

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

Form C-101
August 1, 2011

Permit 275573

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

1. Operator Name and Address CIMAREX ENERGY CO. 600 N. Marienfeld Street Midland, TX 79701		2. OGRID Number 215099
4. Property Code 320797		3. API Number 30-015-46497
5. Property Name CRAWFORD 27 26 FEE		6. Well No. 015H

7. Surface Location

UL - Lot E	Section 27	Township 24S	Range 26E	Lot Idn	Feet From 2661	N/S Line N	Feet From 410	E/W Line W	County Eddy
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8. Proposed Bottom Hole Location

UL - Lot H	Section 26	Township 24S	Range 26E	Lot Idn H	Feet From 1780	N/S Line N	Feet From 330	E/W Line E	County Eddy
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9. Pool Information

PURPLE SAGE;WOLFCAMP (GAS)	98220
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Additional Well Information

11. Work Type New Well	12. Well Type GAS	13. Cable/Rotary	14. Lease Type Private	15. Ground Level Elevation 3331
16. Multiple N	17. Proposed Depth 18302	18. Formation Wolfcamp	19. Contractor	20. Spud Date 2/1/2020
Depth to Ground water		Distance from nearest fresh water well		Distance to nearest surface water

☒ We will be using a closed-loop system in lieu of lined pits

21. Proposed Casing and Cement Program

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surf	17.5	13.375	48	400	256	0
Int1	12.25	9.625	36	1800	444	0
Prod	8.75	5.5	17	18302	3031	1600

Casing/Cement Program: Additional Comments

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22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Annular	3000	3000	Cameran
Annular	5000	5000	Cameran

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief.
I further certify I have complied with 19.15.14.9 (A) NMAC ☒ and/or 19.15.14.9 (B) NMAC ☒ if applicable.

OIL CONSERVATION DIVISION

Signature:

Printed Name: Electronically filed by Genea A Holloway

Title: Prod Admin Supervisor

Email Address: gholloway@cimarex.com

Date: 12/11/2019

Phone: 918-295-1658

Approved By: Raymond Podany

Title: Geologist

Approved Date: 12/19/2019

Expiration Date: 12/19/2021

Conditions of Approval Attached

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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

30-015-	¹ API Number	98220	² Pool Code	Purple Sage; Wolfcamp (Gas)	³ Pool Name
320797	⁴ Property Code	CRAWFORD 27-26 FEE	⁵ Property Name	15H	⁶ Well Number
215099	⁷ OGRID No.	CIMAREX ENERGY CO.	⁸ Operator Name	3331.5'	⁹ Elevation

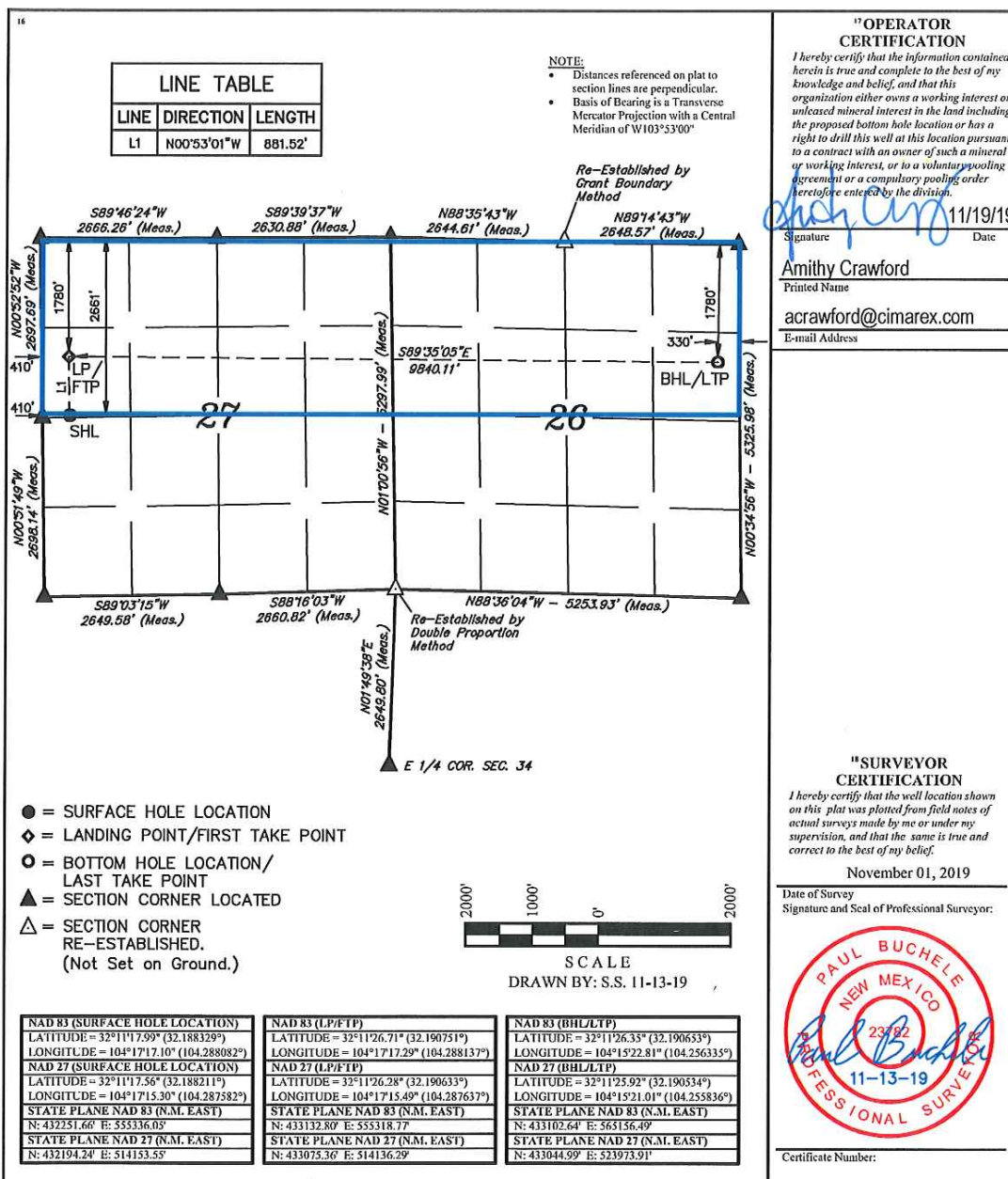
"Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	27	24S	26E		2661	NORTH	410	WEST	EDDY

"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
H	26	24S	26E		1780	NORTH	330	EAST	EDDY
640	¹² Dedicated Acres	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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GAS CAPTURE PLAN

Date: 12/19/2019

☒ Original

Operator & OGRID No.: [215099] CIMAREX ENERGY CO.

☐ Amended - Reason for
Amendment: _____

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomple to new zone, re-frac) activity.

Note: Form C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule (Subsection A of 19.15.18.12 NMAC).

Well(s)/Production Facility – Name of facility

The well(s) that will be located at the production facility are shown in the table below.

Well Name	API	Well Location (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comments
CRAWFORD 27 26 FEE #015H	30-015-46497	E-27-24S-26E	2661N 0410W	4400	Flared	Existing Battery. Sendero already connected.

Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility is dedicated to SENDERO CARLSBAD NGL, LLC and will be connected to SENDERO CARLSBAD NGL, LLC Low Pressure gathering system located in Eddy County, New Mexico. It will require 0' of pipeline to connect the facility to Low Pressure gathering system. CIMAREX ENERGY CO. provides (periodically) to SENDERO CARLSBAD NGL, LLC a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, CIMAREX ENERGY CO. and SENDERO CARLSBAD NGL, LLC have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at SENDERO CARLSBAD NGL, LLC Processing Plant located in Sec. 35, Twn. 23S, Rng. 27E, Eddy County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on SENDERO CARLSBAD NGL, LLC system at that time. Based on current information, it is CIMAREX ENERGY CO.'s belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
 - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
 - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
 - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

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Form APD Comments

Permit 275573

PERMIT COMMENTS

Operator Name and Address: CIMAREX ENERGY CO. [215099] 600 N. Marienfeld Street Midland, TX 79701	API Number: 30-015-46497
	Well: CRAWFORD 27 26 FEE #015H

Created By	Comment	Comment Date
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Form APD Conditions

Permit 275573

PERMIT CONDITIONS OF APPROVAL

Operator Name and Address: CIMAREX ENERGY CO. [215099] 600 N. Marienfeld Street Midland, TX 79701		API Number: 30-015-46497
		Well: CRAWFORD 27 26 FEE #015H
OCD Reviewer	Condition	
rpodany	Will require a directional survey with the C-104	
rpodany	Cement is required to circulate on both surface and intermediate1 strings of casing	



Cimarex Crawford 27-26 Fee #15H Rev0 RM 21Nov19 Proposal Geodetic Report (Def Plan)



