

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD Hobbs

FORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010

SUNDRY NOTICES AND REPORTS ON WELLS
Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

HOBBS OCD

5. Lease Serial No.
NMNM127894

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

OCT 27 2014

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other

2. Name of Operator

CIMAREX ENERGY COMPANY OF CO

Contact: HOPE KNAULS

E-Mail: hknaults@cimarex.com

3a. Address

600 NORTH MARIENFELD STREET, SUITE 600
MIDLAND, TX 79701

3b. Phone No. (include area code)

Ph: 918.295.1763

8. Well Name and No.

DIAMONDTAIL 23 FEDERAL 8

9. API Well No.

30-025-40783-00-X1

10. Field and Pool, or Exploratory

DIAMONDTAIL

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

Sec 23 T23S R32E NENE 330FNL 600FEL

11. County or Parish, and State

LEA COUNTY, NM

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	Change to Original A
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	PD

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

Cimarex Energy Co. requests approval to change the MTD & TVD for the well as indicated on the attached directional plan. Casing and cementing program attached.

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

14. I hereby certify that the foregoing is true and correct.	
Electronic Submission #270615 verified by the BLM Well Information System For CIMAREX ENERGY COMPANY OF CO, sent to the Hobbs Committed to AFMSS for processing by CHRISTOPHER WALLS on 10/20/2014 (15CRW0008SE)	
Name (Printed/Typed) HOPE KNAULS	Title REGULATORY TECH
Signature (Electronic Submission)	Date 10/13/2014
THIS SPACE FOR FEDERAL OR STATE OFFICE USE	
Approved By	Title
Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.	
Office	Date

OCT 21 2014
/s/ Chris Walls
BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED **

OCT 27 2014

DIAMONDTAIL 23 FED 8H

Casing Program:

See COA

Name	Casing Depth From (ft)	Casing Setting Depth (ft) MD	Casing Setting Depth (ft) TVD	Open Hole Size (inches)	Casing Size (inches)	Casing Weight (lb/ft)	Casing Grade	Thread	Condition	BHP (psi)	Anticipated Mud Weight (ppg)	Collapse SF at Full Evacuation (1.125)	Collapse SF at 1/3 Evacuation (1.125)	Burst SF (1.125)	Cumulative Air Weight	Cumulative Buoyed Weight (lbs)	Buoyant Tension SF (1.8)
Surface	0	1060	1060	17 1/2	13-3/8"	54.50	J-55	BT&C	New	459	8.3	2.46		597	57,770	50,423	16.92
Intermediate	0	2875	2875	12 1/4	9-5/8"	40.00	J-55	LT&C	New	2015	10.0		1.53	196	155,000	131,336	3.96
Production	0	9197	9197	8 3/4	5-1/2"	20.00	L-80	BT&C	New	4208	8.8	2.10		214	193,500	167,503	2.78
Production	9197	14179	9675	8 3/4	5-1/2"	20.00	L-80	LT&C	New	4427	8.8	1.99		208	9,560	8,276	50.27

Note: Operator may drill a 8-1/2" OH from end of curve to TD of the well. This is to reduce the need to ream the conventionally drilled curve to run a RSS assembly into the lateral.

Casing Design and Casing Loading Assumptions:

Surface	Tension	A 1.8 design factor with effects of buoyancy: 8.30 ppg.
	Collapse	A 1.125 design factor with full internal evacuation and a collapse force equal to a 8.30 ppg mud gradient.
	Burst	A 1.125 design with a surface pressure equal to the fracture gradient at setting depth less gas gradient to surface.
Intermediate	Tension	A 1.8 design factor with effects of buoyancy: 10.00 ppg.
	Collapse	A 1.125 design factor evacuated 1/3 TVD of next casing string with a collapse force equal to a 10.00 ppg mud gradient. During the running of the casing, the operator will stop and fill the casing as need to ensure it does not collapse.
	Burst	A 1.125 design with a surface pressure equal to the fracture gradient at setting depth less gas gradient to surface.
Production and/or Production Completion System	Tension	A 1.8 design factor with effects of buoyancy: 8.80 ppg.
	Collapse	A 1.125 design factor with full internal evacuation of next casing string with a collapse force equal to a 8.80 ppg mud gradient.
	Burst	A 1.125 design with a surface pressure equal to the fracture gradient at setting depth less gas gradient to surface.

Cementing Program:

See COA

Casing Type	Type	Sacks	Yield	Weight	Cubic Feet	Cement Blend
Surface	Lead	514	1.72	13.50	883	Class C + Bentonite, 9,150 gps water
	Tail	138	1.34	14.80	184	Class C + LCM, 6,320 gps water
	TOC: 0		45% Excess			Centralizers per Onshore Order 2.III.B.1f
Intermediate	Lead	673	1.92	12.90	1291	35% (PozC) + Salt + Bentonite + Retarder + LCM + Dispersant + SMS + Compressive Strength Enhancer, 9,650 gps water
	Tail	223	1.36	14.80	303	Class C + Retarder, 6,570 gps water
	TOC: 0		44% Excess			
Production	Lead	1349	2.35	10.80	3168	Tuned Light I Class H, 9,600 gps water
	Tail	107	1.30	14.20	139	50% (PozH) + Salt + Bentonite + Fluid Loss + Dispersant + SMS + Retarder + LCM, 5,860 gps water
	TOC: 3600		24% Excess			No centralizers planned in the lateral section. 1 every jt from EOC to KOP. 1 every 4th joint from KOP to 500' inside previous casing.

