

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 275601

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 30-015-46502
5. Property Name CRAWFORD 27 26 FEE		6. Well No. 016H

7. Surface Location

UL - Lot E	Section 27	Township 24S	Range 26E	Lot Idn	Feet From 2681	N/S Line N	Feet From 410	E/W Line W	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 2444	N/S Line S	Feet From 100	E/W Line E	County Eddy
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9. Pool Information

WILLOW LAKE;BONE SPRING;WEST	96415
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Additional Well Information

11. Work Type New Well	12. Well Type OIL	13. Cable/Rotary	14. Lease Type Private	15. Ground Level Elevation 3331
16. Multiple N	17. Proposed Depth 18262	18. Formation Bone Spring	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	18262	5494	1600

Casing/Cement Program: Additional Comments

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22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Annular	2000	2000	Cameran
Annular	3000	3000	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: 12/12/2019

Phone: 918-295-1658

Approved By: Raymond Podany

Title: Geologist

Approved Date: 12/19/2019

Expiration Date: 12/19/2021

Conditions of Approval Attached

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

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-015-	² Pool Code 96415	³ Pool Name Willow Lake; Bone Spring
⁴ Property Code 320797	⁵ Property Name CRAWFORD 27-26 FEE	⁶ Well Number 16H
⁷ GRID No. 215099	⁸ Operator Name CIMAREX ENERGY CO.	⁹ Elevation 3331.1'

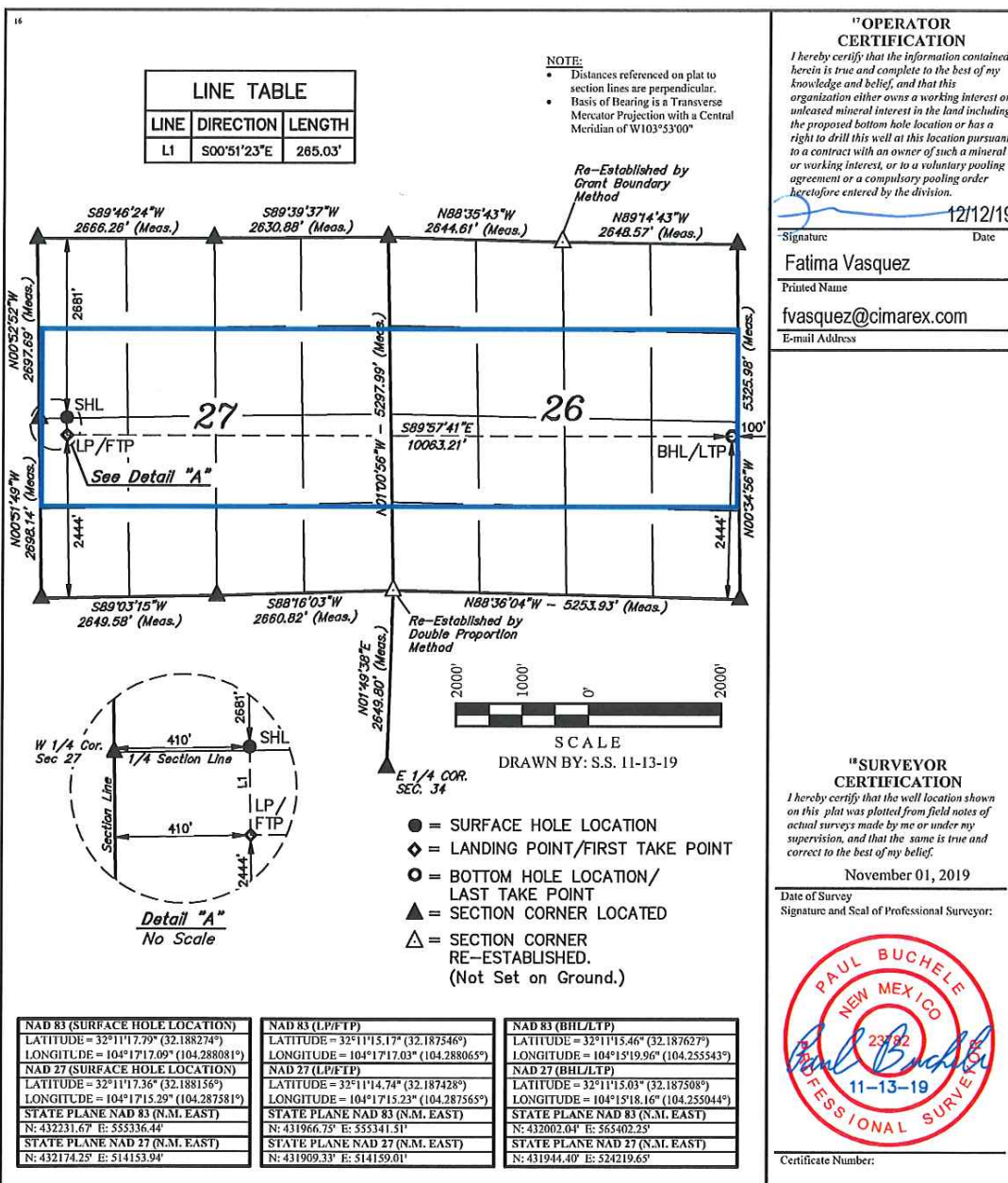
"Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	27	24S	26E		2681	NORTH	410	WEST	EDDY

"Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	26	24S	26E		2444	SOUTH	100	EAST	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.



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GAS CAPTURE PLAN

Date: 12/19/2019

☒ Original

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

☐ Amended - Reason for
Amendment: _____

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

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

Well(s)/Production Facility – Name of facility

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

Well Name	API	Well Location (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comments
CRAWFORD 27 26 FEE #016H	30-015-46502	E-27-24S-26E	2681N 0410W	4400	Flared	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 275601

PERMIT COMMENTS

Operator Name and Address: CIMAREX ENERGY CO. [215099] 600 N. Marienfeld Street Midland, TX 79701	API Number: 30-015-46502
	Well: CRAWFORD 27 26 FEE #016H

Created By	Comment	Comment Date
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Form APD Conditions

Permit 275601

PERMIT CONDITIONS OF APPROVAL

Operator Name and Address: CIMAREX ENERGY CO. [215099] 600 N. Marienfeld Street Midland, TX 79701		API Number: 30-015-46502
		Well: CRAWFORD 27 26 FEE #016H
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 #16H Rev0 RM 21Nov19 Proposal Geodetic Report (Def Plan)



Report Date: November 21, 2019 - 01:46 PM
Client: Cimarex Energy
Field: NM Eddy County (NAD 83)
Structure / Slot: Cimarex Crawford 27-26 Fee #16H / New Slot
Well: Crawford 27-26 Fee #16H
Borehole: Crawford 27-26 Fee #16H
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Crawford 27-26 Fee #16H Rev0 RM 21Nov19
Survey Date: November 21, 2019
Tort / AHD / DDI / ERD Ratio: 100.532° / 10264.763 ft / 6.343 / 1.199
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 11' 17.78745", W 104° 17' 17.09164"
Location Grid N/E Y/X: N 432231.670 ftUS, E 555336.440 ftUS
CRS Grid Convergence Angle: 0.0241°
Grid Scale Factor: 0.99990932
Version / Patch: 2.10.782.0

