

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 276154

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 30-015-46537
5. Property Name CRAWFORD 27 26 FEE		6. Well No. 030H

7. Surface Location

UL - Lot I	Section 28	Township 24S	Range 26E	Lot Idn	Feet From 2135	N/S Line S	Feet From 915	E/W Line E	County Eddy
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8. Proposed Bottom Hole Location

UL - Lot I	Section 26	Township 24S	Range 26E	Lot Idn I	Feet From 1387	N/S Line S	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 3341
16. Multiple N	17. Proposed Depth 19084	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	19084	3772	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:		Approved By: Raymond Podany	
Printed Name: Electronically filed by Genea A Holloway		Title: Geologist	
Title: Prod Admin Supervisor		Approved Date: 12/26/2019	
Email Address: gholloway@cimarex.com		Expiration Date: 12/26/2021	
Date: 12/20/2019	Phone: 918-295-1658	Conditions of Approval Attached	

NAD 83 (SURFACE HOLE LOCATION) LATITUDE = 32°11'12.19" (32.186720°) LONGITUDE = 104°17'32.39" (104.292329°)	NAD 83 (L.P./FTP) LATITUDE = 32°11'04.78" (32.184662°) LONGITUDE = 104°17'32.22" (104.292284°)	NAD 83 (BHL/LTP) LATITUDE = 32°11'05.04" (32.184734°) LONGITUDE = 104°15'22.47" (104.256240°)
NAD 27 (SURFACE HOLE LOCATION) LATITUDE = 32°11'11.76" (32.186601°) LONGITUDE = 104°17'30.59" (104.291829°)	NAD 27 (L.P./FTP) LATITUDE = 32°11'04.36" (32.184544°) LONGITUDE = 104°17'30.42" (104.291784°)	NAD 27 (BHL/LTP) LATITUDE = 32°11'04.61" (32.184615°) LONGITUDE = 104°15'20.67" (104.255741°)
STATE PLANE NAD 83 (N.M. EAST) N: 431665.66' E: 554022.43'	STATE PLANE NAD 83 (N.M. EAST) N: 430917.13' E: 554036.80'	STATE PLANE NAD 83 (N.M. EAST) N: 430949.42' E: 565187.38'
STATE PLANE NAD 27 (N.M. EAST) N: 431608.28' E: 512839.93'	STATE PLANE NAD 27 (N.M. EAST) N: 430859.75' E: 512854.29'	STATE PLANE NAD 27 (N.M. EAST) N: 430891.81' E: 524004.77'

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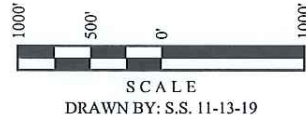
State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

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

☐ AMENDED REPORT

- = SURFACE HOLE LOCATION
- ◇ = LANDING POINT/FIRST TAKE POINT
- = BOTTOM HOLE LOCATION/
LAST TAKE POINT
- ▲ = SECTION CORNER LOCATED
- △ = SECTION CORNER
RE-ESTABLISHED.
(Not Set on Ground.)

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"



LINE TABLE		
LINE	DIRECTION	LENGTH
L1	N01°49'38"E	2649.80'
L2	S00°51'36"E	748.85'

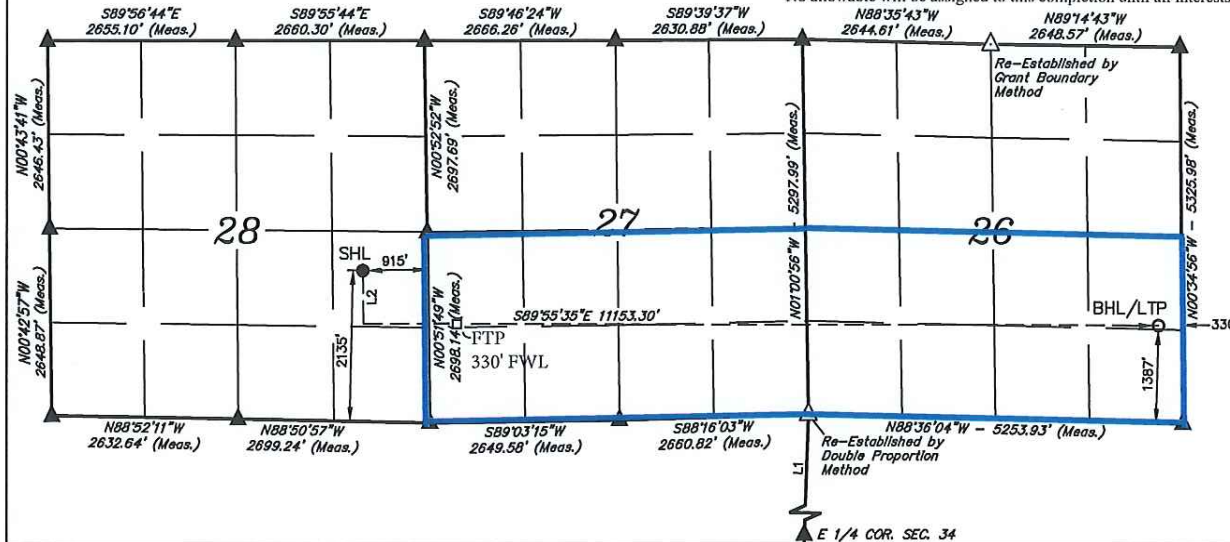
WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-015-320797	² Pool Code 98220	³ Pool Name Purple Sage; Wolfcamp (Gas)
⁴ Property Code 215099	⁵ Property Name CRAWFORD 27-26 FEE	⁶ Well Number 30H
⁷ OGRID No. 215099	⁸ Operator Name CIMAREX ENERGY CO.	⁹ Elevation 3341.0'

¹⁰ Surface Location								
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line
I	28	24S	26E		2135	SOUTH	915	EAST
								County EDDY

¹¹ Bottom Hole Location If Different From Surface								
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line
I	26	24S	26E		1387	SOUTH	330	EAST
								County EDDY
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.



"OPERATOR CERTIFICATION

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

Signature _____ Date 12/12/19

Printed Name
Fatima Vasquez
fvasquez@cimarex.com
E-mail Address

"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.

November 02, 2019

Date of Survey
Signature and Seal of Professional Surveyor:



Certificate Number:

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GAS CAPTURE PLAN

Date: 12/26/2019

☒ 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 #030H	30-015-46537	I-28-24S-26E	2135S 0915E	4400	None	

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 276154

PERMIT COMMENTS

Operator Name and Address: CIMAREX ENERGY CO. [215099] 600 N. Marienfeld Street Midland, TX 79701	API Number: 30-015-46537
	Well: CRAWFORD 27 26 FEE #030H

Created By	Comment	Comment Date
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Form APD Conditions

Permit 276154

PERMIT CONDITIONS OF APPROVAL

Operator Name and Address: CIMAREX ENERGY CO. [215099] 600 N. Marienfeld Street Midland, TX 79701		API Number: 30-015-46537
		Well: CRAWFORD 27 26 FEE #030H
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 #30H Rev1 RM 13Dec19 Proposal Geodetic Report

(Non-Def Plan)