Report Date:	November 21, 2019 - 01:36 PM	Survey / DLS Computation:	Minimum Curvature / Lubinski
Client:	Cimarex Energy	Vertical Section Azimuth:	90.158 ° (Grid North)
Field:	NM Eddy County (NAD 83)	Vertical Section Origin:	0.000 ft, 0.000 ft
Structure / Slot:	Cimarex Crawford 27-26 Fee #15H / New Slot	TVD Reference Datum:	RKB
Well:	Crawford 27-26 Fee #15H	TVD Reference Elevation:	3357.500 ft above MSL
Borehole:	Crawford 27-26 Fee #15H	Seabed / Ground Elevation:	3331.500 ft above MSL
UWI / API#:	Unknown / Unknown	Magnetic Declination:	7.253 °
Survey Name:	Cimarex Crawford 27-26 Fee #15H Rev0 RM 21Nov19	Total Gravity Field Strength:	998.4458mgn (9.80665 Based)
Survey Date:	November 21, 2019	Gravity Model:	GARM
Tort / AHD / DDI / ERD Ratio:	112.450 ° / 10716.934 ft / 6.399 / 1.218	Total Magnetic Field Strength:	47749.321 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	Magnetic Dip Angle:	59.801 °
Location Lat / Long:	N 32° 11' 17.98527", W 104° 17' 17.09608"	Declination Date:	November 21, 2019
Location Grid N/E Y/X:	N 432251.660 ftUS, E 555336.050 ftUS	Magnetic Declination Model:	HDGM 2019
CRS Grid Convergence Angle:	0.0241 °	North Reference:	Grid North
Grid Scale Factor:	0.99990932	Grid Convergence Used:	0.0241 °
Version / Patch:	2.10.782.0	Total Corr Mag North->Grid North:	7.2289 °
		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 [2661' FNL, 410' FWL]	0.00	0.00	52.56	0.00	0.00	0.00	0.00	N/A	432251.66	555336.05	N 32 11 17.99	W 104 17 17.10
	100.00	0.00	358.88	100.00	0.00	0.00	0.00	0.00	432251.66	555336.05	N 32 11 17.99	W 104 17 17.10
	200.00	0.00	358.88	200.00	0.00	0.00	0.00	0.00	432251.66	555336.05	N 32 11 17.99	W 104 17 17.10
	300.00	0.00	358.88	300.00	0.00	0.00	0.00	0.00	432251.66	555336.05	N 32 11 17.99	W 104 17 17.10
	400.00	0.00	358.88	400.00	0.00	0.00	0.00	0.00	432251.66	555336.05	N 32 11 17.99	W 104 17 17.10
	500.00	0.00	358.88	500.00	0.00	0.00	0.00	0.00	432251.66	555336.05	N 32 11 17.99	W 104 17 17.10
	600.00	0.00	358.88	600.00	0.00	0.00	0.00	0.00	432251.66	555336.05	N 32 11 17.99	W 104 17 17.10
	700.00	0.00	358.88	700.00	0.00	0.00	0.00	0.00	432251.66	555336.05	N 32 11 17.99	W 104 17 17.10
	800.00	0.00	358.88	800.00	0.00	0.00	0.00	0.00	432251.66	555336.05	N 32 11 17.99	W 104 17 17.10
	900.00	0.00	358.88	900.00	0.00	0.00	0.00	0.00	432251.66	555336.05	N 32 11 17.99	W 104 17 17.10
	1000.00	0.00	358.88	1000.00	0.00	0.00	0.00	0.00	432251.66	555336.05	N 32 11 17.99	W 104 17 17.10
	1100.00	0.00	358.88	1100.00	0.00	0.00	0.00	0.00	432251.66	555336.05	N 32 11 17.99	W 104 17 17.10
	1200.00	0.00	358.88	1200.00	0.00	0.00	0.00	0.00	432251.66	555336.05	N 32 11 17.99	W 104 17 17.10
	1300.00	0.00	358.88	1300.00	0.00	0.00	0.00	0.00	432251.66	555336.05	N 32 11 17.99	W 104 17 17.10
	1400.00	0.00	358.88	1400.00	0.00	0.00	0.00	0.00	432251.66	555336.05	N 32 11 17.99	W 104 17 17.10
	1500.00	0.00	358.88	1500.00	0.00	0.00	0.00	0.00	432251.66	555336.05	N 32 11 17.99	W 104 17 17.10
Castille (Base Salt)	1514.00	0.00	358.88	1514.00	0.00	0.00	0.00	0.00	432251.66	555336.05	N 32 11 17.99	W 104 17 17.10
	1600.00	0.00	358.88	1600.00	0.00	0.00	0.00	0.00	432251.66	555336.05	N 32 11 17.99	W 104 17 17.10
	1700.00	0.00	358.88	1700.00	0.00	0.00	0.00	0.00	432251.66	555336.05	N 32 11 17.99	W 104 17 17.10
	1800.00	0.00	358.88	1800.00	0.00	0.00	0.00	0.00	432251.66	555336.05	N 32 11 17.99	W 104 17 17.10
Bell Canyon (Top Delaware) Nudge 2"/100' DLS	1830.00	0.00	358.88	1830.00	0.00	0.00	0.00	0.00	432251.66	555336.05	N 32 11 17.99	W 104 17 17.10
	1900.00	0.00	358.88	1900.00	0.00	0.00	0.00	0.00	432251.66	555336.05	N 32 11 17.99	W 104 17 17.10
	2000.00	2.00	358.88	1999.98	-0.04	1.74	-0.03	2.00	432253.40	555336.02	N 32 11 18.00	W 104 17 17.10
	2100.00	4.00	358.88	2099.84	-0.16	6.98	-0.14	2.00	432258.64	555335.91	N 32 11 18.05	W 104 17 17.10
	2200.00	6.00	358.88	2199.45	-0.35	15.69	-0.31	2.00	432267.35	555335.74	N 32 11 18.14	W 104 17 17.10
	2300.00	8.00	358.88	2298.70	-0.62	27.87	-0.55	2.00	432279.53	555335.50	N 32 11 18.26	W 104 17 17.10
	2400.00	10.00	358.88	2397.47	-0.97	43.51	-0.85	2.00	432295.17	555335.20	N 32 11 18.42	W 104 17 17.11
Hold Nudge	2491.48	11.83	358.88	2487.28	-1.36	60.83	-1.19	2.00	432312.49	555334.86	N 32 11 18.59	W 104 17 17.11
	2500.00	11.83	358.88	2495.63	-1.40	62.58	-1.22	0.00	432314.23	555334.83	N 32 11 18.60	W 104 17 17.11
	2600.00	11.83	358.88	2593.50	-1.85	83.07	-1.63	0.00	432334.73	555334.42	N 32 11 18.81	W 104 17 17.11
	2700.00	11.83	358.88	2691.38	-2.31	103.57	-2.03	0.00	432355.22	555334.02	N 32 11 19.01	W 104 17 17.12
Cherry Canyon	2798.72	11.83	358.88	2788.00	-2.76	123.80	-2.42	0.00	432375.45	555333.63	N 32 11 19.21	W 104 17 17.12
	2800.00	11.83	358.88	2789.25	-2.77	124.07	-2.43	0.00	432375.71	555333.62	N 32 11 19.21	W 104 17 17.12
	2900.00	11.83	358.88	2887.13	-3.23	144.56	-2.83	0.00	432396.21	555333.22	N 32 11 19.42	W 104 17 17.13
	3000.00	11.83	358.88	2985.01	-3.68	165.06	-3.23	0.00	432416.70	555332.82	N 32 11 19.62	W 104 17 17.13
	3100.00	11.83	358.88	3082.88	-4.14	185.55	-3.63	0.00	432437.20	555332.42	N 32 11 19.82	W 104 17 17.14
	3200.00	11.83	358.88	3180.76	-4.60	206.05	-4.03	0.00	432457.69	555332.02	N 32 11 20.02	W 104 17 17.14
	3300.00	11.83	358.88	3278.64	-5.06	226.55	-4.43	0.00	432478.19	555331.62	N 32 11 20.23	W 104 17 17.15
	3400.00	11.83	358.88	3376.51	-5.52	247.04	-4.83	0.00	432498.68	555331.22	N 32 11 20.43	W 104 17 17.15
	3500.00	11.83	358.88	3474.39	-5.97	267.54	-5.24	0.00	432519.17	555330.82	N 32 11 20.63	W 104 17 17.16
	3600.00	11.83	358.88	3572.26	-6.43	288.03	-5.64	0.00	432539.67	555330.41	N 32 11 20.84	W 104 17 17.16
	3700.00	11.83	358.88	3670.14	-6.89	308.53	-6.04	0.00	432560.16	555330.01	N 32 11 21.04	W 104 17 17.16
	3800.00	11.83	358.88	3768.02	-7.35	329.03	-6.44	0.00	432580.66	555329.61	N 32 11 21.24	W 104 17 17.17
	3900.00	11.83	358.88	3865.89	-7.80	349.52	-6.84	0.00	432601.15	555329.21	N 32 11 21.44	W 104 17 17.17
	4000.00	11.83	358.88	3963.77	-8.26	370.02	-7.24	0.00	432621.64	555328.81	N 32 11 21.65	W 104 17 17.18
Brushy Canyon	4030.89	11.83	358.88	3994.00	-8.40	376.35	-7.36	0.00	432627.98	555328.69	N 32 11 21.71	W 104 17 17.18
	4100.00	11.83	358.88	4061.64	-8.72	390.52	-7.64	0.00	432642.14	555328.41	N 32 11 21.85	W 104 17 17.18
	4200.00	11.83	358.88	4159.52	-9.18	411.01	-8.04	0.00	432662.63	555328.01	N 32 11 22.05	W 104 17 17.19
	4300.00	11.83	358.88	4257.40	-9.63	431.51	-8.44	0.00	432683.13	555327.61	N 32 11 22.26	W 104 17 17.19
	4400.00	11.83	358.88	4355.27	-10.09	452.00	-8.84	0.00	432703.62	555327.21	N 32 11 22.46	W 104 17 17.20
	4500.00	11.83	358.88	4453.15	-10.55	472.50	-9.25	0.00	432724.12	555326.81	N 32 11 22.66	W 104 17 17.20
	4600.00	11.83	358.88	4551.03	-11.01	493.00	-9.65	0.00	432744.61	555326.40	N 32 11 22.86	W 104 17 17.21
	4700.00	11.83	358.88	4648.90	-11.46	513.49	-10.05	0.00	432765.10	555326.00	N 32 11 23.07	W 104 17 17.21
	4800.00	11.83	358.88	4746.78	-11.92	533.99	-10.45	0.00	432785.60	555325.60	N 32 11 23.27	W 104 17 17.22
	4900.00	11.83	358.88	4844.65	-12.38	554.48	-10.85	0.00	432806.09	555325.20	N 32 11 23.47	W 104 17 17.22
	5000.00	11.83	358.88	4942.53	-12.84	574.98	-11.25	0.00	432826.59	555324.80	N 32 11 23.67	W 104 17 17.22
	5100.00	11.83	358.88	5040.41	-13.29	595.48	-11.65	0.00	432847.08	555324.40	N 32 11 23.88	W 104 17 17.23
	5200.00	11.83	358.88	5138.28	-13.75	615.97	-12.05	0.00	432867.58	555324.00	N 32 11 24.08	W 104 17 17.23
	5300.00	11.83	358.88	5236.16	-14.21	636.47	-12.45	0.00	432888.07	555323.60	N 32 11 24.28	W 104 17 17.24
Top Bone Spring	5350.92	11.83	358.88	5286.00	-14.44	646.91	-12.66	0.00	432898.51	555323.39	N 32 11 24.39	W 104 17 17.24
	5400.00	11.83	358.88	5334.04	-14.67	656.96	-12.86	0.00	432908.56	555323.20	N 32 11 24.49	W 104 17 17.24
	5500.00	11.83	358.88	5431.91	-15.12	677.46	-13.26	0.00	432929.06	555322.79	N 32 11 24.69	W 104 17 17.25
	5600.00	11.83	358.88	5529.79	-15.58	697.96	-13.66	0.00	432949.55	555322.39	N 32 11 24.89	W 104 17 17.25
	5700.00	11.83	358.88	5627.66	-16.04	718.45	-14.06	0.00	432970.05	555321.99	N 32 11 25.09	W 104 17 17.26
	5800.00	11.83	358.88	5725.54	-16.50	738.95	-14.46	0.00	432990.54	555321.59	N 32 11 25.30	W 104 17 17.26

