

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 271799

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 30-015-46536
5. Property Name CRAWFORD 27 26 FEE		6. Well No. 029H

7. Surface Location

UL - Lot I	Section 28	Township 24S	Range 26E	Lot Idn	Feet From 2115	N/S Line S	Feet From 915	E/W Line E	County Eddy
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8. Proposed Bottom Hole Location

UL - Lot P	Section 26	Township 24S	Range 26E	Lot Idn P	Feet From 330	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 19161	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	19161	3786	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: 12/20/2019

Phone: 918-295-1658

Approved By: Raymond Podany

Title: Geologist

Approved Date: 12/26/2019

Expiration Date: 12/26/2021

Conditions of Approval Attached

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

☐ AMENDED REPORT

- 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 #029H	30-015-46536	I-28-24S-26E	2115S 0915E	4400	None	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 271799

PERMIT COMMENTS

Operator Name and Address: CIMAREX ENERGY CO. [215099] 600 N. Marienfeld Street Midland, TX 79701		API Number: 30-015-46536
		Well: CRAWFORD 27 26 FEE #029H

Created By	Comment	Comment Date
rpodany	2 different BHL listed on BHL page. BHL should be same on both entries.	12/20/2019
ahvermersch	Fee Cancellation - Permit in Pending payment, Operator needs to resubmit	12/20/2019

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Form APD Conditions

Permit 271799

PERMIT CONDITIONS OF APPROVAL

Operator Name and Address: CIMAREX ENERGY CO. [215099] 600 N. Marienfeld Street Midland, TX 79701		API Number: 30-015-46536
		Well: CRAWFORD 27 26 FEE #029H
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 #29H Rev1 RM 13Dec19 Proposal Geodetic Report

(Non-Def Plan)



Report Date:	December 12, 2019 - 07:51 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 #29H / New Slot	TVD Reference Datum:	RKB
Well:	Crawford 27-26 Fee #29H	TVD Reference Elevation:	3366.800 ft above MSL
Borehole:	Crawford 27-26 Fee #29H	Seabed / Ground Elevation:	3340.800 ft above MSL
UWI / API#:	Unknown / Unknown	Magnetic Declination:	7.249 °
Survey Name:	Cimarex Crawford 27-26 Fee #29H 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:	105.945 ° / 12333.530 ft / 6.459 / 1.418	Total Magnetic Field Strength:	47740.598 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	Magnetic Dip Angle:	59.795 °
Location Lat / Long:	N 32° 11' 11.99353", W 104° 17' 32.38132"	Declination Date:	December 12, 2019
Location Grid N/E Y/X:	N 431645.670 ftUS, E 554022.800 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:	7.2267 °
		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 [2115' FSL, 915' FEL]	0.00	0.00	199.93	0.00	0.00	0.00	0.00	N/A	431645.67	554022.80	N 32 11 11.99	W 104 17 32.38
	100.00	0.00	160.18	100.00	0.00	0.00	0.00	0.00	431645.67	554022.80	N 32 11 11.99	W 104 17 32.38
	200.00	0.00	160.18	200.00	0.00	0.00	0.00	0.00	431645.67	554022.80	N 32 11 11.99	W 104 17 32.38
	300.00	0.00	160.18	300.00	0.00	0.00	0.00	0.00	431645.67	554022.80	N 32 11 11.99	W 104 17 32.38
	400.00	0.00	160.18	400.00	0.00	0.00	0.00	0.00	431645.67	554022.80	N 32 11 11.99	W 104 17 32.38
	500.00	0.00	160.18	500.00	0.00	0.00	0.00	0.00	431645.67	554022.80	N 32 11 11.99	W 104 17 32.38
	600.00	0.00	160.18	600.00	0.00	0.00	0.00	0.00	431645.67	554022.80	N 32 11 11.99	W 104 17 32.38
	700.00	0.00	160.18	700.00	0.00	0.00	0.00	0.00	431645.67	554022.80	N 32 11 11.99	W 104 17 32.38
	800.00	0.00	160.18	800.00	0.00	0.00	0.00	0.00	431645.67	554022.80	N 32 11 11.99	W 104 17 32.38
	900.00	0.00	160.18	900.00	0.00	0.00	0.00	0.00	431645.67	554022.80	N 32 11 11.99	W 104 17 32.38
	1000.00	0.00	160.18	1000.00	0.00	0.00	0.00	0.00	431645.67	554022.80	N 32 11 11.99	W 104 17 32.38
	1100.00	0.00	160.18	1100.00	0.00	0.00	0.00	0.00	431645.67	554022.80	N 32 11 11.99	W 104 17 32.38
	1200.00	0.00	160.18	1200.00	0.00	0.00	0.00	0.00	431645.67	554022.80	N 32 11 11.99	W 104 17 32.38
	1300.00	0.00	160.18	1300.00	0.00	0.00	0.00	0.00	431645.67	554022.80	N 32 11 11.99	W 104 17 32.38
	1400.00	0.00	160.18	1400.00	0.00	0.00	0.00	0.00	431645.67	554022.80	N 32 11 11.99	W 104 17 32.38
	1500.00	0.00	160.18	1500.00	0.00	0.00	0.00	0.00	431645.67	554022.80	N 32 11 11.99	W 104 17 32.38
Castille (Base Salt)	1514.00	0.00	160.18	1514.00	0.00	0.00	0.00	0.00	431645.67	554022.80	N 32 11 11.99	W 104 17 32.38
	1600.00	0.00	160.18	1600.00	0.00	0.00	0.00	0.00	431645.67	554022.80	N 32 11 11.99	W 104 17 32.38
	1700.00	0.00	160.18	1700.00	0.00	0.00	0.00	0.00	431645.67	554022.80	N 32 11 11.99	W 104 17 32.38
	1800.00	0.00	160.18	1800.00	0.00	0.00	0.00	0.00	431645.67	554022.80	N 32 11 11.99	W 104 17 32.38
Bell Canyon (Top Delaware)	1830.00	0.00	160.18	1830.00	0.00	0.00	0.00	0.00	431645.67	554022.80	N 32 11 11.99	W 104 17 32.38
	1900.00	0.00	160.18	1900.00	0.00	0.00	0.00	0.00	431645.67	554022.80	N 32 11 11.99	W 104 17 32.38
Nudge 2"/100' DLS	2000.00	0.00	160.18	2000.00	0.00	0.00	0.00	0.00	431645.67	554022.80	N 32 11 11.99	W 104 17 32.38
	2100.00	2.00	160.18	2099.98	0.60	-1.64	0.59	2.00	431644.03	554023.39	N 32 11 11.98	W 104 17 32.37
	2200.00	4.00	160.18	2199.84	2.38	-6.57	2.37	2.00	431639.11	554025.17	N 32 11 11.93	W 104 17 32.35
	2300.00	6.00	160.18	2299.45	5.36	-14.76	5.32	2.00	431630.91	554028.12	N 32 11 11.85	W 104 17 32.32
	2400.00	8.00	160.18	2398.70	9.53	-26.23	9.45	2.00	431619.44	554032.25	N 32 11 11.73	W 104 17 32.27
	2500.00	10.00	160.18	2497.47	14.87	-40.94	14.76	2.00	431604.73	554037.56	N 32 11 11.59	W 104 17 32.21
	2600.00	12.00	160.18	2595.62	21.39	-58.89	21.23	2.00	431586.78	554044.02	N 32 11 11.41	W 104 17 32.13
	2700.00	14.00	160.18	2693.06	29.07	-80.06	28.85	2.00	431565.62	554051.65	N 32 11 11.20	W 104 17 32.05
Cherry Canyon	2798.29	15.97	160.18	2788.00	37.76	-103.96	37.47	2.00	431541.72	554060.27	N 32 11 10.96	W 104 17 31.95
	2800.00	16.00	160.18	2789.64	37.92	-104.40	37.63	2.00	431541.28	554060.43	N 32 11 10.96	W 104 17 31.94
Hold Nudge	2817.16	16.34	160.18	2806.12	39.55	-108.90	39.25	2.00	431536.78	554062.05	N 32 11 10.92	W 104 17 31.93
	2900.00	16.34	160.18	2885.62	47.51	-130.83	47.15	0.00	431514.85	554069.95	N 32 11 10.70	W 104 17 31.83
	3000.00	16.34	160.18	2981.58	57.13	-157.30	56.69	0.00	431488.38	554079.49	N 32 11 10.44	W 104 17 31.72
	3100.00	16.34	160.18	3077.54	66.74	-183.77	66.24	0.00	431461.91	554089.03	N 32 11 10.17	W 104 17 31.61
	3200.00	16.34	160.18	3173.49	76.36	-210.24	75.78	0.00	431435.44	554098.57	N 32 11 9.91	W 104 17 31.50
	3300.00	16.34	160.18	3269.45	85.97	-236.72	85.32	0.00	431408.98	554108.11	N 32 11 9.65	W 104 17 31.39
	3400.00	16.34	160.18	3365.41	95.59	-263.19	94.86	0.00	431382.51	554117.65	N 32 11 9.39	W 104 17 31.28
	3500.00	16.34	160.18	3461.37	105.20	-289.66	104.40	0.00	431356.04	554127.19	N 32 11 9.13	W 104 17 31.17
	3600.00	16.34	160.18	3557.33	114.81	-316.13	113.94	0.00	431329.57	554136.73	N 32 11 8.86	W 104 17 31.06
	3700.00	16.34	160.18	3653.29	124.43	-342.61	123.48	0.00	431303.10	554146.27	N 32 11 8.60	W 104 17 30.95
	3800.00	16.34	160.18	3749.25	134.04	-369.08	133.02	0.00	431276.63	554155.81	N 32 11 8.34	W 104 17 30.84
	3900.00	16.34	160.18	3845.21	143.66	-395.55	142.57	0.00	431250.16	554165.35	N 32 11 8.08	W 104 17 30.72
	4000.00	16.34	160.18	3941.17	153.27	-422.02	152.11	0.00	431223.69	554174.89	N 32 11 7.82	W 104 17 30.61
Brushy Canyon	4055.06	16.34	160.18	3994.00	158.56	-436.60	157.36	0.00	431209.11	554180.15	N 32 11 7.67	W 104 17 30.55
	4100.00	16.34	160.18	4037.13	162.88	-448.49	161.65	0.00	431197.22	554184.43	N 32 11 7.55	W 104 17 30.50
	4200.00	16.34	160.18	4133.09	172.50	-474.97	171.19	0.00	431170.75	554193.97	N 32 11 7.29	W 104 17 30.39
	4300.00	16.34	160.18	4229.05	182.11	-501.44	180.73	0.00	431144.28	554203.51	N 32 11 7.03	W 104 17 30.28
	4400.00	16.34	160.18	4325.01	191.73	-527.91	190.27	0.00	431117.81	554213.05	N 32 11 6.77	W 104 17 30.17
	4500.00	16.34	160.18	4420.97	201.34	-554.38	199.81	0.00	431091.34	554222.59	N 32 11 6.51	W 104 17 30.06
	4600.00	16.34	160.18	4516.93	210.95	-580.85	209.35	0.00	431064.87	554232.13	N 32 11 6.25	W 104 17 29.95
	4700.00	16.34	160.18	4612.88	220.57	-607.33	218.90	0.00	431038.40	554241.67	N 32 11 5.98	W 104 17 29.84
	4800.00	16.34	160.18	4708.84	230.18	-633.80	228.44	0.00	431011.93	554251.22	N 32 11 5.72	W 104 17 29.73
	4900.00	16.34	160.18	4804.80	239.80	-660.27	237.98	0.00	430985.46	554260.76	N 32 11 5.46	W 104 17 29.62
	5000.00	16.34	160.18	4900.76	249.41	-686.74	247.52	0.00	430958.99	554270.30	N 32 11 5.20	W 104 17 29.50
	5100.00	16.34	160.18	4996.72	259.03	-713.21	257.06	0.00	430932.52	554279.84	N 32 11 4.94	W 104 17 29.39
	5200.00	16.34	160.18	5092.68	268.64	-739.69	266.60	0.00	430906.05	554289.38	N 32 11 4.67	W 104 17 29.28
	5300.00	16.34	160.18	5188.64	278.25	-766.16	276.14	0.00	430879.58	554298.92	N 32 11 4.41	W 104 17 29.17
	5400.00	16.34	160.18	5284.60	287.87	-792.63	285.68	0.00	430853.11	554308.46	N 32 11 4.15	W 104 17 29.06
Top Bone Spring	5401.46	16.34	160.18	5286.00	288.01	-793.02	285.82	0.00	430852.73	554308.60	N 32 11 4.15	W 104 17 29.06
	5500.00	16.34	160.18	5380.56	297.48	-819.10	295.22	0.00	430826.64	554318.00	N 32 11 3.89	W 104 17 28.95
	5600.00	16.34	160.18	5476.52	307.10	-845.57	304.77	0.00	430800.17	554327.54	N 32 11 3.63	W 104 17 28.84
	5700.00	16.34	160.18	5572.48	316.71	-872.05	314.31	0.00	430773.70	554337.08	N 32 11 3.36	W 104 17 28.73
	5800.00	16.34	160.18	5668.44	326.32	-898.52	323.85	0.00	430747.23	554346.62	N 32 11 3.10	W 104 17 28.62