Report Date:	December 13, 2019 - 03:37 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 #30H / New Slot	TVD Reference Datum:	RKB
Well:	Crawford 27-26 Fee #30H	TVD Reference Elevation:	3367.000 ft above MSL
Borehole:	Crawford 27-26 Fee #30H	Seabed / Ground Elevation:	3341.000 ft above MSL
UWI / API#:	Unknown / Unknown	Magnetic Declination:	7.248 °
Survey Name:	Cimarex Crawford 27-26 Fee #30H Rev1 RM 13Dec19	Total Gravity Field Strength:	998.4454mgn (9.80665 Based)
Survey Date:	December 03, 2019	Gravity Model:	GARM
Tort / AHD / DDI / ERD Ratio:	117.424 ° / 11491.802 ft / 6.466 / 1.306	Total Magnetic Field Strength:	47740.325 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	Magnetic Dip Angle:	59.795 °
Location Lat / Long:	N 32° 11' 12.19136", W 104° 17' 32.38554"	Declination Date:	December 13, 2019
Location Grid N/E Y/X:	N 431665.660 ftUS, E 554022.430 ftUS	Magnetic Declination Model:	HDGM 2019
CRS Grid Convergence Angle:	0.0218 °	North Reference:	Grid North
Grid Scale Factor:	0.99990928	Grid Convergence Used:	0.0218 °
Version / Patch:	2.10.787.0	Total Corr Mag North->Grid North:	7.2265 °
		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 [2135' FSL, 915' FEL]	0.00	0.00	242.75	0.00	0.00	0.00	0.00	N/A	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
	100.00	0.00	140.74	100.00	0.00	0.00	0.00	0.00	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
	200.00	0.00	140.74	200.00	0.00	0.00	0.00	0.00	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
	300.00	0.00	140.74	300.00	0.00	0.00	0.00	0.00	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
	400.00	0.00	140.74	400.00	0.00	0.00	0.00	0.00	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
	500.00	0.00	140.74	500.00	0.00	0.00	0.00	0.00	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
	600.00	0.00	140.74	600.00	0.00	0.00	0.00	0.00	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
	700.00	0.00	140.74	700.00	0.00	0.00	0.00	0.00	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
	800.00	0.00	140.74	800.00	0.00	0.00	0.00	0.00	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
	900.00	0.00	140.74	900.00	0.00	0.00	0.00	0.00	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
	1000.00	0.00	140.74	1000.00	0.00	0.00	0.00	0.00	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
	1100.00	0.00	140.74	1100.00	0.00	0.00	0.00	0.00	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
	1200.00	0.00	140.74	1200.00	0.00	0.00	0.00	0.00	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
	1300.00	0.00	140.74	1300.00	0.00	0.00	0.00	0.00	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
	1400.00	0.00	140.74	1400.00	0.00	0.00	0.00	0.00	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
	1500.00	0.00	140.74	1500.00	0.00	0.00	0.00	0.00	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
Castille (Base Salt)	1514.00	0.00	140.74	1514.00	0.00	0.00	0.00	0.00	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
	1600.00	0.00	140.74	1600.00	0.00	0.00	0.00	0.00	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
	1700.00	0.00	140.74	1700.00	0.00	0.00	0.00	0.00	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
	1800.00	0.00	140.74	1800.00	0.00	0.00	0.00	0.00	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
Bell Canyon (Top Delaware)	1830.00	0.00	140.74	1830.00	0.00	0.00	0.00	0.00	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
	1900.00	0.00	140.74	1900.00	0.00	0.00	0.00	0.00	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
	2000.00	0.00	140.74	2000.00	0.00	0.00	0.00	0.00	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
	2100.00	0.00	140.74	2100.00	0.00	0.00	0.00	0.00	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
	2200.00	0.00	140.74	2200.00	0.00	0.00	0.00	0.00	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
	2300.00	0.00	140.74	2300.00	0.00	0.00	0.00	0.00	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
	2400.00	0.00	140.74	2400.00	0.00	0.00	0.00	0.00	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
Nudge 2°/100' DLS	2500.00	0.00	140.74	2500.00	0.00	0.00	0.00	0.00	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
	2600.00	2.00	140.74	2599.98	1.11	-1.35	1.10	2.00	431664.31	554023.53	N 32 11 12.18	W 104 17 32.37
	2700.00	4.00	140.74	2699.84	4.43	-5.40	4.42	2.00	431660.26	554026.85	N 32 11 12.14	W 104 17 32.33
Cherry Canyon	2788.49	5.77	140.74	2788.00	9.22	-11.24	9.19	2.00	431654.42	554031.61	N 32 11 12.08	W 104 17 32.28
	2800.00	6.00	140.74	2799.45	9.97	-12.15	9.93	2.00	431653.51	554032.36	N 32 11 12.07	W 104 17 32.27
	2900.00	8.00	140.74	2898.70	17.70	-21.59	17.64	2.00	431644.08	554040.07	N 32 11 11.98	W 104 17 32.18
	3000.00	10.00	140.74	2997.47	27.64	-33.70	27.54	2.00	431631.97	554049.97	N 32 11 11.86	W 104 17 32.07
	3100.00	12.00	140.74	3095.62	39.75	-48.47	39.62	2.00	431617.19	554062.05	N 32 11 11.71	W 104 17 31.92
	3200.00	14.00	140.74	3193.06	54.04	-65.89	53.86	2.00	431599.78	554076.28	N 32 11 11.54	W 104 17 31.76
Hold Nudge	3213.51	14.27	140.74	3206.15	56.13	-68.44	55.94	2.00	431597.23	554078.37	N 32 11 11.51	W 104 17 31.73
	3300.00	14.27	140.74	3289.98	69.67	-84.95	69.44	0.00	431580.72	554091.86	N 32 11 11.35	W 104 17 31.58
	3400.00	14.27	140.74	3386.89	85.32	-104.03	85.04	0.00	431561.64	554107.46	N 32 11 11.16	W 104 17 31.40
	3500.00	14.27	140.74	3483.81	100.98	-123.12	100.64	0.00	431542.55	554123.06	N 32 11 10.97	W 104 17 31.22
	3600.00	14.27	140.74	3580.72	116.63	-142.20	116.24	0.00	431523.47	554138.66	N 32 11 10.78	W 104 17 31.03
	3700.00	14.27	140.74	3677.64	132.28	-161.29	131.84	0.00	431504.39	554154.25	N 32 11 10.59	W 104 17 30.85
	3800.00	14.27	140.74	3774.55	147.93	-180.37	147.44	0.00	431485.31	554169.85	N 32 11 10.41	W 104 17 30.67
	3900.00	14.27	140.74	3871.46	163.59	-199.46	163.04	0.00	431466.22	554185.45	N 32 11 10.22	W 104 17 30.49
	4000.00	14.27	140.74	3968.38	179.24	-218.54	178.64	0.00	431447.14	554201.05	N 32 11 10.03	W 104 17 30.31
Brushy Canyon	4026.44	14.27	140.74	3994.00	183.38	-223.59	182.76	0.00	431442.09	554205.17	N 32 11 9.98	W 104 17 30.26
	4100.00	14.27	140.74	4065.29	194.89	-237.63	194.24	0.00	431428.06	554216.65	N 32 11 9.84	W 104 17 30.13
	4200.00	14.27	140.74	4162.21	210.54	-256.71	209.84	0.00	431408.97	554232.25	N 32 11 9.65	W 104 17 29.95
	4300.00	14.27	140.74	4259.12	226.20	-275.79	225.44	0.00	431389.89	554247.85	N 32 11 9.46	W 104 17 29.76
	4400.00	14.27	140.74	4356.04	241.85	-294.88	241.04	0.00	431370.81	554263.44	N 32 11 9.27	W 104 17 29.58
	4500.00	14.27	140.74	4452.95	257.50	-313.96	256.64	0.00	431351.72	554279.04	N 32 11 9.08	W 104 17 29.40
	4600.00	14.27	140.74	4549.87	273.15	-333.05	272.24	0.00	431332.64	554294.64	N 32 11 8.89	W 104 17 29.22
	4700.00	14.27	140.74	4646.78	288.81	-352.13	287.84	0.00	431313.56	554310.24	N 32 11 8.71	W 104 17 29.04
	4800.00	14.27	140.74	4743.69	304.46	-371.22	303.44	0.00	431294.48	554325.84	N 32 11 8.52	W 104 17 28.86
	4900.00	14.27	140.74	4840.61	320.11	-390.30	319.04	0.00	431275.39	554341.44	N 32 11 8.33	W 104 17 28.68
	5000.00	14.27	140.74	4937.52	335.76	-409.39	334.64	0.00	431256.31	554357.04	N 32 11 8.14	W 104 17 28.49
	5100.00	14.27	140.74	5034.44	351.42	-428.47	350.24	0.00	431237.23	554372.63	N 32 11 7.95	W 104 17 28.31
	5200.00	14.27	140.74	5131.35	367.07	-447.56	365.84	0.00	431218.14	554388.23	N 32 11 7.76	W 104 17 28.13
	5300.00	14.27	140.74	5228.27	382.72	-466.64	381.44	0.00	431199.06	554403.83	N 32 11 7.57	W 104 17 27.95
Top Bone Spring	5359.57	14.27	140.74	5286.00	392.05	-478.01	390.73	0.00	431187.69	554413.12	N 32 11 7.46	W 104 17 27.84
	5400.00	14.27	140.74	5325.18	398.37	-485.73	397.04	0.00	431179.98	554419.43	N 32 11 7.38	W 104 17 27.77
	5500.00	14.27	140.74	5422.10	414.03	-504.81	412.64	0.00	431160.89	554435.03	N 32 11 7.19	W 104 17 27.59
	5600.00	14.27	140.74	5519.01	429.68	-523.90	428.24	0.00	431141.81	554450.63	N 32 11 7.01	W 104 17 27.41
	5700.00	14.27	140.74	5615.92	445.33	-542.98	443.84	0.00	431122.73	554466.23	N 32 11 6.82	W 104 17 27.22
	5800.00	14.27	140.74	5712.84	460.99	-562.07	459.44	0.00	431103.65	554481.82	N 32 11 6.63	W 104 17 27.04

