435.07	32.81	2424.68	2402.26	261.02		MAS = 10.00 (m)	4600.00	4590.74				MINPT-O-EQU	
2435.89	32.81	2425.32	2403.08	256.03		MAS = 10.00 (m)	4700.00	4690.38				MinPt-O-SF	
2135.89	36.43	2111.06	2099.46	91.98		OSF1.50	9220.00	9210.19				MinPt-CiCl	
2136.08	36.98	2110.88	2099.10	90.57		OSF1.50	9310.00	9300.19				MINPT-O-EQU	
2136.89	37.86	2111.11	2099.03	88.40		OSF1.50	9450.00	9440.19				MinPt-O-ADP	
2142.87	49.56	2109.29	2093.31	66.98		OSF1.50	11350.00	11340.19				MinPt-CiCl	
2143.23	50.48	2109.04	2092.76	65.74		OSF1.50	11480.00	11470.19				MINPT-O-EQU	
2143.72	51.08	2109.13	2092.64	64.94		OSF1.50	11570.00	11560.19				MinPt-O-ADP	
2169.34	64.26	2126.06	2105.08	51.66		OSF1.50	13630.00	13620.00				MinPt-CiCl	
2169.50	64.58	2126.00	2104.91	51.39		OSF1.50	13660.00	13650.00				MINPT-O-EQU	
2169.60	64.71	2126.02	2104.89	51.30		OSF1.50	13670.00	13670.00				MinPt-O-ADP	
2168.17	69.91	2121.12	2098.26	47.39		OSF1.50	13980.00	13980.00				MinPt-CiCl	
2162.28	83.44	2106.22	2078.86	39.48		OSF1.50	14650.00	14650.00				MinPt-CiCl	
2162.70	84.48	2105.94	2078.22	38.99		OSF1.50	14710.00	14710.00				MINPT-O-EQU	
2163.32	85.22	2106.07	2078.11	38.66		OSF1.50	14750.00	14750.00				MinPt-O-ADP	
2164.89	92.72	2102.63	2072.17	35.51		OSF1.50	15050.00	15050.00				MinPt-CiCl	
2165.47	94.54	2101.99	2070.92	34.83		OSF1.50	15140.00	15140.00				MINPT-O-EQU	
2166.29	95.56	2102.14	2070.73	34.46		OSF1.50	15190.00	15190.00				MinPt-O-ADP	
2167.11	118.02	2087.98	2049.09	27.84		OSF1.50	16040.00	16040.00				MinPt-CiCl	
2168.95	128.88	2082.59	2040.08	25.49		OSF1.50	16440.00	16440.00				MinPt-CiCl	
2160.62	153.11	2058.09	2007.51	21.34		OSF1.50	17310.00	17310.00				MinPt-CiCl	
2162.40	165.87	2051.37	1996.54	19.70		OSF1.50	17760.00	17760.00				MinPt-CiCl	
2163.24	173.86	2046.88	1989.38	18.80		OSF1.50	18040.00	18040.00				MinPt-CiCl	
2164.03	181.97	2042.26	1982.06	17.96		OSF1.50	18320.00	18320.00				MinPt-CiCl	
2164.05	186.83	2039.05	1977.23	17.49		OSF1.50	18490.00	18490.00				MinPt-CiCl	
2162.47	199.70	2028.88	1962.77	16.34		OSF1.50	18930.00	18930.00				MinPt-CiCl	
2162.32	207.64	2023.45	1954.69	15.71		OSF1.50	19200.00	19200.00				MinPt-CiCl	
2159.95	231.48	2005.18	1928.47	14.07		OSF1.50	20010.00	19295.00				MinPt-CiCl	
2158.27	253.56	1988.78	1904.71	12.83		OSF1.50	20750.00	19295.00				MinPt-CiCl	
2159.21	256.46	1987.75	1902.75	12.69		OSF1.50	20870.00	19295.00				MINPT-O-EQU	
2160.20	257.63	1988.00	1902.58	12.64		OSF1.50	20920.00	19295.00				MinPt-O-ADP	
2165.56	262.40	1990.18	1903.16	12.43		OSF1.50	21090.00	19295.00				MinPt-O-ADP	
2162.28	285.56	1971.46	1876.73	11.41		OSF1.50	21830.00	19295.00				MinPt-CiCl	
2157.59	303.71	1954.67	1853.89	10.70		OSF1.50	22440.00	19295.00				MinPt-CiCl	
2158.06	305.28	1954.09	1852.78	10.64		OSF1.50	22510.00	19295.00				MINPT-O-EQU	
2158.76	306.13	1954.22	1852.63	10.62		OSF1.50	22550.00	19295.00				MinPt-O-ADP	
2162.38	310.18	1955.19	1852.26	10.50		OSF1.50	22680.00	19295.00				MINPT-O-EQU	
2164.19	312.20	1955.62	1851.89	10.44		OSF1.50	22760.00	19295.00				MinPt-O-ADP	
2166.51	314.44	1956.44	1852.07	10.37		OSF1.50	22840.00	19295.00				MinPt-O-ADP	
2169.52	317.10	1957.68	1852.43	10.30		OSF1.50	22936.66	19295.00				MinPt-O-SF	

Cimarex Vaca Draw 20-17
Federal #10H Rev1 RM
10Feb21 (Def Plan)

Pass

2419.24	32.81	2417.95	2386.43	N/A		MAS = 10.00 (m)	0.00	0.00				Surface	
2419.24	32.81	2417.91	2386.43	57886.68		MAS = 10.00 (m)	23.00	23.00				WRP	
2419.24	32.81	2405.71	2386.43	197.52		MAS = 10.00 (m)	2000.00	2000.00				MinPts	
2419.29	32.81	2405.69	2386.48	196.37		MAS = 10.00 (m)	2020.00	2020.00				MINPT-O-EQU	
2440.42	32.81	2425.90	2407.61	184.35		MAS = 10.00 (m)	2480.00	2478.81				MinPt-O-SF	
2683.85	66.25	2639.25	2617.60	61.94		OSF1.50	10100.00	10090.19				MINPT-O-EQU	
2684.03	66.48	2639.28	2617.55	61.72		OSF1.50	10130.00	10120.19				MinPt-O-ADP	
2713.95	69.32	2667.31	2644.63	59.81		OSF1.50	10660.00	10650.19				MinPt-O-SF	
3691.52	333.88	3468.50	3357.63	16.64		OSF1.50	22936.66	19295.00				MinPts	

Cimarex Vaca Draw 20-17
Federal #9H Rev1 RM 10Feb21
(Def Plan)

Pass

2439.22	32.81	2437.94	2406.42	N/A		MAS = 10.00 (m)	0.00	0.00				Surface	
2439.22	32.81	2437.90	2406.42	58056.36		MAS = 10.00 (m)	23.00	23.00				WRP	
2439.22	32.81	2425.82	2406.42	201.22		MAS = 10.00 (m)	1980.00	1980.00				MinPts	
2439.25	32.81	2425.77	2406.44	200.09		MAS = 10.00 (m)	2000.00	2000.00				MINPT-O-EQU	
2441.22	32.81	2427.69	2408.41	199.34		MAS = 10.00 (m)	2100.00	2099.98				MinPt-O-SF	
2683.55	67.51	2638.12	2616.05	60.76		OSF1.50	10780.00	10770.19				MinPt-CiCl	
2683.63	67.81	2638.00	2615.83	60.49		OSF1.50	10820.00	10810.19				MINPT-O-EQU	
2683.75	67.95	2638.02	2615.80	60.36		OSF1.50	10840.00	10830.19				MinPt-O-ADP	
2710.21	70.26	2662.94	2639.95	58.91		OSF1.50	11290.00	11280.19				MinPt-O-SF	
3299.90	339.18	3073.36	2960.73	14.64		OSF1.50	22936.66	19295.00				MinPts	

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

Pass

2518.58	32.81	2517.56	2485.77	N/A	MAS = 10.00 (m)	0.00	0.00
2518.57	32.81	2517.50	2485.76	52469.57	MAS = 10.00 (m)	23.00	23.00
2517.53	32.81	2513.34	2484.72	794.38	MAS = 10.00 (m)	760.00	760.00
2518.07	32.81	2511.90	2485.26	488.09	MAS = 10.00 (m)	1220.00	1220.00
2519.16	32.81	2509.01	2486.35	275.74	MAS = 10.00 (m)	2000.00	2000.00
2520.32	32.81	2510.03	2487.51	271.73	MAS = 10.00 (m)	2100.00	2099.98
2549.32	32.81	2539.45	2516.51	288.18	MAS = 10.00 (m)	2850.00	2847.40
2591.20	32.81	2580.73	2558.39	274.10	MAS = 10.00 (m)	3890.00	3883.44
2599.83	32.81	2589.28	2567.02	272.62	MAS = 10.00 (m)	4110.00	4102.60
2603.48	32.81	2592.92	2570.68	272.71	MAS = 10.00 (m)	4190.00	4182.30
2622.44	32.81	2610.83	2589.63	247.53	MAS = 10.00 (m)	4661.28	4651.78
2625.23	32.81	2614.12	2592.42	259.99	MAS = 10.00 (m)	4960.00	4950.19
2618.95	32.81	2607.80	2586.14	258.48	MAS = 10.00 (m)	5350.00	5340.19
2549.94	38.91	2523.65	2511.04	101.05	OSF1.50	9970.00	9960.19
2550.21	39.58	2523.48	2510.65	99.36	OSF1.50	10060.00	10050.19
2552.17	42.08	2523.78	2510.12	93.38	OSF1.50	10440.00	10430.19
2553.12	43.16	2523.99	2509.96	90.93	OSF1.50	10600.00	10590.19
2555.03	45.26	2524.51	2509.78	86.67	OSF1.50	10910.00	10900.19
2605.38	76.47	2554.07	2528.90	51.75	OSF1.50	14360.00	14350.00
2606.38	79.75	2552.88	2526.63	49.61	OSF1.50	14530.00	14520.00
2606.82	80.26	2552.99	2526.56	49.30	OSF1.50	14560.00	14550.00
2611.68	88.61	2552.19	2522.98	44.69	OSF1.50	14910.00	14900.00
2611.84	92.18	2550.06	2519.66	42.94	OSF1.50	15060.00	15050.00
2613.30	96.38	2548.78	2516.88	41.10	OSF1.50	15250.00	15240.00
2614.35	97.61	2548.95	2516.74	40.57	OSF1.50	15310.00	15300.00
2601.37	118.28	2522.19	2483.09	33.25	OSF1.50	16080.00	16070.00
2600.74	121.77	2519.23	2478.97	32.29	OSF1.50	16210.00	16200.00
2601.27	123.18	2518.82	2478.08	31.92	OSF1.50	16280.00	16270.00
2601.78	123.79	2518.93	2477.99	31.77	OSF1.50	16310.00	16300.00
2608.61	130.41	2521.34	2478.20	30.22	OSF1.50	16560.00	16550.00
2611.03	142.98	2515.38	2468.05	27.57	OSF1.50	16980.00	16975.00

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Cl-Cl (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
2601.23	163.25	2492.07	2437.98	24.04		OSF1.50	17700.00	12925.00				MinPt-CtCt	
2601.74	164.71	2491.60	2437.03	23.83		OSF1.50	17770.00	12925.00				MINPT-O-EOU	
2602.26	165.32	2491.72	2436.94	23.74		OSF1.50	17800.00	12925.00				MinPt-O-ADP	
2600.81	185.66	2476.71	2415.15	21.12		OSF1.50	18480.00	12925.00				MinPt-CtCt	
2601.30	187.13	2476.22	2414.17	20.95		OSF1.50	18550.00	12925.00				MINPT-O-EOU	
2601.82	187.75	2476.32	2414.07	20.89		OSF1.50	18580.00	12925.00				MinPt-O-ADP	
2616.13	197.08	2484.45	2419.10	20.01		OSF1.50	18910.00	12925.00				MINPT-O-EOU	
2618.59	199.73	2485.11	2418.86	19.76		OSF1.50	19000.00	12925.00				MinPt-O-ADP	
2606.23	213.33	2463.71	2392.93	18.40		OSF1.50	19430.00	12925.00				MinPt-CtCt	
2606.94	215.42	2463.00	2391.53	18.23		OSF1.50	19520.00	12925.00				MINPT-O-EOU	
2605.98	231.54	2451.21	2374.36	16.95		OSF1.50	20050.00	12925.00				MinPt-CtCt	
2607.61	234.98	2450.63	2372.63	16.71		OSF1.50	20190.00	12925.00				MINPT-O-EOU	
2609.77	237.58	2451.00	2372.19	16.54		OSF1.50	20290.00	12925.00				MinPt-O-ADP	
2616.32	250.77	2448.83	2365.58	15.71		OSF1.50	20720.00	12925.00				MINPT-O-EOU	
2617.07	251.64	2448.99	2365.43	15.66		OSF1.50	20760.00	12925.00				MinPt-O-ADP	
2606.04	267.64	2427.29	2338.40	14.65		OSF1.50	21270.00	12925.00				MinPt-CtCt	
2606.41	268.83	2426.87	2337.59	14.59		OSF1.50	21330.00	12925.00				MINPT-O-EOU	
2606.97	271.45	2425.67	2335.51	14.45		OSF1.50	21400.00	12925.00				MinPt-CtCt	
2607.62	273.53	2424.93	2334.09	14.35		OSF1.50	21490.00	12925.00				MINPT-O-EOU	
2608.54	274.66	2425.10	2333.88	14.29		OSF1.50	21540.00	12925.00				MinPt-O-ADP	
2608.51	279.16	2422.08	2329.35	14.06		OSF1.50	21660.00	12925.00				MinPt-CtCt	
2609.00	280.96	2421.37	2328.04	13.97		OSF1.50	21740.00	12925.00				MINPT-O-EOU	
2609.53	281.57	2421.49	2327.96	13.95		OSF1.50	21770.00	12925.00				MinPt-O-ADP	
2606.88	302.93	2404.58	2303.93	12.95		OSF1.50	22460.00	12925.00				MinPt-CtCt	
2607.18	303.98	2404.23	2303.25	12.90		OSF1.50	22510.00	12925.00				MINPT-O-EOU	
2607.65	304.51	2404.32	2303.14	12.88		OSF1.50	22540.00	12925.00				MinPt-O-ADP	
2602.95	317.79	2390.76	2285.16	12.32		OSF1.50	22936.66	12925.00				MinPts	