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: 3357.100 ft above MSL
Seabed / Ground Elevation: 3331.100 ft above MSL
Magnetic Declination: 7.253°
Total Gravity Field Strength: 998.4458mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 47749.301 nT
Magnetic Dip Angle: 59.801°
Declination Date: November 21, 2019
Magnetic Declination Model: HDGM 2019
North Reference: Grid North
Grid Convergence Used: 0.0241°
Total Corr Mag North->Grid North: 7.2289°
Local Coord Referenced To: Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL [2681' FNL, 410' FWL]	0.00	0.00	106.91	0.00	0.00	0.00	0.00	N/A	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
	100.00	0.00	178.88	100.00	0.00	0.00	0.00	0.00	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
	200.00	0.00	178.88	200.00	0.00	0.00	0.00	0.00	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
	300.00	0.00	178.88	300.00	0.00	0.00	0.00	0.00	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
	400.00	0.00	178.88	400.00	0.00	0.00	0.00	0.00	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
	500.00	0.00	178.88	500.00	0.00	0.00	0.00	0.00	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
	600.00	0.00	178.88	600.00	0.00	0.00	0.00	0.00	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
	700.00	0.00	178.88	700.00	0.00	0.00	0.00	0.00	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
	800.00	0.00	178.88	800.00	0.00	0.00	0.00	0.00	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
	900.00	0.00	178.88	900.00	0.00	0.00	0.00	0.00	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
	1000.00	0.00	178.88	1000.00	0.00	0.00	0.00	0.00	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
	1100.00	0.00	178.88	1100.00	0.00	0.00	0.00	0.00	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
	1200.00	0.00	178.88	1200.00	0.00	0.00	0.00	0.00	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
	1300.00	0.00	178.88	1300.00	0.00	0.00	0.00	0.00	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
	1400.00	0.00	178.88	1400.00	0.00	0.00	0.00	0.00	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
	1500.00	0.00	178.88	1500.00	0.00	0.00	0.00	0.00	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
Castille (Base Salt)	1514.00	0.00	178.88	1514.00	0.00	0.00	0.00	0.00	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
	1600.00	0.00	178.88	1600.00	0.00	0.00	0.00	0.00	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
	1700.00	0.00	178.88	1700.00	0.00	0.00	0.00	0.00	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
	1800.00	0.00	178.88	1800.00	0.00	0.00	0.00	0.00	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
Bell Canyon (Top Delaware)	1830.00	0.00	178.88	1830.00	0.00	0.00	0.00	0.00	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
	1900.00	0.00	178.88	1900.00	0.00	0.00	0.00	0.00	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
	2000.00	0.00	178.88	2000.00	0.00	0.00	0.00	0.00	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
	2100.00	0.00	178.88	2100.00	0.00	0.00	0.00	0.00	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
	2200.00	0.00	178.88	2200.00	0.00	0.00	0.00	0.00	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
	2300.00	0.00	178.88	2300.00	0.00	0.00	0.00	0.00	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
	2400.00	0.00	178.88	2400.00	0.00	0.00	0.00	0.00	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
Nudge 2°/100' DLS	2500.00	0.00	178.88	2500.00	0.00	0.00	0.00	0.00	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
	2600.00	2.00	178.88	2599.98	0.04	-1.74	0.03	2.00	432229.93	555336.47	N 32 11 17.77	W 104 17 17.09
	2700.00	4.00	178.88	2699.84	0.16	-6.98	0.14	2.00	432224.69	555336.58	N 32 11 17.72	W 104 17 17.09
	2788.38	5.77	178.88	2787.89	0.32	-14.50	0.28	2.00	432217.17	555336.72	N 32 11 17.64	W 104 17 17.09
	2788.49	5.77	178.88	2788.00	0.32	-14.51	0.28	0.00	432217.16	555336.72	N 32 11 17.64	W 104 17 17.09
	2800.00	5.77	178.88	2799.45	0.35	-15.67	0.31	0.00	432216.00	555336.75	N 32 11 17.63	W 104 17 17.09
	2900.00	5.77	178.88	2898.95	0.57	-25.71	0.50	0.00	432205.96	555336.94	N 32 11 17.53	W 104 17 17.09
	3000.00	5.77	178.88	2998.44	0.80	-35.76	0.70	0.00	432195.91	555337.14	N 32 11 17.43	W 104 17 17.08
	3100.00	5.77	178.88	3097.94	1.02	-45.81	0.90	0.00	432185.87	555337.34	N 32 11 17.33	W 104 17 17.08
	3200.00	5.77	178.88	3197.43	1.25	-55.86	1.09	0.00	432175.82	555337.53	N 32 11 17.23	W 104 17 17.08
	3300.00	5.77	178.88	3296.92	1.47	-65.90	1.29	0.00	432165.77	555337.73	N 32 11 17.14	W 104 17 17.08
	3400.00	5.77	178.88	3396.42	1.70	-75.95	1.49	0.00	432155.73	555337.93	N 32 11 17.04	W 104 17 17.07
	3500.00	5.77	178.88	3495.91	1.92	-86.00	1.68	0.00	432145.68	555338.12	N 32 11 16.94	W 104 17 17.07
	3600.00	5.77	178.88	3595.40	2.14	-96.05	1.88	0.00	432135.63	555338.32	N 32 11 16.84	W 104 17 17.07
	3700.00	5.77	178.88	3694.90	2.37	-106.09	2.08	0.00	432125.59	555338.52	N 32 11 16.74	W 104 17 17.07
	3800.00	5.77	178.88	3794.39	2.59	-116.14	2.27	0.00	432115.54	555338.71	N 32 11 16.64	W 104 17 17.07
	3900.00	5.77	178.88	3893.89	2.82	-126.19	2.47	0.00	432105.49	555338.91	N 32 11 16.54	W 104 17 17.06
	4000.00	5.77	178.88	3993.38	3.04	-136.23	2.67	0.00	432095.45	555339.11	N 32 11 16.44	W 104 17 17.06
	4000.62	5.77	178.88	3994.00	3.04	-136.30	2.67	0.00	432095.39	555339.11	N 32 11 16.44	W 104 17 17.06
	4100.00	5.77	178.88	4092.87	3.27	-146.28	2.86	0.00	432085.40	555339.30	N 32 11 16.34	W 104 17 17.06
	4200.00	5.77	178.88	4192.37	3.49	-156.33	3.06	0.00	432075.36	555339.50	N 32 11 16.24	W 104 17 17.06
	4300.00	5.77	178.88	4291.86	3.71	-166.38	3.26	0.00	432065.31	555339.70	N 32 11 16.14	W 104 17 17.05
	4400.00	5.77	178.88	4391.35	3.94	-176.42	3.45	0.00	432055.26	555339.89	N 32 11 16.04	W 104 17 17.05
	4500.00	5.77	178.88	4490.85	4.16	-186.47	3.65	0.00	432045.22	555340.09	N 32 11 15.94	W 104 17 17.05
Drop to Vertical 2°/100' DLS	4509.20	5.77	178.88	4500.00	4.18	-187.39	3.67	0.00	432044.29	555340.11	N 32 11 15.93	W 104 17 17.05
	4600.00	3.95	178.88	4590.47	4.36	-195.09	3.82	2.00	432036.60	555340.26	N 32 11 15.86	W 104 17 17.05
	4700.00	1.95	178.88	4690.33	4.47	-200.23	3.92	2.00	432031.46	555340.36	N 32 11 15.81	W 104 17 17.05
	4797.57	0.00	178.88	4787.89	4.51	-201.89	3.95	2.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	4800.00	0.00	178.88	4790.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	4900.00	0.00	178.88	4890.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	5000.00	0.00	178.88	4990.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	5100.00	0.00	178.88	5090.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	5200.00	0.00	178.88	5190.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
Top Bone Spring	5295.68	0.00	178.88	5286.00	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	5300.00	0.00	178.88	5290.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	5400.00	0.00	178.88	5390.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	5500.00	0.00	178.88	5490.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05