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	14.27	140.74	5809.75	476.64	-581.15	475.04	0.00	431084.56	554497.42	N 32 11 6.44	W 104 17 26.86
	6000.00	14.27	140.74	5906.67	492.29	-600.24	490.64	0.00	431065.48	554513.02	N 32 11 6.25	W 104 17 26.68
Drop to Vertical 2°/100' DLS	6096.30	14.27	140.74	6000.00	507.36	-618.62	505.66	0.00	431047.10	554528.04	N 32 11 6.07	W 104 17 26.50
	6100.00	14.20	140.74	6003.58	507.94	-619.32	506.24	2.00	431046.40	554528.62	N 32 11 6.06	W 104 17 26.50
	6200.00	12.20	140.74	6100.94	522.44	-636.99	520.68	2.00	431028.73	554543.06	N 32 11 5.89	W 104 17 26.33
	6300.00	10.20	140.74	6199.03	534.77	-652.03	532.97	2.00	431013.69	554555.35	N 32 11 5.74	W 104 17 26.19
Top 1st BSPG SS	6323.32	9.73	140.74	6222.00	537.33	-655.15	535.52	2.00	431010.57	554557.90	N 32 11 5.71	W 104 17 26.16
	6400.00	8.20	140.74	6297.74	544.91	-664.40	543.08	2.00	431001.32	554565.46	N 32 11 5.61	W 104 17 26.07
	6500.00	6.20	140.74	6396.95	552.87	-674.10	551.01	2.00	430991.63	554573.39	N 32 11 5.52	W 104 17 25.98
	6600.00	4.20	140.74	6496.53	558.62	-681.11	556.74	2.00	430984.61	554579.12	N 32 11 5.45	W 104 17 25.91
Top 2nd BSPG SS	6650.58	3.18	140.74	6547.00	560.69	-683.63	558.80	2.00	430982.09	554581.18	N 32 11 5.42	W 104 17 25.89
	6700.00	2.20	140.74	6596.37	562.16	-685.43	560.27	2.00	430980.30	554582.65	N 32 11 5.41	W 104 17 25.87
	6800.00	0.20	140.74	6696.34	563.49	-687.04	561.59	2.00	430978.68	554583.97	N 32 11 5.39	W 104 17 25.85
Hold Vertical	6809.81	0.00	140.74	6706.15	563.50	-687.05	561.60	2.00	430978.67	554583.98	N 32 11 5.39	W 104 17 25.85
	6900.00	0.00	140.74	6796.34	563.50	-687.05	561.60	0.00	430978.67	554583.98	N 32 11 5.39	W 104 17 25.85
	7000.00	0.00	140.74	6896.34	563.50	-687.05	561.60	0.00	430978.67	554583.98	N 32 11 5.39	W 104 17 25.85
	7100.00	0.00	140.74	6996.34	563.50	-687.05	561.60	0.00	430978.67	554583.98	N 32 11 5.39	W 104 17 25.85
	7200.00	0.00	140.74	7096.34	563.50	-687.05	561.60	0.00	430978.67	554583.98	N 32 11 5.39	W 104 17 25.85
	7300.00	0.00	140.74	7196.34	563.50	-687.05	561.60	0.00	430978.67	554583.98	N 32 11 5.39	W 104 17 25.85
	7400.00	0.00	140.74	7296.34	563.50	-687.05	561.60	0.00	430978.67	554583.98	N 32 11 5.39	W 104 17 25.85
	7500.00	0.00	140.74	7396.34	563.50	-687.05	561.60	0.00	430978.67	554583.98	N 32 11 5.39	W 104 17 25.85
	7600.00	0.00	140.74	7496.34	563.50	-687.05	561.60	0.00	430978.67	554583.98	N 32 11 5.39	W 104 17 25.85
	7700.00	0.00	140.74	7596.34	563.50	-687.05	561.60	0.00	430978.67	554583.98	N 32 11 5.39	W 104 17 25.85
	7800.00	0.00	140.74	7696.34	563.50	-687.05	561.60	0.00	430978.67	554583.98	N 32 11 5.39	W 104 17 25.85
	7900.00	0.00	140.74	7796.34	563.50	-687.05	561.60	0.00	430978.67	554583.98	N 32 11 5.39	W 104 17 25.85
	8000.00	0.00	140.74	7896.34	563.50	-687.05	561.60	0.00	430978.67	554583.98	N 32 11 5.39	W 104 17 25.85
	8100.00	0.00	140.74	7996.34	563.50	-687.05	561.60	0.00	430978.67	554583.98	N 32 11 5.39	W 104 17 25.85
Top 3rd BSPG SS	8182.66	0.00	140.74	8079.00	563.50	-687.05	561.60	0.00	430978.67	554583.98	N 32 11 5.39	W 104 17 25.85
	8200.00	0.00	140.74	8096.34	563.50	-687.05	561.60	0.00	430978.67	554583.98	N 32 11 5.39	W 104 17 25.85
KOP - Build 12°/100' DLS	8202.93	0.00	140.74	8099.27	563.50	-687.05	561.60	0.00	430978.67	554583.98	N 32 11 5.39	W 104 17 25.85
	8300.00	11.65	90.16	8195.67	573.33	-687.08	571.44	12.00	430978.64	554593.81	N 32 11 5.39	W 104 17 25.74
	8400.00	23.65	90.16	8290.79	603.59	-687.17	601.70	12.00	430978.56	554624.07	N 32 11 5.39	W 104 17 25.39
	8500.00	35.65	90.16	8377.54	652.97	-687.30	651.08	12.00	430978.42	554673.45	N 32 11 5.39	W 104 17 24.81
Top Wolfcamp	8545.24	41.08	90.16	8413.00	681.04	-687.38	679.14	12.00	430978.34	554701.51	N 32 11 5.39	W 104 17 24.49
	8600.00	47.65	90.16	8452.13	719.31	-687.48	717.41	12.00	430978.24	554739.78	N 32 11 5.39	W 104 17 24.04
Top Wolfcamp 'Y' SS	8640.32	52.49	90.16	8478.00	750.21	-687.57	748.32	12.00	430978.15	554770.68	N 32 11 5.38	W 104 17 23.68
	8700.00	59.65	90.16	8511.29	799.70	-687.71	797.81	12.00	430978.02	554820.16	N 32 11 5.38	W 104 17 23.11
Top Wolfcamp 'Z' SS	8798.57	71.48	90.16	8552.00	889.28	-687.95	887.39	12.00	430977.77	554909.73	N 32 11 5.38	W 104 17 22.06
	8800.00	71.65	90.16	8552.45	890.64	-687.96	888.74	12.00	430977.77	554911.09	N 32 11 5.38	W 104 17 22.05
Build 4°/100' DLS	8827.93	75.00	90.16	8560.46	917.38	-688.03	915.49	12.00	430977.69	554937.83	N 32 11 5.38	W 104 17 21.74
	8900.00	77.88	90.16	8577.36	987.44	-688.22	985.55	4.00	430977.50	555007.89	N 32 11 5.38	W 104 17 20.92
	9000.00	81.88	90.16	8594.92	1085.87	-688.50	1083.97	4.00	430977.23	555106.30	N 32 11 5.37	W 104 17 19.78
	9100.00	85.88	90.16	8605.58	1185.28	-688.77	1183.38	4.00	430976.95	555205.70	N 32 11 5.37	W 104 17 18.62
Wolfcamp 'Z' SS Target Landing Point	9175.03	88.88	90.16	8609.00	1260.22	-688.98	1258.32	4.00	430976.75	555280.64	N 32 11 5.37	W 104 17 17.75
	9200.00	88.88	90.16	8609.49	1285.19	-689.05	1283.29	0.00	430976.68	555305.60	N 32 11 5.37	W 104 17 17.46
	9300.00	88.88	90.16	8611.43	1385.17	-689.32	1383.27	0.00	430976.40	555405.57	N 32 11 5.36	W 104 17 16.29
	9400.00	88.88	90.16	8613.38	1485.15	-689.60	1483.25	0.00	430976.13	555505.54	N 32 11 5.36	W 104 17 15.13
	9500.00	88.88	90.16	8615.33	1585.13	-689.87	1583.23	0.00	430975.85	555605.52	N 32 11 5.36	W 104 17 13.97
	9600.00	88.88	90.16	8617.28	1685.11	-690.15	1683.21	0.00	430975.58	555705.49	N 32 11 5.36	W 104 17 12.80
	9700.00	88.88	90.16	8619.22	1785.09	-690.42	1783.19	0.00	430975.30	555805.46	N 32 11 5.35	W 104 17 11.64
Base 'Z' SS	9791.17	88.88	90.16	8621.00	1876.24	-690.68	1874.34	0.00	430975.05	555896.60	N 32 11 5.35	W 104 17 10.58
	9800.00	88.88	90.16	8621.17	1885.07	-690.70	1883.17	0.00	430975.02	555905.43	N 32 11 5.35	W 104 17 10.48
	9900.00	88.88	90.16	8623.12	1985.05	-690.98	1983.15	0.00	430974.75	556005.40	N 32 11 5.35	W 104 17 9.31
	10000.00	88.88	90.16	8625.07	2085.03	-691.25	2083.14	0.00	430974.47	556105.37	N 32 11 5.34	W 104 17 8.15
	10100.00	88.88	90.16	8627.01	2185.01	-691.53	2183.12	0.00	430974.20	556205.34	N 32 11 5.34	W 104 17 6.99
	10200.00	88.88	90.16	8628.96	2285.00	-691.80	2283.10	0.00	430973.92	556305.32	N 32 11 5.34	W 104 17 5.82
	10300.00	88.88	90.16	8630.91	2384.98	-692.08	2383.08	0.00	430973.65	556405.29	N 32 11 5.33	W 104 17 4.66
	10400.00	88.88	90.16	8632.86	2484.96	-692.35	2483.06	0.00	430973.37	556505.26	N 32 11 5.33	W 104 17 3.50
	10500.00	88.88	90.16	8634.81	2584.94	-692.63	2583.04	0.00	430973.09	556605.23	N 32 11 5.33	W 104 17 2.33
	10600.00	88.88	90.16	8636.75	2684.92	-692.91	2683.02	0.00	430972.82	556705.20	N 32 11 5.32	W 104 17 1.17
	10700.00	88.88	90.16	8638.70	2784.90	-693.18	2783.00	0.00	430972.54	556805.17	N 32 11 5.32	W 104 17 0.01
	10800.00	88.88	90.16	8640.65	2884.88	-693.46	2882.98	0.00	430972.27	556905.14	N 32 11 5.32	W 104 16 58.84
	10900.00	88.88	90.16	8642.60	2984.86	-693.73	2982.96	0.00	430971.99	557005.11	N 32 11 5.31	W 104 16 57.68
	11000.00	88.88	90.16	8644.54	3084.84	-694.01	3082.94	0.00	430971.71	557105.09	N 32 11 5.31	W 104 16 56.52
	11100.00	88.88	90.16	8646.49	3184.83	-694.29	3182.92	0.00	430971.44	557205.06	N 32 11 5.31	W 104 16 55.35
	11200.00	88.88	90.16	8648.44	3284.81	-694.56	3282.90	0.00	430971.16	557305.03	N 32 11 5.30	W 104 16 54.19
	11300.00	88.88	90.16	8650.39	3384.79	-694.84	3382.88	0.00	430970.89	557405.00	N 32 11 5.30	W 104 16 53.03
	11400.00	88.88	90.16	8652.33	3484.77	-695.11	3482.86	0.00	430970.61	557504.97	N 32 11 5.30	W 104 16 51.86
	11500.00	88.88	90.16	8654.28	3584.75	-695.39	3582.85	0.00	430970.34	557604.94	N 32 11 5.29	W 104 16 50.70
	11600.00	88.88	90.16	8656.23	3684.73	-695.66	3682.83	0.00	430970.06	557704.91	N 32 11 5.29	W 104 16 49.54
	11700.00	88.88	90.16	8658.18	3784.71	-695.94	3782.81	0.00	430969.78	557804.89	N 32 11 5.29	W 104 16 48.37
	11800.00	88.88	90.16	8660.12	3884.69	-696.22	3882.79	0.00	430969.51	557904.86	N 32 11 5.29	W 104 16 47.21
	11900.00	88.88	90.16	8662.07	3984.67	-696.49	3982.77	0.00	430969.23	558004.83	N 32 11 5.28	W 104 16 46.05
	12000.00	88.88	90.16	8664.02	4084.65	-696.77	4082.75	0.00	430968.96	558104.80	N 32 11 5.28	W 104 16 44.88
	12100.00	88.88	90.16	8665.97	4184.64	-697.04	4182.73	0.00	430968.68	558204.77	N 32 11 5	

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	88.88	90.16	8695.18	5684.35	-701.18	5682.44	0.00	430964.54	559704.34	N 32 11 5.23	W 104 16 26.27
	13700.00	88.88	90.16	8697.13	5784.33	-701.46	5782.42	0.00	430964.27	559804.31	N 32 11 5.22	W 104 16 25.11
	13800.00	88.88	90.16	8699.08	5884.31	-701.73	5882.40	0.00	430963.99	559904.28	N 32 11 5.22	W 104 16 23.94
	13900.00	88.88	90.16	8701.02	5984.29	-702.01	5982.38	0.00	430963.72	560004.26	N 32 11 5.22	W 104 16 22.78
	14000.00	88.88	90.16	8702.97	6084.28	-702.28	6082.36	0.00	430963.44	560104.23	N 32 11 5.21	W 104 16 21.62
	14100.00	88.88	90.16	8704.92	6184.26	-702.56	6182.34	0.00	430963.17	560204.20	N 32 11 5.21	W 104 16 20.45
	14200.00	88.88	90.16	8706.87	6284.24	-702.83	6282.32	0.00	430962.89	560304.17	N 32 11 5.21	W 104 16 19.29
	14300.00	88.88	90.16	8708.81	6384.22	-703.11	6382.30	0.00	430962.61	560404.14	N 32 11 5.20	W 104 16 18.13
	14400.00	88.88	90.16	8710.76	6484.20	-703.39	6482.28	0.00	430962.34	560504.11	N 32 11 5.20	W 104 16 16.96
	14500.00	88.88	90.16	8712.71	6584.18	-703.66	6582.26	0.00	430962.06	560604.08	N 32 11 5.20	W 104 16 15.80
	14600.00	88.88	90.16	8714.66	6684.16	-703.94	6682.25	0.00	430961.79	560704.06	N 32 11 5.19	W 104 16 14.64
	14700.00	88.88	90.16	8716.60	6784.14	-704.21	6782.23	0.00	430961.51	560804.03	N 32 11 5.19	W 104 16 13.47
	14800.00	88.88	90.16	8718.55	6884.12	-704.49	6882.21	0.00	430961.24	560904.00	N 32 11 5.19	W 104 16 12.31
	14900.00	88.88	90.16	8720.50	6984.10	-704.77	6982.19	0.00	430960.96	561003.97	N 32 11 5.18	W 104 16 11.15
	15000.00	88.88	90.16	8722.45	7084.09	-705.04	7082.17	0.00	430960.68	561103.94	N 32 11 5.18	W 104 16 9.98
	15100.00	88.88	90.16	8724.40	7184.07	-705.32	7182.15	0.00	430960.41	561203.91	N 32 11 5.18	W 104 16 8.82
	15200.00	88.88	90.16	8726.34	7284.05	-705.59	7282.13	0.00	430960.13	561303.88	N 32 11 5.17	W 104 16 7.66
	15300.00	88.88	90.16	8728.29	7384.03	-705.87	7382.11	0.00	430959.86	561403.86	N 32 11 5.17	W 104 16 6.49
	15400.00	88.88	90.16	8730.24	7484.01	-706.14	7482.09	0.00	430959.58	561503.83	N 32 11 5.17	W 104 16 5.33
	15500.00	88.88	90.16	8732.19	7583.99	-706.42	7582.07	0.00	430959.31	561603.80	N 32 11 5.16	W 104 16 4.17
	15600.00	88.88	90.16	8734.13	7683.97	-706.70	7682.05	0.00	430959.03	561703.77	N 32 11 5.16	W 104 16 3.00
	15700.00	88.88	90.16	8736.08	7783.95	-706.97	7782.03	0.00	430958.75	561803.74	N 32 11 5.16	W 104 16 1.84
	15800.00	88.88	90.16	8738.03	7883.93	-707.25	7882.01	0.00	430958.48	561903.71	N 32 11 5.15	W 104 16 0.68
	15900.00	88.88	90.16	8739.98	7983.91	-707.52	7981.99	0.00	430958.20	562003.68	N 32 11 5.15	W 104 15 59.51
	16000.00	88.88	90.16	8741.92	8083.90	-707.80	8081.97	0.00	430957.93	562103.66	N 32 11 5.15	W 104 15 58.35
	16100.00	88.88	90.16	8743.87	8183.88	-708.08	8181.96	0.00	430957.65	562203.63	N 32 11 5.14	W 104 15 57.19
	16200.00	88.88	90.16	8745.82	8283.86	-708.35	8281.94	0.00	430957.37	562303.60	N 32 11 5.14	W 104 15 56.02
	16300.00	88.88	90.16	8747.77	8383.84	-708.63	8381.92	0.00	430957.10	562403.57	N 32 11 5.14	W 104 15 54.86
	16400.00	88.88	90.16	8749.71	8483.82	-708.90	8481.90	0.00	430956.82	562503.54	N 32 11 5.13	W 104 15 53.70
	16500.00	88.88	90.16	8751.66	8583.80	-709.18	8581.88	0.00	430956.55	562603.51	N 32 11 5.13	W 104 15 52.53
	16600.00	88.88	90.16	8753.61	8683.78	-709.45	8681.86	0.00	430956.27	562703.48	N 32 11 5.13	W 104 15 51.37
	16700.00	88.88	90.16	8755.56	8783.76	-709.73	8781.84	0.00	430956.00	562803.45	N 32 11 5.12	W 104 15 50.21
	16800.00	88.88	90.16	8757.50	8883.74	-710.01	8881.82	0.00	430955.72	562903.43	N 32 11 5.12	W 104 15 49.04
	16900.00	88.88	90.16	8759.45	8983.73	-710.28	8981.80	0.00	430955.44	563003.40	N 32 11 5.12	W 104 15 47.88
	17000.00	88.88	90.16	8761.40	9083.71	-710.56	9081.78	0.00	430955.17	563103.37	N 32 11 5.11	W 104 15 46.72
	17100.00	88.88	90.16	8763.35	9183.69	-710.83	9181.76	0.00	430954.89	563203.34	N 32 11 5.11	W 104 15 45.55
	17200.00	88.88	90.16	8765.30	9283.67	-711.11	9281.74	0.00	430954.62	563303.31	N 32 11 5.11	W 104 15 44.39
	17300.00	88.88	90.16	8767.24	9383.65	-711.38	9381.72	0.00	430954.34	563403.28	N 32 11 5.10	W 104 15 43.23
	17400.00	88.88	90.16	8769.19	9483.63	-711.66	9481.70	0.00	430954.07	563503.25	N 32 11 5.10	W 104 15 42.06
	17500.00	88.88	90.16	8771.14	9583.61	-711.94	9581.68	0.00	430953.79	563603.23	N 32 11 5.10	W 104 15 40.90
	17600.00	88.88	90.16	8773.09	9683.59	-712.21	9681.67	0.00	430953.51	563703.20	N 32 11 5.09	W 104 15 39.74
	17700.00	88.88	90.16	8775.03	9783.57	-712.49	9781.65	0.00	430953.24	563803.17	N 32 11 5.09	W 104 15 38.57
	17800.00	88.88	90.16	8776.98	9883.55	-712.76	9881.63	0.00	430952.96	563903.14	N 32 11 5.09	W 104 15 37.41
	17900.00	88.88	90.16	8778.93	9983.54	-713.04	9981.61	0.00	430952.69	564003.11	N 32 11 5.08	W 104 15 36.25
	18000.00	88.88	90.16	8780.88	10083.52	-713.32	10081.59	0.00	430952.41	564103.08	N 32 11 5.08	W 104 15 35.08
	18100.00	88.88	90.16	8782.82	10183.50	-713.59	10181.57	0.00	430952.14	564203.05	N 32 11 5.08	W 104 15 33.92
	18200.00	88.88	90.16	8784.77	10283.48	-713.87	10281.55	0.00	430951.86	564303.03	N 32 11 5.07	W 104 15 32.76
	18300.00	88.88	90.16	8786.72	10383.46	-714.14	10381.53	0.00	430951.58	564403.00	N 32 11 5.07	W 104 15 31.59
	18400.00	88.88	90.16	8788.67	10483.44	-714.42	10481.51	0.00	430951.31	564502.97	N 32 11 5.07	W 104 15 30.43
	18500.00	88.88	90.16	8790.61	10583.42	-714.69	10581.49	0.00	430951.03	564602.94	N 32 11 5.06	W 104 15 29.27
	18600.00	88.88	90.16	8792.56	10683.40	-714.97	10681.47	0.00	430950.76	564702.91	N 32 11 5.06	W 104 15 28.10
	18700.00	88.88	90.16	8794.51	10783.38	-715.25	10781.45	0.00	430950.48	564802.88	N 32 11 5.06	W 104 15 26.94
	18800.00	88.88	90.16	8796.46	10883.36	-715.52	10881.43	0.00	430950.20	564902.85	N 32 11 5.05	W 104 15 25.78
	18900.00	88.88	90.16	8798.40	10983.35	-715.80	10981.41	0.00	430949.93	565002.83	N 32 11 5.05	W 104 15 24.61
	19000.00	88.88	90.16	8800.35	11083.33	-716.07	11081.39	0.00	430949.65	565102.80	N 32 11 5.05	W 104 15 23.45
Cimarex Crawford 27-26 Fee #30H - PBHL [1387' FSL, 330' FEL]	19084.61	88.88	90.16	8802.00	11167.92	-716.31	11165.99	0.00	430949.42	565187.38	N 32 11 5.04	W 104 15 22.47