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

Pass

3698.83	32.81	3696.85	3666.02	N/A	MAS = 10.00 (m)	0.00	0.00					MinPts	
3698.84	32.81	3696.81	3666.03	74033.98	MAS = 10.00 (m)	23.00	23.00					WRP	
3699.14	32.81	3696.51	3666.33	5696.95	MAS = 10.00 (m)	180.00	180.00					MINPT-O-EOU	
3699.74	32.81	3697.03	3666.93	2336.26	MAS = 10.00 (m)	380.00	380.00					MINPT-O-EOU	
3551.79	32.81	3540.74	3518.98	359.94	MAS = 10.00 (m)	2100.00	2099.98					MinPt-O-SF	
3415.07	32.81	3402.24	3382.26	296.64	MAS = 10.00 (m)	4700.00	4690.38					MinPt-O-SF	
2956.32	42.26	2927.41	2914.06	110.63	OSF1.50	9550.00	9540.19					MinPt-CtCt	
2956.48	42.68	2927.29	2913.80	109.48	OSF1.50	9620.00	9610.19					MINPT-O-EOU	
2956.63	42.86	2927.32	2913.77	109.00	OSF1.50	9650.00	9640.19					MinPt-O-ADP	
2982.66	48.61	2949.54	2934.05	96.19	OSF1.50	10730.00	10720.19					MinPt-O-ADP	
2990.11	58.95	2950.16	2931.16	78.65	OSF1.50	12390.00	12380.19					MinPt-CtCt	
2990.14	59.07	2950.11	2931.07	78.48	OSF1.50	12410.00	12400.19					MINPT-O-EOU	
2990.20	59.13	2950.12	2931.07	78.40	OSF1.50	12420.00	12410.19					MinPt-O-ADP	
2990.23	62.86	2947.71	2927.37	73.47	OSF1.50	13160.00	12900.59					MinPt-CtCt	
2990.29	63.08	2947.63	2927.25	73.25	OSF1.50	13190.00	12905.80					MINPT-O-EOU	
2990.40	63.17	2947.68	2927.24	73.10	OSF1.50	13210.00	12908.92					MinPt-O-ADP	
2989.14	81.90	2933.92	2907.24	55.97	OSF1.50	14430.00	12925.00					MinPt-CtCt	
2989.29	82.48	2933.70	2906.83	55.58	OSF1.50	14470.00	12925.00					MINPT-O-EOU	
2989.64	82.88	2933.77	2906.76	55.30	OSF1.50	14500.00	12925.00					MinPt-O-ADP	
2994.26	97.67	2928.53	2896.59	46.84	OSF1.50	15130.00	12925.00					MinPt-CtCt	
2995.47	104.96	2924.88	2890.50	43.54	OSF1.50	15450.00	12925.00					MINPT-O-EOU	
2978.14	135.62	2887.11	2842.53	33.38	OSF1.50	16590.00	12925.00					MinPt-CtCt	
2978.62	136.94	2886.70	2841.68	33.06	OSF1.50	16660.00	12925.00					MINPT-O-EOU	
2979.10	137.51	2886.81	2841.60	32.93	OSF1.50	16690.00	12925.00					MinPt-O-ADP	
2985.92	143.29	2889.78	2842.64	31.65	OSF1.50	16920.00	12925.00					MinPt-O-ADP	
2996.91	153.46	2893.99	2843.45	29.63	OSF1.50	17270.00	12925.00					MINPT-O-EOU	
2997.80	154.42	2894.24	2843.38	29.45	OSF1.50	17310.00	12925.00					MinPt-O-ADP	
3003.33	161.50	2895.00	2841.83	28.20	OSF1.50	17550.00	12925.00					MINPT-O-EOU	
3006.29	165.08	2895.63	2841.22	27.61	OSF1.50	17690.00	12925.00					MinPt-O-ADP	
2983.21	189.41	2856.31	2793.79	23.84	OSF1.50	18500.00	12925.00					MinPt-CtCt	
2984.55	195.04	2853.90	2789.51	23.16	OSF1.50	18720.00	12925.00					MINPT-O-EOU	
2985.47	204.77	2848.33	2780.69	22.06	OSF1.50	19030.00	12925.00					MinPt-CtCt	
2989.38	215.78	2844.91	2773.60	20.95	OSF1.50	19430.00	12925.00					MINPT-O-EOU	
2990.07	216.62	2845.05	2773.45	20.87	OSF1.50	19470.00	12925.00					MinPt-O-ADP	
2988.04	229.44	2834.47	2758.60	19.68	OSF1.50	19870.00	12925.00					MinPt-CtCt	
2988.51	230.78	2834.04	2757.72	19.57	OSF1.50	19940.00	12925.00					MINPT-O-EOU	
2989.01	231.36	2834.16	2757.65	19.52	OSF1.50	19970.00	12925.00					MinPt-O-ADP	
2988.19	244.43	2824.62	2743.76	18.47	OSF1.50	20380.00	12925.00					MinPt-CtCt	
2989.15	246.88	2823.97	2742.30	18.29	OSF1.50	20490.00	12925.00					MINPT-O-EOU	
2990.31	248.23	2824.22	2742.08	18.19	OSF1.50	20550.00	12925.00					MinPt-O-ADP	
2995.63	260.64	2821.25	2734.99	17.35	OSF1.50	20930.00	12925.00					MinPt-CtCt	
2996.03	264.82	2818.87	2731.21	17.08	OSF1.50	21070.00	12925.00					MinPt-CtCt	
2995.76	292.08	2800.43	2703.68	15.47	OSF1.50	21990.00	12925.00					MinPt-CtCt	
2994.77	302.86	2792.25	2691.91	14.91	OSF1.50	22350.00	12925.00					MinPt-CtCt	
2993.09	318.31	2780.27	2674.78	14.18	OSF1.50	22870.00	12925.00					MinPt-CtCt	
2993.37	319.90	2779.49	2673.47	14.11	OSF1.50	22936.66	12925.00					MinPts	

Cimarex Vaca Draw 20-17
Federal #31H Rev1 RM
20Feb20 (Def Plan)

Pass

3138.30	32.81	3137.02	3105.49	N/A	MAS = 10.00 (m)	0.00	0.00					Surface	
3138.30	32.81	3136.97	3105.49	63031.51	MAS = 10.00 (m)	23.00	23.00					WRP	
3138.30	32.81	3124.76	3105.49	255.93	MAS = 10.00 (m)	2000.00	2000.00					MinPts	
3138.35	32.81	3124.73	3105.54	254.43	MAS = 10.00 (m)	2020.00	2020.00					MINPT-O-EOU	
3159.58	32.81	3145.06	3126.77	238.64	MAS = 10.00 (m)	2480.00	2478.81					MinPt-O-SF	
3405.27	32.81	3393.26	3372.46	317.53	MAS = 10.00 (m)	4661.28	4651.78					MinPt-O-SF	
3409.77	32.81	3397.75	3376.96	317.37	MAS = 10.00 (m)	4700.00	4690.38					MinPt-O-SF	
3418.12	32.81	3406.11	3385.31	318.49	MAS = 10.00 (m)	4810.00	4800.21					MinPt-O-SF	
3417.50	61.30	3376.21	3356.21	85.39	OSF1.50	10550.00	10540.19					MinPt-CtCt	
3417.56	61.51	3376.13	3356.05	85.09	OSF1.50	10580.00	10570.19					MINPT-O-EOU	
3417.67	61.65	3376.15	3356.03	84.90	OSF1.50	10600.00	10590.19					MinPt-O-ADP	
3466.70	64.63	3423.19	3402.08	82.07	OSF1.50	11230.00	11220.19					MinPt-O-SF	
4079.05	340.13	3851.86	3738.92	18.05	OSF1.50	22936.66	12925.00					MinPts	

Cimarex Vaca Draw 20-17
Federal #30H Rev1 RM
20Feb20 (Def Plan)

Pass

3158.28	32.81	3157.00	3125.48	N/A	MAS = 10.00 (m)	0.00	0.00
3158.28	32.81	3156.95	3125.48	62320.12	MAS = 10.00 (m)	23.00	23.00
3158.28	32.81	3144.93	3125.48	261.55	MAS = 10.00 (m)	1970.00	1970.00
3158.34	32.81	3144.86	3125.53	258.96	MAS = 10.00 (m)	2000.00	2000.00

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		
3870.20	32.81	3859.40	3837.39	438.64		MAS = 10.00 (m)	2100.00	2099.98				MinPt-O-SF	
4115.14	32.81	4104.08	4082.33	452.69		MAS = 10.00 (m)	4700.00	4690.38				MinPt-O-SF	
4251.40	32.81	4229.67	4218.59	215.19		MAS = 10.00 (m)	8490.00	8480.19				MINPT-O-EQU	
4256.11	37.19	4230.66	4218.92	181.25		OSF1.50	9520.00	9510.19				MinPt-CtCt	
4221.35	53.49	4185.03	4167.86	122.87		OSF1.50	12120.00	12110.19				MinPt-CtCt	
4221.34	54.80	4184.15	4166.55	119.83		OSF1.50	12320.00	12310.19				MinPt-CtCt	
4220.06	57.42	4181.12	4162.64	114.12		OSF1.50	12770.00	12730.89				MinPt-CtCt	
4220.08	57.47	4181.10	4162.60	114.01		OSF1.50	12780.00	12738.32				MINPT-O-EQU	
4220.12	57.53	4181.11	4162.59	113.91		OSF1.50	12790.00	12745.61				MinPt-O-ADP	
5039.44	83.19	4983.32	4956.25	93.04		OSF1.50	15590.00	12925.00				MinPt-O-SF	
5055.85	83.45	4999.55	4972.39	93.04		OSF1.50	15620.00	12925.00				MinPt-O-SF	
10941.43	108.22	10868.62	10833.21	154.46		OSF1.50	22936.66	12925.00				TD	
Cimarex Vaca Draw 20-17 Federal #1H Rev0 RM 10Apr17 (Non-Def Plan)													Pass
3838.40	32.81	3836.41	3805.59	863345.87		MAS = 10.00 (m)	0.00	0.00				Surface	
3838.40	32.81	3836.36	3805.59	69067.67		MAS = 10.00 (m)	23.00	23.00				WRP	
3838.40	32.81	3824.15	3805.59	312.70		MAS = 10.00 (m)	2000.00	2000.00				MinPts	
3838.41	32.81	3824.13	3805.60	311.78		MAS = 10.00 (m)	2010.00	2010.00				MINPT-O-EQU	
4000.38	103.20	3930.92	3897.18	59.25		OSF1.50	12840.00	12779.81				MinPt-CtCt	
4000.42	103.38	3930.87	3897.09	59.18		OSF1.50	12860.00	12792.39				MINPT-O-EQU	
4000.52	103.46	3930.89	3897.07	59.11		OSF1.50	12880.00	12804.30				MinPt-O-ADP	
4103.27	108.19	4030.48	3995.08	57.92		OSF1.50	13780.00	12925.00				MinPt-O-SF	
4114.68	108.49	4041.70	4006.19	57.92		OSF1.50	13830.00	12925.00				MinPt-O-SF	
10835.29	136.22	10743.82	10699.07	121.05		OSF1.50	22936.66	12925.00				TD	