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 ° ' ")
	5900.00	11.83	358.88	5823.42	-16.95	759.44	-14.86	0.00	433011.03	555321.19	N 32 11 25.50	W 104 17 17.27
	6000.00	11.83	358.88	5921.29	-17.41	779.94	-15.26	0.00	433031.53	555320.79	N 32 11 25.70	W 104 17 17.27
	6100.00	11.83	358.88	6019.17	-17.87	800.44	-15.66	0.00	433052.02	555320.39	N 32 11 25.91	W 104 17 17.27
Drop to Vertical 2"/100' DLS	6182.59	11.83	358.88	6100.00	-18.25	817.36	-15.99	0.00	433068.95	555320.06	N 32 11 26.07	W 104 17 17.28
	6200.00	11.48	358.88	6117.06	-18.33	820.88	-16.06	2.00	433072.47	555319.99	N 32 11 26.11	W 104 17 17.28
	6300.00	9.48	358.88	6215.38	-18.73	839.07	-16.42	2.00	433090.65	555319.63	N 32 11 26.29	W 104 17 17.28
Top 1st BSPG SS	6306.71	9.35	358.88	6222.00	-18.76	840.17	-16.44	2.00	433091.75	555319.61	N 32 11 26.30	W 104 17 17.28
	6400.00	7.48	358.88	6314.28	-19.06	853.81	-16.71	2.00	433105.39	555319.34	N 32 11 26.43	W 104 17 17.29
	6500.00	5.48	358.88	6413.64	-19.31	865.10	-16.93	2.00	433116.68	555319.12	N 32 11 26.55	W 104 17 17.29
	6600.00	3.48	358.88	6513.33	-19.49	872.91	-17.08	2.00	433124.49	555318.97	N 32 11 26.62	W 104 17 17.29
Top 2nd BSPG SS	6633.72	2.81	358.88	6547.00	-19.53	874.76	-17.12	2.00	433126.34	555318.93	N 32 11 26.64	W 104 17 17.29
	6700.00	1.48	358.88	6613.23	-19.58	877.24	-17.17	2.00	433128.82	555318.89	N 32 11 26.67	W 104 17 17.29
Hold Vertical	6774.06	0.00	358.88	6687.28	-19.61	878.19	-17.18	2.00	433129.77	555318.87	N 32 11 26.68	W 104 17 17.29
	6800.00	0.00	358.88	6713.22	-19.61	878.19	-17.18	0.00	433129.77	555318.87	N 32 11 26.68	W 104 17 17.29
	6900.00	0.00	358.88	6813.22	-19.61	878.19	-17.18	0.00	433129.77	555318.87	N 32 11 26.68	W 104 17 17.29
	7000.00	0.00	358.88	6913.22	-19.61	878.19	-17.18	0.00	433129.77	555318.87	N 32 11 26.68	W 104 17 17.29
	7100.00	0.00	358.88	7013.22	-19.61	878.19	-17.18	0.00	433129.77	555318.87	N 32 11 26.68	W 104 17 17.29
	7200.00	0.00	358.88	7113.22	-19.61	878.19	-17.18	0.00	433129.77	555318.87	N 32 11 26.68	W 104 17 17.29
	7300.00	0.00	358.88	7213.22	-19.61	878.19	-17.18	0.00	433129.77	555318.87	N 32 11 26.68	W 104 17 17.29
	7400.00	0.00	358.88	7313.22	-19.61	878.19	-17.18	0.00	433129.77	555318.87	N 32 11 26.68	W 104 17 17.29
	7500.00	0.00	358.88	7413.22	-19.61	878.19	-17.18	0.00	433129.77	555318.87	N 32 11 26.68	W 104 17 17.29
	7600.00	0.00	358.88	7513.22	-19.61	878.19	-17.18	0.00	433129.77	555318.87	N 32 11 26.68	W 104 17 17.29
	7700.00	0.00	358.88	7613.22	-19.61	878.19	-17.18	0.00	433129.77	555318.87	N 32 11 26.68	W 104 17 17.29
	7800.00	0.00	358.88	7713.22	-19.61	878.19	-17.18	0.00	433129.77	555318.87	N 32 11 26.68	W 104 17 17.29
	7900.00	0.00	358.88	7813.22	-19.61	878.19	-17.18	0.00	433129.77	555318.87	N 32 11 26.68	W 104 17 17.29
	8000.00	0.00	358.88	7913.22	-19.61	878.19	-17.18	0.00	433129.77	555318.87	N 32 11 26.68	W 104 17 17.29
	8100.00	0.00	358.88	8013.22	-19.61	878.19	-17.18	0.00	433129.77	555318.87	N 32 11 26.68	W 104 17 17.29
Top 3rd BSPG SS	8165.78	0.00	358.88	8079.00	-19.61	878.19	-17.18	0.00	433129.77	555318.87	N 32 11 26.68	W 104 17 17.29
KOP - Build 12"/100' DLS	8186.09	0.00	358.88	8099.32	-19.61	878.19	-17.18	0.00	433129.77	555318.87	N 32 11 26.68	W 104 17 17.29
	8200.00	1.67	90.16	8113.22	-19.40	878.19	-16.98	12.00	433129.77	555319.07	N 32 11 26.68	W 104 17 17.29
	8300.00	13.67	90.16	8212.14	-6.08	878.16	-3.66	12.00	433129.74	555332.39	N 32 11 26.67	W 104 17 17.13
	8400.00	25.67	90.16	8306.14	27.51	878.06	29.93	12.00	433129.64	555365.98	N 32 11 26.67	W 104 17 16.74
	8500.00	37.67	90.16	8391.09	79.92	877.92	82.34	12.00	433129.50	555418.38	N 32 11 26.67	W 104 17 16.13
Top Wolfcamp	8528.34	41.07	90.16	8413.00	97.89	877.87	100.32	12.00	433129.45	555436.36	N 32 11 26.67	W 104 17 15.92
	8600.00	49.67	90.16	8463.29	148.84	877.73	151.26	12.00	433129.31	555487.30	N 32 11 26.67	W 104 17 15.33
Top Wolfcamp "Y" SS	8623.41	52.48	90.16	8478.00	167.05	877.68	169.47	12.00	433129.26	555505.50	N 32 11 26.67	W 104 17 15.12
	8700.00	61.67	90.16	8519.59	231.27	877.50	233.69	12.00	433129.08	555569.72	N 32 11 26.67	W 104 17 14.37
Top Wolfcamp "Z" SS	8781.59	71.46	90.16	8552.00	306.04	877.30	308.46	12.00	433128.88	555644.48	N 32 11 26.66	W 104 17 13.50
	8800.00	73.67	90.16	8557.52	323.60	877.25	326.02	12.00	433128.83	555662.04	N 32 11 26.66	W 104 17 13.30
Build 4"/100' DLS	8811.09	75.00	90.16	8560.51	334.28	877.22	336.70	12.00	433128.80	555672.72	N 32 11 26.66	W 104 17 13.17
	8900.00	78.56	90.16	8580.84	420.82	876.98	423.24	4.00	433128.56	555759.25	N 32 11 26.66	W 104 17 12.17
	9000.00	82.56	90.16	8597.25	519.44	876.71	521.86	4.00	433128.29	555857.86	N 32 11 26.66	W 104 17 11.02
	9100.00	86.56	90.16	8606.73	618.97	876.43	621.39	4.00	433128.01	555957.38	N 32 11 26.66	W 104 17 9.86
Wolfcamp "Z" SS Target Landing Point	9155.87	88.79	90.16	8609.00	674.79	876.28	677.21	4.00	433127.86	556013.19	N 32 11 26.65	W 104 17 9.21
	9200.00	88.79	90.16	8609.93	718.91	876.16	721.33	0.00	433127.74	556057.31	N 32 11 26.65	W 104 17 8.70
	9300.00	88.79	90.16	8612.04	818.89	875.88	821.31	0.00	433127.46	556157.28	N 32 11 26.65	W 104 17 7.53
	9400.00	88.79	90.16	8614.15	918.87	875.61	921.28	0.00	433127.19	556257.25	N 32 11 26.65	W 104 17 6.37
	9500.00	88.79	90.16	8616.26	1018.84	875.33	1021.26	0.00	433126.91	556357.22	N 32 11 26.64	W 104 17 5.21
	9600.00	88.79	90.16	8618.37	1118.82	875.05	1121.24	0.00	433126.63	556457.19	N 32 11 26.64	W 104 17 4.04
	9700.00	88.79	90.16	8620.48	1218.80	874.78	1221.22	0.00	433126.36	556557.15	N 32 11 26.64	W 104 17 2.88
Base "Z" SS	9724.54	88.79	90.16	8621.00	1243.34	874.71	1245.75	0.00	433126.29	556581.69	N 32 11 26.64	W 104 17 2.60
	9800.00	88.79	90.16	8622.59	1318.78	874.50	1321.19	0.00	433126.08	556657.12	N 32 11 26.63	W 104 17 1.72
	9900.00	88.79	90.16	8624.70	1418.76	874.23	1421.17	0.00	433125.81	556757.09	N 32 11 26.63	W 104 17 0.55
	10000.00	88.79	90.16	8626.81	1518.73	873.95	1521.15	0.00	433125.53	556857.06	N 32 11 26.63	W 104 16 59.39
	10100.00	88.79	90.16	8628.92	1618.71	873.68	1621.13	0.00	433125.26	556957.03	N 32 11 26.62	W 104 16 58.23
	10200.00	88.79	90.16	8631.03	1718.69	873.40	1721.10	0.00	433124.98	557056.99	N 32 11 26.62	W 104 16 57.06
	10300.00	88.79	90.16	8633.14	1818.67	873.12	1821.08	0.00	433124.70	557156.96	N 32 11 26.62	W 104 16 55.90
	10400.00	88.79	90.16	8635.25	1918.64	872.85	1921.06	0.00	433124.43	557256.93	N 32 11 26.61	W 104 16 54.74
	10500.00	88.79	90.16	8637.36	2018.62	872.57	2021.04	0.00	433124.15	557356.90	N 32 11 26.61	W 104 16 53.57
	10600.00	88.79	90.16	8639.47	2118.60	872.30	2121.01	0.00	433123.88	557456.87	N 32 11 26.61	W 104 16 52.41
	10700.00	88.79	90.16	8641.58	2218.58	872.02	2220.99	0.00	433123.60	557556.83	N 32 11 26.60	W 104 16 51.25
	10800.00	88.79	90.16	8643.69	2318.56	871.75	2320.97	0.00	433123.33	557656.80	N 32 11 26.60	W 104 16 50.08
	10900.00	88.79	90.16	8645.80	2418.53	871.47	2420.95	0.00	433123.05	557756.77	N 32 11 26.60	W 104 16 48.92
	11000.00	88.79	90.16	8647.91	2518.51	871.19	2520.92	0.00	433122.77	557856.74	N 32 11 26.59	W 104 16 47.76
	11100.00	88.79	90.16	8650.02	2618.49	870.92	2620.90	0.00	433122.50	557956.71	N 32 11 26.59	W 104 16 46.59
	11200.00	88.79	90.16	8652.13	2718.47	870.64	2720.88	0.00	433122.22	558056.68	N 32 11 26.59	W 104 16 45.43
	11300.00	88.79	90.16	8654.24	2818.44	870.37	2820.85	0.00	433121.95	558156.64	N 32 11 26.58	W 104 16 44.27
	11400.00	88.79	90.16	8656.35	2918.42	870.09	2920.83	0.00	433121.67	558256.61	N 32 11 26.58	W 104 16 43.10
	11500.00	88.79	90.16	8658.47	3018.40	869.82	3020.81	0.00	433121.39	558356.58	N 32 11 26.58	W 104 16 41.94
	11600.00	88.79	90.16	8660.58	3118.38	869.54	3120.79	0.00	433121.12	558456.55	N 32 11 26.58	W 104 16 40.78
	11700.00	88.79	90.16	8662.69	3218.35	869.26	3220.76	0.00	433120.84	558556.52	N 32 11 26.57	W 104 16 39.61
	11800.00	88.79	90.16	8664.80	3318.33	868.99	3320.74	0.00	433120.57	558656.48	N 32 11 26.57	W 104 16 38.45
	11900.00	88.79	90.16	8666.91	3418.31	868.71	3420.72	0.00	433120.29	558756.45	N 32 11 26.57	W 104 16 37.29
	12000.00	88.79	90.16	8669.02	3518.29	868.44	3520.70	0.00	433120.02	558856.42	N 32 11 26.56	W 104 16 36.12
	12100.00	88.79	90.16	8671.13	3618.27	868.16	3620.67	0.00	433119.74	558956.39	N 32 11 26.56	W 104 16 34.96
	12200.00	88.79	90.16	8673.24	3718.2							