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 ° ' ")
Top 1st BSPG SS	5600.00	0.00	178.88	5590.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	5700.00	0.00	178.88	5690.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	5800.00	0.00	178.88	5790.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	5900.00	0.00	178.88	5890.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	6000.00	0.00	178.88	5990.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	6100.00	0.00	178.88	6090.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	6200.00	0.00	178.88	6190.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	6231.68	0.00	178.88	6222.00	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	6300.00	0.00	178.88	6290.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	6400.00	0.00	178.88	6390.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
Top 2nd BSPG SS	6500.00	0.00	178.88	6490.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	6556.68	0.00	178.88	6547.00	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	6600.00	0.00	178.88	6590.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	6700.00	0.00	178.88	6690.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	6800.00	0.00	178.88	6790.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
Top 3rd BSPG Carb	6900.00	0.00	178.88	6890.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	6962.68	0.00	178.88	6953.00	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	7000.00	0.00	178.88	6990.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	7100.00	0.00	178.88	7090.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	7200.00	0.00	178.88	7190.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	7300.00	0.00	178.88	7290.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	7400.00	0.00	178.88	7390.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	7500.00	0.00	178.88	7490.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	7600.00	0.00	178.88	7590.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	7700.00	0.00	178.88	7690.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
KOP - Build 12°/100' DLS	7800.00	0.00	178.88	7790.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	7900.00	0.00	178.88	7890.32	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	7925.29	0.00	178.88	7915.61	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
	8000.00	8.96	90.16	7990.01	10.34	-201.91	9.78	12.00	432029.78	555346.22	N 32 11 15.79	W 104 17 16.98
	8092.05	20.01	90.16	8079.00	33.33	-201.97	32.78	12.00	432029.72	555369.21	N 32 11 15.79	W 104 17 16.71
Top 3rd BSPG SS	8100.00	20.96	90.16	8086.44	36.12	-201.98	35.56	12.00	432029.71	555372.00	N 32 11 15.79	W 104 17 16.68
	8200.00	32.96	90.16	8175.41	81.38	-202.11	80.82	12.00	432029.58	555417.25	N 32 11 15.79	W 104 17 16.15
	8300.00	44.96	90.16	8253.02	144.15	-202.28	143.59	12.00	432029.41	555480.02	N 32 11 15.79	W 104 17 15.42
	8400.00	56.96	90.16	8315.88	221.68	-202.49	221.12	12.00	432029.20	555557.54	N 32 11 15.78	W 104 17 14.52
	8500.00	68.96	90.16	8361.26	310.59	-202.74	310.03	12.00	432028.95	555646.44	N 32 11 15.78	W 104 17 13.49
	8600.00	80.96	90.16	8387.15	406.99	-203.00	406.43	12.00	432028.68	555742.83	N 32 11 15.78	W 104 17 12.36
	8666.93	89.00	90.16	8393.00	473.61	-203.19	473.05	12.00	432028.50	555809.45	N 32 11 15.77	W 104 17 11.59
	8700.00	89.00	90.16	8393.58	506.67	-203.28	506.12	0.00	432028.41	555842.51	N 32 11 15.77	W 104 17 11.20
	8800.00	89.00	90.16	8395.33	606.66	-203.56	606.10	0.00	432028.13	555942.48	N 32 11 15.77	W 104 17 10.04
	8900.00	89.00	90.16	8397.08	706.64	-203.83	706.08	0.00	432027.86	556042.46	N 32 11 15.77	W 104 17 8.88
3rd BSPG SS Target Landing Point	9000.00	89.00	90.16	8398.83	806.63	-204.11	806.07	0.00	432027.58	556142.43	N 32 11 15.76	W 104 17 7.71
	9100.00	89.00	90.16	8400.58	906.61	-204.38	906.05	0.00	432027.31	556242.41	N 32 11 15.76	W 104 17 6.55
	9200.00	89.00	90.16	8402.33	1006.60	-204.66	1006.04	0.00	432027.03	556342.38	N 32 11 15.76	W 104 17 5.39
	9300.00	89.00	90.16	8404.08	1106.58	-204.93	1106.02	0.00	432026.75	556442.36	N 32 11 15.75	W 104 17 4.22
	9400.00	89.00	90.16	8405.84	1206.57	-205.21	1206.01	0.00	432026.48	556542.33	N 32 11 15.75	W 104 17 3.06
	9500.00	89.00	90.16	8407.59	1306.55	-205.49	1305.99	0.00	432026.20	556642.31	N 32 11 15.75	W 104 17 1.90
	9600.00	89.00	90.16	8409.34	1406.54	-205.76	1405.97	0.00	432025.93	556742.28	N 32 11 15.75	W 104 17 0.73
	9700.00	89.00	90.16	8411.09	1506.52	-206.04	1505.96	0.00	432025.65	556842.26	N 32 11 15.74	W 104 16 59.57
	9800.00	89.00	90.16	8412.84	1606.51	-206.31	1605.94	0.00	432025.38	556942.23	N 32 11 15.74	W 104 16 58.41
	9900.00	89.00	90.16	8414.59	1706.49	-206.59	1705.93	0.00	432025.10	557042.21	N 32 11 15.74	W 104 16 57.24
	10000.00	89.00	90.16	8416.34	1806.48	-206.86	1805.91	0.00	432024.82	557142.18	N 32 11 15.73	W 104 16 56.08
	10100.00	89.00	90.16	8418.09	1906.46	-207.14	1905.90	0.00	432024.55	557242.16	N 32 11 15.73	W 104 16 54.92
	10200.00	89.00	90.16	8419.84	2006.44	-207.42	2005.88	0.00	432024.27	557342.13	N 32 11 15.73	W 104 16 53.75
	10300.00	89.00	90.16	8421.59	2106.43	-207.69	2105.86	0.00	432024.00	557442.11	N 32 11 15.72	W 104 16 52.59
	10400.00	89.00	90.16	8423.34	2206.41	-207.97	2205.85	0.00	432023.72	557542.08	N 32 11 15.72	W 104 16 51.43
	10500.00	89.00	90.16	8425.09	2306.40	-208.24	2305.83	0.00	432023.45	557642.06	N 32 11 15.72	W 104 16 50.26
	10600.00	89.00	90.16	8426.85	2406.38	-208.52	2405.82	0.00	432023.17	557742.03	N 32 11 15.71	W 104 16 49.10
	10700.00	89.00	90.16	8428.60	2506.37	-208.80	2505.80	0.00	432022.89	557842.01	N 32 11 15.71	W 104 16 47.94
	10800.00	89.00	90.16	8430.35	2606.35	-209.07	2605.79	0.00	432022.62	557941.98	N 32 11 15.71	W 104 16 46.77
	10900.00	89.00	90.16	8432.10	2706.34	-209.35	2705.77	0.00	432022.34	558041.96	N 32 11 15.70	W 104 16 45.61
	11000.00	89.00	90.16	8433.85	2806.32	-209.62	2805.75	0.00	432022.07	558141.93	N 32 11 15.70	W 104 16 44.44
	11100.00	89.00	90.16	8435.60	2906.31	-209.90	2905.74	0.00	432021.79	558241.91	N 32 11 15.70	W 104 16 43.28
	11200.00	89.00	90.16	8437.35	3006.29	-210.17	3005.72	0.00	432021.52	558341.88	N 32 11 15.69	W 104 16 42.12
	11300.00	89.00	90.16	8439.10	3106.28	-210.45	3105.71	0.00	432021.24	558441.86	N 32 11 15.69	W 104 16 40.95
	11400.00	89.00	90.16	8440.85	3206.26	-210.73	3205.69	0.00	432020.96	558541.83	N 32 11 15.69	W 104 16 39.79
	11500.00	89.00	90.16	8442.60	3306.25	-211.00	3305.68	0.00	432020.69	558641.81	N 32 11 15.68	W 104 16 38.63
	11522.64	89.00	90.16	8443.00	3328.89	-211.06	3328.32	0.00	432020.63	558664.45	N 32 11 15.68	W 104 16 38.36
	11600.00	89.00	90.16	8444.35	3406.23	-211.28	3405.66	0.00	432020.41	558741.78	N 32 11 15.68	W 104 16 37.46
	11700.00	89.00	90.16	8446.11	3506.21	-211.55	3505.64	0.00	432020.14	558841.76	N 32 11 15.68	W 104 16 36.30
	11800.00	89.00	90.16	8447.86	3606.20	-211.83	3605.63	0.00	432019.86	558941.73	N 32 11 15.67	W 104 16 35.14
	11900.00	89.00	90.16	8449.61	3706.18	-212.10	3705.61	0.00	432019.58	559041.71	N 32 11 15.67	W 104 16 33.97
	12000.00	89.00	90.16	8451.36	3806.17	-212.38	3805.60	0.00	432019.31	559141.68	N 32 11 15.67	W 104 16 32.81
	12100.00	89.00	90.16	8453.11	3906.15	-212.66	3905.58	0.00	432019.03	559241.66	N 32 11 15.66	W 104 16 31.65
	12200.00	89.00	90.16	8454.86	4006.14	-212.93	4005.57	0.00	432018.76	559341.63	N 32 11 15.66	W 104 16 30

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 ° ' ")
	14000.00	89.00	90.16	8486.38	5805.86	-217.90	5805.28	0.00	432013.79	561141.19	N 32 11 15.60	W 104 16 9.54
	14100.00	89.00	90.16	8488.13	5905.85	-218.17	5905.27	0.00	432013.52	561241.16	N 32 11 15.60	W 104 16 8.38
	14200.00	89.00	90.16	8489.88	6005.83	-218.45	6005.25	0.00	432013.24	561341.14	N 32 11 15.60	W 104 16 7.22
	14300.00	89.00	90.16	8491.63	6105.82	-218.72	6105.24	0.00	432012.97	561441.11	N 32 11 15.59	W 104 16 6.05
	14400.00	89.00	90.16	8493.38	6205.80	-219.00	6205.22	0.00	432012.69	561541.09	N 32 11 15.59	W 104 16 4.89
	14500.00	89.00	90.16	8495.13	6305.79	-219.28	6305.20	0.00	432012.41	561641.06	N 32 11 15.59	W 104 16 3.73
	14600.00	89.00	90.16	8496.88	6405.77	-219.55	6405.19	0.00	432012.14	561741.04	N 32 11 15.58	W 104 16 2.56
	14700.00	89.00	90.16	8498.63	6505.75	-219.83	6505.17	0.00	432011.86	561841.01	N 32 11 15.58	W 104 16 1.40
	14800.00	89.00	90.16	8500.38	6605.74	-220.10	6605.16	0.00	432011.59	561940.99	N 32 11 15.58	W 104 16 0.23
	14900.00	89.00	90.16	8502.13	6705.72	-220.38	6705.14	0.00	432011.31	562040.96	N 32 11 15.57	W 104 15 59.07
	15000.00	89.00	90.16	8503.88	6805.71	-220.65	6805.13	0.00	432011.04	562140.94	N 32 11 15.57	W 104 15 57.91
	15100.00	89.00	90.16	8505.64	6905.69	-220.93	6905.11	0.00	432010.76	562240.91	N 32 11 15.57	W 104 15 56.74
	15200.00	89.00	90.16	8507.39	7005.68	-221.21	7005.09	0.00	432010.48	562340.89	N 32 11 15.56	W 104 15 55.58
	15300.00	89.00	90.16	8509.14	7105.66	-221.48	7105.08	0.00	432010.21	562440.86	N 32 11 15.56	W 104 15 54.42
	15400.00	89.00	90.16	8510.89	7205.65	-221.76	7205.06	0.00	432009.93	562540.84	N 32 11 15.56	W 104 15 53.25
	15500.00	89.00	90.16	8512.64	7305.63	-222.03	7305.05	0.00	432009.66	562640.81	N 32 11 15.55	W 104 15 52.09
	15600.00	89.00	90.16	8514.39	7405.62	-222.31	7405.03	0.00	432009.38	562740.79	N 32 11 15.55	W 104 15 50.93
	15700.00	89.00	90.16	8516.14	7505.60	-222.59	7505.02	0.00	432009.11	562840.76	N 32 11 15.55	W 104 15 49.76
	15800.00	89.00	90.16	8517.89	7605.59	-222.86	7605.00	0.00	432008.83	562940.74	N 32 11 15.54	W 104 15 48.60
	15900.00	89.00	90.16	8519.64	7705.57	-223.14	7704.98	0.00	432008.55	563040.71	N 32 11 15.54	W 104 15 47.44
	16000.00	89.00	90.16	8521.39	7805.56	-223.41	7804.97	0.00	432008.28	563140.69	N 32 11 15.54	W 104 15 46.27
	16100.00	89.00	90.16	8523.14	7905.54	-223.69	7904.95	0.00	432008.00	563240.66	N 32 11 15.53	W 104 15 45.11
	16200.00	89.00	90.16	8524.89	8005.52	-223.96	8004.94	0.00	432007.73	563340.64	N 32 11 15.53	W 104 15 43.95
	16300.00	89.00	90.16	8526.65	8105.51	-224.24	8104.92	0.00	432007.45	563440.61	N 32 11 15.53	W 104 15 42.78
	16400.00	89.00	90.16	8528.40	8205.49	-224.52	8204.91	0.00	432007.18	563540.59	N 32 11 15.52	W 104 15 41.62
	16500.00	89.00	90.16	8530.15	8305.48	-224.79	8304.89	0.00	432006.90	563640.56	N 32 11 15.52	W 104 15 40.46
	16600.00	89.00	90.16	8531.90	8405.46	-225.07	8404.87	0.00	432006.62	563740.54	N 32 11 15.51	W 104 15 39.29
	16700.00	89.00	90.16	8533.65	8505.45	-225.34	8504.86	0.00	432006.35	563840.51	N 32 11 15.51	W 104 15 38.13
	16800.00	89.00	90.16	8535.40	8605.43	-225.62	8604.84	0.00	432006.07	563940.49	N 32 11 15.51	W 104 15 36.97
	16900.00	89.00	90.16	8537.15	8705.42	-225.89	8704.83	0.00	432005.80	564040.46	N 32 11 15.50	W 104 15 35.80
	17000.00	89.00	90.16	8538.90	8805.40	-226.17	8804.81	0.00	432005.52	564140.44	N 32 11 15.50	W 104 15 34.64
	17100.00	89.00	90.16	8540.65	8905.39	-226.45	8904.80	0.00	432005.24	564240.41	N 32 11 15.50	W 104 15 33.48
	17200.00	89.00	90.16	8542.40	9005.37	-226.72	9004.78	0.00	432004.97	564340.39	N 32 11 15.49	W 104 15 32.31
	17300.00	89.00	90.16	8544.15	9105.36	-227.00	9104.76	0.00	432004.69	564440.36	N 32 11 15.49	W 104 15 31.15
	17400.00	89.00	90.16	8545.91	9205.34	-227.27	9204.75	0.00	432004.42	564540.34	N 32 11 15.49	W 104 15 29.99
	17500.00	89.00	90.16	8547.66	9305.33	-227.55	9304.73	0.00	432004.14	564640.31	N 32 11 15.48	W 104 15 28.82
	17600.00	89.00	90.16	8549.41	9405.31	-227.83	9404.72	0.00	432003.87	564740.29	N 32 11 15.48	W 104 15 27.66
	17700.00	89.00	90.16	8551.16	9505.29	-228.10	9504.70	0.00	432003.59	564840.26	N 32 11 15.48	W 104 15 26.50
	17800.00	89.00	90.16	8552.91	9605.28	-228.38	9604.69	0.00	432003.31	564940.24	N 32 11 15.47	W 104 15 25.33
	17900.00	89.00	90.16	8554.66	9705.26	-228.65	9704.67	0.00	432003.04	565040.21	N 32 11 15.47	W 104 15 24.17
	18000.00	89.00	90.16	8556.41	9805.25	-228.93	9804.65	0.00	432002.76	565140.19	N 32 11 15.47	W 104 15 23.01
	18100.00	89.00	90.16	8558.16	9905.23	-229.20	9904.64	0.00	432002.49	565240.16	N 32 11 15.46	W 104 15 21.84
	18200.00	89.00	90.16	8559.91	10005.22	-229.48	10004.62	0.00	432002.21	565340.14	N 32 11 15.46	W 104 15 20.68