Survey Type: Non-Def Plan

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

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	26.000	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS-Depth Only	Crawford 27-26 Fee #30H / Cimarex Crawford 27-26 Fee #30H Rev1 RM 13Dec19
	1	26.000	19084.607	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS	Crawford 27-26 Fee #30H / Cimarex Crawford 27-26 Fee



Cimarex Crawford 27-26 Fee #30H Rev1 RM 13Dec19 Proposal Geodetic Report

(Non-Def Plan)



Report Date:	December 13, 2019 - 03:37 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 #30H / New Slot	TVD Reference Datum:	RKB
Well:	Crawford 27-26 Fee #30H	TVD Reference Elevation:	3367.000 ft above MSL
Borehole:	Crawford 27-26 Fee #30H	Seabed / Ground Elevation:	3341.000 ft above MSL
UWI / API#:	Unknown / Unknown	Magnetic Declination:	7.248 °
Survey Name:	Cimarex Crawford 27-26 Fee #30H Rev1 RM 13Dec19	Total Gravity Field Strength:	998.4454mgn (9.80665 Based)
Survey Date:	December 03, 2019	Gravity Model:	GARM
Tort / AHD / DDI / ERD Ratio:	117.424 ° / 11491.802 ft / 6.466 / 1.306	Total Magnetic Field Strength:	47740.325 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	Magnetic Dip Angle:	59.795 °
Location Lat / Long:	N 32° 11' 12.19136", W 104° 17' 32.38554"	Declination Date:	December 13, 2019
Location Grid N/E Y/X:	N 431665.660 ftUS, E 554022.430 ftUS	Magnetic Declination Model:	HDGM 2019
CRS Grid Convergence Angle:	0.0218 °	North Reference:	Grid North
Grid Scale Factor:	0.99990928	Grid Convergence Used:	0.0218 °
Version / Patch:	2.10.787.0	Total Corr Mag North->Grid North:	7.2265 °
		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 [2135' FSL, 915' FEL]	0.00	0.00	242.75	0.00	0.00	0.00	0.00	N/A	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
Nudge 2"/100' DLS	2500.00	0.00	140.74	2500.00	0.00	0.00	0.00	0.00	431665.66	554022.43	N 32 11 12.19	W 104 17 32.39
Hold Nudge	3213.51	14.27	140.74	3206.15	56.13	-68.44	55.94	2.00	431597.23	554078.37	N 32 11 11.51	W 104 17 31.73
Drop to Vertical 2"/100' DLS	6096.30	14.27	140.74	6000.00	507.36	-618.62	505.66	0.00	431047.10	554528.04	N 32 11 6.07	W 104 17 26.50
Hold Vertical	6809.81	0.00	140.74	6706.15	563.50	-687.05	561.60	2.00	430978.67	554583.98	N 32 11 5.39	W 104 17 25.85
KOP - Build 12"/100' DLS	8202.93	0.00	140.74	8099.27	563.50	-687.05	561.60	0.00	430978.67	554583.98	N 32 11 5.39	W 104 17 25.85
Build 4"/100' DLS	8827.93	75.00	90.16	8560.46	917.38	-688.03	915.49	12.00	430977.69	554937.83	N 32 11 5.38	W 104 17 21.74
Landing Point	9175.03	88.88	90.16	8609.00	1260.22	-688.98	1258.32	4.00	430976.75	555280.64	N 32 11 5.37	W 104 17 17.75
Cimarex Crawford 27-26 Fee #30H - PBHL [1387' FSL, 330' FEL]	19084.61	88.88	90.16	8802.00	11167.92	-716.31	11165.99	0.00	430949.42	565187.38	N 32 11 5.04	W 104 15 22.47

Survey Type: Non-Def Plan

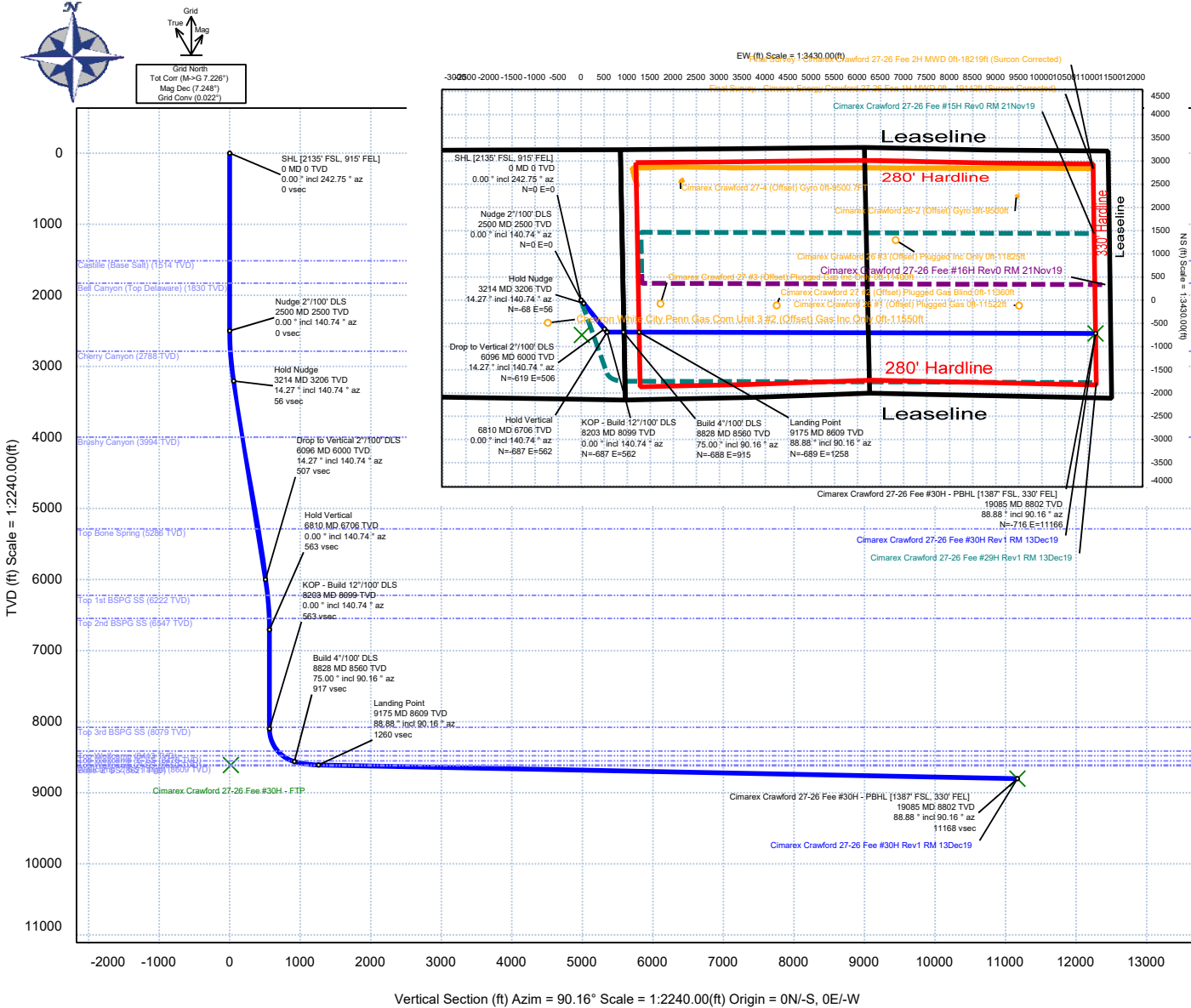
Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma

Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	26.000	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS-Depth Only	Crawford 27-26 Fee #30H / Cimarex Crawford 27-26 Fee #30H Rev1 RM 13Dec19
	1	26.000	19084.607	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS	Crawford 27-26 Fee #30H / Cimarex Crawford 27-26 Fee

Borehole:	Well:	Field:	Structure:
Crawford 27-26 Fee #30H	Crawford 27-26 Fee #30H	NM Eddy County (NAD 83)	Cimarex Crawford 27-26 Fee #30H

Gravity & Magnetic Parameters		Surface Location	NAD83 New Mexico State Plane, Eastern Zone, US Feet		Miscellaneous
Model: HDGM 2019	Dip: 59.795°	Date: 13-Dec-2019	Lat: N 32 11 12.19	Northing: 431665.66ftUS	Grid Conv: 0.0218°
MagDec: 7.248°	FS: 47740.325nT	Gravity FS: 998.445mgn (9.80665 Based)	Lon: W 104 17 32.39	Easting: 554022.43ftUS	Scale Fact: 0.99990928
					Slot: New Slot
					TVD Ref: RKB(3367ft above MSL)
					Plan: Cimarex Crawford 27-26 Fee #30H Rev1 RM 13Dec19



Critical Points								
Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL [2135' FSL 915' FEL]	0.00	0.00	242.75	0.00	0.00	0.00	0.00	0.00
Castile (Base Salt)	1514.00	0.00	140.74	1514.00	0.00	0.00	0.00	0.00
Bell Canyon (Top Delaware)	1830.00	0.00	140.74	1830.00	0.00	0.00	0.00	0.00
Nudge 2"/100' DLS	2500.00	0.00	140.74	2500.00	0.00	0.00	0.00	0.00
Cherry Canyon	2788.49	5.77	140.74	2788.00	9.22	-11.24	9.19	2.00
Hold Nudge	3213.51	14.27	140.74	3206.15	56.13	-68.44	55.94	2.00
Brushy Canyon	4026.44	14.27	140.74	3994.00	183.38	-223.59	182.76	0.00
Top Bone Spring	5359.57	14.27	140.74	5286.00	392.05	-478.01	390.73	0.00
Drop to Vertical 2"/100' DLS	6096.30	14.27	140.74	6000.00	507.36	-618.62	505.66	0.00
Top 1st BSPG SS	6222.32	9.73	140.74	6222.00	537.33	-655.15	535.52	2.00
Top 2nd BSPG SS	6650.58	3.18	140.74	6547.00	560.69	-683.63	558.80	2.00
Hold Vertical	6809.81	0.00	140.74	6706.15	563.50	-687.05	561.60	2.00
Top 3rd BSPG SS	8182.66	0.00	140.74	8079.00	563.50	-687.05	561.60	0.00
KOP - Build 12"/100' DLS	8202.93	0.00	140.74	8099.27	563.50	-687.05	561.60	0.00
Top Wolfcamp	8545.24	41.08	90.16	8413.00	681.04	-687.38	679.14	12.00
Top Wolfcamp 'Y' SS	8640.32	52.49	90.16	8478.00	750.21	-687.57	748.32	12.00
Top Wolfcamp 'Z' SS	8798.57	71.48	90.16	8552.00	889.28	-687.95	887.39	12.00
Build 4"/100' DLS	8827.93	75.00	90.16	8560.46	917.38	-688.03	915.49	12.00
Landing Point	9175.03	88.88	90.16	8609.00	1260.22	-688.96	1258.32	4.00
Wolfcamp 'Z' SS Target	9175.03	88.88	90.16	8609.00	1260.22	-688.96	1258.32	0.00
Base 'Z' SS	9791.17	88.88	90.16	8621.00	1876.24	-690.68	1874.34	0.00
Cimarex Crawford 27-26 Fee #30H - PBHL [1387' FSL 330' FEL]	19084.61	88.88	90.16	8802.00	11167.92	-716.31	11165.99	0.00



Cimarex Crawford 27-26 Fee #30H Rev1 RM 13Dec19 Anti-Collision Summary Report

Analysis Date-24hr Time: December 13, 2019 - 15:38
Client: Cimarex Energy
Field: NM Eddy County (NAD 83)
Structure: Cimarex Crawford 27-26 Fee #30H
Slot: New Slot
Well: Crawford 27-26 Fee #30H
Borehole: Crawford 27-26 Fee #30H
Scan MD Range: 0.00ft ~ 19084.61ft

Analysis Method: 3D Least Distance
Reference Trajectory: Cimarex Crawford 27-26 Fee #30H Rev1 RM 13Dec19 (Non-Def Plan)
Depth Interval: Every 10.00 Measured Depth (ft)
Rule Set: NAL Procedure: D&M AntiCollision Standard S002
Min Pts: All local minima indicated.
Version / Patch: 2.10.787.0
Database / Project: US1153APP452.dir.slb.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!
 Selection filters: Definitive Surveys - Definitive Plans - Definitive surveys exclude definitive plans
 - All Non-Def Surveys when no Def-Survey is set in a borehole - All Non-Def Plans when no Def-Plan is set in a borehole

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		

Results highlighted: Sep-Factor separation <= 1.50 ft

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

4246.61	32.81	4245.48	4213.80	N/A	MAS = 10.00 (m)	0.00	0.00					Fail Major	Surface
4246.27	32.81	4245.10	4213.47	94540.89	MAS = 10.00 (m)	26.00	26.00					MinPt-O-SF	
4062.79	1220.90	3248.43	2841.89	5.00	OSF1.50	4030.00	3997.45	OSF<5.00				Enter Alert	
2674.43	2674.57	890.34	-0.14	1.50	OSF1.50	9550.00	8616.30		OSF<1.50			Enter Minor	
1788.19	2681.19	-0.60	-893.00	1.00	OSF1.50	10470.00	8634.22			OSF<1.00		Enter Major	
584.64	2691.24	-1209.90	-2106.60	0.33	OSF1.50	12160.00	8667.14					MinPts	
1797.19	2699.37	-2.77	-902.18	1.00	OSF1.50	13860.00	8700.25			OSF>1.00		Exit Major	
2703.23	2704.93	899.57	-1.69	1.50	OSF1.50	14800.00	8718.55		OSF>1.50			Exit Minor	
6947.69	2731.03	5126.63	4216.66	3.82	OSF1.50	19084.61	8802.00					TD	

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

9507.43	32.81	9506.30	9474.63	N/A	MAS = 10.00 (m)	0.00	0.00					Fail Major	Surface
9507.15	32.81	9505.98	9474.34	218764.15	MAS = 10.00 (m)	26.00	26.00					MinPt-O-SF	
8735.47	2623.58	6985.68	6111.89	5.00	OSF1.50	8690.00	8506.15	OSF<5.00				Enter Alert	
2688.89	2697.92	887.19	-9.04	1.49	OSF1.50	14800.00	8718.55		OSF<1.50			Enter Minor	
1803.42	2705.04	-3.25	-901.62	1.00	OSF1.50	15720.00	8736.47			OSF<1.00		Enter Major	
595.30	2720.10	-1218.48	-2124.80	0.33	OSF1.50	17420.00	8769.58					MinPts	
595.34	2720.18	-1218.48	-2124.84	0.33	OSF1.50	17430.00	8769.77					MinPts	
1765.05	2717.58	-47.05	-952.53	0.97	OSF1.50	19084.61	8802.00					TD	

Cimarex Crawford 27-26 Fee #29H Rev1 RM 13Dec19 (Def Plan)

20.00	16.25	18.71	3.74	N/A	MAS = 4.95 (m)	0.00	0.00	CtCt<=15m<15.00				Warning Alert	Enter Alert
20.00	16.25	18.71	3.74	N/A	MAS = 4.95 (m)	26.00	26.00					WRP	
20.00	19.54	6.54	0.45	1.54	OSF1.50	2000.00	2000.00					MinPt-CtCt	
20.01	19.59	6.52	0.42	1.53	OSF1.50	2010.00	2010.00					MINPT-O-EQU	
20.06	19.64	6.54	0.42	1.53	OSF1.50	2020.00	2020.00					MinPts	
63.96	20.39	49.93	43.56	4.92	OSF1.50	2510.00	2510.00	OSF>5.00				Exit Alert	
409.21	37.10	384.05	372.12	17.09	OSF1.50	6100.00	6003.58					MinPt-O-SF	
1061.35	70.62	1013.94	990.73	22.93	OSF1.50	9200.00	8609.49					MinPt-CtCt	
1061.96	319.64	848.43	742.31	5.00	OSF1.50	15390.00	8730.04	OSF<5.00				Enter Alert	
1062.34	478.14	743.15	584.20	3.34	OSF1.50	19084.61	8802.00					MinPts	

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

1743.35	32.81	1742.22	1710.54	N/A	MAS = 10.00 (m)	0.00	0.00					Warning Alert	Surface
1742.78	32.81	1741.59	1709.98	27179.36	MAS = 10.00 (m)	26.00	26.00					MinPt-O-SF	
1742.61	32.81	1741.43	1709.80	32644.51	MAS = 10.00 (m)	50.00	50.00					MinPts	
1740.16	39.55	1713.42	1700.61	67.89	OSF1.50	850.00	850.00					MinPt-CtCt	
1743.48	71.58	1695.39	1671.91	37.10	OSF1.50	1470.00	1470.00					MinPt-CtCt	
1744.27	101.27	1676.38	1643.00	26.11	OSF1.50	2040.00	2040.00					MinPt-CtCt	
1314.88	332.93	1092.47	981.96	5.94	OSF1.50	6630.00	6526.46					MinPt-CtCt	
1309.57	390.55	1048.74	919.02	5.04	OSF1.50	7720.00	7616.34					MinPt-CtCt	
1309.68	393.89	1046.63	915.79	5.00	OSF1.50	7790.00	7686.34	OSF<5.00				Enter Alert	
591.22	444.41	294.57	146.81	2.00	OSF1.50	9650.00	8618.25					MinPts	
1471.75	444.77	1174.86	1026.98	4.97	OSF1.50	11000.00	8644.54	OSF>5.00				Exit Alert	
9449.43	451.37	9148.14	8998.06	31.48	OSF1.50	19084.61	8802.00					TD	

Chevron White City Penn Gas
 Com Unit 3 #2 (Offset) Gas Inc
 Only Off-11550ft (Def Survey)

872.23	32.81	871.10	839.43	N/A	MAS = 10.00 (m)	0.00	0.00					Warning Alert	Surface
872.04	32.81	870.77	839.23	6454.40	MAS = 10.00 (m)	26.00	26.00					WRP	
871.43	32.81	862.63	838.62	113.44	MAS = 10.00 (m)	350.00	350.00					MinPts	
871.63	58.51	832.25	813.12	22.76	OSF1.50	1230.00	1230.00					MinPt-CtCt	
871.66	78.32	819.07	793.34	16.92	OSF1.50	1610.00	1610.00					MinPt-CtCt	
866.92	122.10	785.15	744.83	10.74	OSF1.50	2440.00	2440.00					MinPt-CtCt	
874.58	146.91	776.28	727.66	8.99	OSF1.50	2940.00	2938.27					MINPT-O-EQU	
882.98	156.70	778.14	726.29	8.50	OSF1.50	3140.00	3134.69					MinPt-O-ADP	
1303.54	391.98	1041.84	911.56	5.00	OSF1.50	7730.00	7626.34	OSF<5.00				Enter Alert	
1297.40	403.80	1027.83	893.60	4.83	OSF1.50	8000.00	7896.34					MinPt-CtCt	
1300.20	412.46	1024.85	887.74	4.74	OSF1.50	8202.93	8099.27					MINPT-O-EQU	
1300.45	412.75	1024.90	887.69	4.73	OSF1.50	8210.00	8106.34					MinPt-O-ADP	
1303.90	414.42	1027.25	889.48	4.73	OSF1.50	8250.00	8146.27					MinPt-O-SF	
1308.74	416.02	1031.02	892.72	4.73	OSF1.50	8280.00	8176.01					MinPt-O-SF	
1432.64	431.08	1144.88	1001.56	4.99	OSF1.50	8560.00	8423.98	OSF>5.00				Exit Alert	
11892.72	457.58	11587.29	11435.14	39.08	OSF1.50	19084.61	8802.00					TD	