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 ° ' ")
	13600.00	88.79	90.16	8702.78	5117.93	864.02	5120.33	0.00	433115.60	560455.91	N 32 11 26.51	W 104 16 17.51
	13700.00	88.79	90.16	8704.89	5217.91	863.75	5220.31	0.00	433115.33	560555.88	N 32 11 26.51	W 104 16 16.35
	13800.00	88.79	90.16	8707.00	5317.89	863.47	5320.29	0.00	433115.05	560655.85	N 32 11 26.50	W 104 16 15.18
	13900.00	88.79	90.16	8709.11	5417.86	863.20	5420.27	0.00	433114.78	560755.81	N 32 11 26.50	W 104 16 14.02
	14000.00	88.79	90.16	8711.22	5517.84	862.92	5520.24	0.00	433114.50	560855.78	N 32 11 26.50	W 104 16 12.86
	14100.00	88.79	90.16	8713.33	5617.82	862.65	5620.22	0.00	433114.23	560955.75	N 32 11 26.49	W 104 16 11.69
	14200.00	88.79	90.16	8715.44	5717.80	862.37	5720.20	0.00	433113.95	561055.72	N 32 11 26.49	W 104 16 10.53
	14300.00	88.79	90.16	8717.55	5817.78	862.09	5820.18	0.00	433113.67	561155.69	N 32 11 26.49	W 104 16 9.37
	14400.00	88.79	90.16	8719.66	5917.75	861.82	5920.15	0.00	433113.40	561255.65	N 32 11 26.48	W 104 16 8.20
	14500.00	88.79	90.16	8721.77	6017.73	861.54	6020.13	0.00	433113.12	561355.62	N 32 11 26.48	W 104 16 7.04
	14600.00	88.79	90.16	8723.88	6117.71	861.27	6120.11	0.00	433112.85	561455.59	N 32 11 26.48	W 104 16 5.88
	14700.00	88.79	90.16	8725.99	6217.69	860.99	6220.08	0.00	433112.57	561555.56	N 32 11 26.47	W 104 16 4.71
	14800.00	88.79	90.16	8728.10	6317.66	860.72	6320.06	0.00	433112.30	561655.53	N 32 11 26.47	W 104 16 3.55
	14900.00	88.79	90.16	8730.21	6417.64	860.44	6420.04	0.00	433112.02	561755.49	N 32 11 26.47	W 104 16 2.39
	15000.00	88.79	90.16	8732.32	6517.62	860.16	6520.02	0.00	433111.74	561855.46	N 32 11 26.46	W 104 16 1.22
	15100.00	88.79	90.16	8734.43	6617.60	859.89	6619.99	0.00	433111.47	561955.43	N 32 11 26.46	W 104 16 0.06
	15200.00	88.79	90.16	8736.54	6717.58	859.61	6719.97	0.00	433111.19	562055.40	N 32 11 26.46	W 104 15 58.90
	15300.00	88.79	90.16	8738.65	6817.55	859.34	6819.95	0.00	433110.92	562155.37	N 32 11 26.45	W 104 15 57.73
	15400.00	88.79	90.16	8740.76	6917.53	859.06	6919.93	0.00	433110.64	562255.33	N 32 11 26.45	W 104 15 56.57
	15500.00	88.79	90.16	8742.87	7017.51	858.79	7019.90	0.00	433110.37	562355.30	N 32 11 26.45	W 104 15 55.41
	15600.00	88.79	90.16	8744.98	7117.49	858.51	7119.88	0.00	433110.09	562455.27	N 32 11 26.44	W 104 15 54.24
	15700.00	88.79	90.16	8747.09	7217.46	858.23	7219.86	0.00	433109.81	562555.24	N 32 11 26.44	W 104 15 53.08
	15800.00	88.79	90.16	8749.20	7317.44	857.96	7319.84	0.00	433109.54	562655.21	N 32 11 26.44	W 104 15 51.92
	15900.00	88.79	90.16	8751.31	7417.42	857.68	7419.81	0.00	433109.26	562755.18	N 32 11 26.43	W 104 15 50.75
	16000.00	88.79	90.16	8753.42	7517.40	857.41	7519.79	0.00	433108.99	562855.14	N 32 11 26.43	W 104 15 49.59
	16100.00	88.79	90.16	8755.53	7617.37	857.13	7619.77	0.00	433108.71	562955.11	N 32 11 26.43	W 104 15 48.43
	16200.00	88.79	90.16	8757.64	7717.35	856.86	7719.74	0.00	433108.44	563055.08	N 32 11 26.42	W 104 15 47.26
	16300.00	88.79	90.16	8759.75	7817.33	856.58	7819.72	0.00	433108.16	563155.05	N 32 11 26.42	W 104 15 46.10
	16400.00	88.79	90.16	8761.86	7917.31	856.30	7919.70	0.00	433107.88	563255.02	N 32 11 26.42	W 104 15 44.93
	16500.00	88.79	90.16	8763.97	8017.29	856.03	8019.68	0.00	433107.61	563354.98	N 32 11 26.41	W 104 15 43.77
	16600.00	88.79	90.16	8766.08	8117.26	855.75	8119.65	0.00	433107.33	563454.95	N 32 11 26.41	W 104 15 42.61
	16700.00	88.79	90.16	8768.19	8217.24	855.48	8219.63	0.00	433107.06	563554.92	N 32 11 26.41	W 104 15 41.44
	16800.00	88.79	90.16	8770.30	8317.22	855.20	8319.61	0.00	433106.78	563654.89	N 32 11 26.40	W 104 15 40.28
	16900.00	88.79	90.16	8772.41	8417.20	854.93	8419.59	0.00	433106.51	563754.86	N 32 11 26.40	W 104 15 39.12
	17000.00	88.79	90.16	8774.52	8517.17	854.65	8519.56	0.00	433106.23	563854.82	N 32 11 26.40	W 104 15 37.95
	17100.00	88.79	90.16	8776.63	8617.15	854.37	8619.54	0.00	433105.95	563954.79	N 32 11 26.39	W 104 15 36.79
	17200.00	88.79	90.16	8778.74	8717.13	854.10	8719.52	0.00	433105.68	564054.76	N 32 11 26.39	W 104 15 35.63
	17300.00	88.79	90.16	8780.85	8817.11	853.82	8819.50	0.00	433105.40	564154.73	N 32 11 26.39	W 104 15 34.46
	17400.00	88.79	90.16	8782.96	8917.09	853.55	8919.47	0.00	433105.13	564254.70	N 32 11 26.38	W 104 15 33.30
	17500.00	88.79	90.16	8785.07	9017.06	853.27	9019.45	0.00	433104.85	564354.66	N 32 11 26.38	W 104 15 32.14
	17600.00	88.79	90.16	8787.18	9117.04	852.99	9119.43	0.00	433104.58	564454.63	N 32 11 26.38	W 104 15 30.97
	17700.00	88.79	90.16	8789.30	9217.02	852.72	9219.41	0.00	433104.30	564554.60	N 32 11 26.37	W 104 15 29.81
	17800.00	88.79	90.16	8791.41	9317.00	852.44	9319.38	0.00	433104.02	564654.57	N 32 11 26.37	W 104 15 28.65
	17900.00	88.79	90.16	8793.52	9416.97	852.17	9419.36	0.00	433103.75	564754.54	N 32 11 26.37	W 104 15 27.48
	18000.00	88.79	90.16	8795.63	9516.95	851.89	9519.34	0.00	433103.47	564854.50	N 32 11 26.36	W 104 15 26.32
	18100.00	88.79	90.16	8797.74	9616.93	851.62	9619.31	0.00	433103.20	564954.47	N 32 11 26.36	W 104 15 25.16
	18200.00	88.79	90.16	8799.85	9716.91	851.34	9719.29	0.00	433102.92	565054.44	N 32 11 26.35	W 104 15 23.99
	18300.00	88.79	90.16	8801.96	9816.89	851.06	9819.27	0.00	433102.65	565154.41	N 32 11 26.35	W 104 15 22.83
Cimarex Crawford 27-26 Fee #15H - PBHL [1780' FNL, 330' FEL]	18302.08	88.79	90.16	8802.00	9818.97	851.06	9821.35	0.00	433102.64	565156.49	N 32 11 26.35	W 104 15 22.81

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	26.000	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS-Depth Only	Crawford 27-26 Fee #15H / Cimarex Crawford 27-26 Fee #15H Rev0 RM 21Nov19
	1	26.000	18302.081	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS	Crawford 27-26 Fee #15H / Cimarex Crawford 27-26 Fee



Cimarex Crawford 27-26 Fee #15H Rev0 RM 21Nov19 Proposal Geodetic Report (Def Plan)



Report Date:	November 21, 2019 - 01:36 PM	Survey / DLS Computation:	Minimum Curvature / Lubinski
Client:	Cimarex Energy	Vertical Section Azimuth:	90.158 ° (Grid North)
Field:	NM Eddy County (NAD 83)	Vertical Section Origin:	0.000 ft, 0.000 ft
Structure / Slot:	Cimarex Crawford 27-26 Fee #15H / New Slot	TVD Reference Datum:	RKB
Well:	Crawford 27-26 Fee #15H	TVD Reference Elevation:	3357.500 ft above MSL
Borehole:	Crawford 27-26 Fee #15H	Seabed / Ground Elevation:	3331.500 ft above MSL
UWI / API#:	Unknown / Unknown	Magnetic Declination:	7.253 °
Survey Name:	Cimarex Crawford 27-26 Fee #15H Rev0 RM 21Nov19	Total Gravity Field Strength:	998.4458mgn (9.80665 Based)
Survey Date:	November 21, 2019	Gravity Model:	GARM
Tort / AHD / DDI / ERD Ratio:	112.450 ° / 10716.934 ft / 6.399 / 1.218	Total Magnetic Field Strength:	47749.321 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	Magnetic Dip Angle:	59.801 °
Location Lat / Long:	N 32° 11' 17.98527", W 104° 17' 17.09608"	Declination Date:	November 21, 2019
Location Grid N/E Y/X:	N 432251.660 ftUS, E 555336.050 ftUS	Magnetic Declination Model:	HDGM 2019
CRS Grid Convergence Angle:	0.0241 °	North Reference:	Grid North
Grid Scale Factor:	0.99990932	Grid Convergence Used:	0.0241 °
Version / Patch:	2.10.782.0	Total Corr Mag North->Grid North:	7.2289 °
		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 [2661' FNL, 410' FWL]	0.00	0.00	52.56	0.00	0.00	0.00	0.00	N/A	432251.66	555336.05	N 32 11 17.99	W 104 17 17.10
Nudge 2"/100' DLS	1900.00	0.00	358.88	1900.00	0.00	0.00	0.00	0.00	432251.66	555336.05	N 32 11 17.99	W 104 17 17.10
Hold Nudge	2491.48	11.83	358.88	2487.28	-1.36	60.83	-1.19	2.00	432312.49	555334.86	N 32 11 18.59	W 104 17 17.11
Drop to Vertical 2"/100' DLS	6182.59	11.83	358.88	6100.00	-18.25	817.36	-15.99	0.00	433068.95	555320.06	N 32 11 26.07	W 104 17 17.28
Hold Vertical	6774.06	0.00	358.88	6687.28	-19.61	878.19	-17.18	2.00	433129.77	555318.87	N 32 11 26.68	W 104 17 17.29
KOP - Build 12"/100' DLS	8186.09	0.00	358.88	8099.32	-19.61	878.19	-17.18	0.00	433129.77	555318.87	N 32 11 26.68	W 104 17 17.29
Build 4"/100' DLS	8811.09	75.00	90.16	8560.51	334.28	877.22	336.70	12.00	433128.80	555672.72	N 32 11 26.66	W 104 17 13.17
Landing Point	9155.87	88.79	90.16	8609.00	674.79	876.28	677.21	4.00	433127.86	556013.19	N 32 11 26.65	W 104 17 9.21
Cimarex Crawford 27-26 Fee #15H - PBHL [1780' FNL, 330' FEL]	18302.08	88.79	90.16	8802.00	9818.97	851.06	9821.35	0.00	433102.64	565156.49	N 32 11 26.35	W 104 15 22.81