Cimarex
Crawford 27-26
Fee #16H -
PBHL [2444'
FSL, 100' FEL]

18262.1389.0090.168561.0010067.34-229.6510066.740.00432002.04565402.25N 32 11 15.46 W 104 15 19.96

Survey Type: Def Plan

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

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	26.000	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS-Depth Only	Crawford 27-26 Fee #16H / Cimarex Crawford 27-26 Fee #16H Rev0 RM 21Nov19
	1	26.000	18262.129	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS	Crawford 27-26 Fee #16H / Cimarex Crawford 27-26 Fee



Cimarex Crawford 27-26 Fee #16H Rev0 RM 21Nov19 Proposal Geodetic Report (Def Plan)



Report Date: November 21, 2019 - 01:46 PM
Client: Cimarex Energy
Field: NM Eddy County (NAD 83)
Structure / Slot: Cimarex Crawford 27-26 Fee #16H / New Slot
Well: Crawford 27-26 Fee #16H
Borehole: Crawford 27-26 Fee #16H
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Crawford 27-26 Fee #16H Rev0 RM 21Nov19
Survey Date: November 21, 2019
Tort / AHD / DDI / ERD Ratio: 100.532 ° / 10264.763 ft / 6.343 / 1.199
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 11' 17.78745", W 104° 17' 17.09164"
Location Grid N/E Y/X: N 432231.670 ftUS, E 555336.440 ftUS
CRS Grid Convergence Angle: 0.0241 °
Grid Scale Factor: 0.99990932
Version / Patch: 2.10.782.0

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: 3357.100 ft above MSL
Seabed / Ground Elevation: 3331.100 ft above MSL
Magnetic Declination: 7.253 °
Total Gravity Field Strength: 998.4458mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 47749.301 nT
Magnetic Dip Angle: 59.801 °
Declination Date: November 21, 2019
Magnetic Declination Model: HDGM 2019
North Reference: Grid North
Grid Convergence Used: 0.0241 °
Total Corr Mag North->Grid North: 7.2289 °
Local Coord Referenced To: Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL [2681' FNL, 410' FWL]	0.00	0.00	106.91	0.00	0.00	0.00	0.00	N/A	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
Nudge 2"/100' DLS	2500.00	0.00	178.88	2500.00	0.00	0.00	0.00	0.00	432231.67	555336.44	N 32 11 17.79	W 104 17 17.09
Hold Nudge	2788.38	5.77	178.88	2787.89	0.32	-14.50	0.28	2.00	432217.17	555336.72	N 32 11 17.64	W 104 17 17.09
Drop to Vertical 2"/100' DLS	4509.20	5.77	178.88	4500.00	4.18	-187.39	3.67	0.00	432044.29	555340.11	N 32 11 15.93	W 104 17 17.05
Hold Vertical	4797.57	0.00	178.88	4787.89	4.51	-201.89	3.95	2.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
KOP - Build 12"/100' DLS	7925.29	0.00	178.88	7915.61	4.51	-201.89	3.95	0.00	432029.79	555340.39	N 32 11 15.79	W 104 17 17.05
Landing Point	8666.93	89.00	90.16	8393.00	473.61	-203.19	473.05	12.00	432028.50	555809.45	N 32 11 15.77	W 104 17 11.59
Cimarex Crawford 27-26 Fee #16H - PBHL [2444' FSL, 100' FEL]	18262.13	89.00	90.16	8561.00	10067.34	-229.65	10066.74	0.00	432002.04	565402.25	N 32 11 15.46	W 104 15 19.96

Survey Type: Def Plan

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

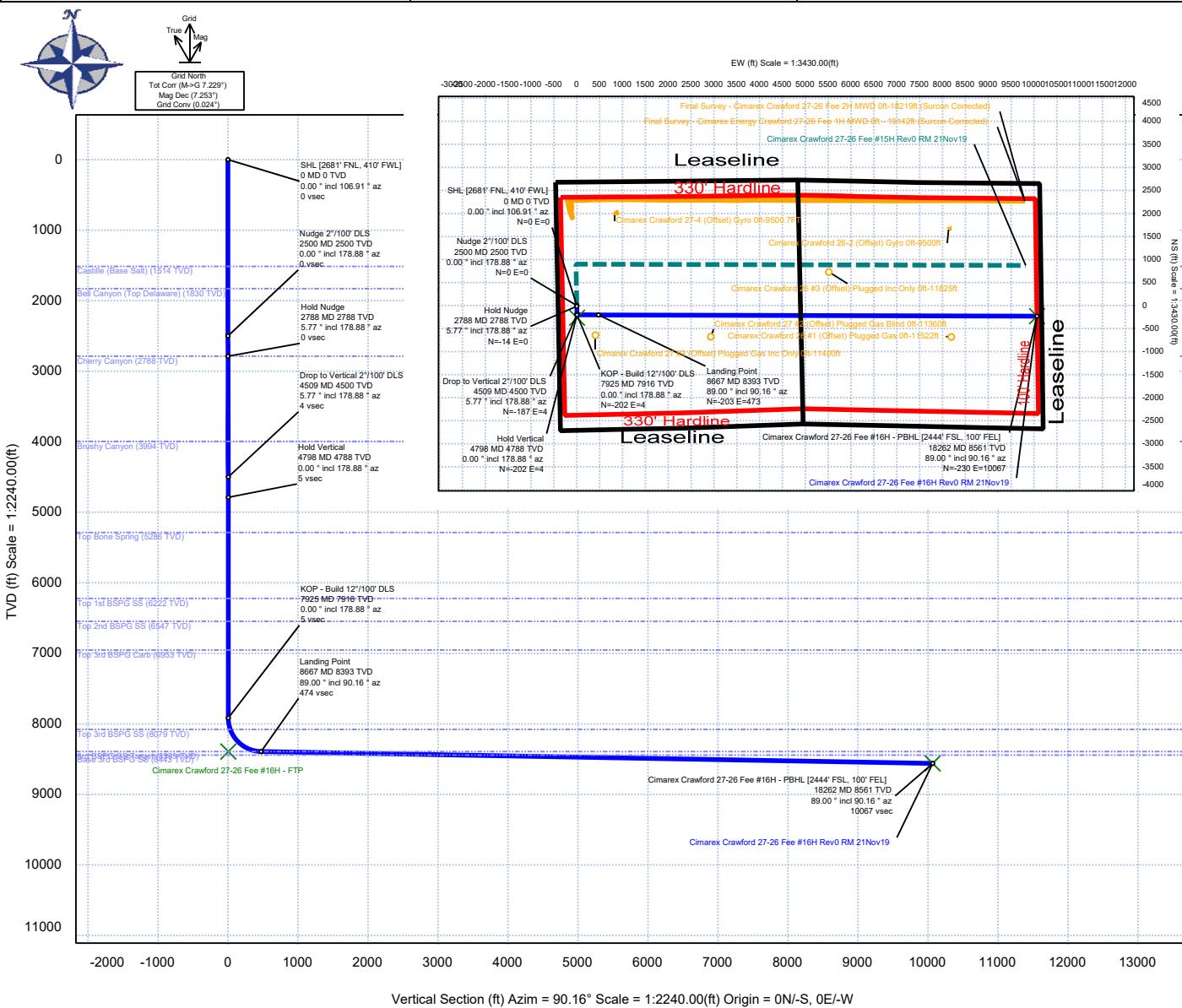
Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	26.000	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS-Depth Only	Crawford 27-26 Fee #16H / Cimarex Crawford 27-26 Fee #16H Rev0 RM 21Nov19
	1	26.000	18262.129	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS	Crawford 27-26 Fee #16H / Cimarex Crawford 27-26 Fee