**Cimarex Vaca Draw 20-17 Federal #61H Rev1 RM 24Feb21 Proposal
Geodetic Report
(Def Plan)**



Report Date: February 24, 2021 - 03:35 PM
Client: Cimarex Energy
Field: NM Lea County (NAD 83)
Structure / Slot: Cimarex Vaca Draw 20-17 Federal #61H / New Slot
Well: Vaca Draw 20-17 Federal #61H
Borehole: Vaca Draw 20-17 Federal #61H
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Vaca Draw 20-17 Federal #61H Rev1 RM 24Feb21
Survey Date: February 24, 2021
Tort / AHD / DDI / ERD Ratio: 100.000 ° / 10468.432 ft / 6.269 / 0.810
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 6' 35.63006", W 103° 35' 18.76651"
Location Grid N/E Y/X: N 404513.690 ftUS, E 771939.650 ftUS
CRS Grid Convergence Angle: 0.3959 °
Grid Scale Factor: 0.99997
Version / Patch: 2.10.824.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 359.634 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3421.300 ft above MSL
Seabed / Ground Elevation: 3398.300 ft above MSL
Magnetic Declination: 6.449 °
Total Gravity Field Strength: 998.4331mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 47594.875 nT
Magnetic Dip Angle: 59.675 °
Declination Date: February 24, 2021
Magnetic Declination Model: HDGM 2020
North Reference: Grid North
Grid Convergence Used: 0.3959 °
Total Corr Mag North->Grid North: 6.0531 °
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 [390' FSL, 860' FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	404513.69	771939.65	N 32.1099	W 103.5885
Nudge 2"/100'	2000.00	0.00	135.34	2000.00	0.00	0.00	0.00	0.00	404513.69	771939.65	N 32.1099	W 103.5885
Hold Nudge	2250.00	5.00	135.34	2249.68	-7.80	-7.75	7.66	2.00	404505.94	771947.31	N 32.1099	W 103.5885
Drop to Vertical	4661.28	5.00	135.34	4651.78	-158.23	-157.25	155.37	0.00	404356.45	772095.02	N 32.1095	W 103.5880
2"/100' DLS	4911.28	0.00	135.34	4901.47	-166.04	-165.00	163.04	2.00	404348.70	772102.68	N 32.1094	W 103.5880
Hold Vertical	12424.81	0.00	135.34	12415.00	-166.04	-165.00	163.04	0.00	404348.70	772102.68	N 32.1094	W 103.5880
KOP - Build	13049.81	75.00	359.63	12876.19	187.85	188.88	160.77	12.00	404702.56	772100.42	N 32.1104	W 103.5880
12"/100' DLS	13424.81	90.00	359.63	12925.00	558.58	559.60	158.40	4.00	405073.28	772098.05	N 32.1114	W 103.5880
Build 4"/100'												
DLS												
Landing Point												
Cimarex Vaca												
Draw 20-17												
Federal #61H -	22936.66	90.00	359.63	12925.00	10070.43	10071.26	97.57	0.00	414584.63	772037.22	N 32.1376	W 103.5880
PBHL [100' FNL, 698' FEL]												

Survey Type: 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	23.000	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS-Depth Only	Vaca Draw 20-17 Federal #61H / Cimarex Vaca Draw 20-17 Federal #61H Rev1 RM 24Feb21
	1	23.000	22936.660	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS	Vaca Draw 20-17 Federal #61H / Cimarex Vaca Draw 20-17 Federal



Cimarex Energy

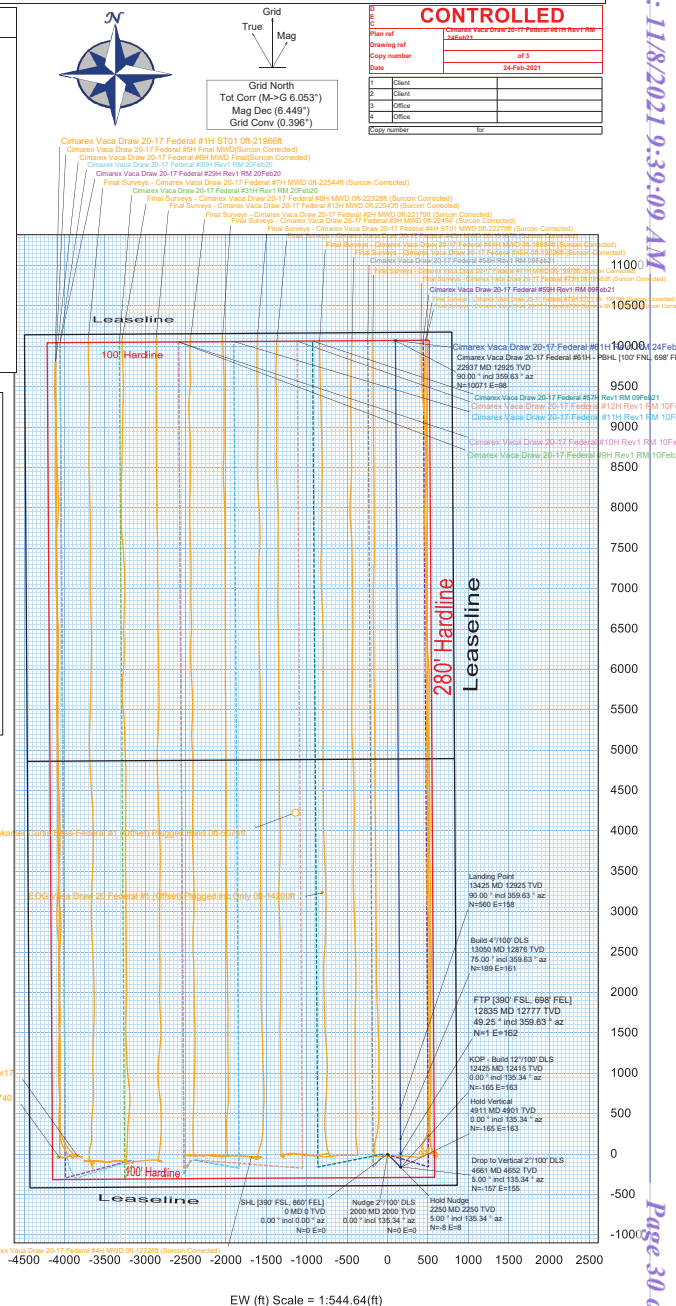
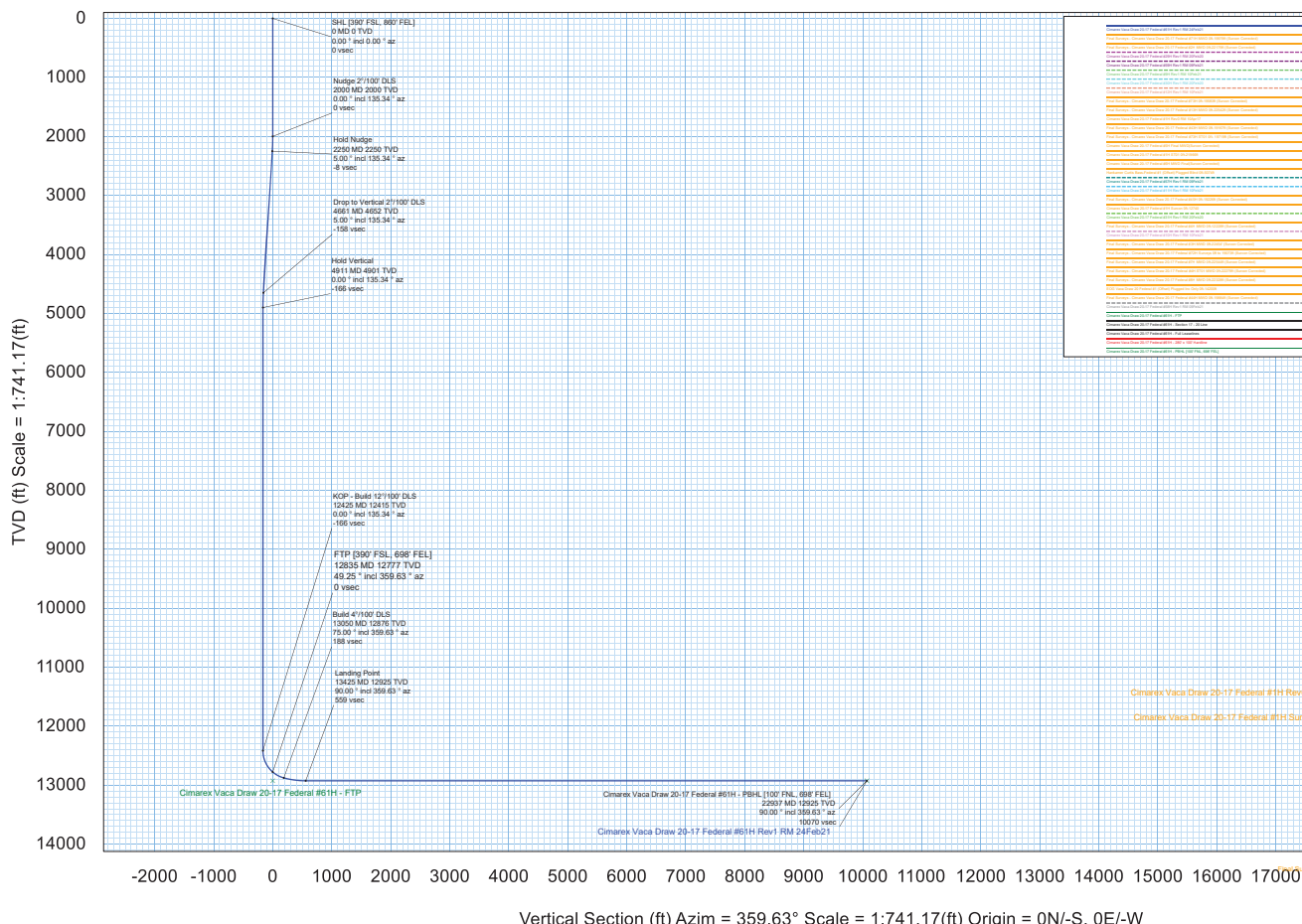
Rev 1



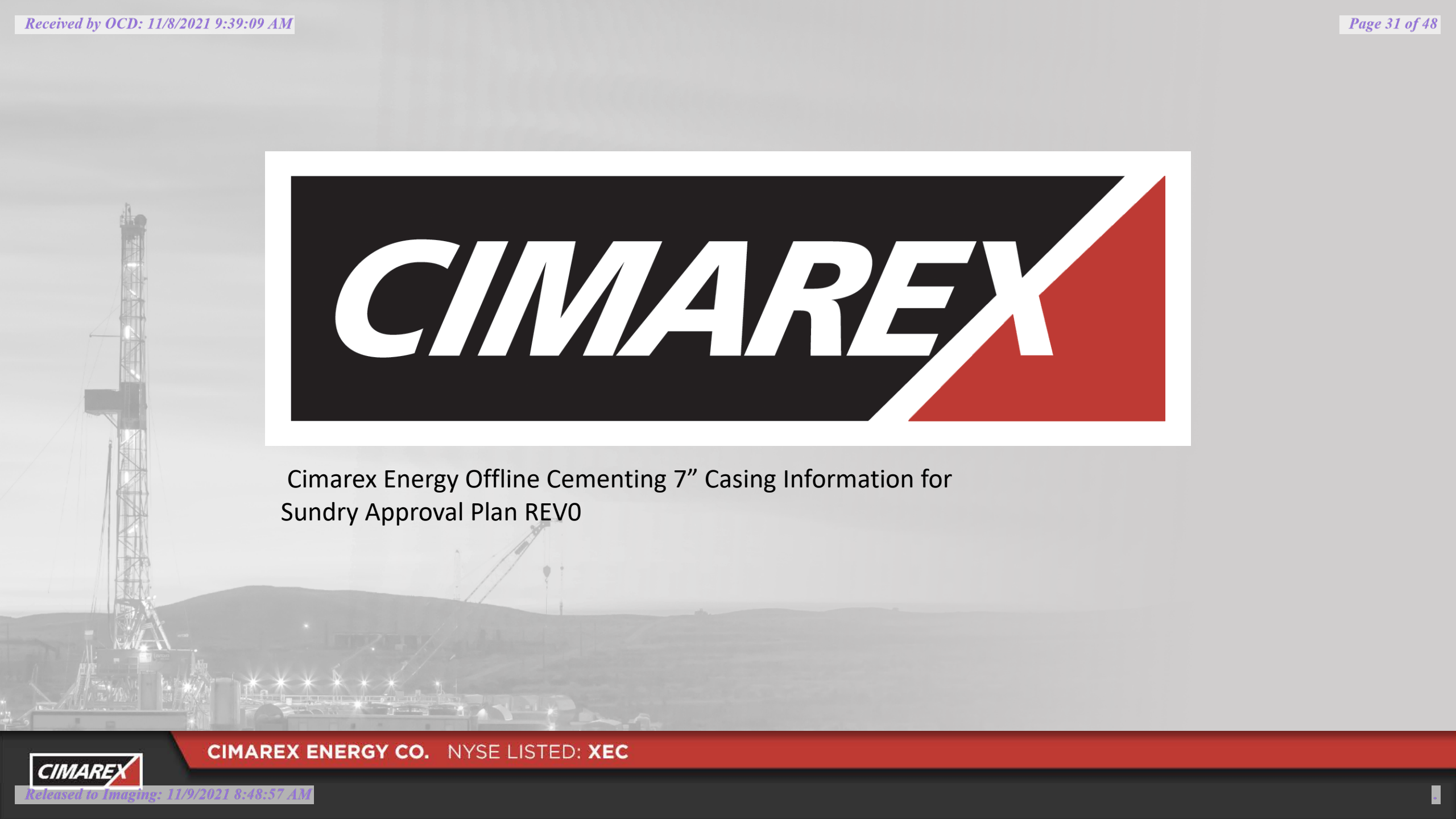
Borehole:	Vaca Draw 20-17 Federal #61H	Well:	Vaca Draw 20-17 Federal #61H	Field:	NM Lea County (NAD 83)	Structure:	Cimarex Vaca Draw 20-17 Federal #61H
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Gravity & Magnetic Parameters	Dip: 59.675°	Date: 24-Feb-2021	Surface Location	NAD83 New Mexico State Plane, Eastern Zone, US Feet	Grid Conv:	Miscellaneous	TVD Ref:
Model: HDGM 2020	FS: 47584.875nT	Gravity FS: 980.433mgm (9.80665 Based)	Lat: N 32 6 35.63	Northings: 404513.69HUS	Scale Fact: 0.3859°	Slot: New Slot	RKB(3421.3ft above MSL)
MagDec: 6.449°			Lon: W 103 35 18.77	Eastings: 771939.65HUS	0.99997	Plan: Cimarex Vaca Draw 20-17 Federal #61H Rev1 RM 24Feb21	