Cement volumes will be adjusted depending on hole size



Cimarex Diamondtail 23 Federal 8H Rev3 mcs 13Oct14 Proposal Geodetic
Report
(Non-Def Plan)



Report Date: October 13, 2014 - 10:55 AM
Client: Cimarex
Field: NM Lea County (NAD 83)
Structure / Slot: Cimarex Diamondtail 23 Federal #8H / Cimarex Diamondtail 23 Federal #8H
Well: Cimarex Diamondtail 23 Federal #8H
Borehole: Original Borehole
UWI / API#: Unknown / 30-025-40783
Survey Name: Cimarex Diamondtail 23 Federal 8H Rev3 mcs 13Oct14
Survey Date: August 27, 2014
Tort / AHD / DD1 / ERD Ratio: 110.667 * / 4715.199 ft / 5.879 / 0.480
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 17' 47.74393", W 103° 38' 19.74031"
Location Grid N/E Y/X: N 472329.000 RUS, E 755935.700 ftUS
CRS Grid Convergence Angle: 0.3711 *
Grid Scale Factor: 0.99996183
Version / Patch: 2.7.1043.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 176.801 * (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3743.000 ft above MSL
Seabed / Ground Elevation: 3718.000 ft above MSL
Magnetic Declination: 7.171 *
Total Gravity Field Strength: 998.4372mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 48449.087 nT
Magnetic Dip Angle: 60.148 *
Declination Date: October 12, 2014
Magnetic Declination Model: HDGM 2014
North Reference: Grid North
Grid Convergence Used: 0.3711 *
Total Corr Mag North-Grid North: 6.7996 *
Local Coord Referenced To: Structure Reference Point

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (ft/100ft)	Closure Azimuth (ft)	Closure (ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' '')	Longitude (E/W ° ' '')
Cimarex Diamondtail 23 Federal #8H SHL	0.00	0.00	176.80	0.00	-3743.00	0.00	0.00	0.00	N/A	0.00	0.00	472329.00	755935.70	N 32 17 47.74	W 103 38 19.74
	162.83	0.48	46.18	162.63	-3580.37	-0.44	0.47	0.49	0.30	46.18	0.88	472328.47	755936.19	N 32 17 47.75	W 103 38 19.73
	264.60	0.48	34.67	264.59	-3478.41	-1.06	1.12	1.04	0.09	42.99	1.53	472330.12	755936.74	N 32 17 47.75	W 103 38 19.73
	354.82	0.48	47.50	354.81	-3388.19	-1.60	1.68	1.54	0.12	42.36	2.28	472330.68	755937.24	N 32 17 47.76	W 103 38 19.72
	416.01	0.40	43.67	416.00	-3327.00	-1.90	2.01	1.87	0.14	42.94	2.75	472331.01	755937.57	N 32 17 47.76	W 103 38 19.72
	505.03	0.48	46.49	505.02	-3237.98	-2.36	2.49	2.36	0.09	43.39	3.43	472331.49	755938.06	N 32 17 47.77	W 103 38 19.71
	595.50	0.40	57.30	595.48	-3147.52	-2.76	2.93	2.90	0.13	44.73	4.12	472331.93	755938.60	N 32 17 47.77	W 103 38 19.71
	654.87	0.40	56.59	654.85	-3088.15	-2.97	3.15	3.25	0.01	45.84	4.52	472332.15	755938.85	N 32 17 47.77	W 103 38 19.70
	714.82	0.40	48.77	714.80	-3028.20	-3.20	3.40	3.58	0.09	46.42	4.94	472332.40	755939.28	N 32 17 47.78	W 103 38 19.70
	844.90	0.40	38.49	844.88	-2898.12	-3.82	4.06	4.20	0.06	45.99	5.84	472333.06	755939.90	N 32 17 47.78	W 103 38 19.69
	939.34	0.40	53.08	939.32	-2803.68	-4.25	4.52	4.67	0.11	45.97	6.50	472333.52	755940.37	N 32 17 47.79	W 103 38 19.69
	1032.98	0.22	60.77	1032.95	-2710.05	-4.51	4.80	5.09	0.20	46.68	7.00	472333.80	755940.79	N 32 17 47.79	W 103 38 19.68
	1127.91	0.09	53.39	1127.88	-2615.12	-4.63	4.93	5.31	0.14	47.10	7.25	472333.93	755941.01	N 32 17 47.79	W 103 38 19.68
	1221.74	0.09	58.88	1221.71	-2521.29	-4.70	5.02	5.43	0.01	47.27	7.39	472334.01	755941.13	N 32 17 47.79	W 103 38 19.68
	1459.84	0.22	128.43	1459.81	-2283.19	-4.49	4.83	5.95	0.09	50.94	7.66	472333.83	755941.65	N 32 17 47.79	W 103 38 19.67
	1555.97	0.09	229.99	1555.94	-2187.06	-4.32	4.66	6.03	0.28	52.30	7.83	472333.66	755941.73	N 32 17 47.79	W 103 38 19.67
	1647.49	0.09	191.32	1647.46	-2095.54	-4.21	4.55	5.97	0.07	52.68	7.50	472333.55	755941.67	N 32 17 47.78	W 103 38 19.67
	1743.36	0.00	184.81	1743.33	-1999.67	-4.13	4.47	5.95	0.09	53.06	7.44	472333.47	755941.65	N 32 17 47.79	W 103 38 19.67
	1839.11	0.22	299.11	1839.08	-1903.92	-4.23	4.56	5.79	0.23	51.76	7.37	472333.56	755941.49	N 32 17 47.79	W 103 38 19.67
	1933.11	0.31	322.63	1933.08	-1809.92	-4.54	4.85	5.48	0.15	48.46	7.32	472333.85	755941.18	N 32 17 47.79	W 103 38 19.68
	2027.37	0.31	299.20	2027.34	-1715.66	-4.89	5.18	5.10	0.13	44.56	7.27	472334.18	755940.80	N 32 17 47.79	W 103 38 19.68
	2122.56	0.22	302.41	2122.53	-1620.47	-5.13	5.40	4.72	0.10	41.15	7.16	472334.40	755940.42	N 32 17 47.80	W 103 38 19.68
	2216.94	0.40	290.72	2216.91	-1526.09	-5.37	5.62	4.26	0.20	37.18	7.05	472334.62	755939.96	N 32 17 47.80	W 103 38 19.69
	2310.45	0.40	284.00	2310.42	-1432.58	-5.60	5.81	3.64	0.05	32.05	6.86	472334.81	755939.34	N 32 17 47.80	W 103 38 19.70
	2404.64	0.40	292.39	2404.60	-1338.40	-5.84	6.02	3.02	0.06	26.62	6.73	472335.02	755938.72	N 32 17 47.80	W 103 38 19.70
	2499.34	0.40	296.21	2499.30	-1243.70	-6.14	6.29	2.41	0.03	21.00	6.74	472335.29	755938.11	N 32 17 47.81	W 103 38 19.71
	2594.86	0.40	290.19	2594.82	-1148.18	-6.44	6.55	1.80	0.04	15.38	6.79	472335.55	755937.50	N 32 17 47.81	W 103 38 19.72
	2689.00	0.31	297.31	2689.96	-1054.04	-6.70	6.78	1.27	0.11	10.58	6.90	472335.78	755936.97	N 32 17 47.81	W 103 38 19.73
	2763.00	0.48	302.50	2762.96	-980.04	-6.98	7.04	0.83	0.23	6.70	7.09	472336.04	755936.53	N 32 17 47.81	W 103 38 19.73
	2878.29	0.62	310.50	2878.24	-864.76	-7.70	7.70	-0.05	0.14	359.60	7.70	472336.70	755935.55	N 32 17 47.82	W 103 38 19.74
	2972.30	0.62	312.30	2972.24	-770.76	-8.41	8.38	-0.82	0.02	354.43	8.42	472337.38	755934.88	N 32 17 47.83	W 103 38 19.75
	3066.74	0.79	313.53	3066.68	-676.32	-9.26	9.17	-1.67	0.18	349.69	9.32	472338.17	755934.03	N 32 17 47.83	W 103 38 19.76
	3160.25	0.79	316.12	3160.18	-582.82	-10.21	10.08	-2.58	0.04	345.63	10.40	472339.08	755933.12	N 32 17 47.84	W 103 38 19.77
	3253.07	0.70	309.79	3252.99	-490.01	-11.08	10.90	-3.46	0.13	342.39	11.44	472339.90	755932.24	N 32 17 47.85	W 103 38 19.78
	3347.95	0.79	317.79	3347.86	-395.14	-11.98	11.76	-4.35	0.14	339.72	12.53	472340.76	755931.35	N 32 17 47.86	W 103 38 19.79
	3441.71	0.88	308.52	3441.61	-301.39	-12.96	12.68	-5.34	0.17	337.16	13.76	472341.68	755930.36	N 32 17 47.87	W 103 38 19.80
	3536.22	0.88	310.72	3536.11	-206.89	-13.95	13.61	-6.46	0.04	334.61	15.07	472342.61	755929.24	N 32 17 47.88	W 103 38 19.81
	3629.85	0.79	315.02	3629.73	-113.27	-14.93	14.54	-7.46	0.12	332.83	16.34	472343.53	755928.24	N 32 17 47.89	W 103 38 19.83
	3726.51	1.10	315.02	3726.38	-16.62	-16.12	15.66	-8.59	0.32	331.26	17.86	472344.66	755927.11	N 32 17 47.90	W 103 38 19.84