Survey Type: Def Plan

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

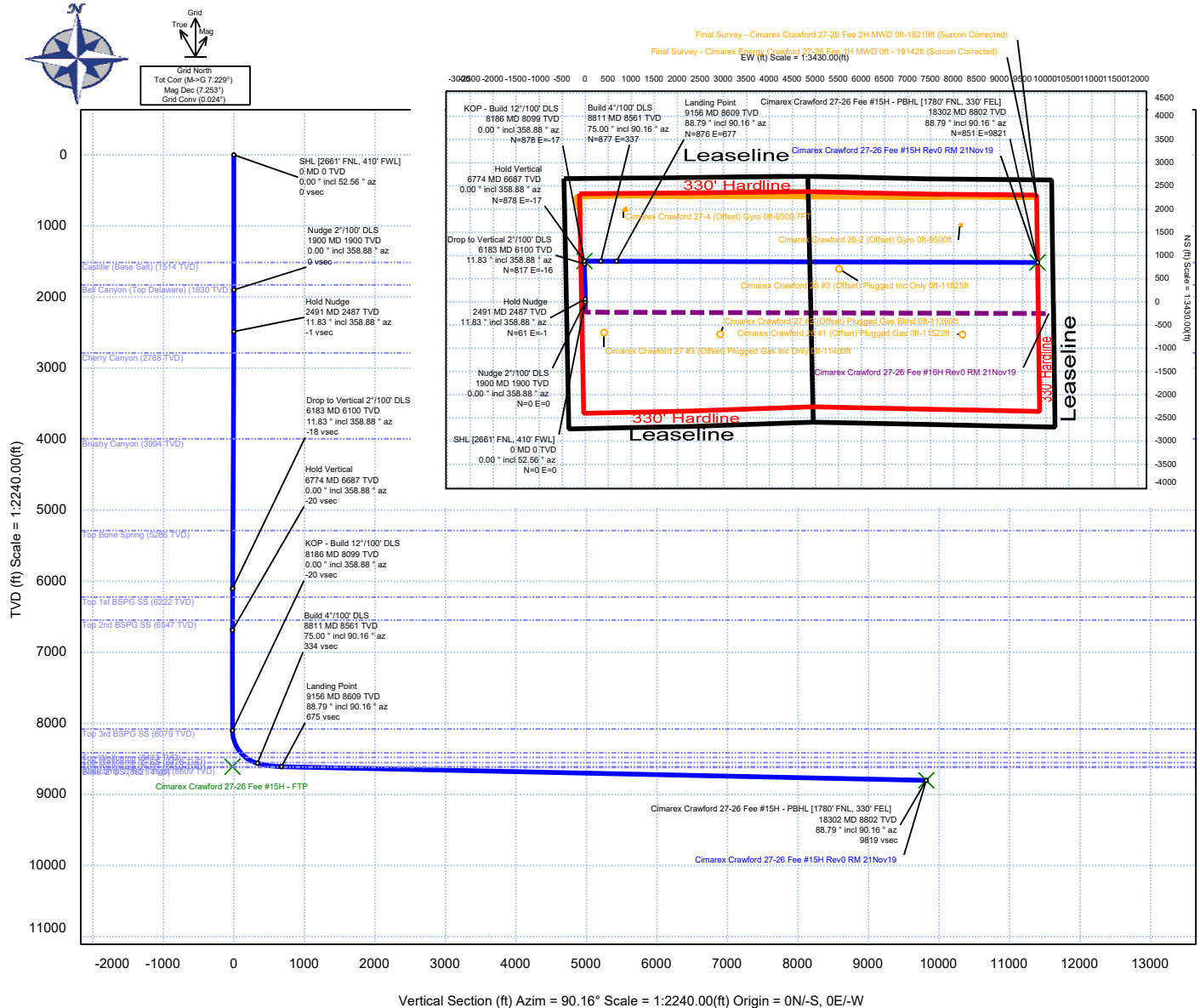
Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	26.000	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS-Depth Only	Crawford 27-26 Fee #15H / Cimarex Crawford 27-26 Fee #15H Rev0 RM 21Nov19
	1	26.000	18302.081	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS	Crawford 27-26 Fee #15H / Cimarex Crawford 27-26 Fee



Cimarex Energy Rev 0



Borehole: Crawford 27-26 Fee #15H	Well: Crawford 27-26 Fee #15H	Field: NM Eddy County (NAD 83)	Structure: Cimarex Crawford 27-26 Fee #15H
Gravity & Magnetic Parameters Model: HDGM 2019 Dip: 59.801° Date: 21-Nov-2019 MagDec: 7.253° FS: 47749.321nT Gravity FS: 998.446mgn (9.80665 Based)		Surface Location NAD83 New Mexico State Plane, Eastern Zone, US Feet Lat: N 32 11 17.99 Northing: 432251.66ftUS Grid Conv: 0.0241° Lon: W 104 17 17.10 Easting: 555336.05ftUS Scale Fact: 0.99990932	
		Miscellaneous Slot: New Slot TVD Ref: RKB(3357.5ft above MSL) Plan: Cimarex Crawford 27-26 Fee #15H Rev0 RM 21Nov19	



Critical Points								
Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL [2661' FNL, 410' FWL]	0.00	0.00	52.56	0.00	0.00	0.00	0.00	
Castile (Base Salt)	1514.00	0.00	358.88	1514.00	0.00	0.00	0.00	0.00
Bell Canyon (Top Delaware)	1830.00	0.00	358.88	1830.00	0.00	0.00	0.00	0.00
Nudge 2"/100' DLS	1900.00	0.00	358.88	1900.00	0.00	0.00	0.00	0.00
Hold Nudge	2491.48	11.83	358.88	2487.28	-1.36	60.83	-1.19	2.00
Cherry Canyon	2798.72	11.83	358.88	2788.00	-2.76	123.80	-2.42	0.00
Brushy Canyon	4030.89	11.83	358.88	3994.00	-8.40	376.35	-7.36	0.00
Top Bone Spring	5350.92	11.83	358.88	5286.00	-14.44	646.91	-12.66	0.00
Drop to Vertical 2"/100' DLS	6182.59	11.83	358.88	6100.00	-18.25	817.36	-15.99	0.00
Top 1st BSPG SS	6306.71	9.35	358.88	6222.00	-18.76	840.17	-16.44	2.00
Top 2nd BSPG SS	6633.72	2.81	358.88	6547.00	-19.53	874.76	-17.12	2.00
Hold Vertical	6774.06	0.00	358.88	6687.28	-19.61	878.19	-17.18	2.00
Top 3rd BSPG SS	8165.78	0.00	358.88	8079.00	-19.61	878.19	-17.18	0.00
KOP - Build 12"/100' DLS	8186.09	0.00	358.88	8099.32	-19.61	878.19	-17.18	0.00
Top Wolfcamp	8528.34	41.07	90.16	8413.00	97.89	877.87	100.32	12.00
Top Wolfcamp 'Y' SS	8623.41	52.48	90.16	8478.00	167.05	877.68	169.47	12.00
Top Wolfcamp 'Z' SS	8781.59	71.46	90.16	8552.00	306.04	877.30	308.46	12.00
Build 4"/100' DLS	8811.09	75.00	90.16	8560.51	334.28	877.22	336.70	12.00
Wolfcamp 'Z' SS Target	9155.86	88.79	90.16	8609.00	674.79	876.28	677.20	4.00
Landing Point	9155.87	88.79	90.16	8609.00	674.79	876.28	677.21	4.00
Base 'Z' SS	9724.54	88.79	90.16	8621.00	1243.34	874.71	1245.75	0.00
Cimarex Crawford 27-26 Fee #15H - PBHL [1780' FNL, 330' FEL]	18302.08	88.79	90.16	8802.00	9818.97	851.06	9821.35	0.00



Cimarex Crawford 27-26 Fee #15H Rev0 RM 21Nov19 Anti-Collision Summary Report

Analysis Date-24hr Time: November 21, 2019 - 13:51
Client: Cimarex Energy
Field: NM Eddy County (NAD 83)
Structure: Cimarex Crawford 27-26 Fee #15H
Slot: New Slot
Well: Crawford 27-26 Fee #15H
Borehole: Crawford 27-26 Fee #15H
Scan MD Range: 0.00ft ~ 18302.08ft

Analysis Method: 3D Least Distance
Reference Trajectory: Cimarex Crawford 27-26 Fee #15H Rev0 RM 21Nov19 (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: 2.10.782.0
Database / Project: US1153APP452.dlr.slb.com/drilling-NM Eddy 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: Not performed!
 Definitive Surveys - Definitive Plans - Definitive surveys exclude definitive plans
 Selection filters:
 - 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 Crawford 26 #3
 (Offset) Plugged Inc Only Off-11825ft (Def Survey)

5560.34	32.81	5559.21	5527.53	N/A	MAS = 10.00 (m)	0.00	0.00						Fail Major
5560.00	32.81	5558.82	5527.19	114422.77	MAS = 10.00 (m)	26.00	26.00						Surface
5559.68	32.81	5558.39	5526.87	35674.15	MAS = 10.00 (m)	90.00	90.00						MinPt-O-SF
5561.58	32.81	5556.65	5528.78	1460.44	MAS = 10.00 (m)	340.00	340.00						MinPts
5557.62	45.02	5527.23	5512.60	189.92	OSF1.50	1010.00	1010.00						MINPT-O-EQU
5528.18	200.44	5394.17	5327.74	41.60	OSF1.50	4080.00	4042.07						MinPt-CtCt
5525.41	268.15	5346.26	5257.26	31.03	OSF1.50	5350.00	5285.10						MinPt-CtCt
5535.28	338.09	5309.51	5197.19	24.64	OSF1.50	6730.00	6643.22						MinPt-CtCt
1477.90	449.02	1176.52	1028.88	4.98	OSF1.50	12530.00	8680.20	OSF<5.00					Enter Alert
446.64	455.49	140.72	-8.85	1.47	OSF1.50	13580.00	8702.36		OSF<1.50				Enter Minor
300.89	460.08	-7.93	-159.19	0.97	OSF1.50	13740.00	8705.73				OSF<1.00		Enter Major
150.43	476.06	-167.31	-325.62	0.47	OSF1.50	14000.00	8711.22					MinPts	
299.75	451.29	-1.49	-151.54	1.00	OSF1.50	14260.00	8716.71				OSF>1.00		Exit Major
445.40	447.71	146.55	-2.31	1.49	OSF1.50	14420.00	8720.08					Exit Minor	
1476.64	446.70	1178.46	1029.94	4.97	OSF1.50	15470.00	8742.24	OSF>5.00					Exit Alert
4303.10	449.02	4003.38	3854.08	14.41	OSF1.50	18302.08	8802.00						TD

Cimarex Crawford 26 #1
 (Offset) Plugged Gas Off-11522ft (Def Survey)

8223.02	32.81	8221.89	8190.22	N/A	MAS = 10.00 (m)	0.00	0.00						Fail Major
8222.73	32.81	8221.55	8189.92	182718.67	MAS = 10.00 (m)	26.00	26.00						Surface
8222.32	549.18	7855.83	7673.15	22.50	OSF1.50	1900.00	1900.00						MinPt-O-SF
8359.05	2508.58	6686.29	5850.47	5.00	OSF1.50	8220.00	8133.19	OSF<5.00					MinPt-CtCt
2701.07	2701.51	897.86	-0.44	1.50	OSF1.50	14470.00	8721.14						Enter Alert
1807.71	2713.08	-2.62	-905.37	1.00	OSF1.50	15760.00	8748.36						Enter Minor
1958.03	2719.62	-255.42	-1161.58	0.86	OSF1.50	16680.00	8767.77				OSF<1.00		Enter Major
1558.09	2719.76	-255.42	-1161.61	0.86	OSF1.50	16690.00	8767.98					MinPts	
1815.96	2723.94	-0.37	-907.98	1.00	OSF1.50	17610.00	8787.40				OSF>1.00		MinPts
2251.10	2725.74	433.56	-474.64	1.24	OSF1.50	18302.08	8802.00						Exit Major
													TD

Cimarex Crawford 27 #2
 (Offset) Plugged Gas Blind Off-11360ft (Def Survey)