Critical Points								
Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL [390° FSL, 860° FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Nudge 2°/100' DLS	2000.00	0.00	135.34	2000.00	0.00	0.00	0.00	0.00
Hold Nudge	2250.00	5.00	135.34	2249.68	-7.80	-7.75	7.66	2.00
Drop to Vertical 2°/100' DLS	4661.28	5.00	135.34	4651.78	-158.23	-157.25	155.37	0.00
Hold Vertical	4911.28	0.00	135.34	4901.47	-166.04	-165.00	163.04	2.00
KOP - Build 12°/100' DLS	12424.81	0.00	135.34	12415.00	-166.04	-165.00	163.04	0.00
FTP [390° FSL, 698° FEL]	12835.25	49.25	359.63	12776.72	-0.22	0.81	161.98	12.00
Build 4°/100' DLS	13049.81	75.00	359.63	12876.19	187.85	188.88	160.77	12.00
Landing Point	13424.81	90.00	359.63	12925.00	558.58	559.60	158.40	4.00
Cimarex Vaca Draw 20-17 Federal #61H - PBHL [100° FNL, 698° FEL]	22936.66	90.00	359.63	12925.00	10070.43	10071.26	97.57	0.00



CONTROLLED	
Plan ref	Survey ref
Draw number	Copy number
Date	24-Feb-2021
1 Client	
2 Client	
3 Office	
4 Office	
Copy number	for



CIMAREX

Cimarex Energy Offline Cementing 7" Casing Information for
Sundry Approval Plan REV0



CIMAREX ENERGY CO. NYSE LISTED: XEC

Cementing Operational Workflow

Conventional Cementing

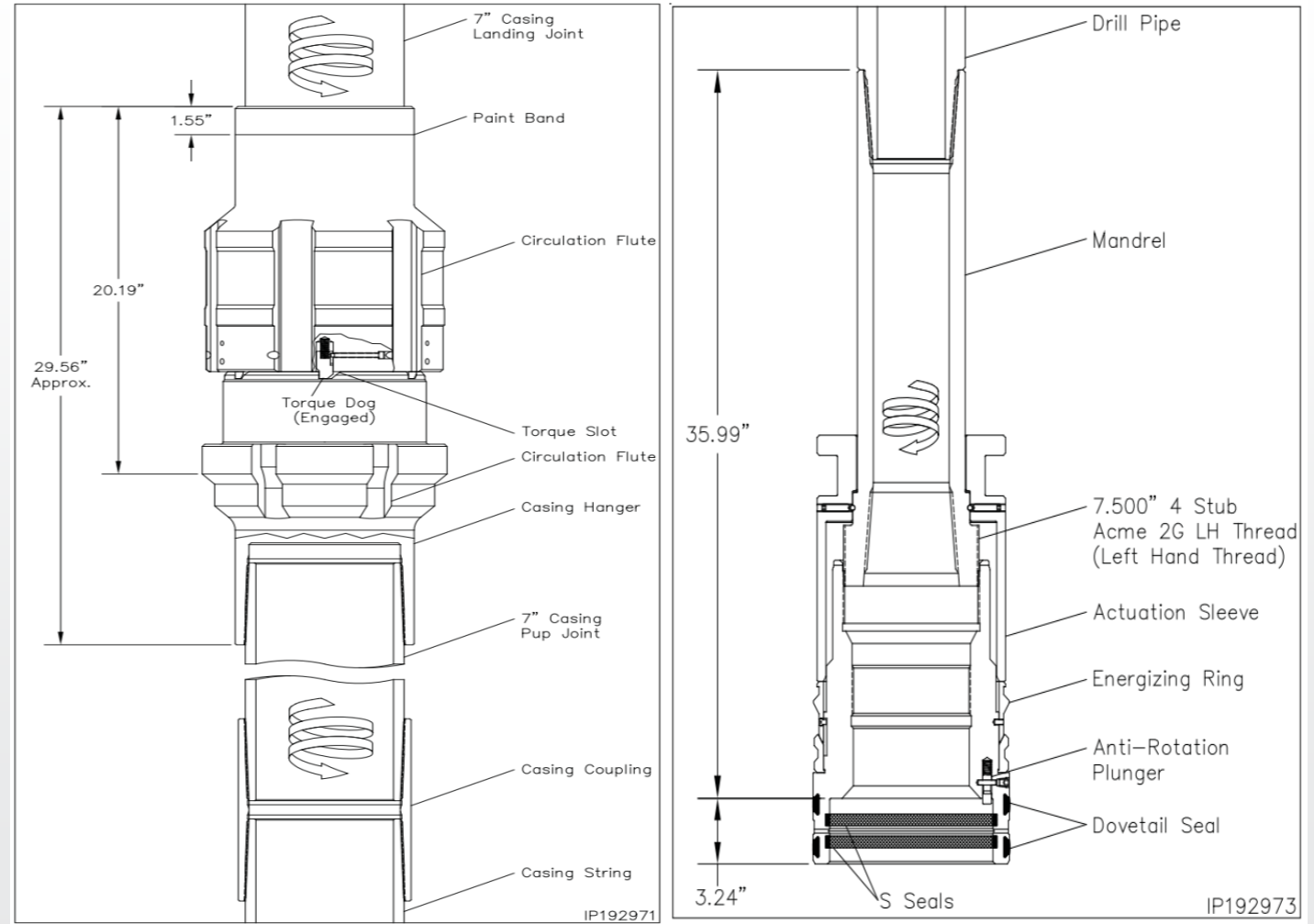
1. Land casing on fluted mandrel hanger
2. Circulate down casing, taking returns through BOP stack
3. Pump lead and tail cement
4. Displace cement and bump the plug
5. Ensure floats are holding pressure
6. RD cement crew
7. Install packoff to isolate pressure
8. Install BPV and skid rig

Offline Cementing

1. Land casing on **solid body** mandrel hanger
 - a) Engage packoff and lockring
2. Install BPV
3. Skid rig
4. Check for pressure and remove BPV
5. Circulate down casing, taking returns through casing valves
6. Pump lead and tail cement
7. Displace cement and bump the plug
8. Ensure floats are holding pressure
9. RD cement crew
10. Install BPV and TA cap

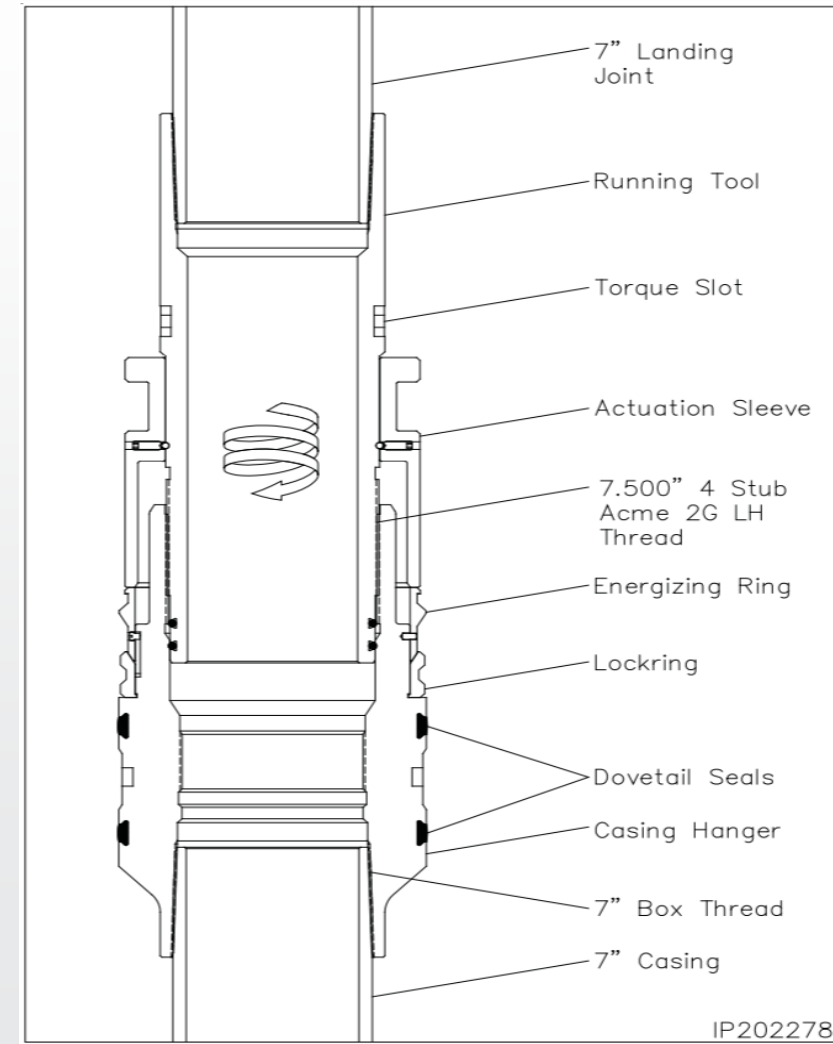
Conventional Cementing Equipment-Fluted Mandrel

- Fluted Hanger allows returns up past the hanger body
- Returns throughout cement job flow up through BOP stack and into flowline
- Packoff is installed **after** cement job to isolate pressure above and below hanger
- Lockring engaged during packoff installation