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (ft/100ft)	Closure Azimuth (°)	Closure (ft)	Northing (NUS)	Easting (EUS)	Latitude (N/S ° ' '')	Longitude (E/W ° ' '')
	3820.71	1.01	311.90	3820.56	77.56	-17.38	16.86	-9.85	0.11	329.71	19.52	472345.86	755925.85	N 32 17 47.91	W 103 38 19.85
	3914.40	1.10	306.19	3914.24	171.24	-18.54	17.94	-11.19	0.13	328.05	21.14	472346.94	755924.51	N 32 17 47.92	W 103 38 19.87
	4009.03	1.10	304.52	4008.85	265.85	-19.67	18.99	-12.67	0.03	326.29	22.83	472347.99	755923.03	N 32 17 47.93	W 103 38 19.89
	4103.80	0.88	299.51	4103.60	360.60	-20.82	19.86	-14.05	0.25	324.73	24.33	472348.86	755921.55	N 32 17 47.94	W 103 38 19.90
	4198.74	0.70	300.52	4198.54	455.54	-21.33	20.52	-15.18	0.19	323.50	25.53	472349.52	755920.52	N 32 17 47.95	W 103 38 19.92
	4292.81	0.31	312.61	4292.60	549.60	-21.84	20.98	-15.87	0.43	322.90	26.31	472349.98	755919.83	N 32 17 47.95	W 103 38 19.92
	4387.26	0.40	323.50	4387.05	644.05	-22.29	21.42	-16.25	0.12	322.81	26.89	472350.42	755919.45	N 32 17 47.96	W 103 38 19.93
	4481.01	0.22	358.31	4480.80	737.80	-22.75	21.86	-16.45	0.27	323.04	27.36	472350.86	755919.25	N 32 17 47.96	W 103 38 19.93
	4575.52	0.09	99.60	4575.31	832.31	-22.03	22.03	-16.38	0.27	323.37	27.46	472351.03	755919.32	N 32 17 47.96	W 103 38 19.93
	4669.72	0.40	118.89	4669.51	926.51	-22.72	21.86	-16.02	0.34	323.76	27.10	472350.86	755919.88	N 32 17 47.96	W 103 38 19.93
	4763.85	0.31	133.92	4763.64	1020.64	-22.36	21.53	-15.55	0.14	324.15	26.56	472350.52	755920.15	N 32 17 47.96	W 103 38 19.92
	4836.62	0.40	123.03	4836.40	1093.40	-22.07	21.25	-15.20	0.15	324.43	26.13	472350.25	755920.50	N 32 17 47.96	W 103 38 19.92
	4960.00	0.48	122.19	4959.78	1216.78	-21.51	20.74	-14.40	0.07	325.23	25.25	472349.74	755921.30	N 32 17 47.95	W 103 38 19.91
	5066.00	0.31	100.31	5065.78	1322.78	-21.19	20.45	-13.74	0.21	326.11	24.64	472349.45	755921.96	N 32 17 47.95	W 103 38 19.90
	5161.00	0.31	110.72	5160.78	1417.78	-21.02	20.32	-13.25	0.06	326.89	24.25	472349.32	755922.45	N 32 17 47.95	W 103 38 19.89
	5256.00	0.62	123.11	5255.77	1512.77	-20.61	19.94	-12.58	0.34	327.77	23.58	472348.94	755923.12	N 32 17 47.94	W 103 38 19.89
	5351.00	0.31	119.29	5350.77	1607.77	-20.17	19.54	-11.92	0.33	328.61	22.89	472348.54	755923.78	N 32 17 47.94	W 103 38 19.88
	5446.00	0.48	137.92	5445.77	1702.77	-19.72	18.12	-11.43	0.22	329.12	22.27	472348.12	755924.27	N 32 17 47.93	W 103 38 19.87
	5540.00	0.40	122.50	5539.77	1796.77	-19.23	18.65	-10.89	0.15	329.72	21.59	472347.65	755924.81	N 32 17 47.93	W 103 38 19.87
	5635.00	0.48	127.11	5634.76	1891.76	-18.78	18.23	-10.29	0.09	330.55	20.93	472347.23	755925.41	N 32 17 47.92	W 103 38 19.86
	5730.00	0.70	100.22	5729.76	1986.76	-18.38	17.89	-9.40	0.37	332.27	20.21	472346.89	755926.30	N 32 17 47.92	W 103 38 19.85
	5825.00	0.31	81.01	5824.75	2081.75	-18.27	17.82	-8.58	0.44	334.30	19.78	472346.82	755927.12	N 32 17 47.92	W 103 38 19.84
	5920.00	0.70	117.40	5919.75	2176.75	-18.01	17.60	-7.81	0.51	336.07	19.25	472346.60	755927.89	N 32 17 47.92	W 103 38 19.83
	6016.00	0.40	95.91	6015.75	2272.75	-17.65	17.29	-6.96	0.37	338.09	18.64	472346.29	755928.74	N 32 17 47.92	W 103 38 19.82
	6110.00	0.62	87.83	6109.74	2366.74	-17.59	17.28	-6.12	0.25	340.49	18.33	472346.28	755929.58	N 32 17 47.92	W 103 38 19.81
	6204.00	0.62	88.62	6203.74	2460.74	-17.57	17.31	-5.11	0.01	343.57	18.05	472346.31	755930.59	N 32 17 47.92	W 103 38 19.80
	6298.00	0.31	95.21	6297.73	2554.73	-17.51	17.30	-4.34	0.33	345.90	17.84	472346.30	755931.36	N 32 17 47.92	W 103 38 19.79
	6392.00	0.62	78.62	6391.73	2648.73	-17.57	17.39	-3.60	0.36	348.32	17.76	472346.39	755932.10	N 32 17 47.92	W 103 38 19.78
	6485.00	0.62	84.00	6484.72	2741.72	-17.68	17.56	-2.61	0.09	351.66	17.75	472346.56	755933.09	N 32 17 47.92	W 103 38 19.77
	6580.00	0.40	50.60	6579.72	2836.72	-17.90	17.83	-1.84	0.38	354.11	17.92	472346.83	755933.86	N 32 17 47.92	W 103 38 19.76
	6676.00	0.31	47.40	6675.72	2932.72	-18.26	18.22	-1.39	0.10	355.64	18.27	472347.21	755934.31	N 32 17 47.92	W 103 38 19.76