3013.52	32.81	3012.39	2980.71	N/A	MAS = 10.00 (m)	0.00	0.00						Fail Major
3013.12	32.81	3011.94	2980.32	61511.48	MAS = 10.00 (m)	26.00	26.00						Surface
3012.95	564.57	2636.19	2448.38	8.02	OSF1.50	1900.00	1900.00						MinPt-O-SF
3061.64	921.05	2447.23	2140.59	4.99	OSF1.50	3050.00	3033.94	OSF<5.00					MinPt-CtCt
2672.64	2674.60	889.07	-1.96	1.50	OSF1.50	9250.00	8610.99						Enter Alert
1786.15	2683.99	-3.70	-897.84	1.00	OSF1.50	10560.00	8638.63				OSF<1.50		Enter Minor
1568.69	2689.94	-224.98	-1121.25	0.87	OSF1.50	11410.00	8656.57						Enter Major
1568.70	2690.02	-225.02	-1121.32	0.87	OSF1.50	11420.00	8656.78					MinPts	
1568.77	2690.09	-225.04	-1121.32	0.87	OSF1.50	11430.00	8656.99					MinPt-O-ADP	
1796.45	2695.89	-1.18	-899.44	1.00	OSF1.50	12290.00	8675.14				OSF>1.00		Enter Major
2698.07	2704.10	894.96	-6.03	1.50	OSF1.50	13610.00	8702.99						Exit Minor
7062.63	2734.59	5239.20	4328.04	3.88	OSF1.50	18302.08	8802.00						TD

Cimarex Crawford 27-26 Fee #15H Rev0 RM 21Nov19 (Def Plan)

20.00	16.25	18.71	3.75	N/A	MAS = 4.95 (m)	0.00	0.00	CtCt<=15m<15.00					Warning Alert
20.00	16.25	18.71	3.74	N/A	MAS = 4.95 (m)	26.00	26.00						Enter Alert
20.00	18.60	7.17	1.39	1.62	OSF1.50	1900.00	1900.00						WRP
20.07	18.76	7.11	1.28	1.61	OSF1.50	1920.00	1920.00						MinPt-CtCt
20.15	18.88	7.13	1.27	1.61	OSF1.50	1930.00	1930.00						MINPT-O-EQU
76.51	24.01	60.08	52.51	4.97	OSF1.50	2470.00	2466.25						MinPts
764.22	35.27	740.28	728.95	33.68	OSF1.50	4840.00	4785.93	OSF>5.00					Exit Alert
1039.45	47.04	1007.66	992.41	34.03	OSF1.50	6182.59	6100.00						MinPt-O-SF
1100.44	56.16	1062.57	1044.28	30.05	OSF1.50	8080.00	7993.22						MINPT-O-EQU
1100.48	56.21	1062.58	1044.27	30.02	OSF1.50	8090.00	8003.22						MinPt-O-ADP
1101.75	56.70	1063.52	1045.04	29.79	OSF1.50	8200.00	8113.22						MinPt-O-SF
1125.47	338.81	899.16	786.66	5.00	OSF1.50	16370.00	8761.23	OSF<5.00					Enter Alert
1126.96	420.34	846.30	706.61	4.03	OSF1.50	18302.08	8802.00						MinPts

Cimarex Crawford 26-2 (Offset)
 Gyro Off-9500ft (Def Survey)

8329.61	32.81	8327.63	8296.80	N/A	MAS = 10.00 (m)	0.00	0.00						Warning Alert
8329.38	32.81	8327.37	8296.58	252543.21	MAS = 10.00 (m)	26.00	26.00						Surface
8329.16	32.81	8327.04	8296.36	58491.30	MAS = 10.00 (m)	90.00	90.00						MinPt-O-SF
8330.78	32.81	8323.38	8297.98	1536.04	MAS = 10.00 (m)	1210.00	1210.00						MinPts
8223.29	45.82	8192.04	8177.46	281.93	OSF1.50	6200.00	6117.06						MINPT-O-EQU
8221.90	45.70	8190.72	8176.20	283.19	OSF1.50	6260.00	6175.98						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		
8195.60	50.61	8161.17	8144.99	253.18		OSF1.50	7940.00	7853.22				MinPt-CtCt	
805.82	245.72	640.31	560.10	4.99		OSF1.50	16460.00	8763.13	OSF<5.00			Enter Alert	
789.77	256.89	617.46	532.88	4.65		OSF1.50	16620.00	8766.51				MinPt-CtCt	
789.84	257.27	617.32	532.56	4.64		OSF1.50	16630.00	8766.72				MINPT-O-EQU	
790.03	257.61	617.32	532.41	4.64		OSF1.50	16640.00	8766.93				MinPt-O-ADP	
792.05	258.57	618.88	533.47	4.62		OSF1.50	16680.00	8767.77				MinPt-O-SF	
841.32	255.15	670.56	586.17	4.97		OSF1.50	16910.00	8772.62	OSF>5.00			Exit Alert	
1858.18	154.73	1754.36	1703.45	18.23		OSF1.50	18302.08	8802.00				TD	

Final Survey - Cimarex
Crawford 27-26 Fee 2H MWD
0ft-18219ft (Surcon Corrected)
(Def Survey)

												Warning Alert	
1882.33	32.81	1881.26	1849.52	N/A		MAS = 10.00 (m)	0.00	0.00				MinPts	
1882.33	32.81	1881.16	1849.52	49403.84		MAS = 10.00 (m)	26.00	26.00				WRP	
1872.33	32.81	1865.15	1839.53	309.42		MAS = 10.00 (m)	1350.00	1350.00				MinPts	
1872.40	32.81	1865.10	1839.60	303.46		MAS = 10.00 (m)	1380.00	1380.00				MINPT-O-EQU	
1338.09	45.91	1306.94	1292.18	45.27		OSF1.50	6240.00	6156.31				MinPt-O-SF	
1317.46	44.41	1287.30	1273.05	46.17		OSF1.50	6570.00	6483.39				MinPts	
1317.44	44.36	1287.32	1273.09	46.22		OSF1.50	6580.00	6493.37				MinPt-CtCt	
1386.00	51.81	1350.95	1334.20	41.31		OSF1.50	8200.00	8113.22				MinPts	
1386.20	51.85	1351.12	1334.35	41.28		OSF1.50	8280.00	8192.62				MinPt-O-SF	
1383.22	52.43	1347.76	1330.79	40.72		OSF1.50	8480.00	8375.01				MinPt-CtCt	
1383.24	52.48	1347.74	1330.76	40.68		OSF1.50	8490.00	8383.11				MINPT-O-EQU	
1383.29	52.53	1347.78	1330.78	40.64		OSF1.50	8500.00	8391.09				MinPt-O-ADP	
1406.18	62.54	1364.00	1343.64	34.49		OSF1.50	9260.00	8611.20				MINPT-O-EQU	
1410.75	72.55	1361.90	1338.20	29.73		OSF1.50	9650.00	8619.43				MINPT-O-EQU	
1396.78	123.29	1314.10	1273.49	17.18		OSF1.50	11090.00	8649.81				MinPt-CtCt	
1412.00	158.62	1305.77	1253.38	13.46		OSF1.50	11990.00	8668.80				MINPT-O-EQU	
1402.54	193.84	1272.83	1208.70	10.92		OSF1.50	12840.00	8686.74				MinPt-CtCt	
1402.80	205.44	1265.35	1197.36	10.30		OSF1.50	13120.00	8692.65				MinPt-CtCt	
1399.29	243.32	1236.59	1155.97	8.67		OSF1.50	14030.00	8711.85				MinPt-CtCt	
1399.32	323.08	1183.44	1076.24	6.52		OSF1.50	15930.00	8751.95				MinPt-CtCt	
1403.08	356.15	1165.16	1046.93	5.93		OSF1.50	16710.00	8768.40				MinPt-CtCt	
1397.90	407.19	1125.96	990.72	5.16		OSF1.50	17910.00	8793.73				MinPt-CtCt	
1405.41	422.87	1123.01	982.54	5.00		OSF1.50	18290.00	8801.75	OSF<5.00			Enter Alert	
1405.71	423.38	1122.97	982.33	4.99		OSF1.50	18302.08	8802.00				MinPts	

Cimarex Crawford 27-#3
(Offset) Plugged Gas Inc Only
0ft-11400ft (Def Survey)

												Pass	
802.83	32.81	801.70	770.02	N/A		MAS = 10.00 (m)	0.00	0.00				Surface	
802.05	32.81	800.83	769.25	8718.17		MAS = 10.00 (m)	20.00	20.00				MinPt-O-SF	
801.92	32.81	800.70	769.11	9367.86		MAS = 10.00 (m)	26.00	26.00				WRP	
801.78	32.81	800.48	768.97	4916.50		MAS = 10.00 (m)	50.00	50.00				MinPts	
801.15	44.06	771.40	757.09	27.95		OSF1.50	930.00	930.00				MinPt-CtCt	
803.18	75.16	752.70	728.02	16.25		OSF1.50	1530.00	1530.00				MinPt-CtCt	
804.34	96.41	739.69	707.93	12.65		OSF1.50	1930.00	1930.00				MinPt-CtCt	
806.08	102.13	737.61	703.95	11.95		OSF1.50	2040.00	2039.94				MINPT-O-EQU	
808.18	104.63	738.06	703.56	11.70		OSF1.50	2090.00	2089.86				MinPt-O-ADP	
1437.68	281.62	1249.56	1156.06	7.68		OSF1.50	5530.00	5461.27				MinPt-O-SF	
1561.58	441.45	1266.88	1120.11	5.32		OSF1.50	8900.00	8580.84				MinPt-CtCt	
1561.59	441.56	1266.84	1120.03	5.31		OSF1.50	8910.00	8582.79				MINPT-O-EQU	
1561.69	441.66	1266.81	1120.02	5.31		OSF1.50	8920.00	8584.67				MinPt-O-ADP	
1562.33	441.94	1267.32	1120.38	5.31		OSF1.50	8950.00	8589.91				MinPt-O-SF	
9523.66	452.61	9221.55	9071.05	31.64		OSF1.50	18302.08	8802.00				TD	

Cimarex Crawford 27-4 (Offset)
Gyro 0ft-9500.7FT (Def Survey)

												Pass	
2201.98	32.81	2200.00	2169.17	N/A		MAS = 10.00 (m)	0.00	0.00				Surface	
2201.92	32.81	2199.91	2169.11	81291.93		MAS = 10.00 (m)	26.00	26.00				WRP	
2193.38	32.81	2186.06	2160.57	410.48		MAS = 10.00 (m)	1000.00	1000.00				MinPts	
2193.71	32.81	2185.87	2160.90	373.75		MAS = 10.00 (m)	1120.00	1120.00				MINPT-O-EQU	
2194.01	32.81	2185.86	2161.20	355.39		MAS = 10.00 (m)	1180.00	1180.00				MINPT-O-EQU	
1441.12	48.11	1408.09	1393.01	47.71		OSF1.50	6480.00	6393.74				MinPt-O-SF	
1065.19	63.92	1021.52	1001.28	26.23		OSF1.50	9320.00	8612.46				MinPt-CtCt	
1065.22	64.04	1021.47	1001.18	26.17		OSF1.50	9330.00	8612.67				MINPT-O-EQU	
1065.34	64.16	1021.52	1001.18	26.11		OSF1.50	9340.00	8612.89				MinPt-O-ADP	
1095.99	67.23	1050.25	1028.78	25.43		OSF1.50	9580.00	8617.95				MinPt-O-SF	
9041.15	75.03	8990.47	8966.12	185.60		OSF1.50	18302.08	8802.00				TD	

Final Survey - Cimarex Energy
Crawford 27-26 Fee 1H MWD
0ft - 19142ft (Surcon Corrected)
(Def Survey)