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	16.34	160.18	5764.40	335.94	-924.99	333.39	0.00	430720.77	554356.16	N 32 11 2.84	W 104 17 28.51
	6000.00	16.34	160.18	5860.36	345.55	-951.46	342.93	0.00	430694.30	554365.70	N 32 11 2.58	W 104 17 28.40
	6100.00	16.34	160.18	5956.32	355.17	-977.93	352.47	0.00	430667.83	554375.24	N 32 11 2.32	W 104 17 28.28
	6200.00	16.34	160.18	6052.27	364.78	-1004.41	362.01	0.00	430641.36	554384.78	N 32 11 2.05	W 104 17 28.17
	6300.00	16.34	160.18	6148.23	374.40	-1030.88	371.55	0.00	430614.89	554394.32	N 32 11 1.79	W 104 17 28.06
Top 1st BSPG SS	6376.87	16.34	160.18	6222.00	381.79	-1051.23	378.89	0.00	430594.54	554401.65	N 32 11 1.59	W 104 17 27.98
	6400.00	16.34	160.18	6244.19	384.01	-1057.35	381.10	0.00	430588.42	554403.86	N 32 11 1.53	W 104 17 27.95
	6500.00	16.34	160.18	6340.15	393.62	-1083.82	390.64	0.00	430561.95	554413.40	N 32 11 1.27	W 104 17 27.84
	6600.00	16.34	160.18	6436.11	403.24	-1110.30	400.18	0.00	430535.48	554422.94	N 32 11 1.01	W 104 17 27.73
	6700.00	16.34	160.18	6532.07	412.85	-1136.77	409.72	0.00	430509.01	554432.48	N 32 11 0.74	W 104 17 27.62
Top 2nd BSPG SS	6715.56	16.34	160.18	6547.00	414.35	-1140.89	411.20	0.00	430504.89	554433.96	N 32 11 0.70	W 104 17 27.60
	6800.00	16.34	160.18	6628.03	422.47	-1163.24	419.26	0.00	430482.54	554442.02	N 32 11 0.48	W 104 17 27.51
	6900.00	16.34	160.18	6723.99	432.08	-1189.71	428.80	0.00	430456.07	554451.56	N 32 11 0.22	W 104 17 27.40
	7000.00	16.34	160.18	6819.95	441.69	-1216.18	438.34	0.00	430429.60	554461.10	N 32 10 59.96	W 104 17 27.29
	7100.00	16.34	160.18	6915.91	451.31	-1242.66	447.88	0.00	430403.13	554470.64	N 32 10 59.70	W 104 17 27.18
	7200.00	16.34	160.18	7011.87	460.92	-1269.13	457.42	0.00	430376.66	554480.18	N 32 10 59.43	W 104 17 27.06
	7300.00	16.34	160.18	7107.83	470.54	-1295.60	466.97	0.00	430350.19	554489.72	N 32 10 59.17	W 104 17 26.95
	7400.00	16.34	160.18	7203.79	480.15	-1322.07	476.51	0.00	430323.72	554499.26	N 32 10 58.91	W 104 17 26.84
	7500.00	16.34	160.18	7299.75	489.77	-1348.54	486.05	0.00	430297.25	554508.80	N 32 10 58.65	W 104 17 26.73
	7600.00	16.34	160.18	7395.71	499.38	-1375.02	495.59	0.00	430270.78	554518.34	N 32 10 58.39	W 104 17 26.62
	7700.00	16.34	160.18	7491.66	508.99	-1401.49	505.13	0.00	430244.31	554527.88	N 32 10 58.12	W 104 17 26.51
	7800.00	16.34	160.18	7587.62	518.61	-1427.96	514.67	0.00	430217.84	554537.42	N 32 10 57.86	W 104 17 26.40
	7900.00	16.34	160.18	7683.58	528.22	-1454.43	524.21	0.00	430191.37	554546.96	N 32 10 57.60	W 104 17 26.29
	8000.00	16.34	160.18	7779.54	537.84	-1480.90	533.75	0.00	430164.90	554556.50	N 32 10 57.34	W 104 17 26.18
	8100.00	16.34	160.18	7875.50	547.45	-1507.38	543.30	0.00	430138.43	554566.04	N 32 10 57.08	W 104 17 26.07
	8200.00	16.34	160.18	7971.46	557.06	-1533.85	552.84	0.00	430111.96	554575.59	N 32 10 56.81	W 104 17 25.96
KOP - Build 12°/100' DLS	8278.01	16.34	160.18	8046.32	564.56	-1554.50	560.28	0.00	430091.32	554583.03	N 32 10 56.61	W 104 17 25.87
	8300.00	18.57	155.46	8067.30	567.08	-1560.60	562.78	12.00	430085.22	554585.53	N 32 10 56.55	W 104 17 25.84
Top 3rd BSPG SS	8312.39	19.87	153.26	8079.00	568.86	-1564.27	564.55	12.00	430081.54	554587.30	N 32 10 56.51	W 104 17 25.82
	8400.00	29.55	143.23	8158.52	588.63	-1594.96	584.23	12.00	430050.86	554606.98	N 32 10 56.21	W 104 17 25.59
Build & Turn 12°/100' DLS	8447.65	35.00	140.00	8198.80	604.51	-1614.86	600.06	12.00	430030.96	554622.81	N 32 10 56.01	W 104 17 25.41
	8500.00	38.13	130.84	8240.87	626.48	-1636.95	621.96	12.00	430008.87	554644.71	N 32 10 55.79	W 104 17 25.15
	8600.00	45.68	116.82	8315.41	682.06	-1673.41	677.45	12.00	429972.41	554700.19	N 32 10 55.43	W 104 17 24.51
	8700.00	54.54	106.23	8379.58	753.43	-1701.03	748.74	12.00	429944.79	554771.47	N 32 10 55.16	W 104 17 23.68
Top Wolfcamp	8789.69	63.13	98.62	8426.00	828.32	-1717.29	823.59	12.00	429928.54	554846.31	N 32 10 55.00	W 104 17 22.81
	8800.00	64.14	97.83	8430.58	837.46	-1718.61	832.73	12.00	429927.22	554855.45	N 32 10 54.98	W 104 17 22.70
	8900.00	74.14	90.72	8466.18	930.49	-1725.37	925.73	12.00	429920.46	554948.45	N 32 10 54.92	W 104 17 21.62
Build 4°/100' DLS	8908.47	75.00	90.16	8468.43	938.65	-1725.43	933.89	12.00	429920.40	554956.61	N 32 10 54.92	W 104 17 21.52
	9000.00	78.66	90.16	8489.28	1027.76	-1725.67	1023.01	4.00	429920.16	555045.71	N 32 10 54.91	W 104 17 20.49
Wolfcamp 'Y' SS	9008.86	79.02	90.16	8491.00	1036.45	-1725.70	1031.70	4.00	429920.13	555054.40	N 32 10 54.91	W 104 17 20.38
	9100.00	82.66	90.16	8505.51	1126.42	-1725.95	1121.66	4.00	429919.88	555144.36	N 32 10 54.91	W 104 17 19.34
	9200.00	86.66	90.16	8514.81	1225.96	-1726.22	1221.21	4.00	429919.61	555243.89	N 32 10 54.91	W 104 17 18.18
Wolfcamp 'Y' SS Target	9223.82	87.61	90.16	8516.00	1249.75	-1726.29	1244.99	4.00	429919.54	555267.68	N 32 10 54.91	W 104 17 17.90
Landing Point	9257.14	88.95	90.16	8517.00	1283.06	-1726.38	1278.30	4.00	429919.45	555300.98	N 32 10 54.91	W 104 17 17.52
	9300.00	88.95	90.16	8517.79	1325.91	-1726.50	1321.15	0.00	429919.33	555343.83	N 32 10 54.90	W 104 17 17.02
	9400.00	88.95	90.16	8519.63	1425.89	-1726.77	1421.14	0.00	429919.06	555443.80	N 32 10 54.90	W 104 17 15.85
	9500.00	88.95	90.16	8521.46	1525.88	-1727.05	1521.12	0.00	429918.78	555543.78	N 32 10 54.90	W 104 17 14.69
	9600.00	88.95	90.16	8523.30	1625.86	-1727.32	1621.10	0.00	429918.51	555643.75	N 32 10 54.89	W 104 17 13.53
	9700.00	88.95	90.16	8525.14	1725.84	-1727.60	1721.08	0.00	429918.23	555743.72	N 32 10 54.89	W 104 17 12.36
	9800.00	88.95	90.16	8526.98	1825.82	-1727.87	1821.07	0.00	429917.96	555843.70	N 32 10 54.89	W 104 17 11.20
	9900.00	88.95	90.16	8528.81	1925.81	-1728.15	1921.05	0.00	429917.68	555943.67	N 32 10 54.89	W 104 17 10.04
	10000.00	88.95	90.16	8530.65	2025.79	-1728.43	2021.03	0.00	429917.40	556043.64	N 32 10 54.88	W 104 17 8.87
	10100.00	88.95	90.16	8532.49	2125.77	-1728.70	2121.01	0.00	429917.13	556143.62	N 32 10 54.88	W 104 17 7.71
	10200.00	88.95	90.16	8534.33	2225.76	-1728.98	2221.00	0.00	429916.85	556243.59	N 32 10 54.88	W 104 17 6.55
	10300.00	88.95	90.16	8536.16	2325.74	-1729.25	2320.98	0.00	429916.58	556343.56	N 32 10 54.87	W 104 17 5.38
Base 'Y' SS	10399.93	88.95	90.16	8538.00	2425.66	-1729.53	2420.90	0.00	429916.30	556443.47	N 32 10 54.87	W 104 17 4.22
	10400.00	88.95	90.16	8538.00	2425.72	-1729.53	2420.96	0.00	429916.30	556443.54	N 32 10 54.87	W 104 17 4.22
	10500.00	88.95	90.16	8539.84	2525.71	-1729.80	2520.95	0.00	429916.03	556543.51	N 32 10 54.87	W 104 17 3.06
	10600.00	88.95	90.16	8541.68	2625.69	-1730.08	2620.93	0.00	429915.75	556643.49	N 32 10 54.86	W 104 17 1.89
	10700.00	88.95	90.16	8543.51	2725.67	-1730.36	2720.91	0.00	429915.47	556743.46	N 32 10 54.86	W 104 17 0.73
	10800.00	88.95	90.16	8545.35	2825.66	-1730.63	2820.89	0.00	429915.20	556843.43	N 32 10 54.86	W 104 16 59.57
	10900.00	88.95	90.16	8547.19	2925.64	-1730.91	2920.88	0.00	429914.92	556943.41	N 32 10 54.85	W 104 16 58.40
	11000.00	88.95	90.16	8549.03	3025.62	-1731.18	3020.86	0.00	429914.65	557043.38	N 32 10 54.85	W 104 16 57.24
	11100.00	88.95	90.16	8550.86	3125.60	-1731.46	3120.84	0.00	429914.37	557143.35	N 32 10 54.85	W 104 16 56.08
	11200.00	88.95	90.16	8552.70	3225.59	-1731.73	3220.82	0.00	429914.10	557243.33	N 32 10 54.84	W 104 16 54.91
	11300.00	88.95	90.16	8554.54	3325.57	-1732.01	3320.81	0.00	429913.82	557343.30	N 32 10 54.84	W 104 16 53.75
	11400.00	88.95	90.16	8556.38	3425.55	-1732.29	3420.79	0.00	429913.54	557443.27	N 32 10 54.84	W 104 16 52.59
	11500.00	88.95	90.16	8558.21	3525.54	-1732.56	3520.77	0.00	429913.27	557543.25	N 32 10 54.83	W 104 16 51.42
	11600.00	88.95	90.16	8560.05	3625.52	-1732.84	3620.76	0.00	429912.99	557643.22	N 32 10 54.83	W 104 16 50.26
	11700.00	88.95	90.16	8561.89	3725.50	-1733.11	3720.74	0.00	429912.72	557743.19	N 32 10 54.83	W 104 16 49.10
	11800.00	88.95	90.16	8563.73	3825.49	-1733.39	3820.72	0.00	429912.44	557843.17	N 32 10 54.82	W 104 16 47.93
	11900.00	88.95	90.16	8565.57	3925.47	-1733.66	3920.70	0.00	429912.17	557943.14	N 32 10 54.82	W 104 16 46.77
	12000.00	88.95	90.16	8567.40	4025.45	-1733.94	4020.69	0.00	429911.89	558043.11	N 32 10 54.82	W 104 16 45.61
	12100.00	88.95	90.16	8569.24	4125.44	-1734.22	4120.67	0.00	429911.62	558143.09	N 32 10 54.82	