	6771.00	0.04	53.11	6770.72	3027.72	-18.45	18.41	-1.17	0.28	356.36	18.45	472347.41	755934.53	N 32 17 47.93	W 103 38 19.75
	6865.00	0.22	38.91	6864.72	3121.72	-18.60	18.57	-1.03	0.19	356.82	18.60	472347.57	755934.67	N 32 17 47.93	W 103 38 19.75
	6960.00	0.09	119.49	6959.72	3216.72	-18.69	18.67	-0.85	0.24	357.38	18.69	472347.67	755934.85	N 32 17 47.93	W 103 38 19.75
	7054.00	0.09	299.29	7053.72	3310.72	-18.89	18.67	-0.85	0.19	357.38	18.69	472347.67	755934.85	N 32 17 47.93	W 103 38 19.75
	7148.00	0.09	111.82	7147.72	3404.72	-18.70	18.68	-0.85	0.19	357.40	18.70	472347.68	755934.85	N 32 17 47.93	W 103 38 19.75
	7242.00	0.09	323.02	7241.72	3498.72	-18.73	18.71	-0.83	0.18	357.47	18.73	472347.71	755934.87	N 32 17 47.93	W 103 38 19.75
	7337.00	0.22	278.72	7336.72	3593.72	-18.93	18.80	-1.05	0.18	356.80	18.83	472347.80	755934.65	N 32 17 47.93	W 103 38 19.75
	7432.00	0.04	232.01	7431.72	3688.72	-18.85	18.81	-1.26	0.21	356.18	18.85	472347.81	755934.44	N 32 17 47.93	W 103 38 19.75
	7525.00	0.31	175.10	7524.72	3781.72	-18.58	18.54	-1.26	0.31	356.11	18.58	472347.54	755934.44	N 32 17 47.93	W 103 38 19.75
	7621.00	0.48	212.32	7620.71	3877.71	-17.99	17.94	-1.45	0.31	355.37	18.00	472346.94	755934.25	N 32 17 47.92	W 103 38 19.76
	7716.00	0.88	184.20	7715.71	3972.71	-16.95	16.88	-1.72	0.54	354.18	16.96	472345.88	755933.98	N 32 17 47.91	W 103 38 19.76
	7811.00	0.48	165.33	7810.70	4067.70	-15.85	15.79	-1.61	0.54	354.19	15.67	472344.79	755934.09	N 32 17 47.90	W 103 38 19.76
	7904.00	0.48	188.11	7903.70	4160.70	-15.11	15.05	-1.50	0.29	354.31	15.12	472344.05	755934.20	N 32 17 47.89	W 103 38 19.76
	7999.00	0.70	173.52	7998.69	4255.69	-14.14	14.08	-1.49	0.28	353.96	14.15	472343.08	755934.21	N 32 17 47.88	W 103 38 19.76
	8093.00	0.79	180.42	8092.69	4349.69	-12.92	12.86	-1.43	0.14	353.65	12.94	472341.86	755934.27	N 32 17 47.87	W 103 38 19.76
	8187.00	0.62	205.60	8186.68	4443.68	-11.83	11.75	-1.65	0.37	351.98	11.87	472340.75	755934.05	N 32 17 47.86	W 103 38 19.76
	8281.00	0.79	205.99	8280.67	4537.67	-10.81	10.71	-2.16	0.18	348.61	10.93	472339.71	755933.54	N 32 17 47.85	W 103 38 19.76
	8377.00	0.70	210.61	8376.66	4633.66	-9.75	9.61	-2.75	0.11	344.05	10.00	472338.61	755932.95	N 32 17 47.84	W 103 38 19.77
	8470.00	1.01	203.49	8469.65	4726.65	-8.54	8.37	-3.36	0.35	338.11	9.02	472337.37	755932.34	N 32 17 47.83	W 103 38 19.78
	8564.00	1.19	210.61	8563.64	4820.64	-6.99	6.77	-4.19	0.24	328.24	7.96	472335.77	755931.51	N 32 17 47.81	W 103 38 19.79
	8660.00	1.49	229.51	8659.61	4916.61	-5.41	5.10	-5.65	0.55	312.09	7.61	472334.10	755930.05	N 32 17 47.79	W 103 38 19.81
	8754.00	1.71	236.49	8753.57	5010.57	-3.96	3.53	-7.75	0.31	294.52	8.51	472332.53	755927.95	N 32 17 47.78	W 103 38 19.83
	8848.00	1.71	233.42	8847.53	5104.53	-2.48	1.92	-10.04	0.10	280.84	10.22	472330.92	755925.66	N 32 17 47.76	W 103 38 19.86
	8943.00	2.29	246.42	8942.47	5195.47	-1.04	0.32	-12.92	0.77	271.42	12.92	472329.32	755922.78	N 32 17 47.75	W 103 38 19.89
	9038.00	2.20	244.62	9037.40	5294.40	0.31	-1.22	-16.31	0.12	265.72	16.35	472327.78	755919.39	N 32 17 47.73	W 103 38 19.93
	9133.00	2.11	251.30	9132.33	5389.33	1.47	-2.56	-19.61	0.28	262.55	19.78	472326.44	755916.09	N 32 17 47.72	W 103 38 19.97
	9140.18	2.11	255.21	9139.51	5396.51	1.53	-2.64	-19.86	2.00	262.43	20.04	472326.36	755915.84	N 32 17 47.72	W 103 38 19.97
	9200.00	2.11	255.21	9199.29	5456.29	1.97	-3.20	-21.99	0.00	261.72	22.22	472325.80	755913.71	N 32 17 47.71	W 103 38 20.00
	9201.00	2.11	255.21	9200.29	5457.29	1.98	-3.21	-22.03	0.00	261.71	22.26	472325.79	755913.67	N 32 17 47.71	W 103 38 20.00
	9300.00	0.13	255.21	9299.26	5556.26	2.37	-3.71	-23.90	2.00	261.19	24.18	472325.29	755911.80	N 32 17 47.71	W 103 38 20.02
	9306.50	0.00	255.21	9305.78	5562.78	2.37	-3.71	-23.91	2.00	261.19	24.19	472325.29	755911.79	N 32 17 47.71	W 103 38 20.02
	9348.27	0.00	255.21	9347.54	5604.54	2.37	-3.71	-23.91	0.00	261.19	24.19	472325.28	755911.79	N 32 17 47.71	W 103 38 20.02
	9400.00	6.21	176.50	9399.16	5656.16	5.17	-6.50	-23.74	12.00	254.68	24.61	472322.50	755911.97	N 32 17 47.68	W 103 38 20.02