Cimarex Energy Rev 0



Borehole:	Well:	Field:	Structure:
Crawford 27-26 Fee #16H	Crawford 27-26 Fee #16H	NM Eddy County (NAD 83)	Cimarex Crawford 27-26 Fee #16H
Gravity & Magnetic Parameters			
Model: HDGM 2019	Dip: 59.801°	Date: 21-Nov-2019	Surface Location NAD83 New Mexico State Plane, Eastern Zone, US Feet
MagDec: 7.253°	FS: 47749.301nT	Gravity FS: 998.446mgn (9.80665 Based)	Miscellaneous
			Slot: New Slot
			TVD Ref: RKB(3357.1ft above MSL)
			Plan: Cimarex Crawford 27-26 Fee #16H Rev0 RM 21Nov19



Critical Points								
Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL [2681' FNL, 410' FWL]	0.00	0.00	106.91	0.00	0.00	0.00	0.00	
Castille (Base Salt)	1514.00	0.00	178.88	1514.00	0.00	0.00	0.00	0.00
Bell Canyon (Top Delaware)	1830.00	0.00	178.88	1830.00	0.00	0.00	0.00	0.00
Nudge 2°/100' DLS	2500.00	0.00	178.88	2500.00	0.00	0.00	0.00	0.00
Hold Nudge	2788.38	5.77	178.88	2787.89	0.32	-14.50	0.28	2.00
Cherry Canyon	2788.49	5.77	178.88	2788.00	0.32	-14.51	0.28	0.00
Brushy Canyon	4000.62	5.77	178.88	3994.00	3.04	-136.30	2.67	0.00
Drop to Vertical 2°/100' DLS	4509.20	5.77	178.88	4500.00	4.18	-187.39	3.67	0.00
Hold Vertical	4797.57	0.00	178.88	4787.89	4.51	-201.89	3.95	2.00
Top Bone Spring	5295.68	0.00	178.88	5286.00	4.51	-201.89	3.95	0.00
Top 1st BSPG SS	6231.68	0.00	178.88	6222.00	4.51	-201.89	3.95	0.00
Top 2nd BSPG SS	6556.68	0.00	178.88	6547.00	4.51	-201.89	3.95	0.00
Top 3rd BSPG Carb	6962.68	0.00	178.88	6953.00	4.51	-201.89	3.95	0.00
KOP - Build 12°/100' DLS	7925.29	0.00	178.88	7915.61	4.51	-201.89	3.95	0.00
Top 3rd BSPG SS	8092.05	20.01	90.16	8079.00	33.33	-201.97	32.78	12.00
3rd BSPG SS Target	8666.93	89.00	90.16	8393.00	473.61	-203.19	473.05	12.00
Landing Point	8666.93	89.00	90.16	8393.00	473.61	-203.19	473.05	12.00
Base 3rd BSPG SS	11522.64	89.00	90.16	8443.00	3328.89	-211.06	3328.32	0.00
Cimarex Crawford 27-26 Fee #16H - PBHL [2444' FSL, 100' FEL]	18262.13	89.00	90.16	8561.00	10067.34	-229.65	10066.74	0.00



Cimarex Crawford 27-26 Fee #16H Rev0 RM 21Nov19 Anti-Collision Summary Report

Analysis Date-24hr Time: November 21, 2019 - 13:47
Client: Cimarex Energy
Field: NM Eddy County (NAD 83)
Structure: Cimarex Crawford 27-26 Fee #16H
Slot: New Slot
Well: Crawford 27-26 Fee #16H
Borehole: Crawford 27-26 Fee #16H
Scan MD Range: 0.00ft - 18262.13ft

Analysis Method: 3D Least Distance
Reference Trajectory: Cimarex Crawford 27-26 Fee #16H Rev0 RM 21Nov19 (Def Plan)
Depth Interval: Every 10.00 Measured Depth (ft)
Rule Set: NAL Procedure: D&M AntiCollision Standard S002
Min Pts: All local minima indicated.
Version / Patch: 2.10.782.0
Database / Project: US1153APP452.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 26 #1 (Offset) Plugged Gas Off-11522ft (Def Survey)													Fail Major
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8220.95	32.81	8219.82	8188.14	N/A	MAS = 10.00 (m)	0.00	0.00						Surface
8220.65	32.81	8219.47	8187.84	183527.14	MAS = 10.00 (m)	26.00	26.00						MinPt-O-SF
8197.64	2460.28	6557.07	5737.36	5.00	OSF1.50	7990.00	7980.12	OSF<5.00		OSF<1.50			Enter Alert
2618.20	2625.21	865.46	-7.01	1.50	OSF1.50	13810.00	8483.05						Enter Minor
1749.00	2631.37	-8.14	-882.37	1.00	OSF1.50	14700.00	8498.63				OSF<1.00		Enter Major
458.09	2644.68	-1305.53	-2186.59	0.26	OSF1.50	16380.00	8528.05						MinPts
458.09	2644.55	-1305.45	-2186.53	0.26	OSF1.50	16390.00	8528.22						MinPt-CtCt
1762.08	2643.04	-0.32	-880.96	1.00	OSF1.50	18090.00	8557.99				OSF>1.00		Exit Major
1928.79	2643.83	165.85	-715.05	1.09	OSF1.50	18262.13	8561.00						TD

Cimarex Crawford 27 #2 (Offset) Plugged Gas Blind Off-11360ft (Def Survey)													Fail Major
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3008.56	32.81	3007.43	2975.75	N/A	MAS = 10.00 (m)	0.00	0.00						Surface
3008.17	32.81	3006.99	2975.36	62073.20	MAS = 10.00 (m)	26.00	26.00						MinPt-O-SF
2999.92	903.66	2397.10	2096.26	4.98	OSF1.50	2980.00	2978.54	OSF<5.00		OSF<1.50			Enter Alert
2597.40	2602.51	861.79	-5.11	1.50	OSF1.50	8570.00	8381.51						Enter Minor
1740.05	2611.44	-1.85	-871.40	1.00	OSF1.50	9450.00	8406.71				OSF<1.00		Enter Major
468.71	2620.66	-1278.85	-2151.95	0.27	OSF1.50	11120.00	8435.95						MinPts
468.69	2620.64	-1278.84	-2151.96	0.27	OSF1.50	11130.00	8436.13						MinPts
1747.75	2628.48	-4.95	-880.73	1.00	OSF1.50	12810.00	8465.54				OSF>1.00		Exit Major
2625.77	2633.35	869.83	-7.58	1.50	OSF1.50	13710.00	8481.30			OSF>1.50			Exit Minor
7150.41	2658.34	5377.81	4492.07	4.04	OSF1.50	18262.13	8561.00						TD

Cimarex Crawford 27-26 Fee #15H Rev0 RM 21Nov19 (Def Plan)													Warning Alert
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20.00	16.25	18.71	3.74	N/A	MAS = 4.95 (m)	0.00	0.00	CtCt<=15m<15.00					Enter Alert
20.00	16.25	18.71	3.74	21051.57	MAS = 4.95 (m)	26.00	26.00						WRP
20.00	18.51	7.23	1.49	1.63	OSF1.50	1890.00	1890.00						MinPt-CtCt
20.07	18.78	7.11	1.28	1.61	OSF1.50	1920.00	1920.00						MINPT-O-EQU
20.16	18.89	7.14	1.27	1.61	OSF1.50	1930.00	1930.00						MinPts
73.92	23.54	57.80	50.38	4.90	OSF1.50	2460.00	2460.00	OSF>5.00					Exit Alert
1060.57	47.77	1028.29	1012.80	34.16	OSF1.50	6320.00	6310.32						MinPt-O-SF
1100.44	56.17	1062.56	1044.27	30.04	OSF1.50	8000.00	7990.01						MINPT-O-EQU
1100.54	56.28	1062.59	1044.28	29.98	OSF1.50	8020.00	8009.70						MinPt-O-ADP
1102.09	56.83	1063.77	1045.25	29.73	OSF1.50	8130.00	8114.10						MinPt-O-SF
1125.46	338.57	899.32	786.89	5.00	OSF1.50	16080.00	8522.79	OSF<5.00					Enter Alert
1127.18	421.06	846.05	706.13	4.02	OSF1.50	18040.00	8557.11						MINPT-O-EQU
1127.42	421.31	846.12	706.11	4.02	OSF1.50	18050.00	8557.29						MinPt-O-ADP
1128.18	421.74	846.58	706.43	4.02	OSF1.50	18070.00	8557.64						MinPt-O-SF
1153.19	419.42	873.15	733.77	4.13	OSF1.50	18262.13	8561.00						TD

Cimarex Crawford 27 #3 (Offset) Plugged Gas Inc Only Off-11400ft (Def Survey)													Warning Alert
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785.76	32.81	784.63	752.95	N/A	MAS = 10.00 (m)	0.00	0.00						Surface
784.98	32.81	783.76	752.17	8512.03	MAS = 10.00 (m)	20.00	20.00						MinPt-O-SF
784.84	32.81	783.63	752.04	9217.07	MAS = 10.00 (m)	26.00	26.00						WRP
784.71	32.81	783.55	751.90	24890.04	MAS = 10.00 (m)	40.00	40.00						MinPts
784.05	44.07	754.29	739.98	27.35	OSF1.50	930.00	930.00						MinPt-CtCt
786.12	75.17	735.62	710.94	15.90	OSF1.50	1530.00	1530.00						MinPt-CtCt
785.52	108.64	712.71	676.87	10.94	OSF1.50	2170.00	2170.00						MinPt-CtCt
672.77	202.80	537.16	469.97	5.00	OSF1.50	4010.00	4003.33	OSF<5.00					Enter Alert
628.52	241.32	467.22	387.20	3.92	OSF1.50	4760.00	4750.32						MinPt-CtCt
627.25	280.00	440.15	347.24	3.37	OSF1.50	5500.00	5490.32						MinPt-CtCt
621.84	334.02	398.73	287.82	2.80	OSF1.50	6540.00	6530.32						MinPt-CtCt
459.86	430.60	172.35	29.26	1.60	OSF1.50	8620.00	8389.88						MinPts
1428.95	432.25	1140.41	996.71	4.97	OSF1.50	9970.00	8415.82	OSF>5.00					Exit Alert
9654.18	440.70	9360.01	9213.48	32.94	OSF1.50	18262.13	8561.00						TD