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
Cimarex Crawford 27-26 Fee #16H Rev0 RM 21Nov19 (Def Plan)													
												Warning Alert	
1430.90	32.81	1429.61	1398.09	N/A		MAS = 10.00 (m)	0.00	0.00				Surface	
1430.86	32.81	1429.58	1398.05	N/A		MAS = 10.00 (m)	26.00	26.00				WRP	
1429.95	32.81	1413.32	1397.15	93.10		MAS = 10.00 (m)	2590.00	2589.99				MinPt-O-SF	
1251.00	32.81	1237.08	1218.19	99.88		MAS = 10.00 (m)	5100.00	5034.44				MinPts	
1251.27	32.81	1236.84	1218.46	95.92		MAS = 10.00 (m)	5200.00	5131.35				MINPT-O-EOU	
1295.12	37.10	1269.96	1258.02	54.20		OSF1.50	8030.00	7926.34				MINPT-O-EOU	
1295.15	37.13	1269.96	1258.01	54.14		OSF1.50	8040.00	7936.34				MinPt-O-ADP	
1075.29	60.78	1034.34	1014.51	27.08		OSF1.50	9700.00	8619.22				MinPt-CtCt	
1077.93	324.47	861.19	753.46	5.00		OSF1.50	16190.00	8745.62	OSF<5.00			Enter Alert	
1079.15	447.98	780.07	631.17	3.62		OSF1.50	19084.61	8802.00				MinPts	
Cimarex Crawford 27-26 Fee #15H Rev0 RM 21Nov19 (Def Plan)													
												Pass	
1438.56	32.81	1437.28	1405.76	N/A		MAS = 10.00 (m)	0.00	0.00				Surface	
1438.53	32.81	1437.25	1405.72	N/A		MAS = 10.00 (m)	26.00	26.00				WRP	
1438.53	32.81	1425.73	1405.72	124.82		MAS = 10.00 (m)	1900.00	1900.00				MinPts	
1438.68	32.81	1425.53	1405.87	121.14		MAS = 10.00 (m)	1960.00	1960.00				MINPT-O-EOU	
1466.35	32.81	1449.86	1433.54	96.36		MAS = 10.00 (m)	2600.00	2599.98				MinPt-O-SF	
2112.79	47.70	2080.56	2065.08	68.23		OSF1.50	6100.00	6003.58				MinPt-O-SF	
2256.68	50.99	2222.26	2205.69	68.07		OSF1.50	6650.00	6546.43				MinPt-O-SF	
2153.32	175.18	2036.11	1978.14	18.56		OSF1.50	12470.00	8673.17				MinPt-CtCt	
2153.59	454.72	1850.01	1698.87	7.12		OSF1.50	19080.00	8801.91				MINPT-O-EOU	
2153.66	454.82	1850.02	1698.84	7.12		OSF1.50	19084.61	8802.00				MinPts	
Cimarex Crawford 26 #3 (Offset) Plugged Inc Only Off- 11825ft (Def Survey)													
												Pass	
6950.57	32.81	6949.44	6917.76	N/A		MAS = 10.00 (m)	0.00	0.00				Surface	
6950.27	32.81	6949.09	6917.46	154188.38		MAS = 10.00 (m)	26.00	26.00				MinPt-O-SF	
6949.92	32.81	6948.62	6917.12	39249.17		MAS = 10.00 (m)	100.00	100.00				MinPts	
6951.68	32.81	6946.97	6918.87	1939.54		MAS = 10.00 (m)	350.00	350.00				MINPT-O-EOU	
6947.69	44.51	6917.64	6903.18	240.22		OSF1.50	1010.00	1010.00				MinPt-CtCt	
6948.57	118.08	6869.48	6830.49	89.11		OSF1.50	2430.00	2430.00				MinPt-CtCt	
6575.08	336.40	6350.31	6238.68	29.44		OSF1.50	6780.00	6676.34				MinPt-CtCt	
6573.90	408.64	6300.96	6165.25	24.22		OSF1.50	8150.00	8046.34				MinPt-CtCt	
2002.68	488.52	1676.62	1514.16	6.16		OSF1.50	14750.00	8717.58				MinPt-CtCt	
2002.72	488.64	1676.58	1514.08	6.16		OSF1.50	14760.00	8717.77				MINPT-O-EOU	
2002.81	488.76	1676.59	1514.05	6.16		OSF1.50	14770.00	8717.97				MinPt-O-ADP	
2004.39	489.43	1677.73	1514.96	6.15		OSF1.50	14830.00	8719.14				MinPt-O-SF	
4776.83	467.54	4464.76	4309.29	15.36		OSF1.50	19084.61	8802.00				TD	
Final Survey - Cimarex Crawford 27-26 Fee 2H MWD Off-18219ft (Surcon Corrected) (Def Survey)													
												Pass	
2740.13	32.81	2739.00	2707.32	N/A		MAS = 10.00 (m)	0.00	0.00				MinPts	
2740.15	32.81	2739.00	2707.34	190140.81		MAS = 10.00 (m)	26.00	26.00				WRP	
2741.03	32.81	2738.69	2708.22	2263.64		MAS = 10.00 (m)	280.00	280.00				MINPT-O-EOU	
2740.78	32.81	2735.63	2707.97	681.98		MAS = 10.00 (m)	820.00	820.00				MinPts	
2740.84	32.81	2735.55	2708.03	658.34		MAS = 10.00 (m)	870.00	870.00				MINPT-O-EOU	
2741.38	32.81	2734.68	2708.57	492.15		MAS = 10.00 (m)	1210.00	1210.00				MINPT-O-EOU	
2750.46	32.81	2742.09	2717.65	380.06		MAS = 10.00 (m)	1640.00	1640.00				MinPt-O-SF	
2744.38	32.81	2734.62	2711.57	313.97		MAS = 10.00 (m)	2010.00	2010.00				MinPts	
2744.41	32.81	2734.57	2711.60	310.85		MAS = 10.00 (m)	2030.00	2030.00				MINPT-O-EOU	
2767.19	32.81	2755.20	2734.38	252.13		MAS = 10.00 (m)	2600.00	2599.98				MinPt-O-SF	
3013.88	32.81	3003.69	2981.07	328.41		MAS = 10.00 (m)	4090.00	4055.60				MinPt-O-SF	
3424.03	32.81	3406.90	3391.22	212.51		MAS = 10.00 (m)	6100.00	6003.58				MinPt-O-SF	
3461.47	32.81	3444.30	3428.66	214.27		MAS = 10.00 (m)	6280.00	6179.36				MinPt-O-SF	
3590.02	32.81	3571.04	3557.21	199.93		MAS = 10.00 (m)	8010.00	7906.34				MinPts	
3590.04	32.81	3571.02	3557.23	199.40		MAS = 10.00 (m)	8040.00	7936.34				MINPT-O-EOU	
3542.92	46.42	3511.63	3496.50	117.03		OSF1.50	9340.00	8612.21				MinPt-CtCt	
3543.52	48.07	3511.13	3495.45	112.93		OSF1.50	9410.00	8613.58				MINPT-O-EOU	
3544.13	48.80	3511.25	3495.33	111.24		OSF1.50	9440.00	8614.16				MinPt-O-ADP	
3550.75	125.39	3466.83	3425.36	42.80		OSF1.50	11510.00	8654.48				MinPt-CtCt	
3547.22	138.95	3454.26	3408.28	38.56		OSF1.50	11840.00	8660.90				MinPt-CtCt	
3562.77	176.38	3444.85	3386.38	30.46		OSF1.50	12780.00	8679.21				MINPT-O-EOU	
3552.34	212.52	3410.33	3339.82	25.18		OSF1.50	13600.00	8695.18				MinPt-CtCt	
3552.36	224.35	3402.46	3328.01	23.85		OSF1.50	13880.00	8700.63				MinPt-CtCt	
3549.18	261.70	3374.36	3287.46	20.41		OSF1.50	14760.00	8717.77				MinPt-CtCt	
3561.00	285.68	3370.25	3275.37	18.76		OSF1.50	15370.00	8729.65				MINPT-O-EOU	
3551.48	343.07	3322.42	3208.39	15.57		OSF1.50	16670.00	8754.97				MinPt-CtCt	
3556.28	375.97	3304.31	3179.31	14.22		OSF1.50	17440.00	8769.97				MinPt-CtCt	
3550.08	427.70	3264.62	3122.38	12.48		OSF1.50	18650.00	8793.54				MinPt-CtCt	
3551.50	432.10	3263.11	3119.40	12.35		OSF1.50	18790.00	8796.26				MINPT-O-EOU	
3558.31	444.28	3261.80	3114.04	12.04		OSF1.50	19084.61	8802.00				MinPts	
Final Survey - Cimarex Energy Crawford 27-26 Fee 1H MWD Off - 19142ft (Surcon Corrected) (Def Survey)													
												Pass	
2757.96	32.81	2756.83	2725.16	N/A		MAS = 10.00 (m)	0.00	0.00				MinPts	
2757.97	32.81	2756.82	2725.16	155309.96		MAS = 10.00 (m)	26.00	26.00				WRP	
2750.30	32.81	2742.98	2717.49	444.10		MAS = 10.00 (m)	1320.00	1320.00				MinPts	
2750.34	32.81	2742.95	2717.53	439.48		MAS = 10.00 (m)	1340.00	1340.00				MINPT-O-EOU	
2794.72	32.81	2782.62	2761.92	251.98		MAS = 10.00 (m)	2600.00	2599.98				MinPt-O-SF	
3006.75	32.81	2996.43	2973.94	323.13		MAS = 10.00 (m)	3960.00	3929.61				MinPt-O-SF	
3452.24	32.81	3434.87	3419.43	211.19		MAS = 10.00 (m)	6100.00	6003.58				MinPt-O-SF	
3527.54	32.81	3510.06	3494.73	214.31		MAS = 10.00 (m)	6510.00	6406.89				MinPt-O-SF	
3541.48	32.81	3524.01	3508.67	215.22		MAS = 10.00 (m)	6700.00	6596.37				MinPt-O-SF	
3531.51	32.81	3512.58	3498.70	197.17		MAS = 10.00 (m)	8020.00	7916.34				MinPts	
3531.52	32.81	3512.57	3498.71	196.95		MAS = 10.00 (m)	8040.00	7936.34				MINPT-O-EOU	
3489.81	38.21	3464.00	3451.60	140.70		OSF1.50	9000.00	8594.92				MinPt-CtCt	
3490.19	39.29	3463.68	3450.95	136.96		OSF1.50	9050.00	8601.12				MINPT-O-EOU	
3490.53	39.64	3463.77	3450.89	135.53		OSF1.50	9070.00	8603.11				MinPt-O-ADP	
3620.40	89.40	3560.47	3531.00	61.40		OSF1.50	10600.00	8636.75				MinPt-CtCt	
3619.71	97.62	3554.30	3522.09	56.17		OSF1.50	10810.00	8640.84				MinPt-CtCt	
3608.98	117.08	3530.60	3491.90	46.62		OSF1.50	11300.00	8650.39				MinPt-CtCt	
3611.16	123.08	3528.82	3488.13	44.37		OSF1.50	11480.00	8653.89				MINPT-O-EOU	