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Closure Azimuth (°)	Closure (ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' '')	Longitude (E/W ° ' '')
	9500.00	18.21	176.50	9496.72	5753.72	26.27	-27.57	-22.45	12.00	219.15	35.55	472301.43	755913.25	N 32 17 47.47	W 103 38 20.00
	9600.00	30.21	176.50	9587.76	5844.76	67.20	-68.42	-19.95	12.00	198.26	71.27	472260.58	755915.75	N 32 17 47.07	W 103 38 19.98
	9700.00	42.21	176.50	9668.30	5925.30	126.16	-127.27	-16.35	12.00	187.32	128.32	472201.73	755919.35	N 32 17 46.49	W 103 38 19.94
	9800.00	54.21	176.50	9734.83	5991.83	200.58	-201.56	-11.81	12.00	183.35	201.80	472127.45	755923.89	N 32 17 45.75	W 103 38 19.89
	9900.00	66.21	176.50	9794.42	6041.42	287.21	-288.02	-8.53	12.00	181.30	288.09	472040.99	755929.17	N 32 17 44.89	W 103 38 19.84
	10000.00	78.21	176.50	9814.92	6071.92	382.25	-382.88	-0.73	12.00	180.11	382.89	471946.13	755934.97	N 32 17 43.96	W 103 38 19.78
Landing Point	10098.27	90.00	176.50	9825.00	6082.00	479.83	-480.28	5.22	12.00	179.38	480.31	471848.74	755940.92	N 32 17 42.99	W 103 38 19.72
	10100.00	90.00	176.50	9825.00	6082.00	481.55	-482.01	5.33	0.00	179.37	482.04	471847.01	755941.03	N 32 17 42.97	W 103 38 19.71
	10200.00	90.00	176.50	9825.00	6082.00	581.55	-581.82	11.43	0.00	178.87	581.93	471747.20	755947.13	N 32 17 41.99	W 103 38 19.65
	10300.00	90.00	176.50	9825.00	6082.00	681.55	-681.63	17.53	0.00	178.53	681.86	471647.39	755953.23	N 32 17 41.00	W 103 38 19.58
	10400.00	90.00	176.50	9825.00	6082.00	781.55	-781.45	23.63	0.00	178.27	781.81	471547.58	755959.33	N 32 17 40.01	W 103 38 19.52
	10500.00	90.00	176.50	9825.00	6082.00	881.55	-881.26	29.73	0.00	178.07	881.76	471447.77	755965.43	N 32 17 39.02	W 103 38 19.46
	10600.00	90.00	176.50	9825.00	6082.00	981.55	-981.08	35.83	0.00	177.91	981.73	471347.96	755971.53	N 32 17 38.03	W 103 38 19.40
	10700.00	90.00	176.50	9825.00	6082.00	1081.55	-1080.89	41.93	0.00	177.78	1081.70	471248.15	755977.63	N 32 17 37.05	W 103 38 19.33
	10800.00	90.00	176.50	9825.00	6082.00	1181.54	-1180.70	48.03	0.00	177.67	1181.68	471148.34	755983.73	N 32 17 36.06	W 103 38 19.27
	10900.00	90.00	176.50	9825.00	6082.00	1281.54	-1280.52	54.13	0.00	177.59	1281.66	471048.53	755989.83	N 32 17 35.07	W 103 38 19.21
	11000.00	90.00	176.50	9825.00	6082.00	1381.54	-1380.33	60.23	0.00	177.50	1381.64	470948.72	755995.93	N 32 17 34.08	W 103 38 19.14
	11100.00	90.00	176.50	9825.00	6082.00	1481.54	-1480.14	66.33	0.00	177.43	1481.63	470848.91	756002.03	N 32 17 33.09	W 103 38 19.08
	11200.00	90.00	176.50	9825.00	6082.00	1581.55	-1579.96	72.43	0.00	177.38	1581.72	470749.10	756008.13	N 32 17 32.11	W 103 38 19.02
	11300.00	90.00	176.50	9825.00	6082.00	1681.54	-1679.77	78.53	0.00	177.32	1681.81	470649.30	756014.23	N 32 17 31.12	W 103 38 18.95
	11400.00	90.00	176.50	9825.00	6082.00	1781.54	-1779.59	84.64	0.00	177.28	1781.80	470549.49	756020.33	N 32 17 30.13	W 103 38 18.89
	11500.00	90.00	176.50	9825.00	6082.00	1881.53	-1879.40	90.74	0.00	177.24	1881.59	470449.58	756026.43	N 32 17 29.14	W 103 38 18.83
	11600.00	90.00	176.50	9825.00	6082.00	1981.53	-1979.21	96.84	0.00	177.20	1981.58	470349.87	756032.53	N 32 17 28.15	W 103 38 18.76
	11700.00	90.00	176.50	9825.00	6082.00	2081.53	-2079.03	102.94	0.00	177.17	2081.57	470250.06	756038.63	N 32 17 27.17	W 103 38 18.70
	11800.00	90.00	176.50	9825.00	6082.00	2181.53	-2178.84	109.04	0.00	177.14	2181.57	470150.25	756044.73	N 32 17 26.18	W 103 38 18.63