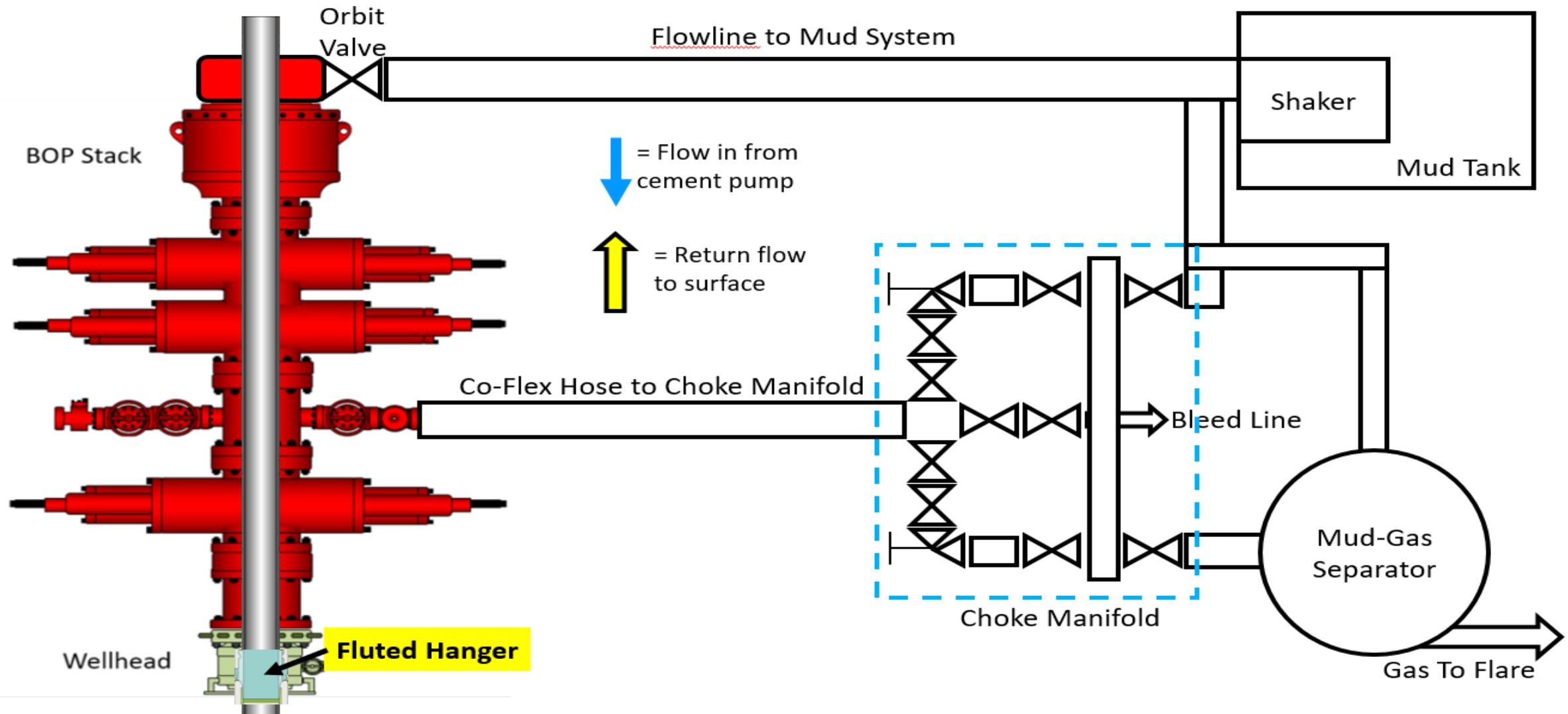


Offline Cementing Equipment-Solid Body Mandrel Hanger

- Solid Body Mandrel Hanger allows for casing to be landed and pressure isolated in one step, **prior** to cementing
- Lockring is engaged to lock casing in place
- Casing is isolated and returns throughout cement job flow through the casing valves and through flowback iron independent of rig