												Pass	
1902.32	32.81	1901.19	1869.51	N/A		MAS = 10.00 (m)	0.00	0.00				MinPts	
1902.34	32.81	1901.17	1869.53	52421.21		MAS = 10.00 (m)	26.00	26.00				WRP	
1902.85	32.81	1900.99	1870.05	2599.47		MAS = 10.00 (m)	200.00	200.00				MINPT-O-EQU	
1888.53	32.81	1881.10	1855.72	299.96		MAS = 10.00 (m)	1360.00	1360.00				MinPts	
1888.56	32.81	1881.07	1855.75	296.91		MAS = 10.00 (m)	1380.00	1380.00				MINPT-O-EQU	
1400.52	46.20	1369.19	1354.32	47.03		OSF1.50	6200.00	6117.06				MinPt-O-SF	
1392.49	45.94	1361.33	1346.55	47.04		OSF1.50	6260.00	6175.98				MinPt-O-SF	
1363.31	43.81	1333.55	1319.49	48.43		OSF1.50	6710.00	6623.23				MinPt-O-ADP	
1363.25	43.76	1333.54	1319.50	48.50		OSF1.50	6720.00	6633.22				MINPT-O-EQU	
1363.23	43.70	1333.55	1319.53	48.56		OSF1.50	6730.00	6643.22				MinPt-CtCt	
1351.23	50.00	1317.34	1301.23	41.88		OSF1.50	7870.00	7783.22				MinPt-CtCt	
1351.51	50.63	1317.21	1300.89	41.36		OSF1.50	7980.00	7893.22				MINPT-O-EQU	
1351.66	50.80	1317.24	1300.86	41.22		OSF1.50	8010.00	7923.22				MinPt-O-ADP	
1353.05	51.80	1317.96	1301.25	40.43		OSF1.50	8186.09	8099.32				MinPt-O-ADP	
1353.15	51.84	1318.03	1301.30	40.43		OSF1.50	8200.00	8113.22				MinPt-O-SF	
1564.39	65.37	1520.49	1499.02	36.42		OSF1.50	9850.00	8623.65				MinPt-CtCt	
1564.18	71.83	1515.96	1492.35	33.10		OSF1.50	10060.00	8628.08				MinPt-CtCt	
1552.73	88.02	1493.72	1464.71	26.74		OSF1.50	10540.00	8638.21				MinPt-CtCt	
1554.59	94.14	1491.50	1460.45	25.02		OSF1.50	10720.00	8642.01				MINPT-O-EQU	
1562.48	118.04	1483.45	1444.44	20.01		OSF1.50	11360.00	8655.51				MinPt-CtCt	
1548.23	140.45	1454.26	1407.77	16.64		OSF1.50	11940.00	8667.75				MinPt-CtCt	
1550.12	147.56	1451.43	1402.57	15.85		OSF1.50	12130.00	8671.76				MINPT-O-EQU	
1559.50	171.45	1444.87	1388.05	13.71		OSF1.50	12730.00	8684.42				MinPt-CtCt	
1563.23	186.76	1438.40	1376.48	12.61		OSF1.50	13120.00	8692.65				MinPt-CtCt	
1562.89	195.81	1432.02	1367.08	12.03		OSF1.50	13350.00	8697.50				MinPt-CtCt	
1563.84	198.98	1430.88	1364.86	11.84		OSF1.50	13440.00	8699.40				MINPT-O-EQU	

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		
1564.97	200.31	1431.11	1364.66	11.77		OSF1.50	13480.00	8700.25				MinPt-O-ADP	
1570.83	206.11	1433.10	1364.72	11.48		OSF1.50	13630.00	8703.41				MINPT-O-EQU	
1567.98	225.69	1417.19	1342.28	10.46		OSF1.50	14130.00	8713.96				MinPt-CtCt	
1505.93	235.38	1408.69	1330.56	10.01		OSF1.50	14380.00	8719.24				MinPt-CtCt	
1565.10	242.18	1403.41	1323.01	9.73		OSF1.50	14550.00	8722.82				MinPt-CtCt	
1568.97	251.59	1400.91	1317.38	9.39		OSF1.50	14800.00	8728.10				MINPT-O-EQU	
1566.17	269.74	1386.02	1296.43	8.74		OSF1.50	15250.00	8737.60				MinPt-CtCt	
1569.10	278.83	1382.88	1290.27	8.47		OSF1.50	15490.00	8742.66				MINPT-O-EQU	
1574.71	292.56	1379.34	1282.15	8.10		OSF1.50	15840.00	8750.05				MINPT-O-EQU	
1576.11	294.23	1379.63	1281.88	8.06		OSF1.50	15890.00	8751.10				MinPt-O-ADP	
1596.82	330.70	1376.03	1266.12	7.26		OSF1.50	16790.00	8770.09				MinPt-CtCt	
1599.32	342.28	1370.80	1257.04	7.02		OSF1.50	17090.00	8776.42				MINPT-O-EQU	
1599.96	359.74	1359.80	1240.22	6.69		OSF1.50	17540.00	8785.92				MinPt-CtCt	
1585.32	389.31	1325.46	1196.01	6.12		OSF1.50	18290.00	8801.75				MinPt-CtCt	
1585.34	389.69	1325.22	1195.65	6.11		OSF1.50	18302.08	8802.00				MinPts	

Intent ☐ As Drilled ☐API #

Operator Name:	Property Name:	Well Number
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Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude				NAD

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude				NAD

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude				NAD

Is this well the defining well for the Horizontal Spacing Unit? ☐Is this well an infill well? ☐

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API #

Operator Name:	Property Name:	Well Number
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KZ 06/29/2018

Cimarex Energy Co., Crawford 27-26 Fee 15H

1. Geological Formations

TVD of target
MD at TD

Pilot Hole TD N/A
Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
Castile	1514	N/A	
Bell Canyon	1830	N/A	
Cherry Canyon	2788	N/A	
Brushy Canyon	3994	N/A	
Bone Spring	5288	N/A	
1st Bone Spring	6222	N/A	
2nd Bone Spring	6547	N/A	
3rd Bone Spring	8079	N/A	
Wolfcamp	8413	N/A	
Wolfcamp Y	8478	N/A	
Wolfcamp Z	8552	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	400	400	13-3/8"	48.00	H-40/J-55 Hybrid	ST&C	4.04	9.45	16.77
12 1/4	0	1800	1800	9-5/8"	36.00	J-55	LT&C	2.16	3.76	6.99
8 3/4	0	8086	8086	5-1/2"	17.00	L-80	LT&C	1.66	2.05	2.26
8 3/4	8086	18302	8802	5-1/2"	17.00	L-80	BT&C	1.53	1.88	32.62
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., Crawford 27-26 Fee 15H

	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

Cimarex Energy Co., Crawford 27-26 Fee 15H

3. Cementing Program

Casing	# Sk	Wt. lb/gal	Yld ft ³ /sack	H ₂ O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	61	13.50	1.72	9.15	15.5	Lead: Class C + Bentonite
	195	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate	341	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
	103	14.80	1.36	6.57	9.5	Tail: Class C + Retarder
Production	568	10.30	3.64	22.18		Lead: Tuned Light + LCM
	2463	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	31
Intermediate	0	50
Production	1600	25

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

Cimarex Energy Co., Crawford 27-26 Fee 15H

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

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

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

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

Cimarex Energy Co., Crawford 27-26 Fee 15H

5. Mud Program

Depth	Type	Weight (ppg)	Viscosity	Water Loss
0' to 400'	FW Spud Mud	8.30 - 8.80	30-32	N/C
400' to 1800'	Brine Water	9.50 - 10.00	30-32	N/C
1800' to 18302'	Cut Brine or OBM	8.50 - 9.00	27-70	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
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6. Logging and Testing Procedures

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

Additional Logs Planned	Interval
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7. Drilling Conditions

Condition	
BH Pressure at deepest TVD	4119 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 50% of working pressure. The pressure test will be repeated at least every 30 days, as per Onshore Order No. 2.

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

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

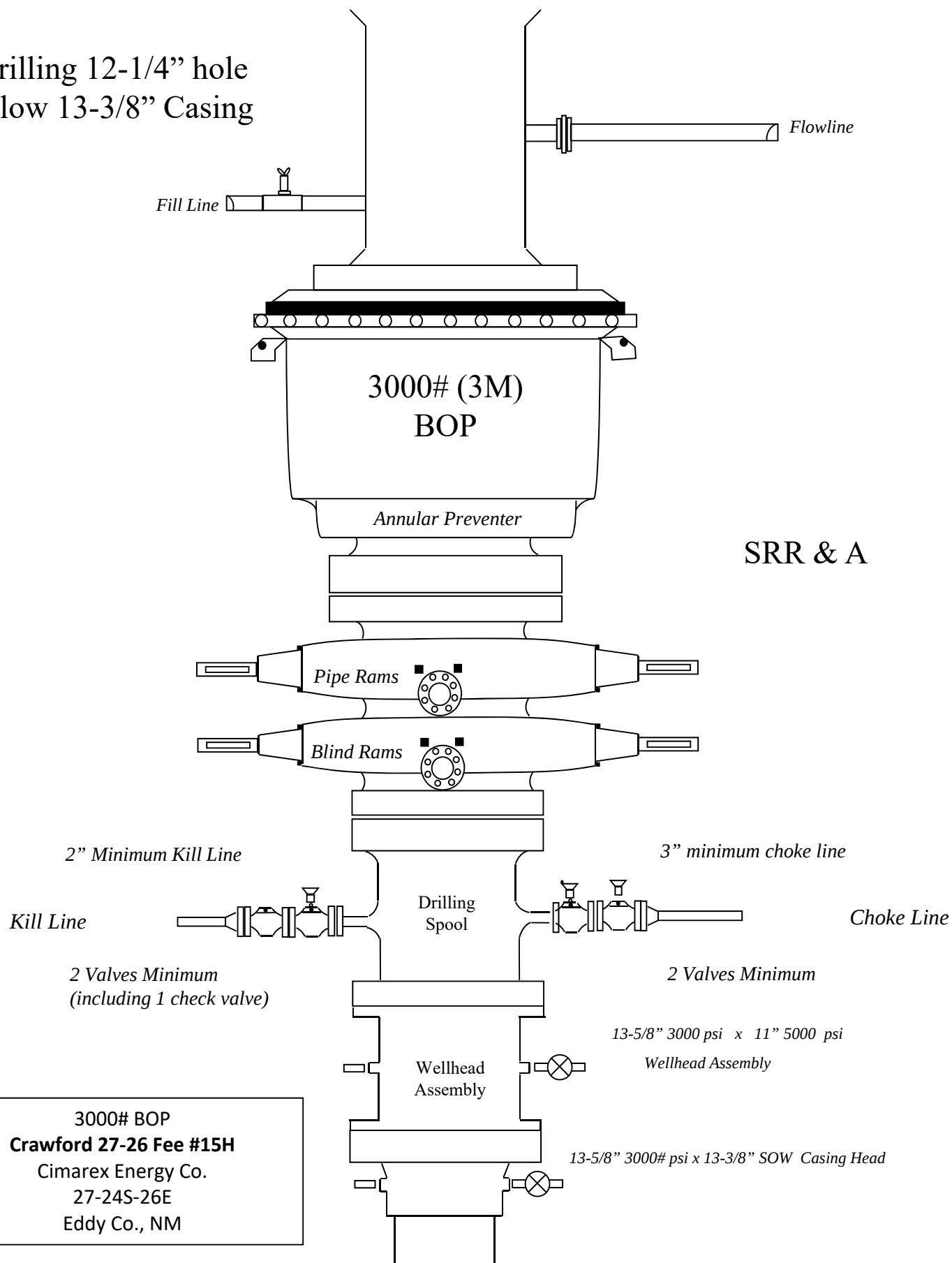
All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type.