	11900.00	90.00	176.50	9825.00	6082.00	2281.53	-2278.65	115.14	0.00	177.11	2281.56	470050.44	756050.83	N 32 17 25.19	W 103 38 18.57
	12000.00	90.00	176.50	9825.00	6082.00	2381.53	-2378.47	121.24	0.00	177.08	2381.56	469950.63	756056.93	N 32 17 24.20	W 103 38 18.51
	12100.00	90.00	176.50	9825.00	6082.00	2481.53	-2478.28	127.34	0.00	177.06	2481.55	469850.82	756063.03	N 32 17 23.21	W 103 38 18.44
	12200.00	90.00	176.50	9825.00	6082.00	2581.53	-2578.10	133.44	0.00	177.04	2581.55	469751.01	756069.14	N 32 17 22.23	W 103 38 18.38
	12300.00	90.00	176.50	9825.00	6082.00	2681.52	-2677.91	139.54	0.00	177.02	2681.54	469651.20	756075.24	N 32 17 21.24	W 103 38 18.32
	12400.00	90.00	176.50	9825.00	6082.00	2781.52	-2777.72	145.64	0.00	177.00	2781.54	469551.39	756081.34	N 32 17 20.25	W 103 38 18.25
	12500.00	90.00	176.50	9825.00	6082.00	2881.52	-2877.54	151.74	0.00	176.98	2881.54	469451.58	756087.44	N 32 17 19.26	W 103 38 18.19
	12600.00	90.00	176.50	9825.00	6082.00	2981.52	-2977.35	157.84	0.00	176.97	2981.53	469351.77	756093.54	N 32 17 18.27	W 103 38 18.13
	12700.00	90.00	176.50	9825.00	6082.00	3081.52	-3077.16	163.94	0.00	176.95	3081.53	469251.96	756099.64	N 32 17 17.29	W 103 38 18.06
	12800.00	90.00	176.50	9825.00	6082.00	3181.52	-3176.98	170.04	0.00	176.94	3181.53	469152.15	756105.74	N 32 17 16.30	W 103 38 18.00
	12900.00	90.00	176.50	9825.00	6082.00	3281.52	-3276.79	176.14	0.00	176.92	3281.52	469052.34	756111.84	N 32 17 15.31	W 103 38 17.94
	13000.00	90.00	176.50	9825.00	6082.00	3381.51	-3376.61	182.25	0.00	176.91	3381.52	468952.53	756117.94	N 32 17 14.32	W 103 38 17.87
	13100.00	90.00	176.50	9825.00	6082.00	3481.51	-3476.42	188.35	0.00	176.90	3481.52	468852.72	756124.04	N 32 17 13.33	W 103 38 17.81
	13200.00	90.00	176.50	9825.00	6082.00	3581.51	-3576.23	194.45	0.00	176.89	3581.52	468752.91	756130.14	N 32 17 12.35	W 103 38 17.75
	13300.00	90.00	176.50	9825.00	6082.00	3681.51	-3676.05	200.55	0.00	176.88	3681.51	468653.10	756136.24	N 32 17 11.36	W 103 38 17.68
	13400.00	90.00	176.50	9825.00	6082.00	3781.51	-3775.86	206.65	0.00	176.87	3781.51	468553.29	756142.34	N 32 17 10.37	W 103 38 17.62
	13500.00	90.00	176.50	9825.00	6082.00	3881.51	-3875.67	212.75	0.00	176.86	3881.51	468453.48	756148.44	N 32 17 9.38	W 103 38 17.55
	13600.00	90.00	176.50	9825.00	6082.00	3981.51	-3975.49	218.85	0.00	176.85	3981.51	468353.67	756154.54	N 32 17 8.39	W 103 38 17.49
	13700.00	90.00	176.50	9825.00	6082.00	4081.50	-4075.30	224.95	0.00	176.84	4081.51	468253.86	756160.64	N 32 17 7.41	W 103 38 17.43
	13800.00	90.00	176.50	9825.00	6082.00	4181.50	-4175.12	231.05	0.00	176.83	4181.50	468154.05	756166.74	N 32 17 6.42	W 103 38 17.36
	13900.00	90.00	176.50	9825.00	6082.00	4281.50	-4274.93	237.15	0.00	176.82	4281.50	468054.24	756172.84	N 32 17 5.43	W 103 38 17.30
	14000.00	90.00	176.50	9825.00	6082.00	4381.50	-4374.74	243.25	0.00	176.82	4381.50	467954.43	756178.94	N 32 17 4.44	W 103 38 17.24
	14100.00	90.00	176.50	9825.00	6082.00	4481.50	-4474.56	249.35	0.00	176.81	4481.50	467854.62	756185.04	N 32 17 3.45	W 103 38 17.17
	14200.00	90.00	176.50	9825.00	6082.00	4581.50	-4574.37	255.45	0.00	176.80	4581.50	467754.81	756191.14	N 32 17 2.46	W 103 38 17.11
Cimarex Diamondtail 23 Federal #8H PBHL	14245.20	90.00	176.50	9825.00	6082.00	4626.70	-4619.49	258.21	0.00	176.80	4626.70	467709.70	756193.90	N 32 17 2.02	W 103 38 17.08