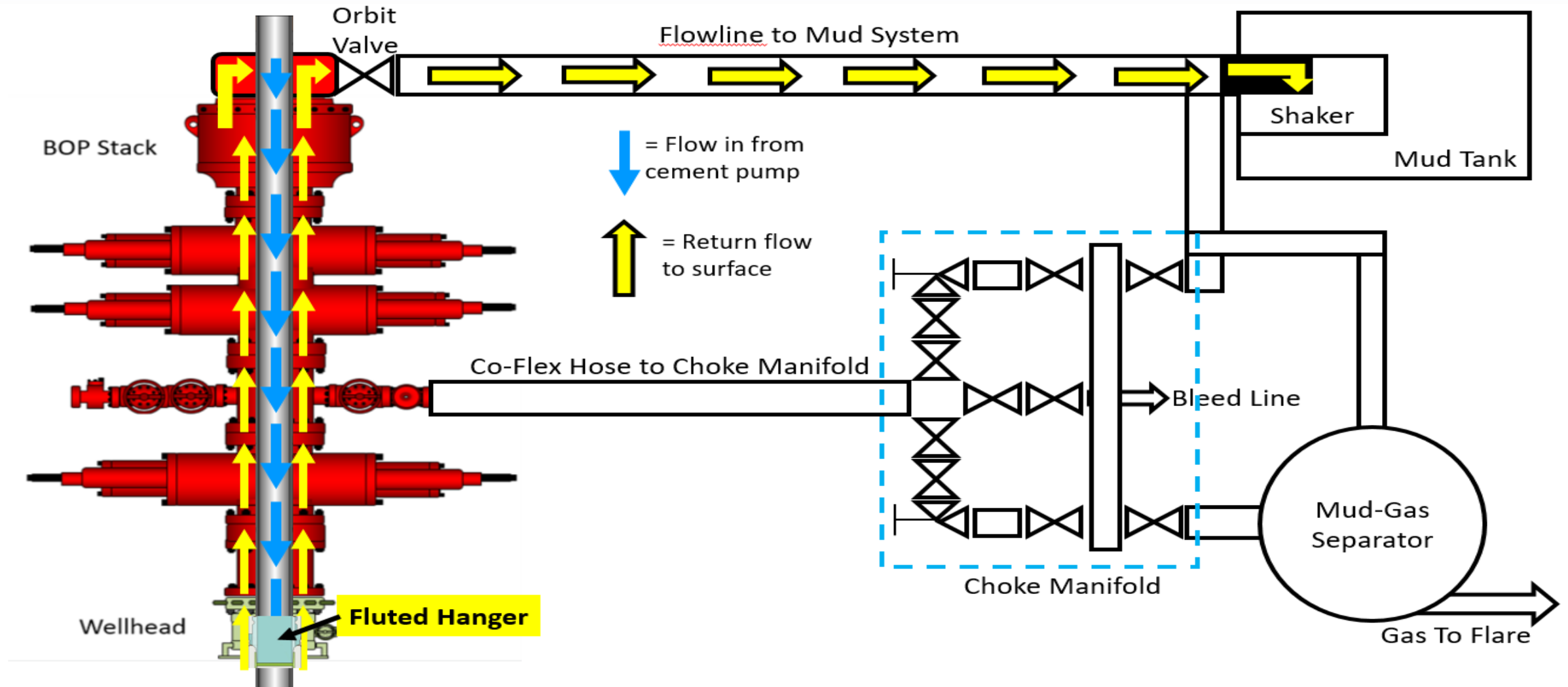
Conventional Cementing Flow Diagram



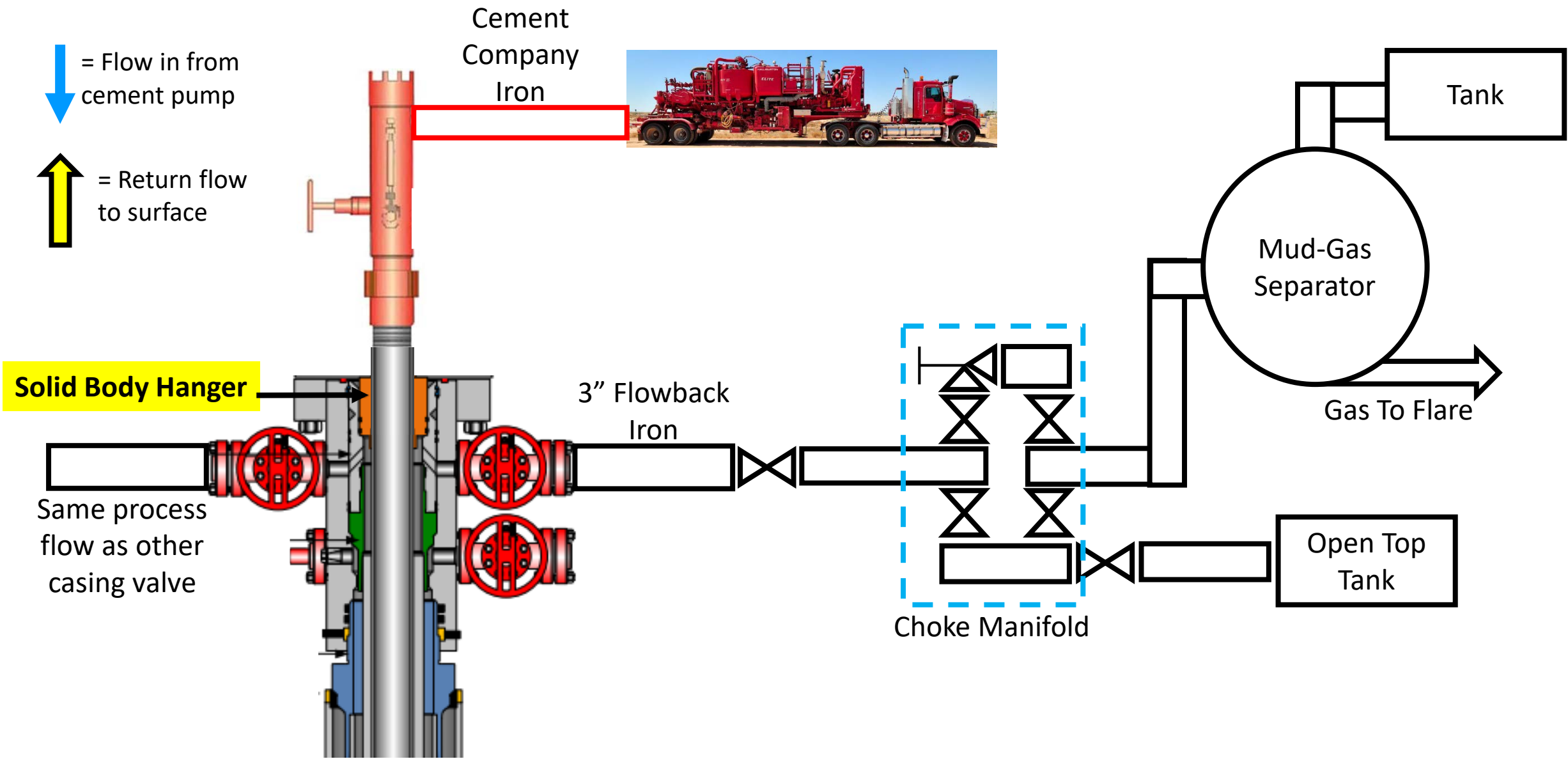
CIMAREX ENERGY CO. NYSE LISTED: XEC



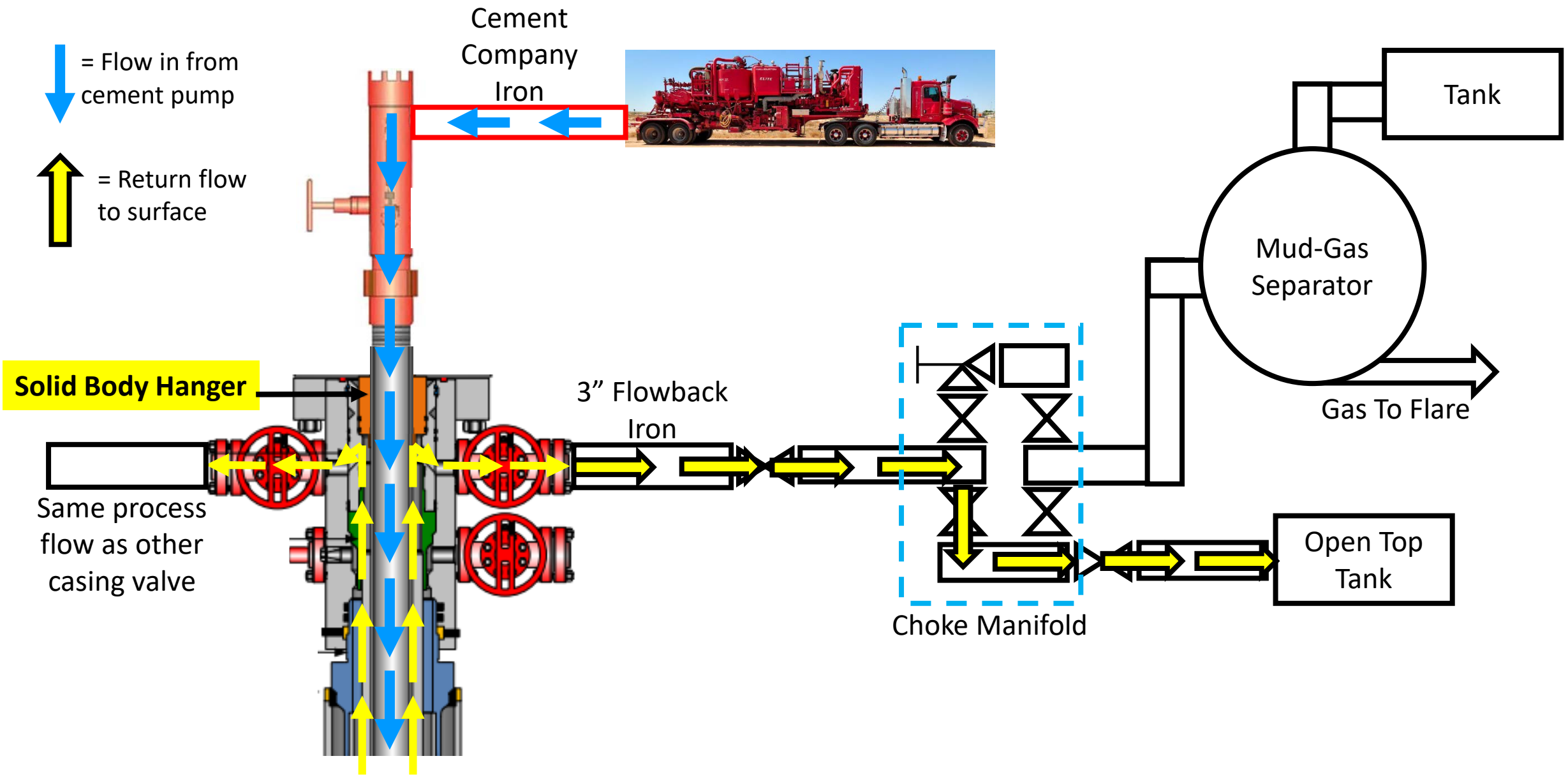
Conventional Cementing Flow Diagram



Offline Cementing -- Intermediate Casing

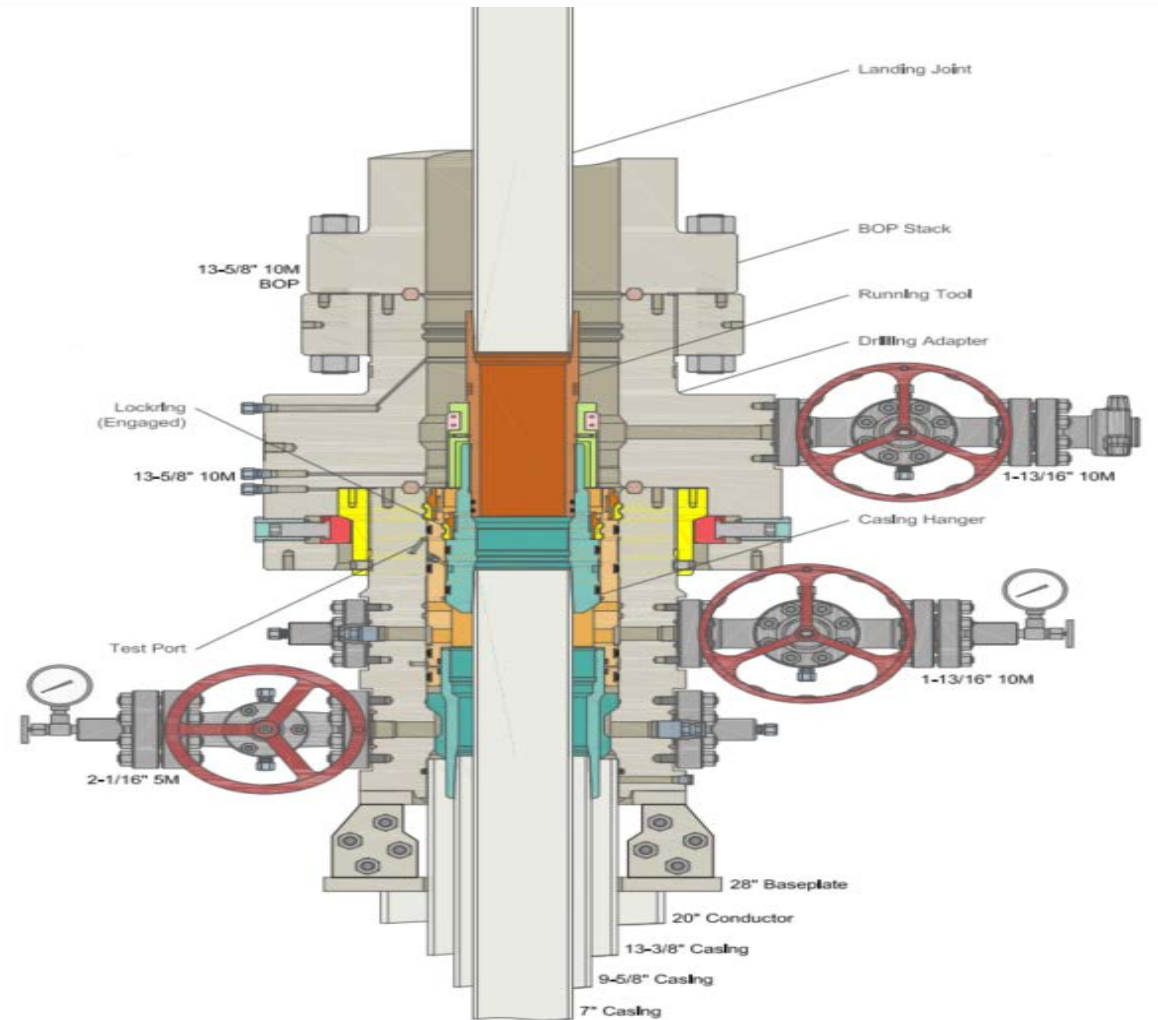


Offline Cementing -- Intermediate Casing



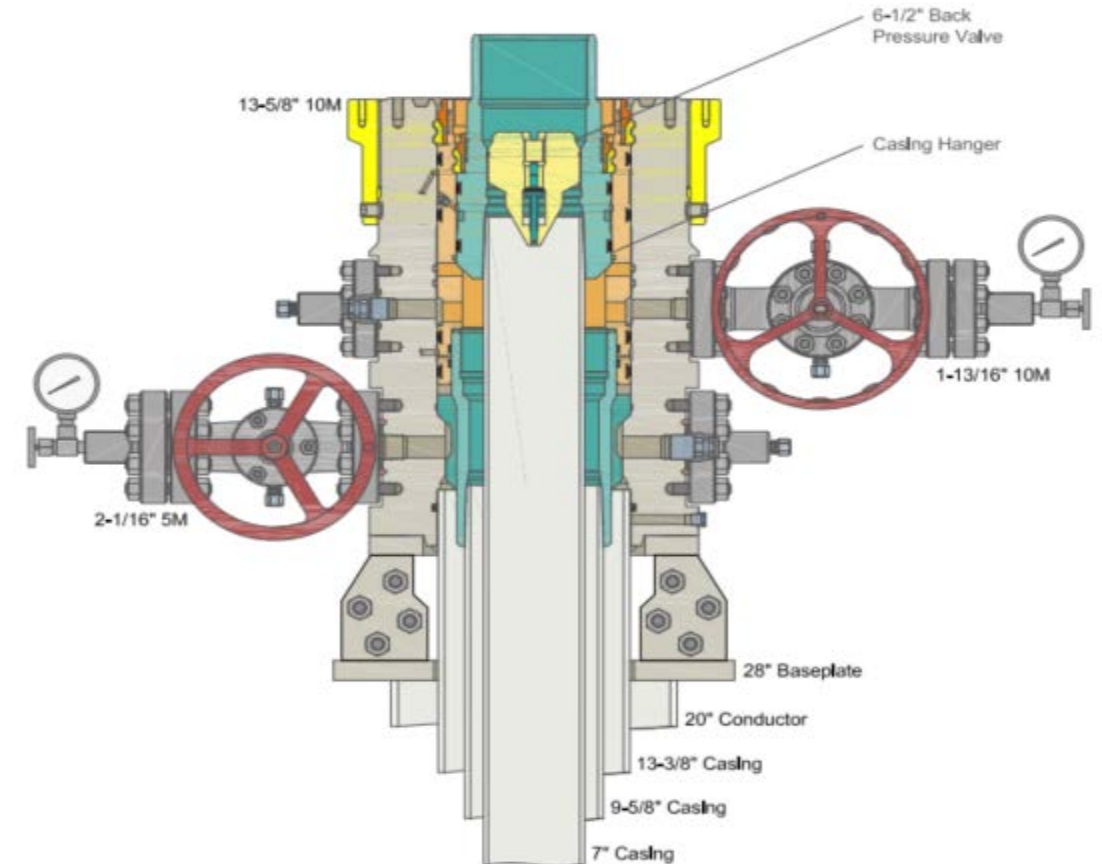
Offline Cementing Progression

- Run 7" casing
- Land 11" nominal x 7" hanger
- Test casing hanger
- Energize 11" nom x 7" hanger lock ring and pull test
- Re-test casing hanger
- Barriers & Procedures after landing casing before setting packoff
 - 10K BOP & 5K Annular-Internal and Annular barrier
 - Kill Weight Fluid in annulus and casing (ensure well is static before setting solid body packoff) Internal and Annular barrier
 - **If well is not static we WILL NOT set solid body packoff.**
 - 10K float collar-Internal Barrier
 - 10k float Shoe-Internal Barrier
 - **After circulating a 1.5 casing capacities to ensure full column of mud and no entrained gas pumps will be shut off and floats checked for flow**



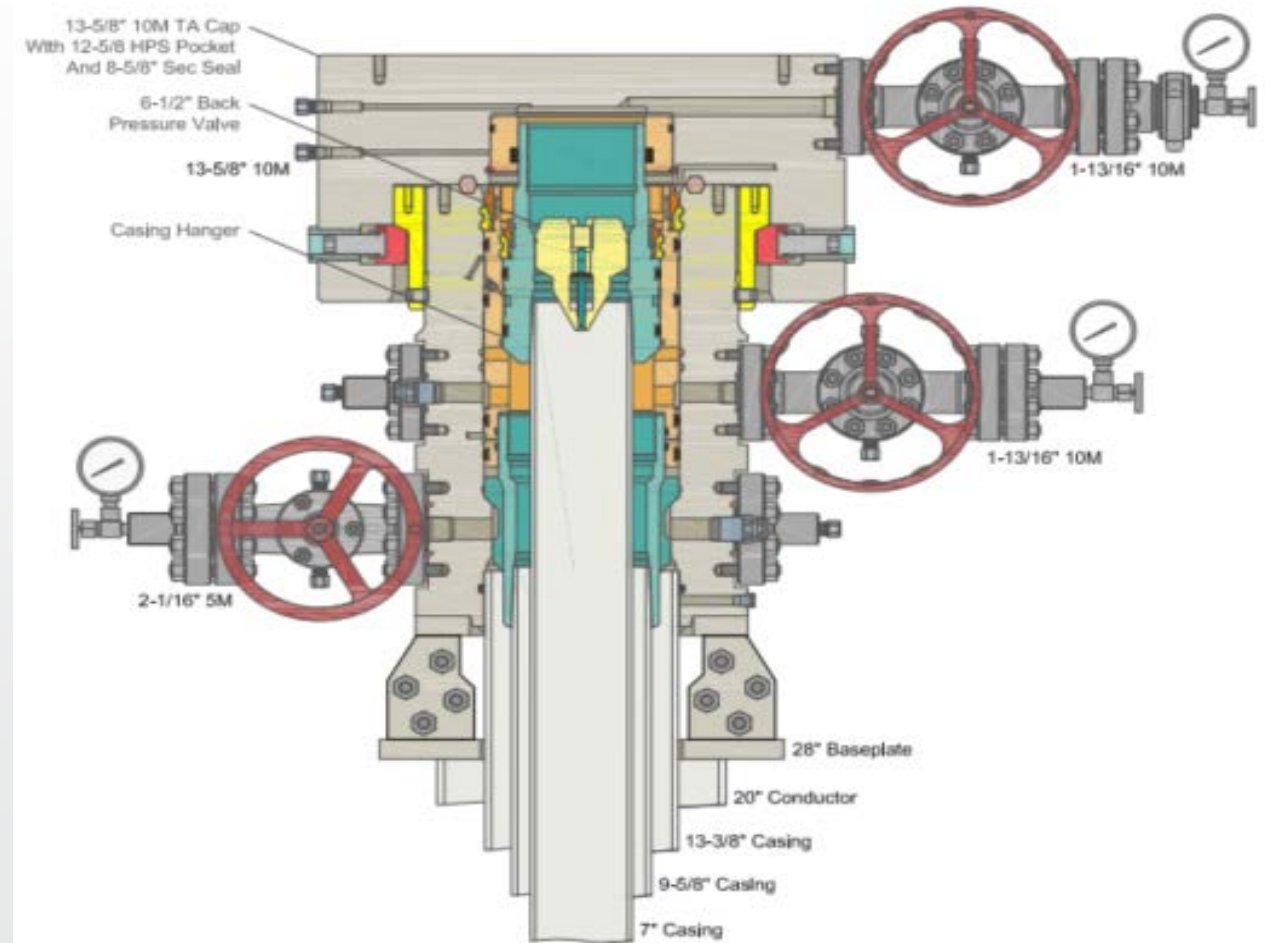
Offline Cementing Progression

- Pick up running tool with 6-1/2" nominal Back Pressure valve run into well and set
- Barriers and procedures **BEFORE** removing BOP's
 - Kill weight Fluid in annulus-Annular Barrier
 - Solid Body Packoff-Annular Barrier
 - 10K Float Equipment-Internal Barrier
 - 10K Back pressure valve installed with BOP still on well-Internal Barrier
 - BPV will be tested before it arrives on location by Cactus