Cimarex Crawford 26 #3 (Offset) Plugged Inc Only Off-11825ft (Def Survey)													Warning Alert
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5562.54	32.81	5561.41	5529.73	N/A	MAS = 10.00 (m)	0.00	0.00						Surface
5562.20	32.81	5561.02	5529.38	115288.55	MAS = 10.00 (m)	26.00	26.00						MinPt-O-SF
5561.89	32.81	5560.60	5529.08	35146.91	MAS = 10.00 (m)	90.00	90.00						MinPts
5563.80	32.81	5558.85	5530.99	1458.94	MAS = 10.00 (m)	340.00	340.00						MINPT-O-EQU
5559.81	45.02	5529.42	5514.79	189.98	OSF1.50	1010.00	1010.00						MinPt-CtCt
5560.71	118.62	5481.25	5442.09	70.98	OSF1.50	2430.00	2430.00						MinPt-CtCt
5567.93	170.73	5453.73	5397.20	49.23	OSF1.50	3380.00	3376.52						MinPt-CtCt
5566.44	214.84	5442.83	5371.60	39.20	OSF1.50	4410.00	4401.30						MINPT-O-EQU
5586.53	265.03	5409.46	5321.50	31.75	OSF1.50	5290.00	5280.32						MinPt-CtCt

Offset Trajectory	Separation			Allow	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
5590.04	334.18	5366.87		5255.86	25.17	OSF1.50	6620.00	6610.32				MinPt-CtCt	
1454.48	442.23	1157.99		1012.25	4.97	OSF1.50	12610.00	8462.04	OSF<5.00			Enter Alert	
951.72	463.20	642.54		488.52	3.09	OSF1.50	13710.00	8481.30				MinPt-CtCt	
951.77	463.39	642.50		488.44	3.09	OSF1.50	13720.00	8481.47				MinPts	
951.92	463.46	642.57		488.48	3.08	OSF1.50	13730.00	8481.65				MinPt-O-SF	
1499.67	452.87	1197.38		1046.80	4.98	OSF1.50	14870.00	8501.61	OSF>5.00			Exit Alert	
4648.27	442.99	4352.57		4205.28	15.78	OSF1.50	18262.13	8561.00				TD	

Final Survey - Cimarex

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

Pass

1902.31	32.81	1901.18	1869.50	N/A	MAS = 10.00 (m)	0.00	0.00					MinPts	
1902.31	32.81	1901.14	1869.50	48828.76	MAS = 10.00 (m)	26.00	26.00					WRP	
1892.32	32.81	1885.14	1859.51	312.73	MAS = 10.00 (m)	1350.00	1350.00					MinPts	
1892.35	32.81	1885.05	1859.54	308.69	MAS = 10.00 (m)	1370.00	1370.00					MINPT-O-EQU	
1892.72	32.81	1883.05	1859.91	218.75	MAS = 10.00 (m)	1990.00	1990.00					MinPts	
1892.75	32.81	1882.95	1859.95	216.55	MAS = 10.00 (m)	2010.00	2010.00					MINPT-O-EQU	
1914.54	32.81	1902.61	1881.73	175.34	MAS = 10.00 (m)	2500.00	2500.00					MinPt-O-SF	
2296.46	32.81	2290.13	2263.65	432.21	MAS = 10.00 (m)	4797.57	4787.89					MinPt-O-SF	
2486.80	32.81	2467.32	2453.99	134.65	MAS = 10.00 (m)	8030.00	8019.48					MinPts	
2486.80	32.81	2467.32	2454.00	134.60	MAS = 10.00 (m)	8040.00	8029.22					MINPT-O-EQU	
2486.99	32.81	2466.59	2454.18	128.21	MAS = 10.00 (m)	8340.00	8280.10					MinPts	
2487.01	32.81	2466.55	2454.21	127.87	MAS = 10.00 (m)	8350.00	8286.48					MINPT-O-EQU	
2498.92	34.49	2475.64	2464.49	112.02	OSF1.50	8630.00	8390.93					MINPT-O-EQU	
2497.46	99.57	2430.76	2397.90	37.99	OSF1.50	10470.00	8424.57					MinPt-CtCt	
2494.10	113.54	2418.07	2380.55	33.22	OSF1.50	10810.00	8430.52					MinPt-CtCt	
2509.74	151.14	2408.65	2358.60	25.06	OSF1.50	11740.00	8446.81					MINPT-O-EQU	
2498.76	187.40	2373.50	2311.36	20.10	OSF1.50	12570.00	8461.34					MinPt-CtCt	
2497.07	223.47	2347.76	2273.59	16.83	OSF1.50	13420.00	8476.22					MinPt-CtCt	
2495.98	236.17	2338.20	2259.80	15.91	OSF1.50	13720.00	8481.47					MinPt-CtCt	
2499.01	244.26	2335.84	2254.75	15.40	OSF1.50	13940.00	8485.32					MINPT-O-EQU	
2500.08	245.81	2335.88	2254.27	15.31	OSF1.50	13980.00	8486.03					MINPT-O-EQU	
2507.42	257.29	2335.58	2250.13	14.67	OSF1.50	14250.00	8490.75					MINPT-O-EQU	
2503.10	316.87	2291.52	2186.22	11.88	OSF1.50	15620.00	8514.74					MinPt-CtCt	
2507.28	348.43	2274.67	2158.86	10.82	OSF1.50	16360.00	8527.70					MinPt-CtCt	
2502.52	401.81	2234.32	2100.71	9.36	OSF1.50	17610.00	8549.58					MinPt-CtCt	
2503.89	406.20	2232.77	2097.70	9.27	OSF1.50	17740.00	8551.86					MINPT-O-EQU	
2510.53	417.38	2231.95	2093.15	9.04	OSF1.50	18010.00	8556.59					MINPT-O-EQU	
2511.89	419.48	2231.91	2092.41	9.00	OSF1.50	18060.00	8557.46					MinPts	
2517.28	421.22	2236.14	2096.06	8.98	OSF1.50	18170.00	8559.39					MinPt-O-SF	
2525.47	422.07	2243.76	2103.40	8.99	OSF1.50	18262.13	8561.00					TD	

Cimarex Crawford 26-2 (Offset)

Gyro 0ft-9500ft (Def Survey)

Pass

8333.25	32.81	8331.27	8300.44	N/A	MAS = 10.00 (m)	0.00	0.00					Surface	
8333.02	32.81	8331.01	8300.22	254446.32	MAS = 10.00 (m)	26.00	26.00					MinPt-O-SF	
8332.81	32.81	8330.65	8300.00	58600.13	MAS = 10.00 (m)	90.00	90.00					MinPts	
8334.42	32.81	8327.02	8301.61	1537.33	MAS = 10.00 (m)	1210.00	1210.00					MINPT-O-EQU	
8354.52	32.81	8340.12	8321.71	672.47	MAS = 10.00 (m)	2500.00	2500.00					MINPT-O-EQU	
8355.07	32.81	8340.48	8322.26	662.12	MAS = 10.00 (m)	2600.00	2599.98					MinPt-O-SF	
8390.42	32.81	8383.96	8357.61	1872.75	MAS = 10.00 (m)	4700.00	4690.33					MinPt-O-SF	
8351.18	32.81	8331.04	8318.35	459.43	MAS = 10.00 (m)	7880.00	7870.32					MinPts	
1894.19	251.79	1725.67	1642.40	11.36	OSF1.50	16330.00	8527.17					MinPt-CtCt	
1894.54	253.00	1725.21	1641.54	11.31	OSF1.50	16370.00	8527.87					MINPT-O-EQU	
1895.03	253.56	1725.33	1641.47	11.29	OSF1.50	16390.00	8528.22					MinPt-O-ADP	
1907.70	257.22	1735.56	1650.48	11.20	OSF1.50	16560.00	8531.20					MinPt-O-SF	
2703.25	220.88	2555.34	2482.37	18.51	OSF1.50	18262.13	8561.00					TD	

Final Survey - Cimarex Energy

Crawford 27-26 Fee 1H MWD

0ft - 19142ft (Surcon Corrected)

(Def Survey)