Survey Type:

Non-Def Plan

Survey Error Model:
Survey Program:

ISCWSA Rev 0 *** 3-D 95,000% Confidence 2.7655 sigma

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	1	0.000	25.000	Act Stns	30.000	30.000	SLB_MWD-POOR-Depth Only	Original Borehole / Cimarex Diamondtail 23 Federal #8H XEM
	1	25.000	9140.180	Act Stns	30.000	30.000	SLB_MWD-POOR	Original Borehole / Cimarex Diamondtail 23 Federal #8H XEM

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Closure Azimuth (°)	Closure (ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' '')	Longitude (E/W ° ' '')
		1	9140.180	9197.540	1/100.000	30.000	30.000	SLB_MWD-POOR		Original Borehole / Cimarex Diamondtail 23 Federal 8H Rev3					
		1	9197.540	14245.199	1/100.000	30.000	30.000	SLB_MWD-STD		Original Borehole / Cimarex Diamondtail 23 Federal 8H Rev3					



**Cimarex Diamondtail 23 Federal 8H Rev3 mcs 13Oct14 Proposal Geodetic
Report**
(Non-Def Plan)



Report Date:	October 13, 2014 - 10:51 AM	Survey / DLS Computation:	Minimum Curvature / Lubinski
Client:	Cimarex	Vertical Section Azimuth:	176.801 ° (Grid North)
Field:	NM Lea County (NAD 83)	Vertical Section Origin:	0.000 ft, 0.000 ft
Structure / Slot:	Cimarex Diamondtail 23 Federal #8H / Cimarex Diamondtail 23 Federal #8H	TVD Reference Datum:	RKB
Well:	Cimarex Diamondtail 23 Federal #8H	TVD Reference Elevation:	3743.000 ft above MSL
Borehole:	Original Borehole	Seabed / Ground Elevation:	3718.000 ft above MSL
UWI / API#:	Unknown / 30-025-40783	Magnetic Declination:	7.171 °
Survey Name:	Cimarex Diamondtail 23 Federal 8H Rev3 mcs 13Oct14	Total Gravity Field Strength:	998.4372mgN (9.80665 Based)
Survey Date:	August 27, 2014	Gravity Model:	GARM
Tort / AHD / DDI / ERD Ratio:	110.667 ° / 4715.199 ft / 5.879 / 0.480	Total Magnetic Field Strength:	48449.087 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	Magnetic Dip Angle:	60.148 °
Location Lat / Long:	N 32° 17' 47.74393", W 103° 38' 19.74031"	Declination Date:	October 12, 2014
Location Grid N/E Y/X:	N 472329.000 ftUS, E 755935.700 ftUS	Magnetic Declination Model:	HDGM 2014
CRS Grid Convergence Angle:	0.3711 °	North Reference:	Grid North
Grid Scale Factor:	0.99996183	Grid Convergence Used:	0.3711 °
Version / Patch:	2.7.1043.0	Total Corr Mag North->Grid North:	6.7996 °
		Local Coord Referenced To:	Structure Reference Point

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Closure Azimuth (°)	Closure (ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
Tie-In Rev3	9140.18	2.11	255.21	9139.51	5396.51	1.53	-2.64	-19.86	N/A	262.43	20.04	472326.36	755915.84	N 32 17 47.72	W 103 38 19.97
Proi to Bit	9201.00	2.11	255.21	9200.29	5457.29	1.98	-3.21	-22.03	0.00	261.71	22.26	472325.79	755913.67	N 32 17 47.71	W 103 38 20.00
Hold	9306.50	0.00	255.21	9305.76	5562.76	2.37	-3.71	-23.91	2.00	261.19	24.19	472325.28	755911.79	N 32 17 47.71	W 103 38 20.02
Build Curve 12"/100ft	9348.27	0.00	255.21	9347.54	5604.54	2.37	-3.71	-23.91	0.00	261.19	24.19	472325.28	755911.79	N 32 17 47.71	W 103 38 20.02
Landing Point	10098.27	90.00	176.50	9825.00	6082.00	479.93	-480.28	5.22	12.00	179.38	480.31	471848.74	755940.92	N 32 17 42.99	W 103 39 19.72
Cimarex Diamondtail 23 Federal #8H PBHL	14245.20	90.00	176.50	9825.00	6082.00	4626.70	-4619.49	258.21	0.00	176.80	4626.70	467709.70	756193.90	N 32 17 2.02	W 103 39 17.08

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)	Survey Tool Type	Borehole / Survey
	1	0.000	25.000	Act Stns	30.000	30.000	SLB_MWD-POOR-Depth Only	Original Borehole / Cimarex Diamondtail 23 Federal #8H XEM
	1	25.000	9140.180	Act Stns	30.000	30.000	SLB_MWD-POOR	Original Borehole / Cimarex Diamondtail 23 Federal #8H XEM
	1	9140.180	9197.540	1/100.000	30.000	30.000	SLB_MWD-POOR	Original Borehole / Cimarex Diamondtail 23 Federal 8H Rev3
	1	9197.540	14245.199	1/100.000	30.000	30.000	SLB_MWD-STD	Original Borehole / Cimarex Diamondtail 23 Federal 8H Rev3