Offset Trajectory	Separation			Allow	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Cl-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
3619.53	149.69	3519.41	3469.85	36.50		OSF1.50	12100.00	8665.97				MinPt-CtCt	
3608.19	172.46	3492.89	3435.74	31.55		OSF1.50	12650.00	8676.68				MinPt-CtCt	
3611.80	182.12	3490.06	3429.68	29.90		OSF1.50	12920.00	8681.94				MinPt-O-EQU	
3617.09	191.15	3489.33	3425.94	28.52		OSF1.50	13140.00	8686.22				MinPt-O-EQU	
3625.02	223.31	3475.82	3401.71	24.45		OSF1.50	13870.00	8700.44				MinPt-CtCt	
3624.01	232.56	3469.24	3392.05	23.47		OSF1.50	14090.00	8704.72				MinPt-CtCt	
3626.00	237.38	3467.42	3388.62	23.00		OSF1.50	14240.00	8707.65				MinPt-O-EQU	
3627.79	239.51	3467.75	3388.28	22.81		OSF1.50	14310.00	8709.01				MinPt-O-ADP	
3619.36	276.40	3434.76	3342.95	19.71		OSF1.50	15140.00	8725.17				MinPt-CtCt	
3619.05	282.73	3430.24	3336.32	19.26		OSF1.50	15290.00	8728.10				MinPt-CtCt	
3618.48	312.12	3410.07	3306.36	17.44		OSF1.50	15990.00	8741.73				MinPt-CtCt	
3624.46	333.52	3401.78	3290.94	16.34		OSF1.50	16500.00	8751.66				MinPt-CtCt	
3626.08	338.25	3400.25	3287.83	16.12		OSF1.50	16650.00	8754.58				MinPt-O-EQU	
3637.29	352.93	3401.67	3284.35	15.50		OSF1.50	17030.00	8761.98				MinPt-O-ADP	
3642.62	359.27	3402.72	3283.35	15.25		OSF1.50	17170.00	8764.71				MinPt-O-EQU	
3645.97	376.42	3394.69	3269.55	14.56		OSF1.50	17520.00	8771.53				MinPt-CtCt	
3629.41	440.30	3335.55	3189.11	12.39		OSF1.50	19040.00	8801.13				MinPt-CtCt	
3629.71	441.26	3335.21	3188.45	12.36		OSF1.50	19084.61	8802.00				MinPts	

Cimarex Crawford 26-2 (Offset)													Pass
Gyro 0ft-9500ft (Def Survey)													
9739.08	32.81	9737.10	9706.27	N/A		MAS = 10.00 (m)	0.00	0.00				Surface	
9738.86	32.81	9736.85	9706.05	298399.74		MAS = 10.00 (m)	26.00	26.00				MinPt-O-SF	
9738.61	32.81	9736.46	9705.80	59152.95		MAS = 10.00 (m)	100.00	100.00				MinPts	
9739.82	32.81	9732.96	9707.01	1996.44		MAS = 10.00 (m)	1100.00	1100.00				MinPts	
9740.13	32.81	9732.67	9707.32	1778.05		MAS = 10.00 (m)	1230.00	1230.00				MinPt-O-EQU	
9759.92	32.81	9745.61	9727.11	791.77		MAS = 10.00 (m)	2500.00	2500.00				MinPt-O-EQU	
9759.42	32.81	9744.88	9726.62	776.25		MAS = 10.00 (m)	2600.00	2599.98				MinPt-O-SF	
9417.70	32.81	9398.94	9384.89	574.47		MAS = 10.00 (m)	6100.00	6003.58				MinPt-O-SF	
9377.02	32.81	9357.84	9344.21	562.03		MAS = 10.00 (m)	6630.00	6526.46				MinPt-O-SF	
9363.88	32.81	9343.37	9331.07	516.67		MAS = 10.00 (m)	8000.00	7896.34				MinPts	
2942.80	285.58	2751.75	2657.22	15.55		OSF1.50	17370.00	8768.61				MinPt-CtCt	
2943.29	286.92	2751.35	2656.37	15.48		OSF1.50	17420.00	8769.58				MinPt-O-EQU	
2943.72	287.43	2751.45	2656.30	15.46		OSF1.50	17440.00	8769.97				MinPt-O-ADP	
2971.75	294.10	2775.03	2677.65	15.25		OSF1.50	17780.00	8776.59				MinPt-O-SF	
3407.78	288.49	3214.80	3119.30	17.83		OSF1.50	19084.61	8802.00				TD	

Cimarex Crawford 27-4 (Offset)													Pass
Gyro 0ft-9500.7FT (Def Survey)													
3399.08	32.81	3397.10	3366.27	N/A		MAS = 10.00 (m)	0.00	0.00				Surface	
3399.02	32.81	3397.03	3366.21	413310.78		MAS = 10.00 (m)	10.00	10.00				MinPt-O-SF	
3398.99	32.81	3397.00	3366.18	551070.55		MAS = 10.00 (m)	20.00	20.00				MinPt-O-EQU	
3398.98	32.81	3397.00	3366.18	N/A		MAS = 10.00 (m)	26.00	26.00				WRP	
3391.92	32.81	3384.96	3359.11	683.29		MAS = 10.00 (m)	950.00	950.00				MinPts	
3391.96	32.81	3384.94	3359.15	673.22		MAS = 10.00 (m)	970.00	970.00				MinPt-O-EQU	
3421.99	32.81	3408.57	3389.18	298.82		MAS = 10.00 (m)	2600.00	2599.98				MinPts	
3421.97	32.81	3408.62	3389.16	300.75		MAS = 10.00 (m)	2620.00	2619.96				MinPts	
3218.03	70.19	3170.58	3147.84	70.73		OSF1.50	10070.00	8626.43				MinPt-CtCt	
3218.44	71.34	3170.22	3147.10	69.56		OSF1.50	10120.00	8627.40				MinPt-O-EQU	
3218.82	71.80	3170.25	3147.02	69.11		OSF1.50	10140.00	8627.79				MinPt-O-ADP	
3603.26	100.19	3535.81	3503.07	55.00		OSF1.50	11690.00	8657.98				MinPt-O-SF	
9571.65	112.32	9496.11	9459.33	130.09		OSF1.50	19084.61	8802.00				TD	

Intent ☐ As Drilled ☐

API #		
Operator Name:	Property Name:	Well Number

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

KZ 06/29/2018

Cimarex Energy Co., Crawford 27-26 Fee 30H

1. Geological Formations

TVD of target 8,802

Pilot Hole TD N/A

MD at TD 19,084

Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
Castille	1514	N/A	
Bell Canyon	1830	N/A	
Cherry Canyon	2788	N/A	
Brushy Canyon	3994	N/A	
Bone Spring	5286	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	8102	8102	5-1/2"	17.00	L-80	LT&C	1.66	2.04	2.26
8 3/4	8102	19084	8802	5-1/2"	17.00	L-80	BT&C	1.53	1.88	33.36
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 30H

	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?	N
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

Cimarex Energy Co., Crawford 27-26 Fee 30H

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	1207	13.50	1.72	9.15	15.5	Lead: Class C + Bentonite
	2565	14.80	1.34	6.32	9.5	Tail: Class C + LCM

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 30H

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.	
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?

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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 19084'	OBM	8.50 - 9.00	50-70	N/C

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

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring
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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.
X	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.

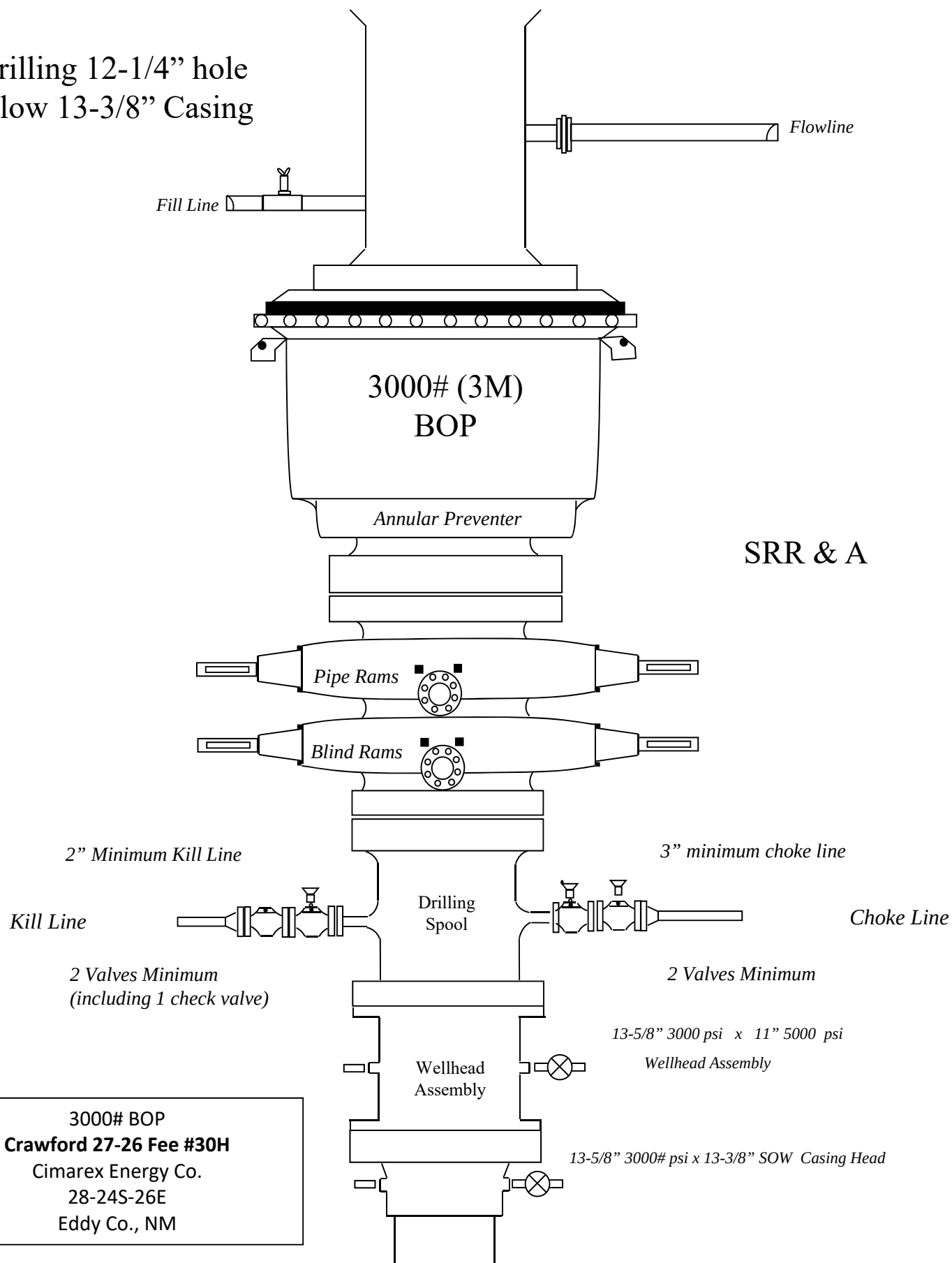
All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type.

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.