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 ° ' ")
	13900.00	88.95	90.16	8602.32	5925.13	-1739.18	5920.36	0.00	429906.65	559942.61	N 32 10 54.76	W 104 16 23.50
	14000.00	88.95	90.16	8604.16	6025.12	-1739.45	6020.34	0.00	429906.38	560042.58	N 32 10 54.75	W 104 16 22.34
	14100.00	88.95	90.16	8605.99	6125.10	-1739.73	6120.32	0.00	429906.10	560142.56	N 32 10 54.75	W 104 16 21.18
	14200.00	88.95	90.16	8607.83	6225.08	-1740.00	6220.31	0.00	429905.83	560242.53	N 32 10 54.75	W 104 16 20.01
	14300.00	88.95	90.16	8609.67	6325.06	-1740.28	6320.29	0.00	429905.55	560342.50	N 32 10 54.74	W 104 16 18.85
	14400.00	88.95	90.16	8611.51	6425.05	-1740.56	6420.27	0.00	429905.28	560442.48	N 32 10 54.74	W 104 16 17.69
	14500.00	88.95	90.16	8613.34	6525.03	-1740.83	6520.26	0.00	429905.00	560542.45	N 32 10 54.74	W 104 16 16.52
	14600.00	88.95	90.16	8615.18	6625.01	-1741.11	6620.24	0.00	429904.72	560642.42	N 32 10 54.73	W 104 16 15.36
	14700.00	88.95	90.16	8617.02	6725.00	-1741.38	6720.22	0.00	429904.45	560742.40	N 32 10 54.73	W 104 16 14.20
	14800.00	88.95	90.16	8618.86	6824.98	-1741.66	6820.20	0.00	429904.17	560842.37	N 32 10 54.73	W 104 16 13.03
	14900.00	88.95	90.16	8620.69	6924.96	-1741.93	6920.19	0.00	429903.90	560942.34	N 32 10 54.72	W 104 16 11.87
	15000.00	88.95	90.16	8622.53	7024.95	-1742.21	7020.17	0.00	429903.62	561042.32	N 32 10 54.72	W 104 16 10.71
	15100.00	88.95	90.16	8624.37	7124.93	-1742.49	7120.15	0.00	429903.35	561142.29	N 32 10 54.72	W 104 16 9.54
	15200.00	88.95	90.16	8626.21	7224.91	-1742.76	7220.13	0.00	429903.07	561242.26	N 32 10 54.71	W 104 16 8.38
	15300.00	88.95	90.16	8628.04	7324.90	-1743.04	7320.12	0.00	429902.79	561342.24	N 32 10 54.71	W 104 16 7.22
	15400.00	88.95	90.16	8629.88	7424.88	-1743.31	7420.10	0.00	429902.52	561442.21	N 32 10 54.71	W 104 16 6.05
	15500.00	88.95	90.16	8631.72	7524.86	-1743.59	7520.08	0.00	429902.24	561542.19	N 32 10 54.70	W 104 16 4.89
	15600.00	88.95	90.16	8633.56	7624.85	-1743.86	7620.07	0.00	429901.97	561642.16	N 32 10 54.70	W 104 16 3.73
	15700.00	88.95	90.16	8635.39	7724.83	-1744.14	7720.05	0.00	429901.69	561742.13	N 32 10 54.70	W 104 16 2.56
	15800.00	88.95	90.16	8637.23	7824.81	-1744.42	7820.03	0.00	429901.42	561842.11	N 32 10 54.69	W 104 16 1.40
	15900.00	88.95	90.16	8639.07	7924.79	-1744.69	7920.01	0.00	429901.14	561942.08	N 32 10 54.69	W 104 16 0.24
	16000.00	88.95	90.16	8640.91	8024.78	-1744.97	8020.00	0.00	429900.86	562042.05	N 32 10 54.69	W 104 15 59.07
	16100.00	88.95	90.16	8642.74	8124.76	-1745.24	8119.98	0.00	429900.59	562142.03	N 32 10 54.68	W 104 15 57.91
	16200.00	88.95	90.16	8644.58	8224.74	-1745.52	8219.96	0.00	429900.31	562242.00	N 32 10 54.68	W 104 15 56.75
	16300.00	88.95	90.16	8646.42	8324.73	-1745.79	8319.94	0.00	429900.04	562341.97	N 32 10 54.68	W 104 15 55.58
	16400.00	88.95	90.16	8648.26	8424.71	-1746.07	8419.93	0.00	429899.76	562441.95	N 32 10 54.67	W 104 15 54.42
	16500.00	88.95	90.16	8650.10	8524.69	-1746.35	8519.91	0.00	429899.49	562541.92	N 32 10 54.67	W 104 15 53.26
	16600.00	88.95	90.16	8651.93	8624.68	-1746.62	8619.89	0.00	429899.21	562641.89	N 32 10 54.67	W 104 15 52.09
	16700.00	88.95	90.16	8653.77	8724.66	-1746.90	8719.88	0.00	429898.93	562741.87	N 32 10 54.66	W 104 15 50.93
	16800.00	88.95	90.16	8655.61	8824.64	-1747.17	8819.86	0.00	429898.66	562841.84	N 32 10 54.66	W 104 15 49.77
	16900.00	88.95	90.16	8657.45	8924.63	-1747.45	8919.84	0.00	429898.38	562941.81	N 32 10 54.66	W 104 15 48.60
	17000.00	88.95	90.16	8659.28	9024.61	-1747.72	9019.82	0.00	429898.11	563041.79	N 32 10 54.65	W 104 15 47.44
	17100.00	88.95	90.16	8661.12	9124.59	-1748.00	9119.81	0.00	429897.83	563141.76	N 32 10 54.65	W 104 15 46.28
	17200.00	88.95	90.16	8662.96	9224.57	-1748.28	9219.79	0.00	429897.56	563241.73	N 32 10 54.65	W 104 15 45.11
	17300.00	88.95	90.16	8664.80	9324.56	-1748.55	9319.77	0.00	429897.28	563341.71	N 32 10 54.64	W 104 15 43.95
	17400.00	88.95	90.16	8666.63	9424.54	-1748.83	9419.75	0.00	429897.01	563441.68	N 32 10 54.64	W 104 15 42.79
	17500.00	88.95	90.16	8668.47	9524.52	-1749.10	9519.74	0.00	429896.73	563541.65	N 32 10 54.64	W 104 15 41.62
	17600.00	88.95	90.16	8670.31	9624.51	-1749.38	9619.72	0.00	429896.45	563641.63	N 32 10 54.63	W 104 15 40.46
	17700.00	88.95	90.16	8672.15	9724.49	-1749.65	9719.70	0.00	429896.18	563741.60	N 32 10 54.63	W 104 15 39.30
	17800.00	88.95	90.16	8673.98	9824.47	-1749.93	9819.69	0.00	429895.90	563841.57	N 32 10 54.63	W 104 15 38.13
	17900.00	88.95	90.16	8675.82	9924.46	-1750.21	9919.67	0.00	429895.63	563941.55	N 32 10 54.62	W 104 15 36.97
	18000.00	88.95	90.16	8677.66	10024.44	-1750.48	10019.65	0.00	429895.35	564041.52	N 32 10 54.62	W 104 15 35.81
	18100.00	88.95	90.16	8679.50	10124.42	-1750.76	10119.63	0.00	429895.08	564141.50	N 32 10 54.62	W 104 15 34.64
	18200.00	88.95	90.16	8681.33	10224.41	-1751.03	10219.62	0.00	429894.80	564241.47	N 32 10 54.61	W 104 15 33.48
	18300.00	88.95	90.16	8683.17	10324.39	-1751.31	10319.60	0.00	429894.52	564341.44	N 32 10 54.61	W 104 15 32.32
	18400.00	88.95	90.16	8685.01	10424.37	-1751.58	10419.58	0.00	429894.25	564441.42	N 32 10 54.61	W 104 15 31.15
	18500.00	88.95	90.16	8686.85	10524.36	-1751.86	10519.56	0.00	429893.97	564541.39	N 32 10 54.60	W 104 15 29.99
	18600.00	88.95	90.16	8688.69	10624.34	-1752.14	10619.55	0.00	429893.70	564641.36	N 32 10 54.60	W 104 15 28.83
	18700.00	88.95	90.16	8690.52	10724.32	-1752.41	10719.53	0.00	429893.42	564741.34	N 32 10 54.60	W 104 15 27.66
	18800.00	88.95	90.16	8692.36	10824.30	-1752.69	10819.51	0.00	429893.15	564841.31	N 32 10 54.59	W 104 15 26.50
	18900.00	88.95	90.16	8694.20	10924.29	-1752.96	10919.50	0.00	429892.87	564941.28	N 32 10 54.59	W 104 15 25.34
	19000.00	88.95	90.16	8696.04	11024.27	-1753.24	11019.48	0.00	429892.59	565041.26	N 32 10 54.59	W 104 15 24.17
	19100.00	88.95	90.16	8697.87	11124.25	-1753.51	11119.46	0.00	429892.32	565141.23	N 32 10 54.58	W 104 15 23.01