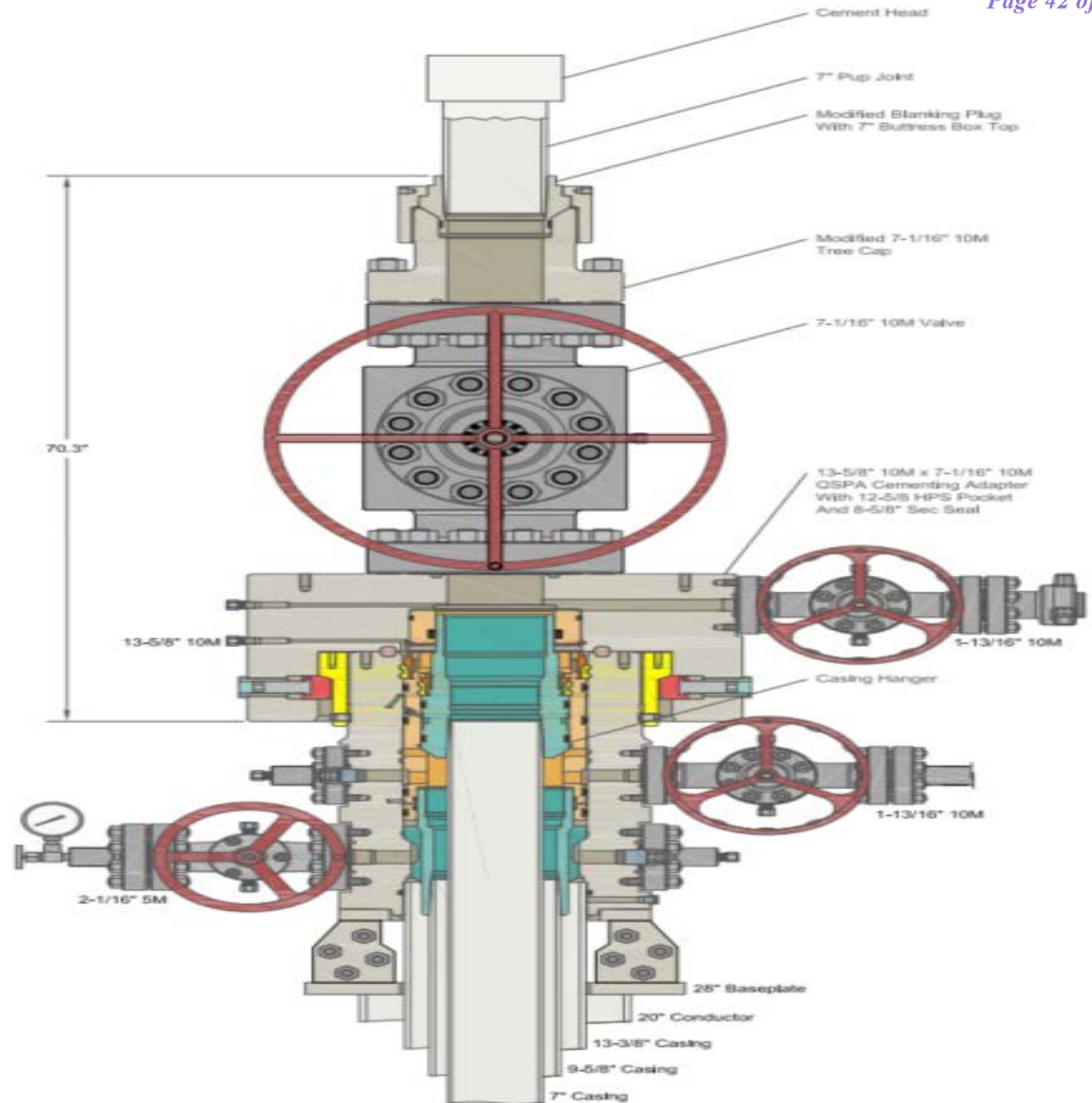
Offline Cementing Progression

- Nipple down BOP
- Nipple up TA Cap and test
- Skid Drilling Rig
- Barriers and procedures **AFTER** removing BOP's
 - Kill weight Fluid in annulus-Annular Barrier
 - Solid Body Packoff-Annular Barrier
 - 10K Float Equipment-Internal Barrier
 - 10K Back pressure valve-Internal Barrier
 - 10K rated TA cap with Valve-Internal Barrier



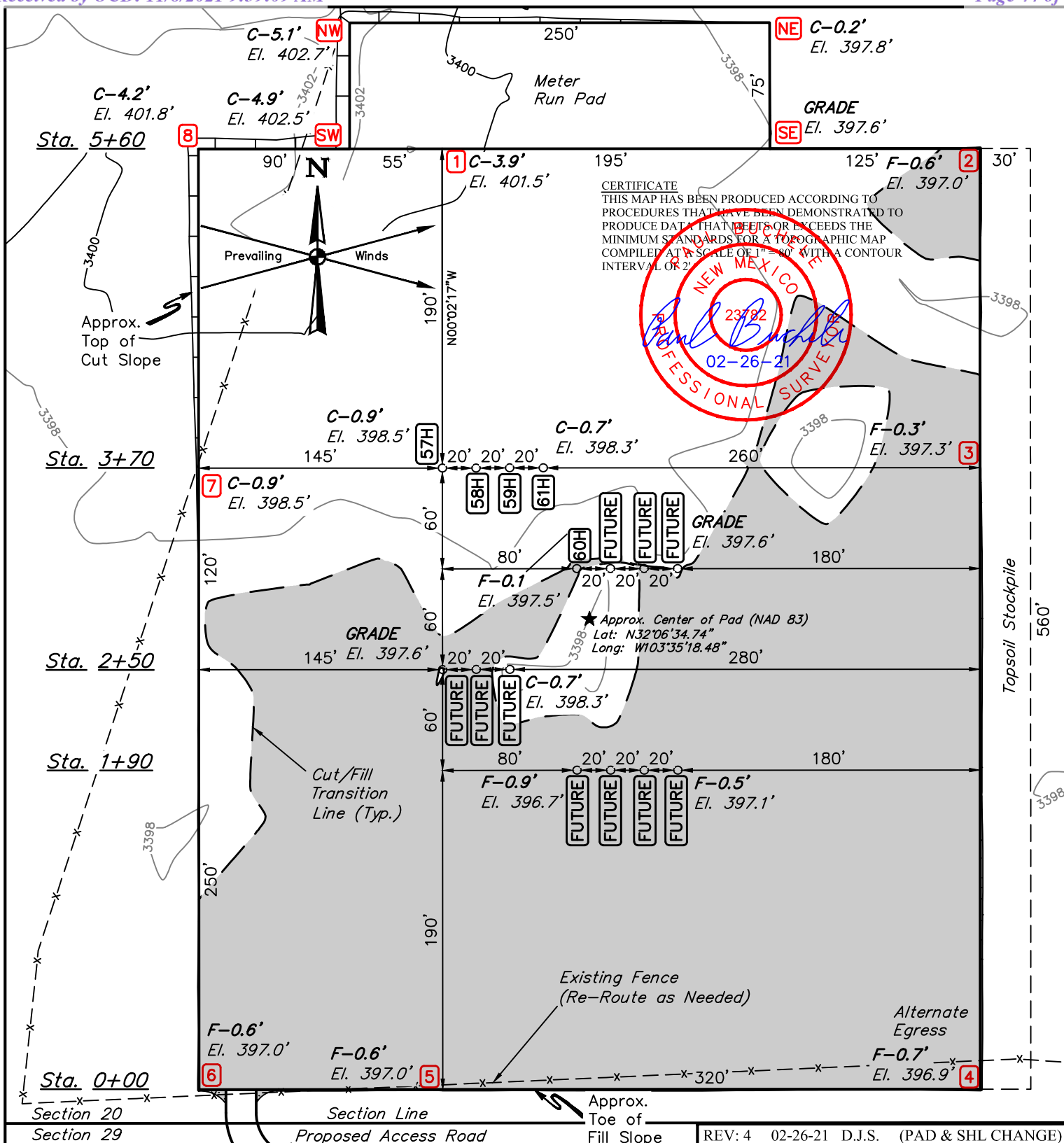
Offline Cementing Progression

- Check Pressure on TA Cap and remove
- Install adaptor with Gate valve for off line cementing and test
- Rig up flowback iron independent of rig
- Retrieve Back Pressure Valve
- Shut in well
- Rig up to cement and pump job
- NU 10K TA cap after cement job
- Barriers and procedures before rigging up cementing equipment
 - Address well and ensure no pressure on TA cap
 - Ability to pump into well through casing valves on backside to kill if needed
 - Kill weight Fluid in annulus-Annular barrier
 - Solid Body Packoff-Annular barrier
 - 10K Float Equipment-Internal Barrier
 - 10K Back pressure valve-Internal Barrier



Offline Cementing Risk and COA Compliance

- All testing and breaks tested in accordance with Onshore Order # 2 and COA's
- If no cement to surface, bradenhead squeeze still possible with offline cementing equipment
- Time from skid rig to offline cementing ops typically 24 hours
- **Conditions where we would not Offline Cement**
 - Well is flowing
- All wellhead equipment rated to 10K maintaining APD compliant
 - 10K flowback iron independent of rig circulating system
 - 10K Back Pressure Valve
 - 10K Gate Valve & TA combo for second barrier during operations
 - 10K 1-13/16 Valve coming off TA cap
 - 10K TA Cap



FINISHED GRADE ELEVATION = 3397.6'

NOTES:

- Contours shown at 2' intervals.
- Cut/Fill slopes 1 1/2:1 (Typ.)
- Underground utilities shown on this sheet are for visualization purposes only, actual locations to be determined prior to construction.
- Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00" (NAD 83)

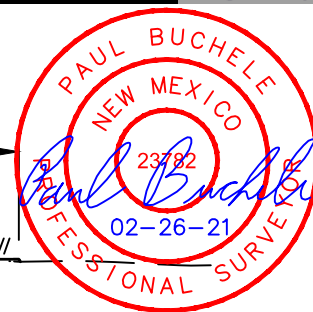
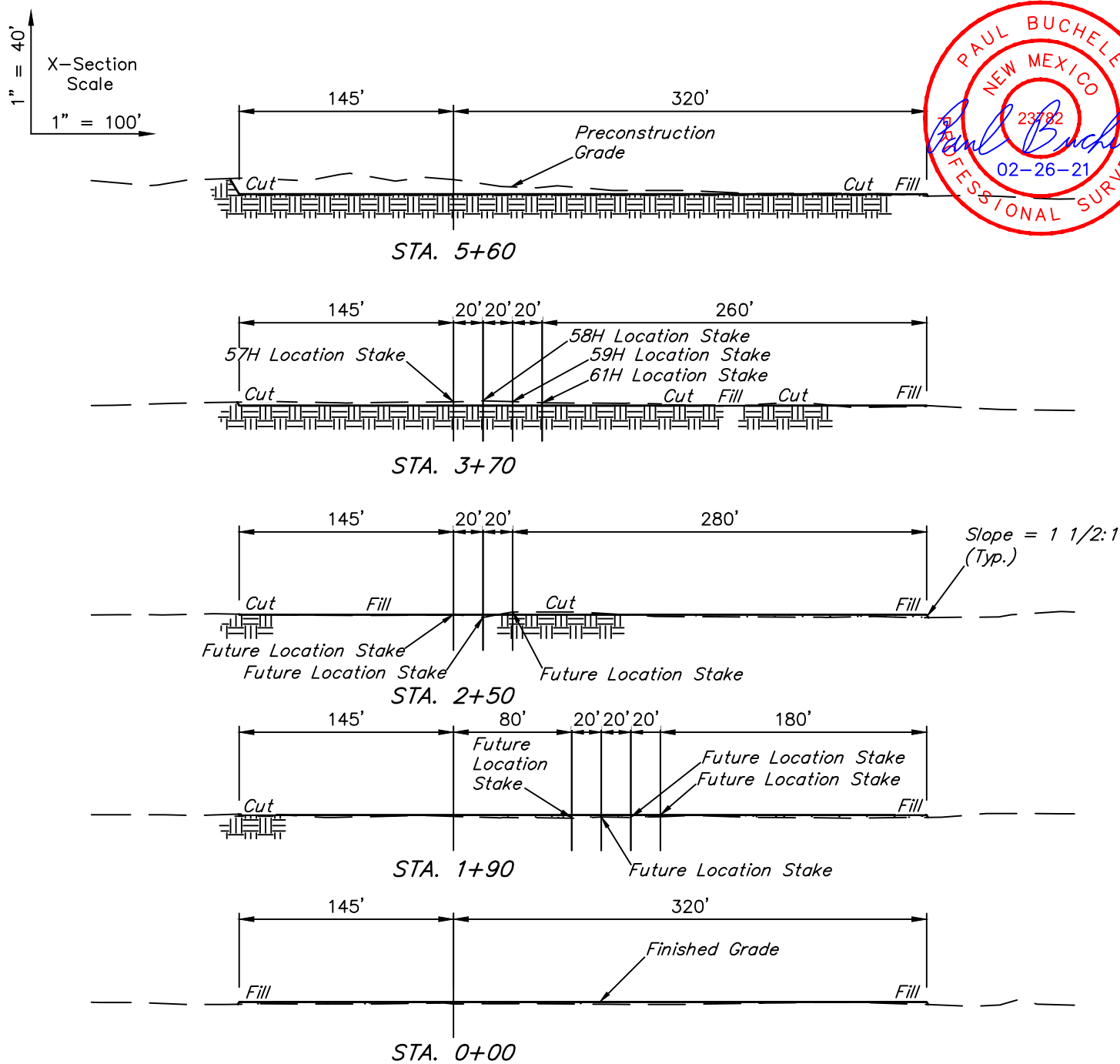
CIMAREX ENERGY CO.