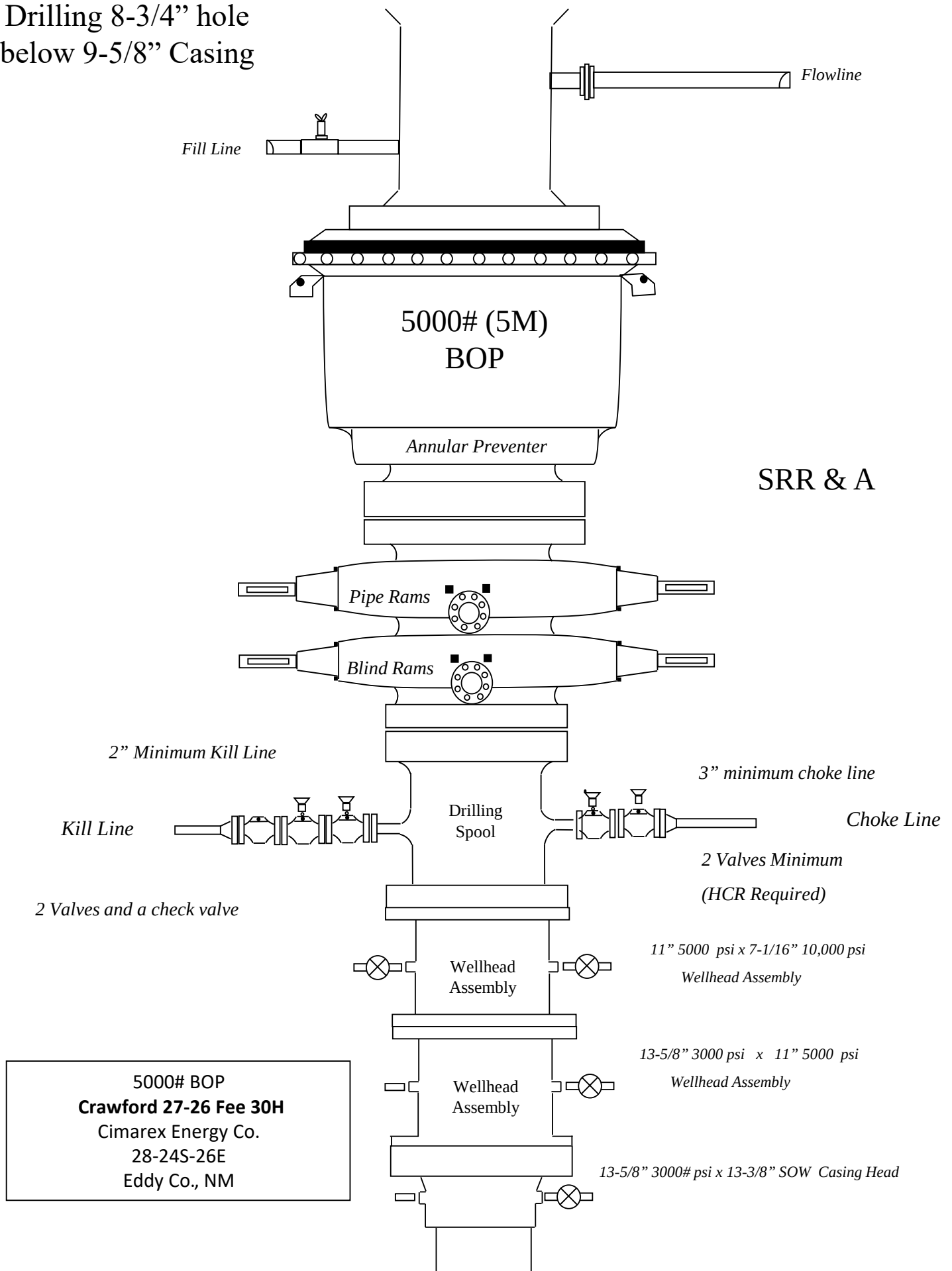
All casing strings will be tested as per Onshore Order No.2 to at least 0.22 psi/ft or 1,500 whichever is greater and not to exceed 70% of casing burst.

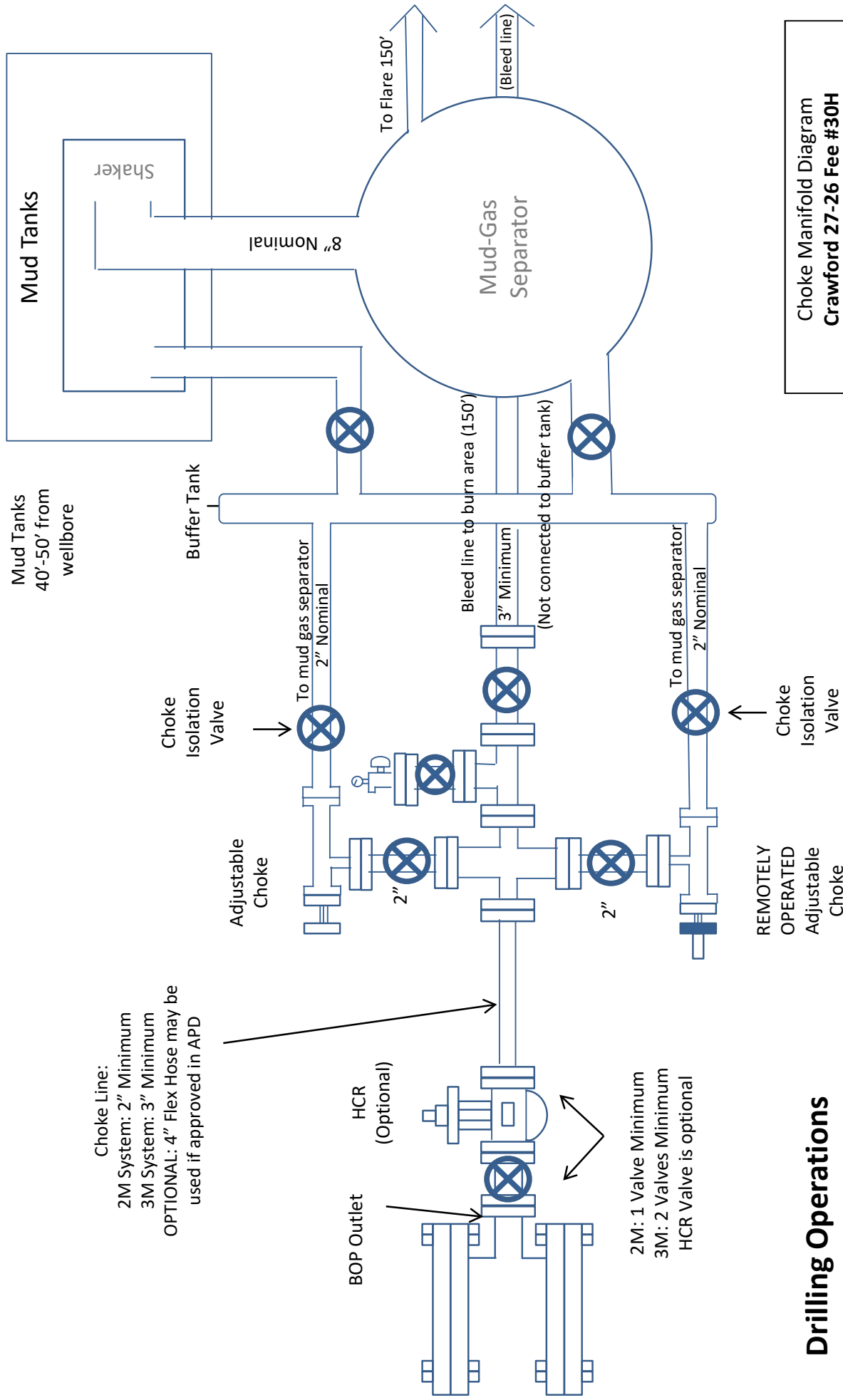
If well conditions dictate conventional slips will be set and BOPE will be tested to appropriate pressures based on permitted pressure requirements.

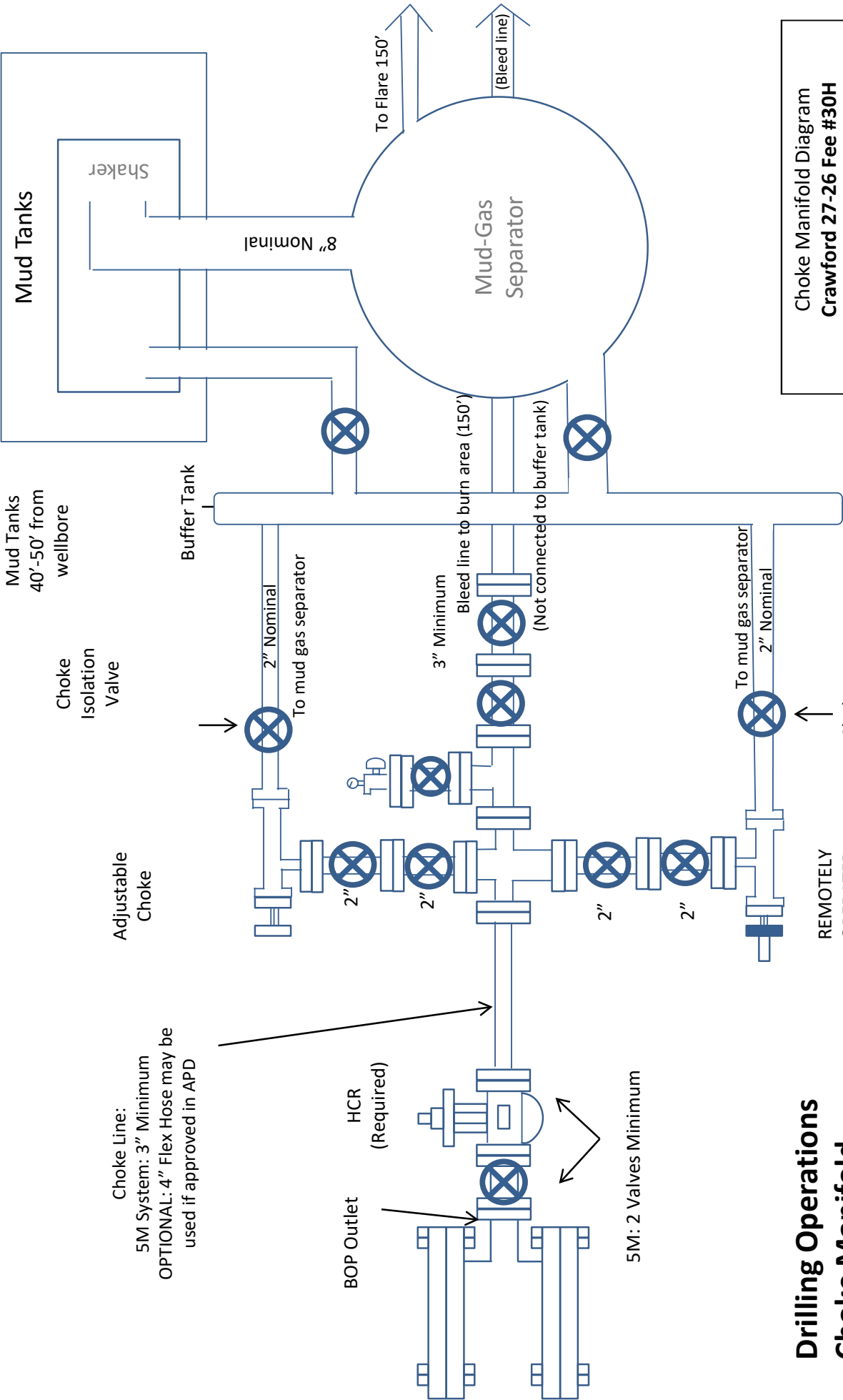
Drilling 12-1/4" hole
below 13-3/8" Casing



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







**Drilling Operations
Choke Manifold
5M Service**

Choke Manifold Diagram
Crawford 27-26 Fee #30H
28-24S-26E
Cimarex Energy Co.
Eddy Co., NM