Cimarex
Crawford 27-26
Fee #29H -
PBHL [330' FSL,
330' FEL]

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 #29H / Cimarex Crawford 27-26 Fee #29H Rev1 RM 13Dec19
	1	26.000	19161.327	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS	Crawford 27-26 Fee #29H / Cimarex Crawford 27-26 Fee



Cimarex Crawford 27-26 Fee #29H Rev1 RM 13Dec19 Proposal Geodetic Report

(Non-Def Plan)



Report Date:

December 12, 2019 - 07:51 PM

Client:

Cimarex Energy

Field:

NM Eddy County (NAD 83)

Structure / Slot:

Cimarex Crawford 27-26 Fee #29H / New Slot

Well:

Crawford 27-26 Fee #29H

Borehole:

Crawford 27-26 Fee #29H

UWI / API#:

Unknown / Unknown

Survey Name:

Cimarex Crawford 27-26 Fee #29H Rev1 RM 13Dec19

Survey Date:

December 03, 2019

Tort / AHD / DDI / ERD Ratio:

105.945 ° / 12333.530 ft / 6.459 / 1.418

Coordinate Reference System:

NAD83 New Mexico State Plane, Eastern Zone, US Feet

Location Lat / Long:

N 32° 11' 11.99353", W 104° 17' 32.38132"

Location Grid N/E Y/X:

N 431645.670 ftUS, E 554022.800 ftUS

CRS Grid Convergence Angle:

0.0218 °

Grid Scale Factor:

0.99990928

Version / Patch:

2.10.787.0

Survey / DLS Computation:

Minimum Curvature / Lubinski

Vertical Section Azimuth:

90.158 ° (Grid North)

Vertical Section Origin:

0.000 ft, 0.000 ft

TVD Reference Datum:

RKB

TVD Reference Elevation:

3366.800 ft above MSL

Seabed / Ground Elevation:

3340.800 ft above MSL

Magnetic Declination:

7.249 °

Total Gravity Field Strength:

998.4454mgn (9.80665 Based)

Gravity Model:

GARM

Total Magnetic Field Strength:

47740.598 nT

Magnetic Dip Angle:

59.795 °

Declination Date:

December 12, 2019

Magnetic Declination Model:

HDGM 2019

North Reference:

Grid North

Grid Convergence Used:

0.0218 °

Total Corr Mag North->Grid North:

7.2267 °

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 [2115' FSL, 915' FEL]	0.00	0.00	199.93	0.00	0.00	0.00	0.00	N/A	431645.67	554022.80	N 32 11 11.99	W 104 17 32.38
Nudge 2"/100' DLS	2000.00	0.00	160.18	2000.00	0.00	0.00	0.00	0.00	431645.67	554022.80	N 32 11 11.99	W 104 17 32.38
Hold Nudge	2817.16	16.34	160.18	2806.12	39.55	-108.90	39.25	2.00	431536.78	554062.05	N 32 11 10.92	W 104 17 31.93
KOP - Build 12"/100' DLS	8278.01	16.34	160.18	8046.32	564.56	-1554.50	560.28	0.00	430091.32	554583.03	N 32 10 56.61	W 104 17 25.87
Build & Turn 12"/100' DLS	8447.65	35.00	140.00	8198.80	604.51	-1614.86	600.06	12.00	430030.96	554622.81	N 32 10 56.01	W 104 17 25.41
Build 4"/100' DLS	8908.47	75.00	90.16	8468.43	938.65	-1725.43	933.89	12.00	429920.40	554956.61	N 32 10 54.92	W 104 17 21.52
Landing Point	9257.14	88.95	90.16	8517.00	1283.06	-1726.38	1278.30	4.00	429919.45	555300.98	N 32 10 54.91	W 104 17 17.52
Cimarex Crawford 27-26 Fee #29H - PBHL [330' FSL, 330' FEL]	19161.33	88.95	90.16	8699.00	11185.57	-1753.68	11180.78	0.00	429892.15	565202.54	N 32 10 54.58	W 104 15 22.30

Survey Type:

Non-Def Plan

Survey Error Model:

ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma

Survey Program:

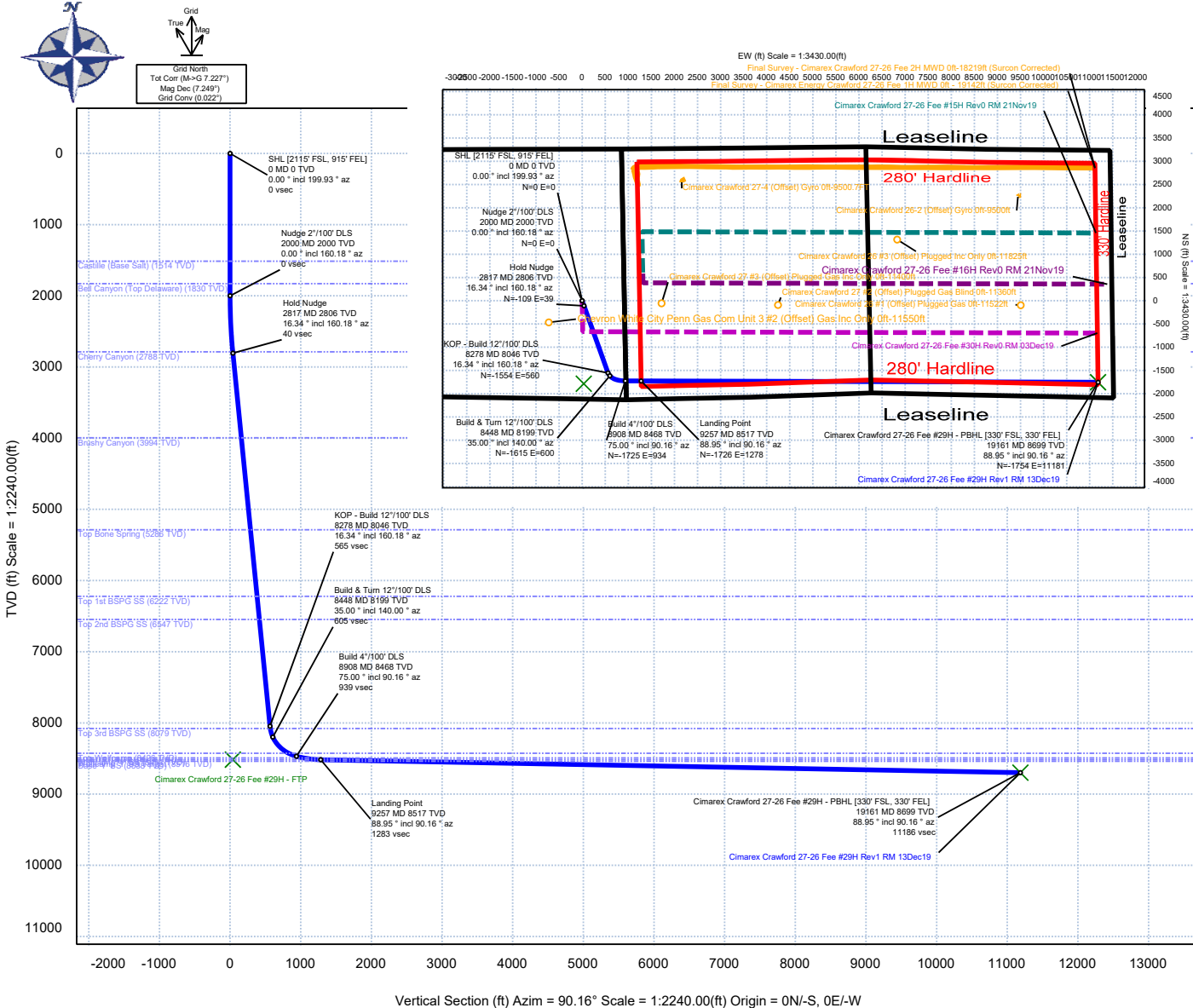
Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	26.000	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS-Depth Only	Crawford 27-26 Fee #29H / Cimarex Crawford 27-26 Fee #29H Rev1 RM 13Dec19
	1	26.000	19161.327	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS	Crawford 27-26 Fee #29H / Cimarex Crawford 27-26 Fee