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

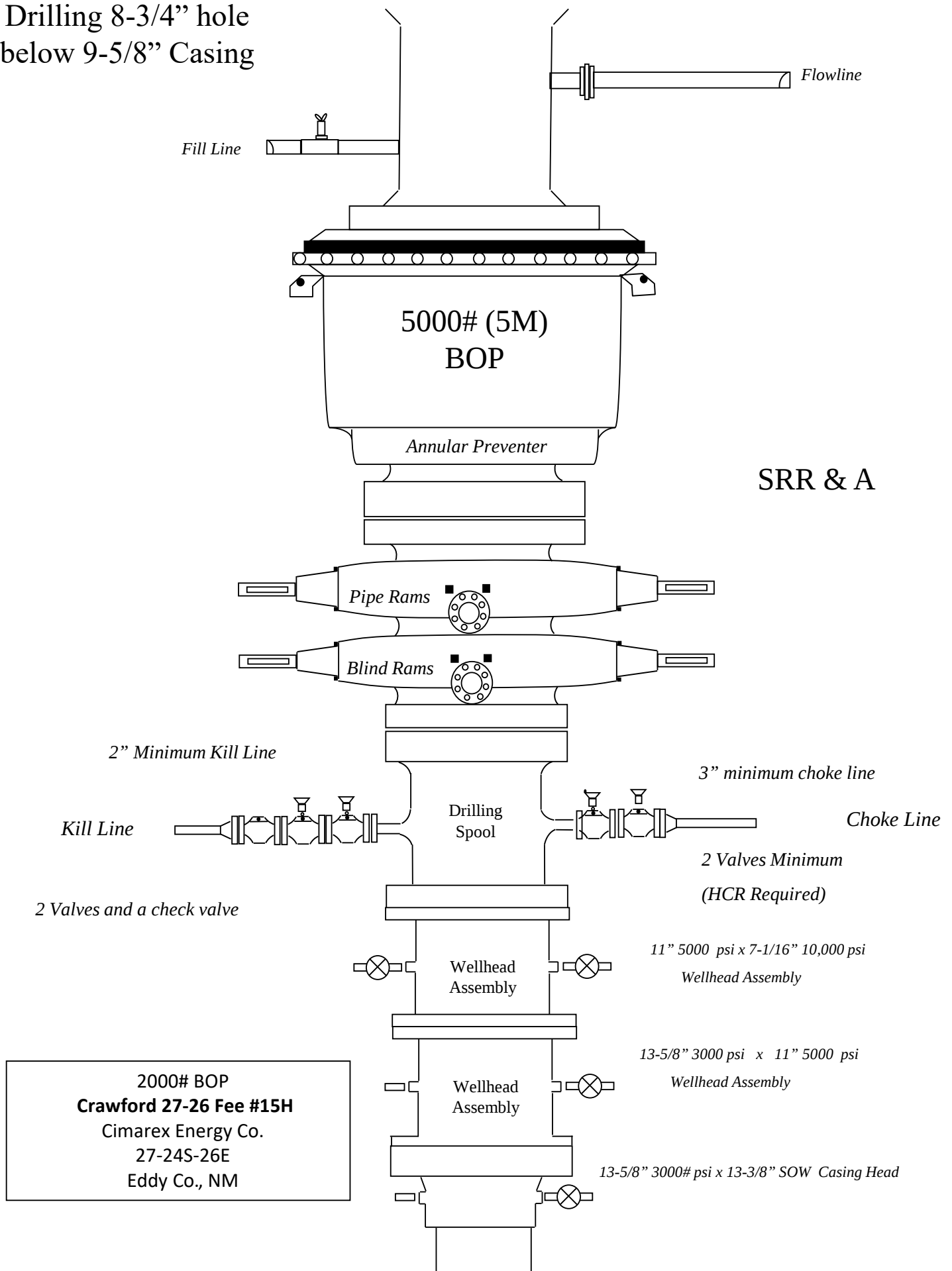
All casing strings will be tested as per Onshore Order No.2 to at least 0.22 psi/ft or 1,500 whichever is greater and not to exceed 70% of casing burst.

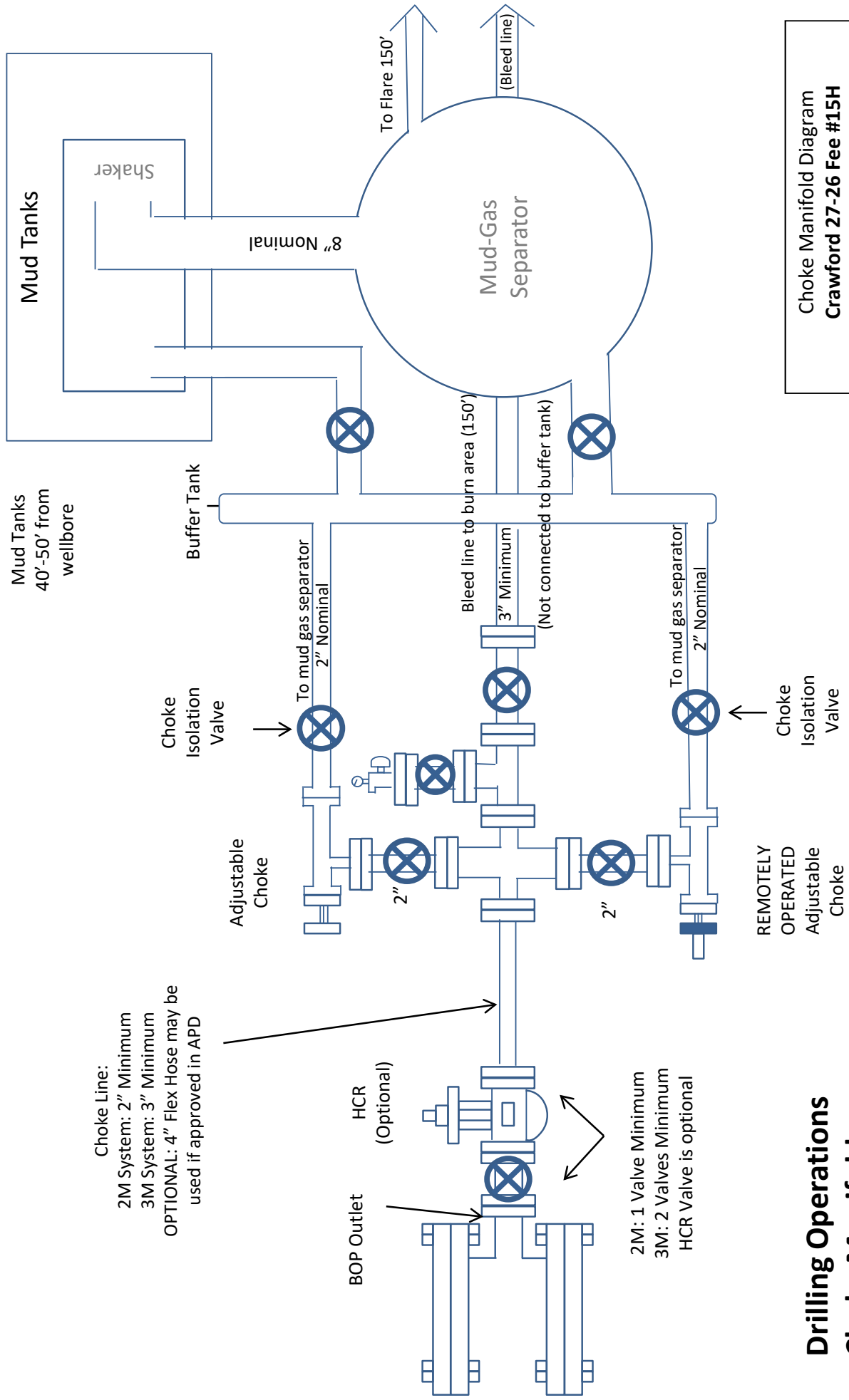
If well conditions dictate conventional slips will be set and BOPE will be tested to appropriate pressures based on permitted pressure requirements.

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

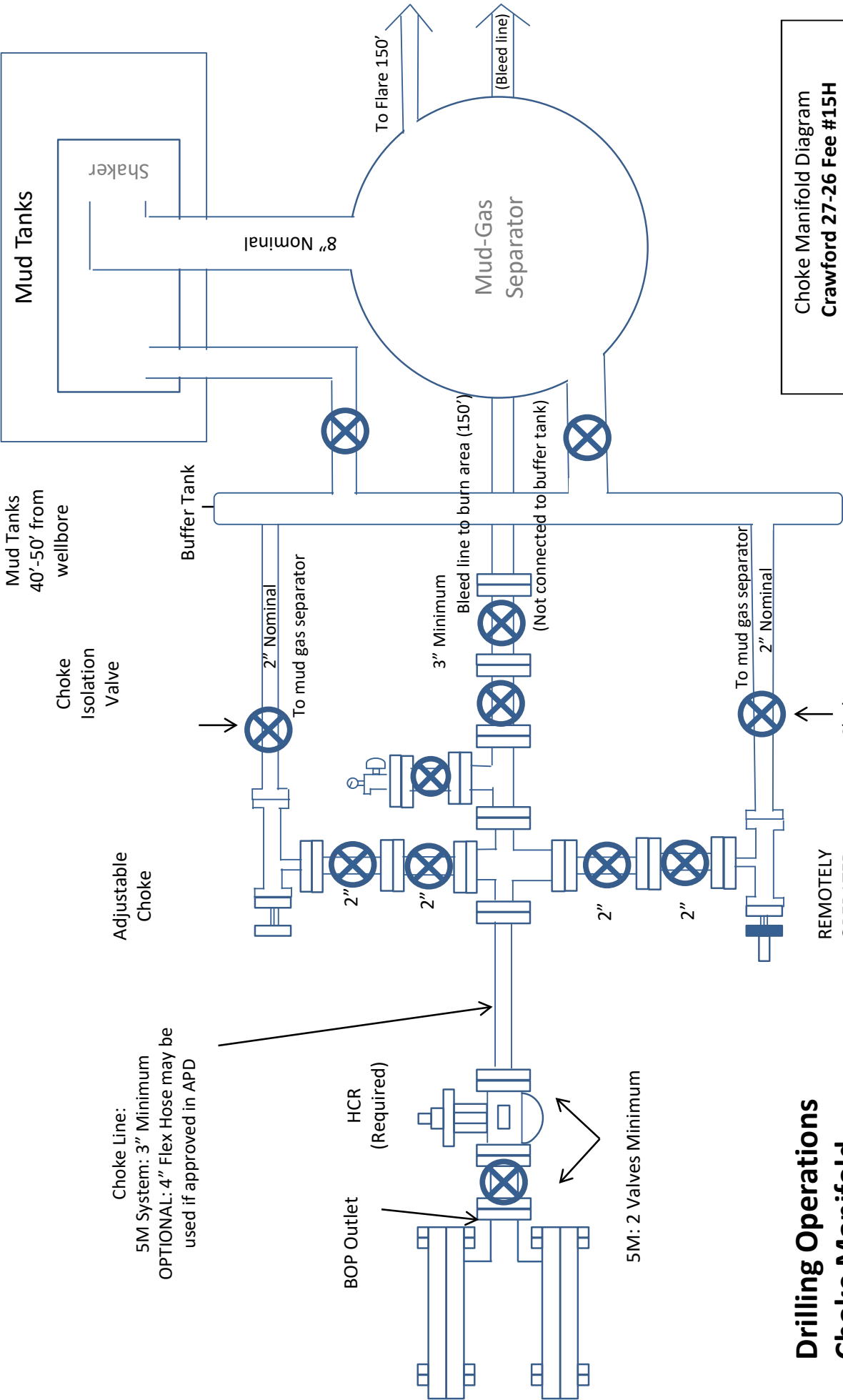


Drilling 8-3/4" hole below 9-5/8" Casing





Choke Manifold Diagram
Crawford 27-26 Fee #15H
Cimarex Energy Co.
27-24S-26E
Eddy Co., NM



Choke Manifold Diagram
Crawford 27-26 Fee #15H
27-24S-26E
Cimarex Energy Co.
Eddy Co., NM

**Drilling Operations
Choke Manifold
5M Service**