Pass

1922.30	32.81	1921.17	1889.49	N/A	MAS = 10.00 (m)	0.00	0.00					MinPts	
1922.32	32.81	1921.15	1889.51	51818.97	MAS = 10.00 (m)	26.00	26.00					WRP	
1922.83	32.81	1920.97	1890.02	2625.49	MAS = 10.00 (m)	200.00	200.00					MINPT-O-EQU	
1908.51	32.81	1901.08	1875.70	303.16	MAS = 10.00 (m)	1360.00	1360.00					MinPts	
1908.54	32.81	1901.05	1875.73	300.06	MAS = 10.00 (m)	1380.00	1380.00					MINPT-O-EQU	
1959.39	32.81	1947.34	1926.59	177.58	MAS = 10.00 (m)	2500.00	2500.00					MinPt-O-SF	
2330.87	32.81	2324.51	2298.07	436.11	MAS = 10.00 (m)	4797.57	4787.89					MinPt-O-SF	
2447.14	32.81	2428.28	2414.33	137.12	MAS = 10.00 (m)	7800.00	7790.32					MinPts	
2447.32	32.81	2428.08	2414.51	134.31	MAS = 10.00 (m)	7910.00	7900.32					MINPT-O-EQU	
2448.39	32.81	2429.00	2415.58	133.22	MAS = 10.00 (m)	8000.00	7990.01					MinPt-O-SF	
2661.31	61.13	2620.23	2600.18	66.35	OSF1.50	9560.00	8408.64					MinPt-CtCt	
2661.13	68.99	2614.81	2592.14	58.68	OSF1.50	9770.00	8412.31					MinPt-CtCt	
2650.42	87.60	2591.69	2562.81	45.88	OSF1.50	10250.00	8420.72					MinPt-CtCt	
2652.53	94.01	2589.53	2558.52	42.75	OSF1.50	10440.00	8424.04					MINPT-O-EQU	
2661.48	119.92	2581.21	2541.56	33.55	OSF1.50	11060.00	8434.90					MinPt-CtCt	
2648.99	143.15	2553.22	2505.83	27.94	OSF1.50	11630.00	8444.88					MinPt-CtCt	
2651.62	151.40	2550.38	2500.22	26.43	OSF1.50	11860.00	8448.91					MINPT-O-EQU	
2657.18	160.27	2550.00	2496.91	25.01	OSF1.50	12080.00	8452.76					MINPT-O-EQU	
2656.12	192.21	2537.65	2473.91	20.91	OSF1.50	12830.00	8465.89					MinPt-CtCt	
2666.00	201.28	2531.49	2464.72	19.96	OSF1.50	13050.00	8469.74					MinPt-CtCt	
2667.05	205.15	2529.96	2461.90	19.59	OSF1.50	13170.00	8471.84					MINPT-O-EQU	
2668.31	206.64	2530.22	2461.67	19.45	OSF1.50	13220.00	8472.72					MinPt-O-ADP	
2666.88	243.85	2503.99	2423.03	16.47	OSF1.50	14100.00	8488.13					MinPt-CtCt	
2666.49	250.45	2499.20	2416.04	16.03	OSF1.50	14260.00	8490.93					MinPt-CtCt	
2667.49	253.58	2498.11	2413.91	15.83	OSF1.50	14360.00	8492.68					MINPT-O-EQU	
2670.54	260.76	2496.37	2409.78	15.41	OSF1.50	14540.00	8495.83					MINPT-O-EQU	
2667.65	279.07	2481.27	2388.57	14.38	OSF1.50	14960.00	8503.18					MinPt-CtCt	
2671.08	288.92	2478.13	2382.15	13.91	OSF1.50	15230.00	8507.91					MINPT-O-EQU	
2676.29	302.98	2473.98	2373.31	13.29	OSF1.50	15570.00	8513.86					MINPT-O-EQU	
2677.81	304.81	2474.27	2373.00	13.22	OSF1.50	15630.00	8514.91					MinPt-O-ADP	
2680.58	307.66	2475.14	2372.92	13.11	OSF1.50	15710.00	8516.32					MinPt-O-ADP	
2686.39	313.56	2477.03	2372.84	12.89	OSF1.50	15860.00	8518.94					MinPt-O-ADP	
2696.87	324.23	2480.35	2372.64	12.51	OSF1.50	16110.00	8523.32					MINPT-O-EQU	
2699.07	341.67	2470.96	2357.40	11.88	OSF1.50	16490.00	8529.97					MinPt-CtCt	
2702.27	354.44	2465.65	2347.84	11.46	OSF1.50	16830.00	8535.93					MINPT-O-EQU	
2687.17	400.27	2420.00	2286.90	10.09	OSF1.50	17930.00	8555.18					MinPt-CtCt	
2687.39	404.15	2417.63	2283.24	9.99	OSF1.50	18040.00	8557.11					MINPT-O-EQU	

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
	2687.72	404.56	2417.68	2283.16	9.99	OSF1.50	18060.00	8557.46				MinPt-O-ADP	
	2694.88	406.94	2423.26	2287.94	9.95	OSF1.50	18210.00	8560.09				MinPt-O-SF	
	2699.32	407.47	2427.34	2291.84	9.96	OSF1.50	18262.13	8561.00				TD	
Cimarex Crawford 27-4 (Offset)													
Gyro Off-9500.7FT (Def Survey)													
	2220.25	32.81	2218.27	2187.44	N/A	MAS = 10.00 (m)	0.00	0.00				Pass	
	2220.19	32.81	2218.18	2187.38	78696.12	MAS = 10.00 (m)	26.00	26.00				Surface	
	2211.63	32.81	2204.31	2178.82	413.74	MAS = 10.00 (m)	1000.00	1000.00				WRP	
	2212.26	32.81	2204.06	2179.45	355.20	MAS = 10.00 (m)	1190.00	1190.00				MinPts	
	2228.93	32.81	2215.64	2196.12	196.25	MAS = 10.00 (m)	2530.00	2530.00				MINPT-O-EQU	
	2229.79	32.81	2216.40	2196.98	195.34	MAS = 10.00 (m)	2600.00	2599.98				MinPts	
	2170.03	44.96	2139.39	2125.07	75.69	OSF1.50	9030.00	8399.36				MinPt-O-SF	
	2170.08	45.26	2139.25	2124.83	75.17	OSF1.50	9050.00	8399.71				MinPt-CtCt	
	2170.32	45.55	2139.30	2124.77	74.65	OSF1.50	9070.00	8400.06				MINPT-O-EQU	
	2507.16	65.21	2463.03	2441.95	59.43	OSF1.50	10290.00	8421.42				MinPt-O-ADP	
	9478.29	80.94	9423.67	9397.36	180.03	OSF1.50	18262.13	8561.00				MinPt-O-SF	
												TD	

Cimarex Energy Co., Crawford 27-26 Fee 16H

1. Geological Formations

TVD of target

Pilot Hole TD N/A

MD at TD

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	5826	N/A	
1st Bone Spring	6222	N/A	
2nd Bone Spring	6547	N/A	
3rd Bone Spring	8079	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	7825	7825	5-1/2"	17.00	L-80	LT&C	1.72	2.11	2.32
8 3/4	7825	18262	8561	5-1/2"	17.00	L-80	BT&C	1.57	1.93	31.73
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

	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?	Y

Cimarex Energy Co., Crawford 27-26 Fee 16H

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	547	10.30	3.64	22.18		Lead: Tuned Light + LCM
	2436	14.80	1.34	6.32	9.5	Tail: Class C + LCM
	2511	14.50	1.30	5.79	20	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + Expanding Agent + Retarder + Antifoam

Casing String	TOC	% Excess
Surface	0	31
Intermediate	0	50
Production	1600	25
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 16H

4. Pressure Control Equipment

A variance is requested for the use of a diverter on the surface casing. See attached for schematic.					
BOP installed and tested before drilling which hole?	Size	Min Required WP	Type		Tested To
12 1/4	13 5/8	2M	Annular	X	50% of working pressure
			Blind Ram		2M
			Pipe Ram		
			Double Ram	X	
			Other		
8 3/4	13 5/8	3M	Annular	X	50% of working pressure
			Blind Ram		3M
			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 16H

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 18262'	Cut Brine or OBM	8.50 - 9.00	27-70	N/C

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

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

Logging, Coring and Testing	
	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	4006 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 3000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 3000 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.

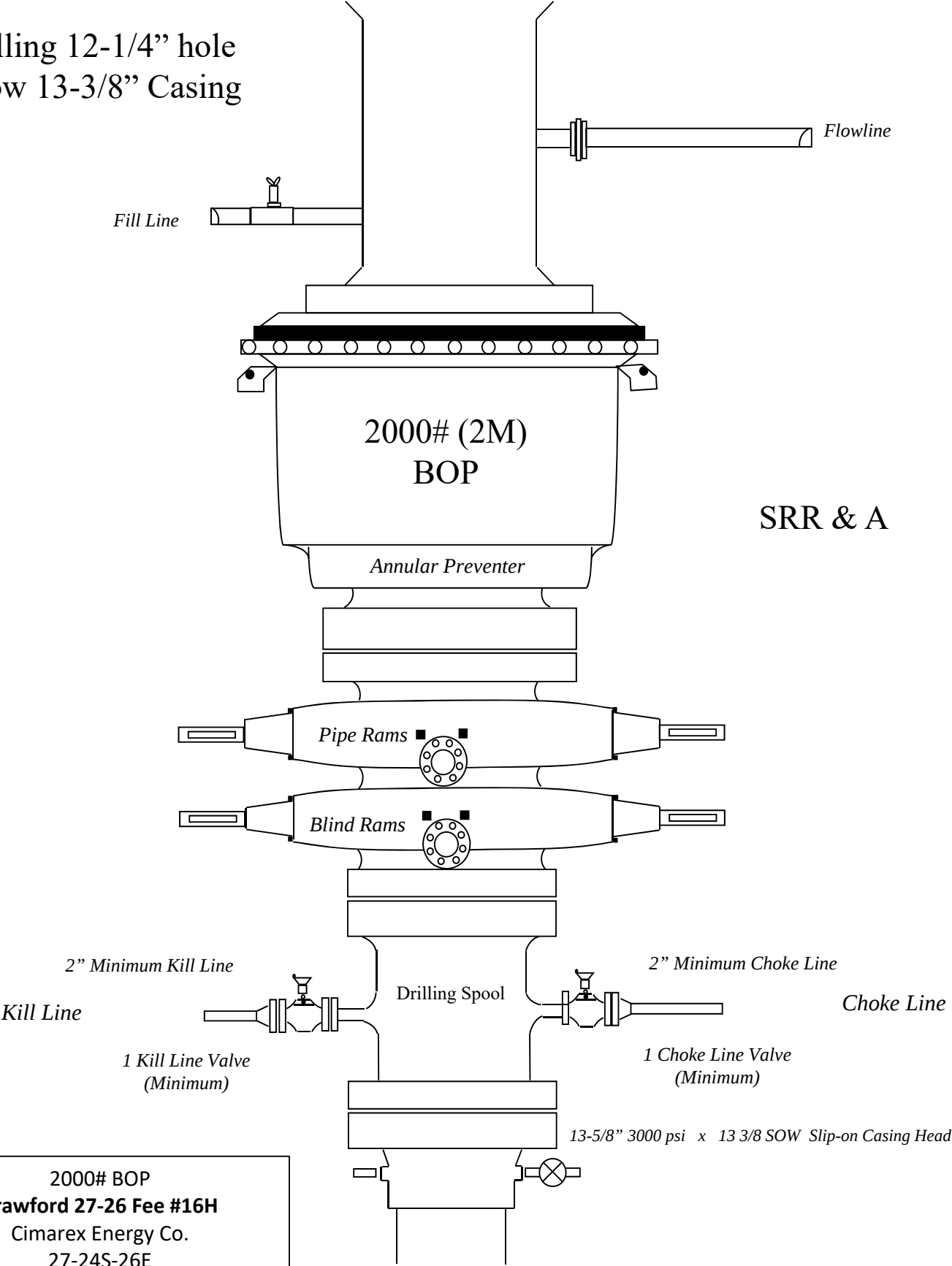
All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type.