Cimarex Energy Rev 1



Borehole: Crawford 27-26 Fee #29H		Well: Crawford 27-26 Fee #29H	Field: NM Eddy County (NAD 83)	Structure: Cimarex Crawford 27-26 Fee #29H
Gravity & Magnetic Parameters Model: HDGM 2019 Dip: 59.795° Date: 12-Dec-2019 MagDec: 7.249° FS: 47740.598nT Gravity FS: 998.445mgn (9.80665 Based)		Surface Location NAD83 New Mexico State Plane, Eastern Zone, US Feet Lat: N 32 11 11.99 Northing: 431645.67NUS Grid Conv: 0.0218° Lon: W 104 17 32.38 Easting: 554022.8NUS Scale Fact: 0.99990928		Miscellaneous Slot: New Slot TVD Ref: RKB(3366.8ft above MSL) Plan: Cimarex Crawford 27-26 Fee #29H Rev1 RM 13Dec19



Critical Points								
Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL [2115' FSL, 915' FEL]	0.00	0.00	199.93	0.00	0.00	0.00	0.00	
Castille (Base Salt)	1514.00	0.00	160.18	1514.00	0.00	0.00	0.00	0.00
Bell Canyon (Top Delaware)	1830.00	0.00	160.18	1830.00	0.00	0.00	0.00	0.00
Nudge 2"/100' DLS	2000.00	0.00	160.18	2000.00	0.00	0.00	0.00	0.00
Cherry Canyon	2798.29	15.97	160.18	2788.00	37.76	-103.96	37.47	2.00
Hold Nudge	2817.16	16.34	160.18	2806.12	39.55	-108.90	39.25	2.00
Brushy Canyon	4055.06	16.34	160.18	3994.00	158.56	-436.60	157.36	0.00
Top Bone Spring	5401.46	16.34	160.18	5286.00	288.01	-793.02	285.82	0.00
Top 1st BSGP SS	6376.87	16.34	160.18	6222.00	381.79	-1051.23	378.89	0.00
Top 2nd BSGP SS	6715.56	16.34	160.18	6547.00	414.35	-1140.89	411.20	0.00
KOP - Build 12"/100' DLS	8278.01	16.34	160.18	8046.32	564.56	-1554.50	560.28	0.00
Top 3rd BSGP SS	8312.39	19.87	153.26	8079.00	568.86	-1564.27	564.55	12.00
Build & Turn 12"/100' DLS	8447.65	35.00	140.00	8198.80	604.51	-1614.86	600.06	12.00
Top Wolfcamp	8789.69	63.13	98.62	8426.00	828.32	-1717.29	823.59	12.00
Build 4"/100' DLS	8908.47	75.00	90.16	8468.43	938.65	-1725.43	933.89	12.00
Wolfcamp "Y" SS	9008.86	79.02	90.16	8491.00	1036.45	-1725.70	1031.70	4.00
Wolfcamp "Y" SS Target	9223.82	87.61	90.16	8516.00	1249.75	-1726.29	1244.99	4.00
Landing Point	9257.14	88.95	90.16	8517.00	1283.06	-1726.38	1278.30	4.00
Base "Y" SS	10399.93	88.95	90.16	8538.00	2425.66	-1729.53	2420.90	0.00
Cimarex Crawford 27-26 Fee #29H - PBHL [330' FSL, 330' FEL]	19161.33	88.95	90.16	8699.00	11185.57	-1753.68	11180.78	0.00



Cimarex Crawford 27-26 Fee #29H Rev1 RM 13Dec19 Anti-Collision Summary Report

Analysis Date-24hr Time: December 12, 2019 - 19:51
Client: Cimarex Energy
Field: NM Eddy County (NAD 83)
Structure: Cimarex Crawford 27-26 Fee #29H
Slot: New Slot
Well: Crawford 27-26 Fee #29H
Borehole: Crawford 27-26 Fee #29H
Scan MD Range: 0.00ft ~ 19161.33ft

Analysis Method: 3D Least Distance
Reference Trajectory: Cimarex Crawford 27-26 Fee #29H 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 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 Trajectories Summary

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)													
	4245.75	32.81	4244.62	4212.95	N/A	MAS = 10.00 (m)	0.00	0.00					Fail Major
	4245.42	32.81	4244.24	4212.61	94954.99	MAS = 10.00 (m)	26.00	26.00					Surface
	4098.04	1233.37	3275.38	2864.67	4.99	OSF1.50	4100.00	4037.13	OSF<5.00				MinPt-O-SF
	3961.39	2358.58	2388.62	1602.81	2.52	OSF1.50	7830.00	7616.41					Enter Alert
	2641.11	2648.14	875.06	-7.02	1.50	OSF1.50	10150.00	8533.41					MinPt-CtCt
	1769.24	2656.96	-2.44	-887.71	1.00	OSF1.50	11560.00	8559.32	OSF<1.50				Enter Minor
	1641.97	2661.50	-132.74	-1019.53	0.93	OSF1.50	12220.00	8571.45			OSF<1.00		Enter Major
	1642.00	2661.56	-132.75	-1019.56	0.93	OSF1.50	12230.00	8571.63					MinPt-CtCt
	1773.73	2665.33	-3.54	-891.61	1.00	OSF1.50	12890.00	8583.76					MinPts
	2666.21	2672.44	884.20	-6.23	1.50	OSF1.50	14320.00	8610.04	OSF>1.50				Exit Major
	7132.69	2699.30	5332.78	4433.40	3.96	OSF1.50	19161.33	8699.00					Exit Minor
													TD

Cimarex Crawford 26 #1 (Offset) Plugged Gas Off-11522ft (Def Survey)													
	9506.84	32.81	9505.71	9474.03	N/A	MAS = 10.00 (m)	0.00	0.00					Fail Major
	9506.55	32.81	9505.38	9473.74	219218.53	MAS = 10.00 (m)	26.00	26.00					Surface
	8704.69	2613.81	6961.44	6090.88	5.00	OSF1.50	8930.00	8473.85	OSF<5.00				MinPt-O-SF
	2665.21	2672.01	881.62	-6.80	1.50	OSF1.50	15390.00	8629.70		OSF<1.50			Enter Alert
	1787.51	2683.64	-2.57	-896.13	1.00	OSF1.50	16800.00	8655.61					Enter Minor
	1652.62	2688.66	-140.20	-1036.04	0.92	OSF1.50	17480.00	8668.10			OSF<1.00		Enter Major
	1652.64	2688.73	-140.22	-1036.05	0.92	OSF1.50	17490.00	8668.29					MinPt-CtCt
	1794.19	2691.24	-0.35	-897.05	1.00	OSF1.50	18180.00	8680.97			OSF>1.00		MinPts
	2356.39	2691.93	561.39	-335.54	1.31	OSF1.50	19161.33	8699.00					Exit Major
													TD

Cimarex Crawford 27-26 Fee #30H Rev0 RM 03Dec19 (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
	20.00	16.25	18.71	3.74	42102.28	MAS = 4.95 (m)	26.00	26.00					Enter Alert
	20.00	19.55	6.54	0.45	1.54	OSF1.50	2000.00	2000.00					WRP
	20.01	19.60	6.52	0.42	1.53	OSF1.50	2010.00	2010.00					MinPt-CtCt
	20.06	19.64	6.54	0.42	1.53	OSF1.50	2020.00	2020.00					MinPts
	64.52	20.65	50.32	43.87	4.90	OSF1.50	2510.00	2507.31	OSF>5.00				MinPt-O-SF
	502.25	32.54	480.13	469.71	24.04	OSF1.50	6110.00	5965.91					Exit Alert
	1026.44	53.26	990.51	973.18	29.59	OSF1.50	8400.00	8158.52					MinPt-O-SF
	1026.62	53.46	990.55	973.16	29.48	OSF1.50	8410.00	8167.17					MinPts
	1062.26	71.36	1014.26	990.90	22.71	OSF1.50	9257.14	8517.00					MinPt-O-ADP
	1062.31	319.72	848.73	742.59	5.00	OSF1.50	15360.00	8629.15	OSF<5.00				MinPt-CtCt
	1062.35	482.26	740.41	580.09	3.31	OSF1.50	19150.00	8698.79					Enter Alert
	1062.46	482.18	740.58	580.28	3.31	OSF1.50	19161.33	8699.00					MinPts
													TD

Chevron White City Penn Gas Com Unit 3 #2 (Offset) Gas Inc Only Off-11550ft (Def Survey)													
	861.64	32.81	860.51	828.83	N/A	MAS = 10.00 (m)	0.00	0.00					Pass
	861.45	32.81	860.18	828.64	6212.40	MAS = 10.00 (m)	26.00	26.00					Surface
	860.83	32.81	851.67	828.02	107.16	MAS = 10.00 (m)	360.00	360.00					WRP
	861.02	58.53	821.62	802.49	22.47	OSF1.50	1230.00	1230.00					MinPts
	861.05	78.33	808.45	782.72	16.71	OSF1.50	1610.00	1610.00					MinPt-CtCt
	838.91	146.68	740.74	692.22	8.63	OSF1.50	2960.00	2943.19					MinPt-CtCt
	947.37	167.98	735.01	679.39	7.61	OSF1.50	3390.00	3355.82					MINPT-O-EQU
	857.27	180.18	736.71	677.09	7.17	OSF1.50	3630.00	3586.12					MinPt-O-ADP
	1240.24	314.90	1029.93	925.34	5.92	OSF1.50	6310.00	6157.83					MinPt-O-SF
	1526.59	379.50	1273.21	1147.09	6.05	OSF1.50	7590.00	7386.11					MinPt-O-SF
	1589.06	395.74	1324.85	1193.32	6.04	OSF1.50	7880.00	7664.39					MinPt-O-SF
	11976.29	455.39	11672.32	11520.90	39.54	OSF1.50	19161.33	8699.00					TD