VACA DRAW 20-17 FEDERAL E2E2 PAD 1
300' FSL 833' FEL (APPROX. CENTER OF PAD)
SE 1/4 SE 1/4, SECTION 20, T25S, R33E, N.M.P.M.
LEA COUNTY, NEW MEXICO

SURVEYED BY	M.D., R.C.	02-23-21	SCALE
DRAWN BY	D.J.S.	08-20-18	1" = 80'
LOCATION LAYOUT		EXHIBIT J	



UELS, LLC
 Corporate Office * 85 South 200 East
 Vernal, UT 84078 * (435) 789-1017



APPROXIMATE EARTHWORK QUANTITIES	
(4") TOPSOIL STRIPPING	3,490 Cu. Yds.
REMAINING LOCATION	4,850 Cu. Yds.
TOTAL CUT	8,340 Cu. Yds.
FILL	4,850 Cu. Yds.
EXCESS MATERIAL	3,490 Cu. Yds.
TOPSOIL	3,490 Cu. Yds.
EXCESS UNBALANCE (After Interim Rehabilitation)	0 Cu. Yds.

APPROXIMATE SURFACE DISTURBANCE AREAS		
	DISTANCE	ACRES
WELL SITE DISTURBANCE	NA	±6.868
30' WIDE ACCESS ROAD R-O-W DISTURBANCE	±589.61'	±0.406
TOTAL SURFACE USE AREA		±7.274

REV: 3 02-26-21 D.J.S. (PAD & SHL CHANGE)

NOTES:

- Fill quantity includes 5% for compaction.
- Cut/Fill slopes 1 1/2:1 (Typ.)

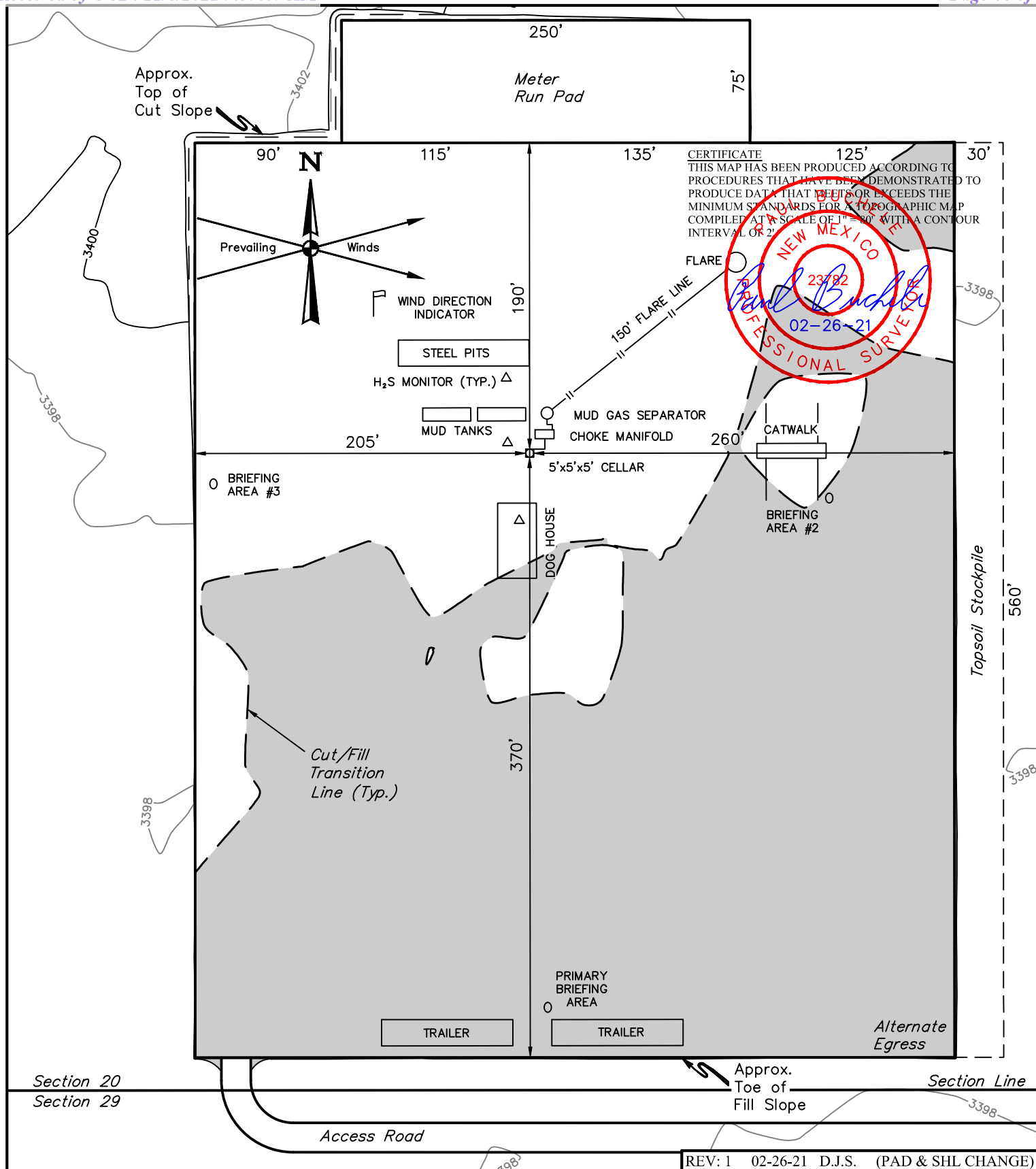
CIMAREX ENERGY CO.

VACA DRAW 20-17 FEDERAL E2E2 PAD 1
300' FSL 833' FEL (APPROX. CENTER OF PAD)
SE 1/4 SE 1/4, SECTION 20, T25S, R33E, N.M.P.M.
LEA COUNTY, NEW MEXICO

SURVEYED BY	M.D., R.C.	02-23-21	SCALE
DRAWN BY	D.J.S.	08-20-18	AS SHOWN
TYPICAL CROSS SECTIONS		EXHIBIT J	



UELS, LLC
 Corporate Office * 85 South 200 East
 Vernal, UT 84078 * (435) 789-1017

**NOTES:**

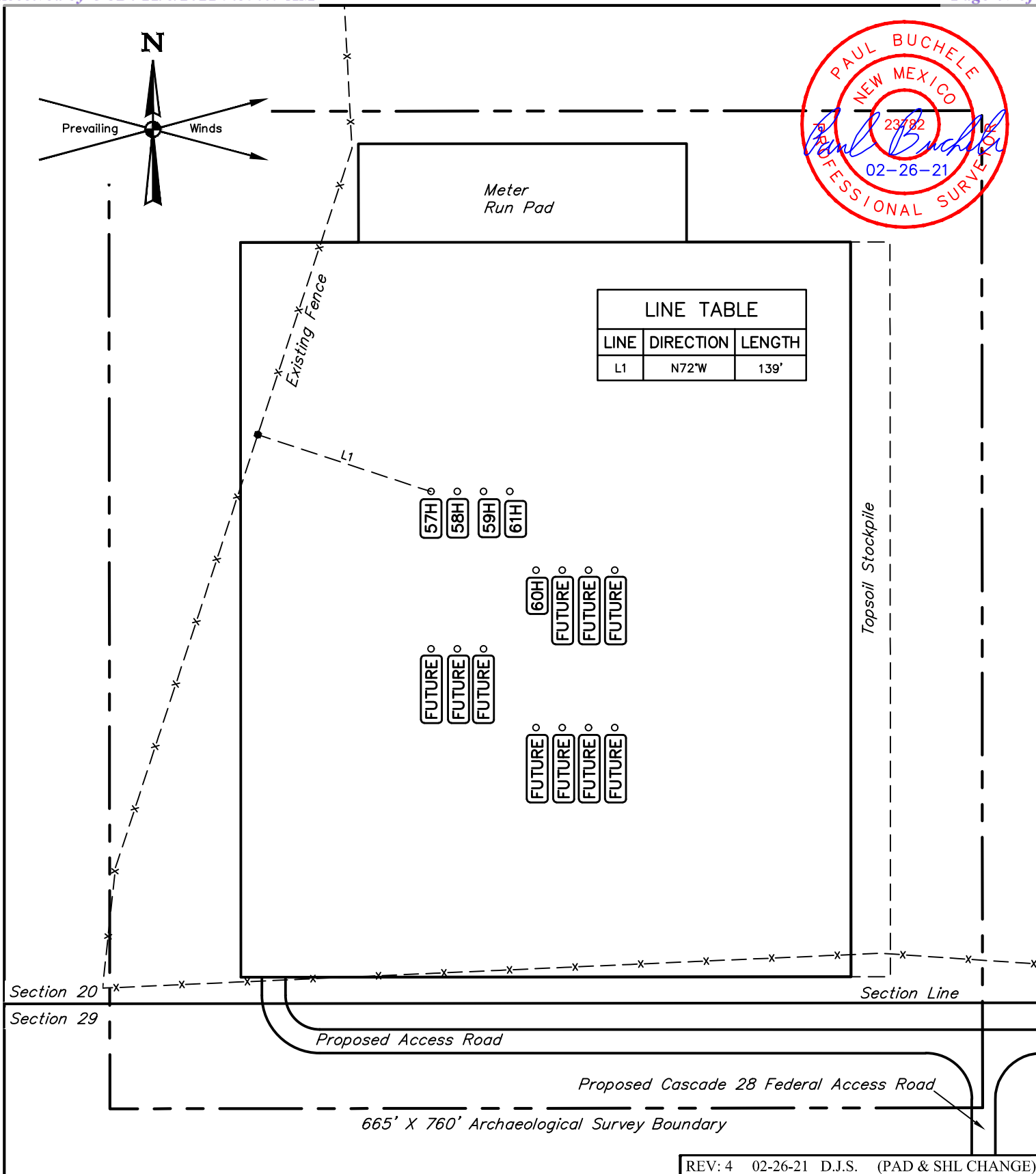
- Contours shown at 2' intervals.

CIMAREX ENERGY CO.**VACA DRAW 20-17 FEDERAL 61H****390' FSL 860' FEL****SE 1/4 SE 1/4, SECTION 20, T25S, R33E, N.M.P.M.
LEA COUNTY, NEW MEXICO**

SURVEYED BY	M.D., R.C.	02-23-21	SCALE
DRAWN BY	T.A.	08-08-19	1" = 80'
TYPICAL RIG LAYOUT			EXHIBIT K



UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017



REV: 4 02-26-21 D.J.S. (PAD & SHL CHANGE)

NOTES:

- Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00" (NAD 83)

CIMAREX ENERGY CO.

VACA DRAW 20-17 FEDERAL E2E2 PAD 1
300' FSL 833' FEL (APPROX. CENTER OF PAD)
SE 1/4 SE 1/4, SECTION 20, T25S, R33E, N.M.P.M.
LEA COUNTY, NEW MEXICO

SURVEYED BY	M.D., R.C.	02-23-21	SCALE
DRAWN BY	D.J.S.	08-20-18	1" = 100'
ARCHAEOLOGICAL SURVEY BOUNDARY			EXHIBIT L



UELS, LLC
 Corporate Office * 85 South 200 East
 Vernal, UT 84078 * (435) 789-1017

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 60761

CONDITIONS

Operator: CIMAREX ENERGY CO. 600 N. Marienfeld Street Midland, TX 79701	OGRID: 215099
	Action Number: 60761
	Action Type: [C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
pkautz	None	11/9/2021