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 3000 psi.

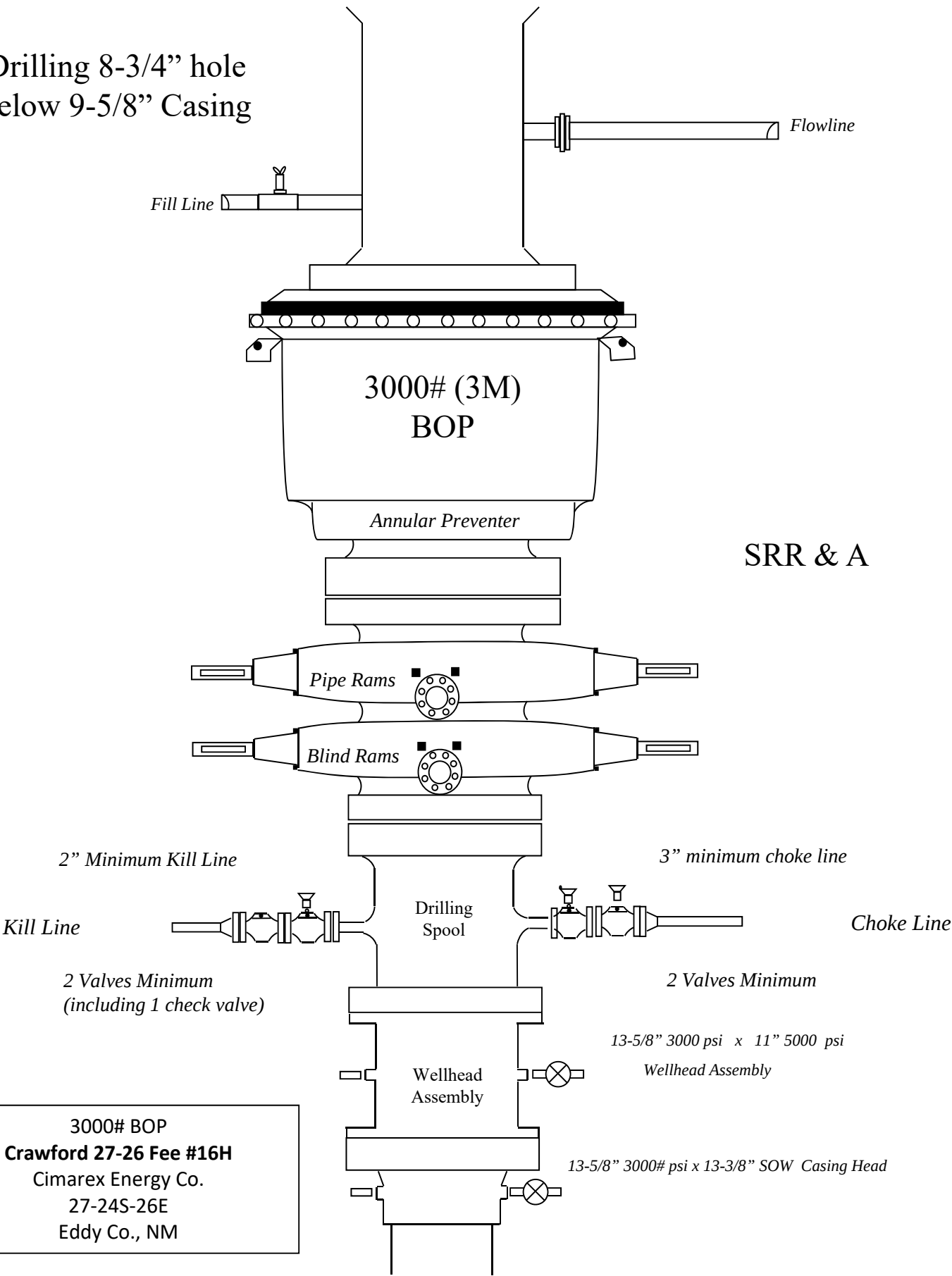
All casing strings will be tested as per Onshore Order No.2 to at least 0.22 psi/ft or 1,500 whichever is greater and not to exceed 70% of casing burst.

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

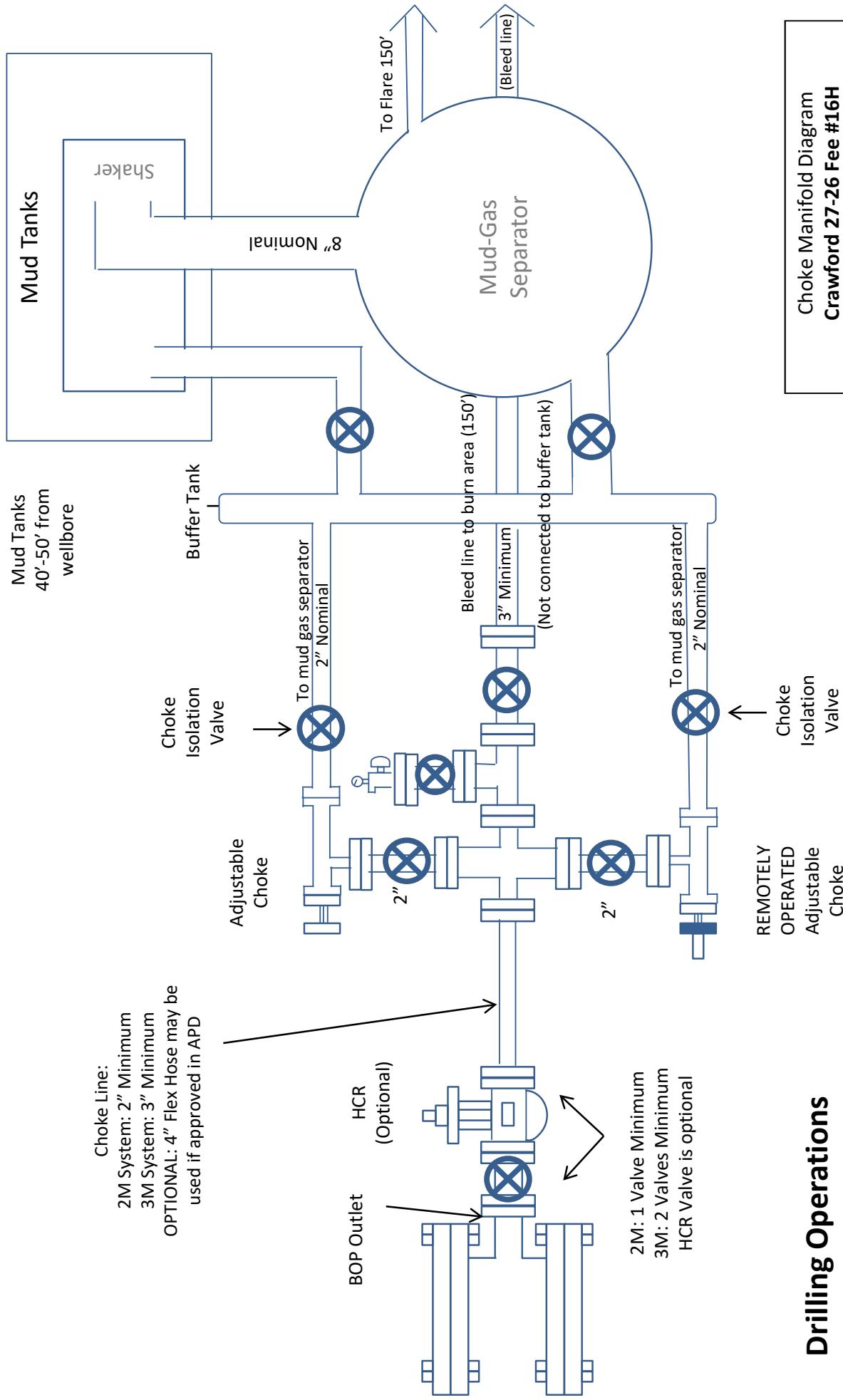


Drilling 8-3/4" hole
below 9-5/8" Casing



SRR & A

3000# BOP
Crawford 27-26 Fee #16H
Cimarex Energy Co.
27-24S-26E
Eddy Co., NM



Choke Manifold Diagram
Crawford 27-26 Fee #16H
Cimarex Energy Co.
27-24S-26E
Eddy Co., NM

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

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