Cimarex Crawford 27-26 Fee #16H Rev0 RM 21Nov19 (Def Plan)													
	1438.58	32.81	1437.30	1405.78	N/A	MAS = 10.00 (m)	0.00	0.00					Pass
	1438.55	32.81	1437.26	1405.74	N/A	MAS = 10.00 (m)	26.00	26.00					Surface
	1438.55	32.81	1425.12	1405.74	118.37	MAS = 10.00 (m)	2000.00	2000.00					WRP
	1438.68	32.81	1424.93	1405.87	115.29	MAS = 10.00 (m)	2100.00	2099.98					MinPts
	1442.59	32.81	1428.44	1409.78	112.07	MAS = 10.00 (m)	2510.00	2507.31					MINPT-O-EQU
	1443.18	32.81	1430.53	1410.37	126.94	MAS = 10.00 (m)	2810.00	2799.25					MinPt-O-SF
	1442.77	32.81	1430.98	1409.96	137.21	MAS = 10.00 (m)	2990.00	2971.98					MINPT-O-EQU
	2067.46	52.93	2031.75	2014.54	60.02	OSF1.50	8210.00	7981.06					MinPts
	2114.25	71.01	2066.48	2043.24	45.46	OSF1.50	9760.00	8526.24					MinPt-O-SF
	2114.73	453.79	1811.77	1660.94	7.01	OSF1.50	19161.33	8699.00					MinPt-CtCt
													MinPts

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
Cimarex Crawford 27-26 Fee #15H Rev0 RM 21Nov19 (Def Plan)													
												Pass	
1446.49	32.81	1445.20	1413.68	N/A		MAS = 10.00 (m)	0.00	0.00				Surface	
1446.46	32.81	1445.17	1413.65	N/A		MAS = 10.00 (m)	26.00	26.00				WRP	
1446.46	32.81	1433.66	1413.65	125.50		MAS = 10.00 (m)	1900.00	1900.00				MinPts	
1446.61	32.81	1433.46	1413.80	121.82		MAS = 10.00 (m)	1960.00	1960.00				MINPT-O-EQU	
1448.74	32.81	1435.09	1415.93	117.09		MAS = 10.00 (m)	2100.00	2099.98				MinPt-O-SF	
2788.42	55.17	2751.21	2733.25	77.59		OSF1.50	6820.00	6647.22				MinPt-O-SF	
3154.30	68.59	3108.14	3085.70	70.27		OSF1.50	8380.00	8140.93				MinPt-O-SF	
3210.66	78.71	3157.75	3131.95	62.18		OSF1.50	9500.00	8521.46				MinPt-CtCt	
3212.91	455.93	2908.54	2756.99	10.60		OSF1.50	19150.00	8698.79				MINPT-O-EQU	
3213.08	456.13	2908.57	2756.95	10.59		OSF1.50	19161.33	8699.00				MinPts	
Cimarex Crawford 27 #3 (Offset) Plugged Gas Inc Only 0ft-11400ft (Def Survey)													
												Pass	
1742.02	32.81	1740.89	1709.21	N/A		MAS = 10.00 (m)	0.00	0.00				Surface	
1741.46	32.81	1740.27	1708.65	27360.50		MAS = 10.00 (m)	26.00	26.00				MinPt-O-SF	
1741.29	32.81	1740.11	1708.48	32627.51		MAS = 10.00 (m)	50.00	50.00				MinPts	
1738.82	39.55	1712.08	1699.28	67.85		OSF1.50	850.00	850.00				MinPt-CtCt	
1742.14	71.57	1694.05	1670.57	37.07		OSF1.50	1470.00	1470.00				MinPt-CtCt	
1614.72	241.16	1453.57	1373.56	10.08		OSF1.50	4830.00	4737.63				MinPt-CtCt	
1621.58	271.51	1440.20	1350.07	8.99		OSF1.50	5430.00	5313.39				MINPT-O-EQU	
1625.04	275.69	1440.88	1349.36	8.87		OSF1.50	5530.00	5409.35				MinPt-O-ADP	
1657.81	313.16	1448.66	1344.65	7.96		OSF1.50	6220.00	6071.47				MinPt-O-ADP	
1649.64	441.70	1354.75	1207.93	5.61		OSF1.50	9710.00	8525.32				MinPts	
1649.66	441.73	1354.80	1207.93	5.61		OSF1.50	9720.00	8525.51				MinPt-O-ADP	
1649.75	441.76	1354.86	1207.99	5.61		OSF1.50	9730.00	8525.69				MinPt-O-SF	
9591.54	450.34	9290.94	9141.20	32.02		OSF1.50	19161.33	8699.00				TD	
Final Survey - Cimarex Crawford 27-26 Fee 2H MWD 0ft-18219ft (Surcon Corrected) (Def Survey)													
												Pass	
2757.97	32.81	2756.84	2725.16	N/A		MAS = 10.00 (m)	0.00	0.00				MinPts	
2757.98	32.81	2756.84	2725.17	186380.23		MAS = 10.00 (m)	26.00	26.00				WRP	
2758.86	32.81	2756.52	2726.05	2277.61		MAS = 10.00 (m)	280.00	280.00				MINPT-O-EQU	
2758.59	32.81	2753.44	2725.78	686.41		MAS = 10.00 (m)	820.00	820.00				MinPts	
2758.64	32.81	2753.35	2725.83	662.73		MAS = 10.00 (m)	870.00	870.00				MINPT-O-EQU	
2758.98	32.81	2752.66	2726.17	531.15		MAS = 10.00 (m)	1120.00	1120.00				MinPts	
2759.15	32.81	2752.45	2726.34	495.34		MAS = 10.00 (m)	1210.00	1210.00				MINPT-O-EQU	
2768.19	32.81	2759.83	2735.39	382.50		MAS = 10.00 (m)	1640.00	1640.00				MinPt-O-SF	
2762.14	32.81	2752.42	2729.33	317.60		MAS = 10.00 (m)	2000.00	2000.00				MinPts	
2762.14	32.81	2752.42	2729.33	317.55		MAS = 10.00 (m)	2010.00	2010.00				MINPT-O-EQU	
2763.35	32.81	2753.62	2730.54	317.35		MAS = 10.00 (m)	2080.00	2079.99				MinPt-O-SF	
2991.79	32.81	2984.54	2958.98	479.82		MAS = 10.00 (m)	3210.00	3183.09				MinPt-O-SF	
3054.11	32.81	3046.86	3021.30	489.69		MAS = 10.00 (m)	3430.00	3394.20				MinPt-O-SF	
4595.63	58.72	4556.15	4536.92	119.45		OSF1.50	9380.00	8519.26				MinPt-CtCt	
4595.96	59.75	4555.80	4536.23	117.39		OSF1.50	9440.00	8520.36				MINPT-O-EQU	
4596.37	60.25	4555.88	4536.12	116.38		OSF1.50	9470.00	8520.91				MinPt-O-ADP	
4606.14	130.52	4518.80	4475.62	53.33		OSF1.50	11570.00	8559.50				MinPt-CtCt	
4602.66	143.60	4506.60	4459.06	48.40		OSF1.50	11900.00	8565.57				MinPt-CtCt	
4611.88	165.78	4501.02	4446.08	41.97		OSF1.50	12510.00	8576.77				MINPT-O-EQU	
4617.89	179.39	4497.97	4438.50	38.82		OSF1.50	12840.00	8582.84				MINPT-O-EQU	
4607.54	215.47	4463.56	4392.06	32.22		OSF1.50	13660.00	8597.91				MinPt-CtCt	
4607.45	227.14	4455.70	4380.32	30.55		OSF1.50	13940.00	8603.05				MinPt-CtCt	
4604.47	264.01	4428.14	4340.46	26.25		OSF1.50	14820.00	8619.22				MinPt-CtCt	
4607.54	272.08	4425.82	4335.46	25.49		OSF1.50	15070.00	8623.82				MINPT-O-EQU	
4616.01	286.12	4424.93	4329.89	24.28		OSF1.50	15410.00	8630.07				MINPT-O-EQU	
4608.36	344.55	4378.33	4263.81	20.12		OSF1.50	16720.00	8654.14				MinPt-CtCt	
4612.28	377.23	4360.47	4235.05	18.38		OSF1.50	17490.00	8668.29				MinPt-CtCt	
4607.16	429.14	4320.73	4178.02	16.14		OSF1.50	18710.00	8690.71				MinPt-CtCt	
4608.60	433.38	4319.35	4175.21	15.98		OSF1.50	18860.00	8693.46				MINPT-O-EQU	
4615.62	445.40	4318.36	4170.22	15.58		OSF1.50	19161.33	8699.00				MinPts	
Final Survey - Cimarex Energy Crawford 27-26 Fee 1H MWD 0ft - 19142ft (Surcon Corrected) (Def Survey)													
												Pass	
2775.83	32.81	2774.70	2743.02	N/A		MAS = 10.00 (m)	0.00	0.00				MinPts	
2775.83	32.81	2774.69	2743.03	152840.95		MAS = 10.00 (m)	26.00	26.00				WRP	
2768.12	32.81	2760.80	2735.31	447.00		MAS = 10.00 (m)	1320.00	1320.00				MinPts	
2768.16	32.81	2760.77	2735.35	442.35		MAS = 10.00 (m)	1340.00	1340.00				MINPT-O-EQU	
2785.91	32.81	2776.09	2753.10	316.64		MAS = 10.00 (m)	2100.00	2099.98				MinPt-O-SF	
4547.10	53.69	4510.97	4493.42	129.48		OSF1.50	9060.00	8499.85				MinPt-CtCt	
4547.24	54.16	4510.75	4493.08	128.32		OSF1.50	9100.00	8505.51				MINPT-O-EQU	
4547.45	54.43	4510.82	4493.02	127.69		OSF1.50	9120.00	8507.92				MinPt-O-ADP	
4677.38	99.87	4610.47	4577.51	70.94		OSF1.50	10660.00	8542.78				MinPt-CtCt	
4676.67	107.52	4604.67	4569.16	65.83		OSF1.50	10870.00	8546.64				MinPt-CtCt	
4666.11	125.84	4581.89	4540.27	56.05		OSF1.50	11360.00	8555.64				MinPt-CtCt	
4667.87	130.72	4580.40	4537.15	53.96		OSF1.50	11530.00	8558.77				MINPT-O-EQU	
4670.36	133.72	4580.88	4536.63	52.77		OSF1.50	11630.00	8560.60				MinPt-O-ADP	
4672.67	135.90	4581.74	4536.77	51.94		OSF1.50	11700.00	8561.89				MinPt-O-ADP	
4676.79	157.22	4571.65	4519.58	44.89		OSF1.50	12160.00	8570.34				MinPt-CtCt	
4665.80	179.31	4545.93	4486.48	39.24		OSF1.50	12710.00	8580.45				MinPt-CtCt	
4669.28	188.24	4543.45	4481.03	37.39		OSF1.50	12980.00	8585.41				MINPT-O-EQU	
4674.31	196.65	4542.88	4477.66	35.83		OSF1.50	13190.00	8589.27				MINPT-O-EQU	
4682.88	229.31	4529.68	4453.57	30.76		OSF1.50	13930.00	8602.87				MinPt-CtCt	
4682.50	238.47	4523.19	4444.03	29.57		OSF1.50	14150.00	8606.91				MinPt-CtCt	
4683.86	243.15	4521.44	4440.72	29.01		OSF1.50	14310.00	8609.85				MINPT-O-EQU	
4685.47	245.09	4521.75	4440.35	28.79		OSF1.50	14380.00	8611.14				MinPt-O-ADP	
4676.66	282.08	4488.28	4394.59	24.95		OSF1.50	15200.00	8626.21				MinPt-CtCt	
4676.42	288.34	4483.87	4388.09	24.41		OSF1.50	15350.00	8628.96				MinPt-CtCt	
4675.80	317.59	4463.74	4358.20	22.15		OSF1.50	16050.00	8641.83				MinPt-CtCt	
4681.68	338.95	4455.39	4342.73	20.77		OSF1.50	16560.00	8651.20				MinPt-CtCt	
4683.07	343.27	4453.90	4339.81	20.52		OSF1.50	16710.00	8653.95				MINPT-O-EQU	
4693.86	357.89	4454.94	4335.97	19.72		OSF1.50	17100.00	8661.12				MinPt-O-ADP	
4700.10	365.34	4456.22	4334.77	19.35		OSF1.50	17270.00	8664.24				MINPT-O-EQU	
4703.09	381.76	4448.25	4321.33	18.52		OSF1.50	17580.00	8669.94				MinPt-CtCt	
4686.24	445.67	4388.89	4240.66	15.80		OSF							

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		

4686.76 446.80 4388.57 4239.96 15.77 OSF1.50 19161.33 8699.00

MinPts

Cimarex Crawford 26 #3
(Offset) Plugged Inc Only Off-
11825ft (Def Survey)

Pass

6953.97	32.81	6952.84	6921.16	N/A	MAS = 10.00 (m)	0.00	0.00	Surface
6953.66	32.81	6952.49	6920.85	154787.75	MAS = 10.00 (m)	26.00	26.00	MinPt-O-SF
6953.32	32.81	6952.01	6920.51	39049.68	MAS = 10.00 (m)	100.00	100.00	MinPts
6955.08	32.81	6950.38	6922.27	1939.12	MAS = 10.00 (m)	350.00	350.00	MINPT-O-EQU
6951.07	44.50	6921.03	6906.57	240.35	OSF1.50	1010.00	1010.00	MinPt-CtCt
6871.26	272.92	6688.93	6598.35	37.92	OSF1.50	5600.00	5476.52	MinPt-CtCt
6872.94	330.69	6652.10	6542.24	31.28	OSF1.50	6660.00	6493.69	MinPt-CtCt
6894.05	408.96	6621.03	6485.08	25.35	OSF1.50	8250.00	8019.44	MINPT-O-EQU
3061.30	485.42	2737.31	2575.88	9.48	OSF1.50	14810.00	8619.04	MinPt-CtCt
3061.39	485.62	2737.27	2575.77	9.47	OSF1.50	14830.00	8619.41	MINPT-O-EQU
3061.49	485.72	2737.30	2575.77	9.47	OSF1.50	14840.00	8619.59	MinPt-O-ADP
3065.70	486.93	2740.70	2578.77	9.46	OSF1.50	14970.00	8621.98	MinPt-O-SF
5322.87	477.75	5003.99	4845.12	16.75	OSF1.50	19161.33	8699.00	TD

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

Pass

3414.24	32.81	3412.26	3381.43	N/A	MAS = 10.00 (m)	0.00	0.00	Surface
3414.18	32.81	3412.19	3381.37	422284.74	MAS = 10.00 (m)	10.00	10.00	MinPt-O-SF
3414.15	32.81	3412.16	3381.34	575170.28	MAS = 10.00 (m)	20.00	20.00	MINPT-O-EQU
3414.14	32.81	3412.16	3381.33	N/A	MAS = 10.00 (m)	26.00	26.00	WRP
3407.06	32.81	3400.11	3374.25	685.95	MAS = 10.00 (m)	950.00	950.00	MinPts
3407.09	32.81	3400.07	3374.28	675.85	MAS = 10.00 (m)	970.00	970.00	MINPT-O-EQU
3437.75	32.81	3426.98	3404.94	391.28	MAS = 10.00 (m)	2100.00	2099.98	MinPt-O-SF
3575.66	32.81	3567.65	3542.85	592.50	MAS = 10.00 (m)	3360.00	3327.03	MinPt-O-SF
4277.00	79.74	4223.18	4197.26	82.46	OSF1.50	10130.00	8533.04	MinPt-CtCt
4277.32	80.64	4222.90	4196.69	81.53	OSF1.50	10180.00	8533.96	MINPT-O-EQU
4277.79	81.17	4223.02	4196.62	80.99	OSF1.50	10210.00	8534.51	MinPt-O-ADP
4787.76	111.89	4712.51	4675.87	65.32	OSF1.50	12280.00	8572.55	MinPt-O-SF
9993.45	128.61	9907.05	9864.84	118.36	OSF1.50	19161.33	8699.00	TD

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

Pass

9743.36	32.81	9741.39	9710.56	N/A	MAS = 10.00 (m)	0.00	0.00	Surface
9743.14	32.81	9741.13	9710.34	299518.12	MAS = 10.00 (m)	26.00	26.00	MinPt-O-SF
9742.89	32.81	9740.75	9710.09	59172.15	MAS = 10.00 (m)	100.00	100.00	MinPts
9744.10	32.81	9737.24	9711.29	1998.03	MAS = 10.00 (m)	1100.00	1100.00	MinPts
9744.41	32.81	9736.95	9711.60	1779.41	MAS = 10.00 (m)	1230.00	1230.00	MINPT-O-EQU
9761.26	32.81	9749.72	9728.46	1020.31	MAS = 10.00 (m)	2100.00	2099.98	MinPt-O-SF
9761.60	32.81	9750.01	9728.79	1015.63	MAS = 10.00 (m)	2120.00	2119.96	MinPt-O-SF
9757.46	32.81	9746.39	9724.65	1073.00	MAS = 10.00 (m)	2610.00	2605.40	MinPt-O-SF
9669.14	40.80	9641.28	9628.34	373.62	OSF1.50	7110.00	6925.50	MinPt-CtCt
9669.91	42.91	9640.65	9627.00	354.29	OSF1.50	7350.00	7155.81	MINPT-O-EQU
9674.87	48.88	9641.63	9625.99	309.36	OSF1.50	7970.00	7750.76	MinPt-O-ADP
4001.98	287.96	3809.35	3714.02	20.98	OSF1.50	17430.00	8667.19	MinPt-CtCt
4002.34	289.08	3808.96	3713.26	20.90	OSF1.50	17480.00	8668.10	MINPT-O-EQU
4002.86	289.73	3809.04	3713.13	20.86	OSF1.50	17510.00	8668.66	MinPt-O-ADP
4051.87	298.81	3852.00	3753.05	20.47	OSF1.50	18060.00	8678.76	MinPt-O-SF
4361.96	301.46	4160.33	4060.50	21.84	OSF1.50	19161.33	8699.00	TD

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 29H

1. Geological Formations

TVD of target 8,699

Pilot Hole TD N/A

MD at TD 19,161

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	8426	N/A	
Wolfcamp Y	8491	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	8178	8178	5-1/2"	17.00	L-80	LT&C	1.56	1.92	2.29
8 3/4	8178	19161	8699	5-1/2"	17.00	L-80	BT&C	1.46	1.80	44.82
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 29H

	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 29H

3. Cementing Program

Casing	# Sks	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	1221	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 29H

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?

Cimarex Energy Co., Crawford 27-26 Fee 29H

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 19161'	OBM	9.00 - 9.50	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
-------------------------	----------

7. Drilling Conditions

Condition	
BH Pressure at deepest TVD	4297 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.

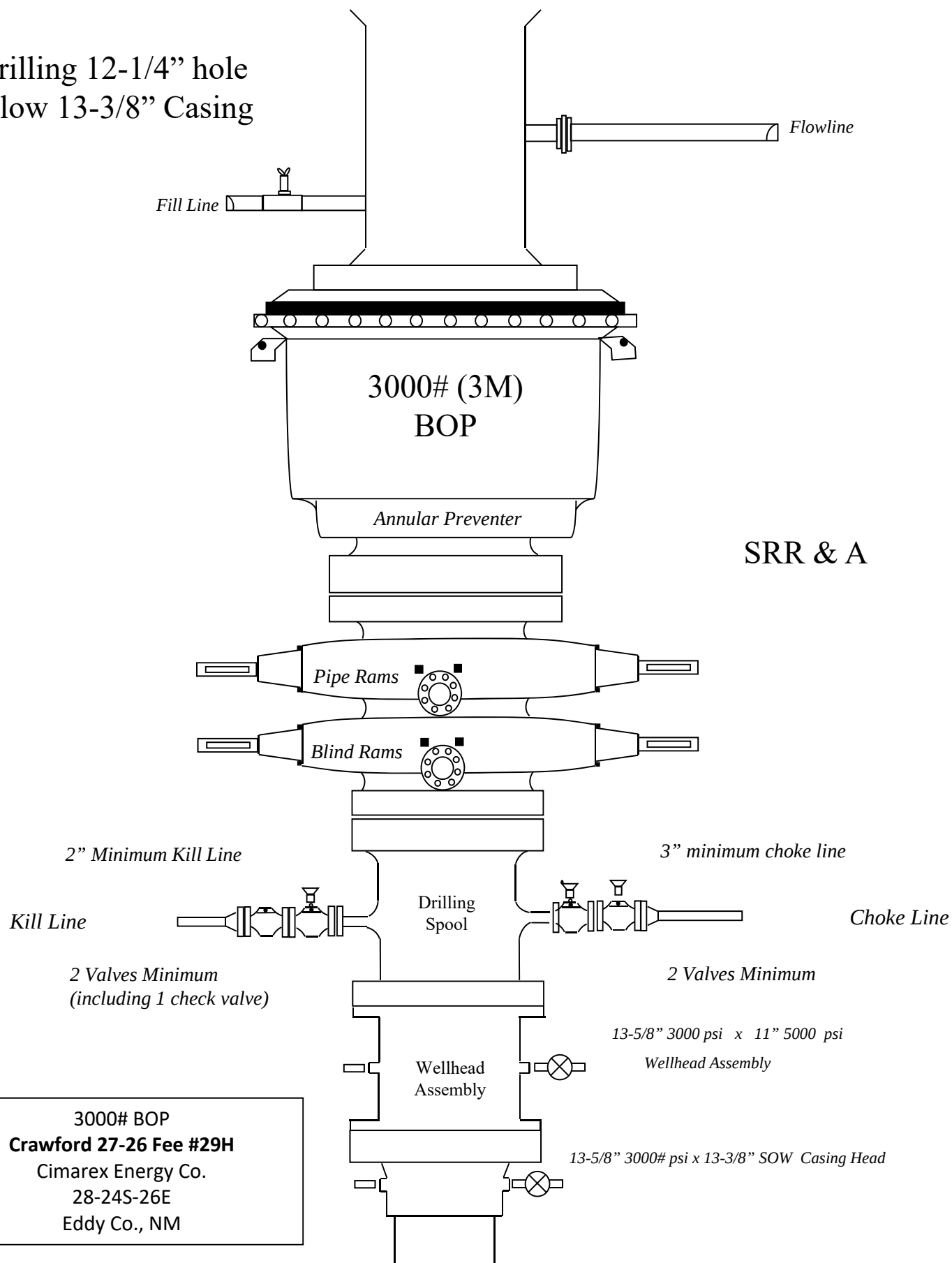
All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type.

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.

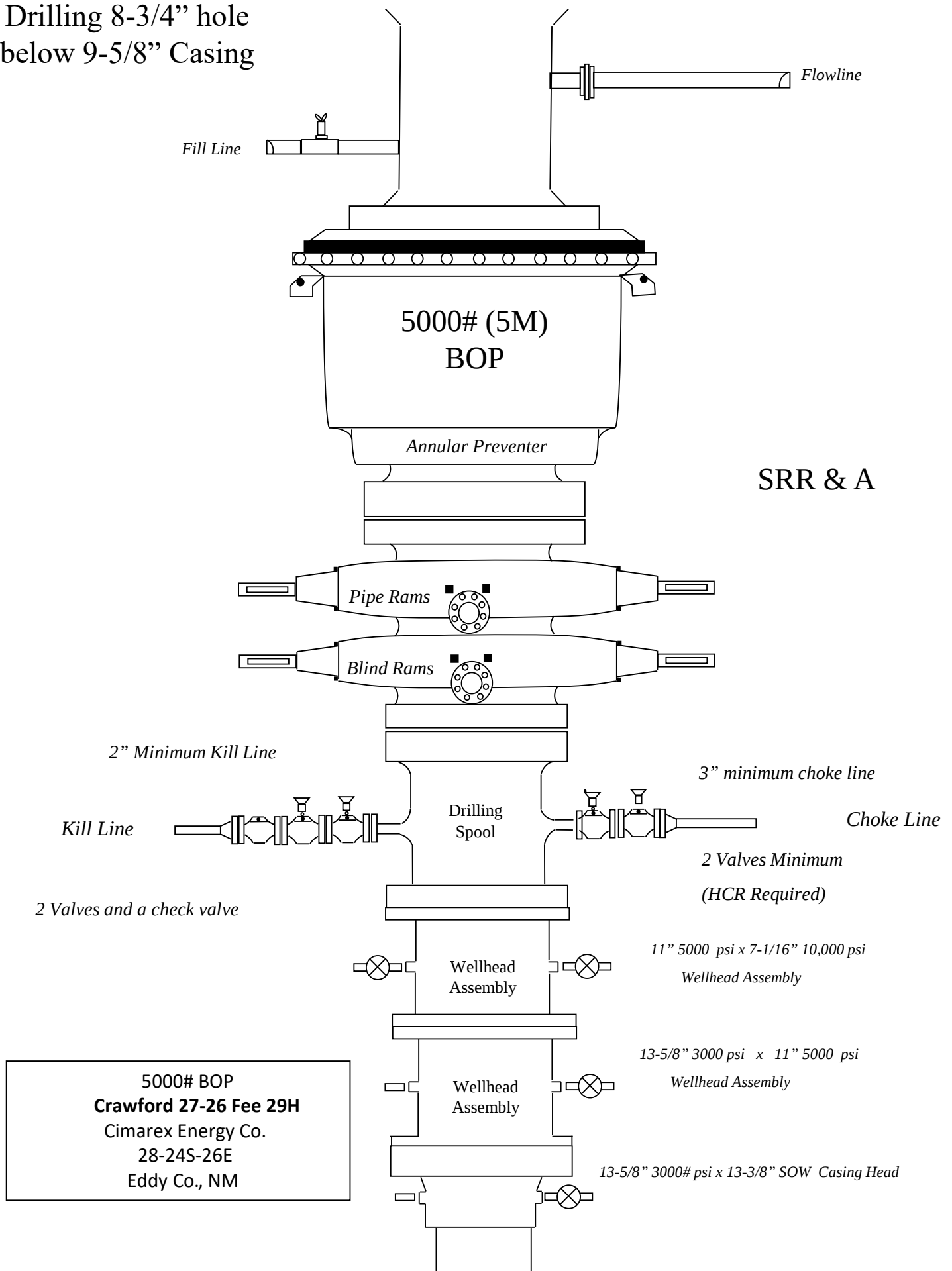
All casing strings will be tested as per Onshore Order No.2 to atleast 0.22 psi/ft or 1,500 whichever is greater and not to exceed 70% of casing burst.

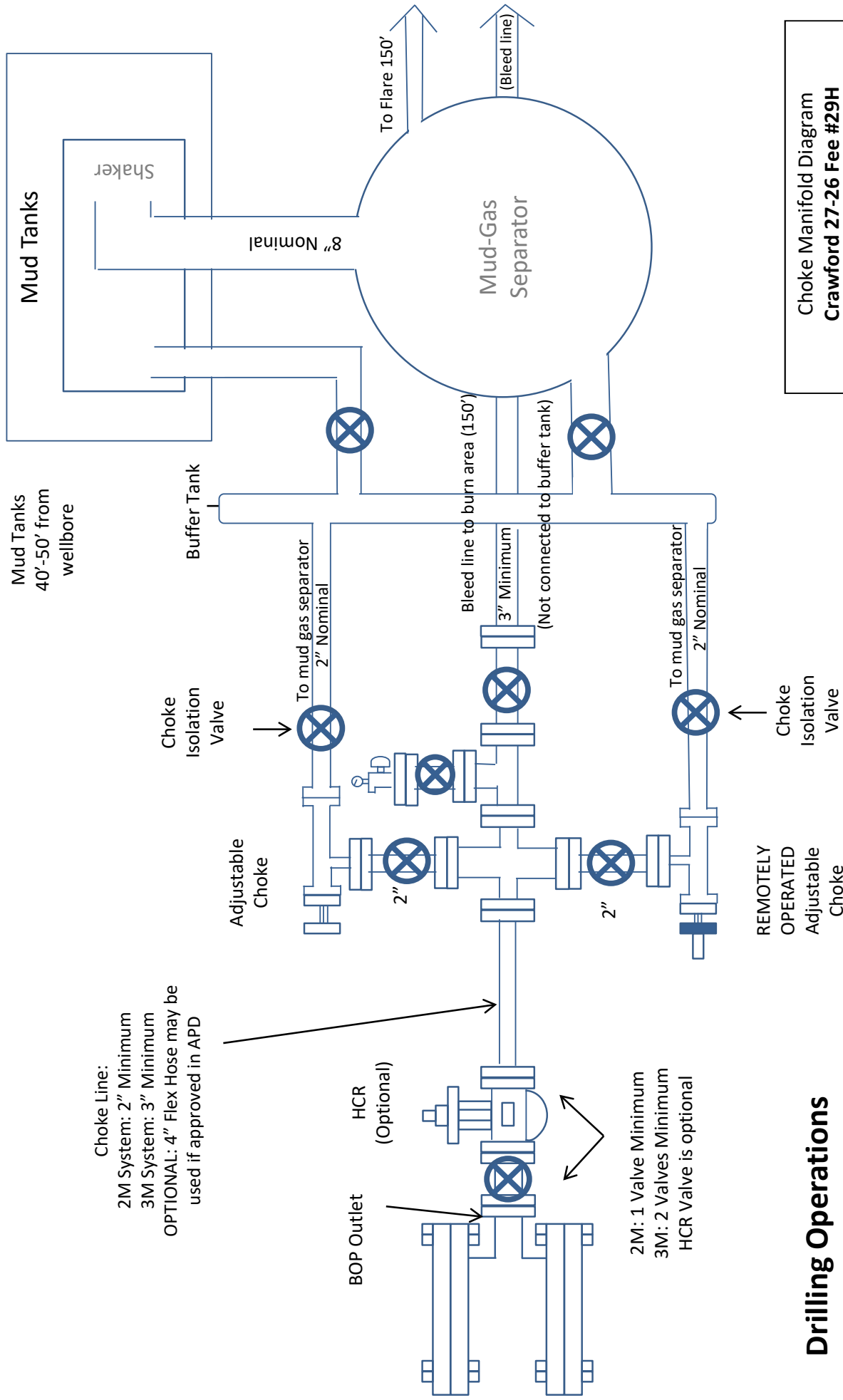
If well conditions dictate conventional slips will be set and BOPE will be tested to appropriate pressures based on permitted pressure requirements.

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



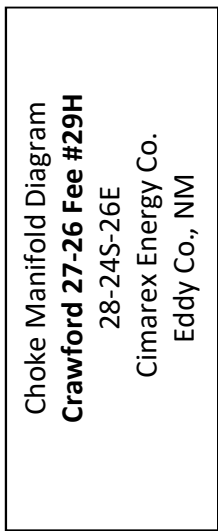
Drilling 8-3/4" hole below 9-5/8" Casing





Choke Manifold Diagram
Crawford 27-26 Fee #29H
Cimarex Energy Co.
28-24S-26E
Eddy Co., NM

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



Drilling Operations Choke Manifold 5M Service