NorAm 26

Cimarex

Rev3



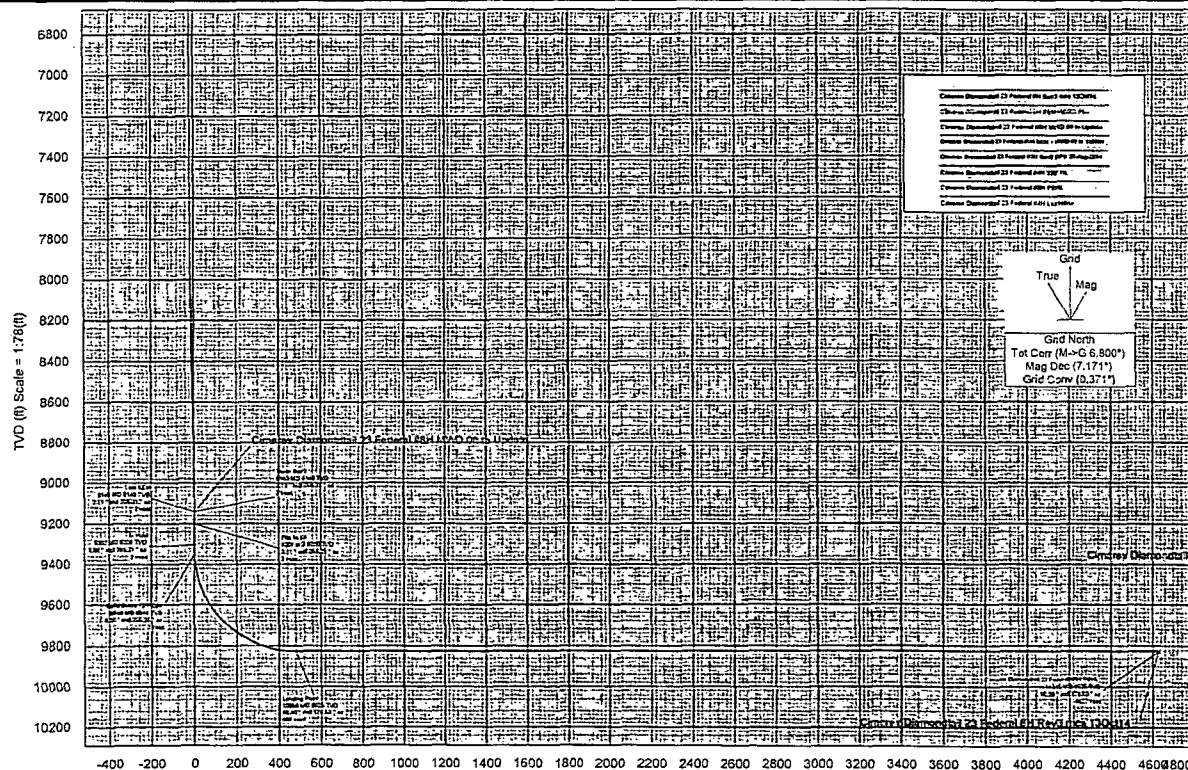
EW (ft) Scale = 1:78(ft)

-1200 -1000 -800 -600 -400 -200 0 200 400 600 800 1000

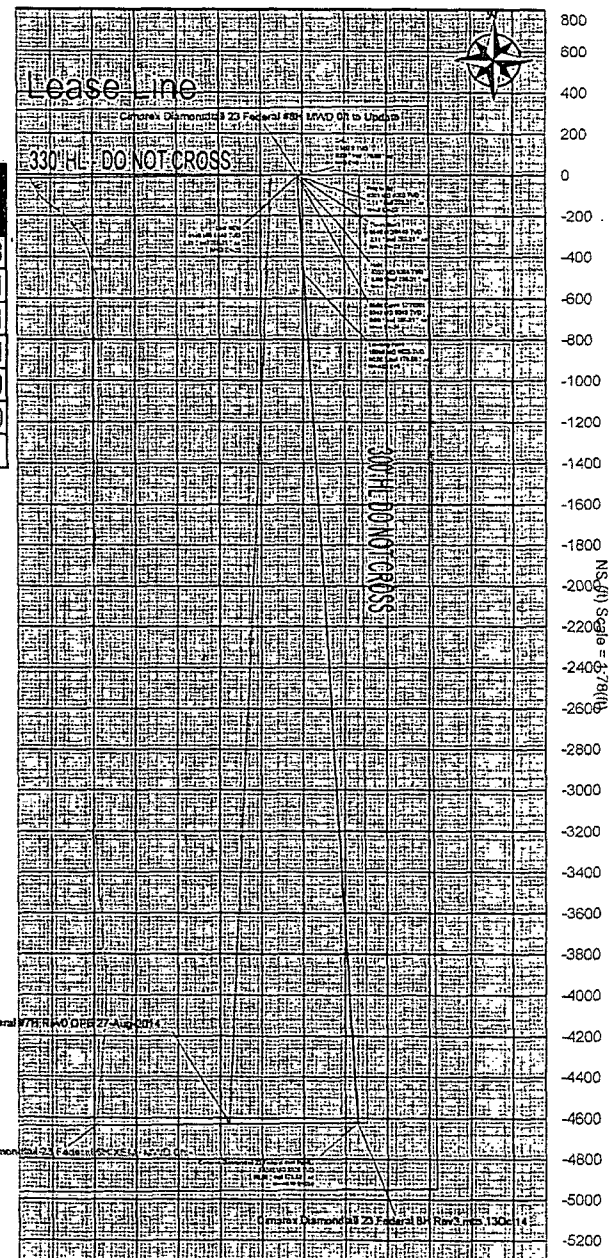
Borehole:	Well:	Field:	Structure:
Original Borehole	Diamondtail 23 Federal 8H	Lea County, NM	Noram 26

Gravity & Magnetic Parameters	Surface Location	MD&T Survey Data Parameters	MD&T Survey Data Parameters
Model: NORAM 26 MagDec: 7.171°	Site: 464646747 Date: 13-04-2014 Gravity: 980.337 (980.337) m/s²	MD&T Survey Data Parameters Lat: N 32 17 47.24 Long: W 103 38 16.74	MD&T Survey Data Parameters Lat: N 32 17 47.24 Long: W 103 38 16.74

Comments	Survey MD	Inc	Azim	TVD	SSTVD	VS	WS	EW	Longitude	Latitude	Easting	Northing	DLS	Tool Face
SHL	0.00	0.00	176.80	0.00	-3743.00	0.00	0.00	0.00	W 103 38 19.740	N 32 17 47.744	755935.70	472329.00		46.18
Tie-In Rev3	9140.18	2.11	255.21	9139.51	5396.51	-1.53	-2.64	-19.86	W 103 38 19.972	N 32 17 47.719	755915.84	472326.36	2.00	255.21
Proj to Bit	9201.00	2.11	255.21	9200.29	5457.29	1.98	-3.21	-22.03	W 103 38 19.997	N 32 17 47.714	755913.67	472325.79	0.00	255.21
Hold	9306.50	0.00	255.21	9305.76	5562.76	2.37	-3.71	-23.91	W 103 38 20.019	N 32 17 47.709	755911.79	472325.29	2.00	255.21
Build Curve 12°/100ft	9348.27	0.00	255.21	9347.54	5604.54	2.37	-3.71	-23.91	W 103 38 20.019	N 32 17 47.709	755911.79	472325.29	0.00	176.50
Landing Point	10098.27	90.00	176.50	9825.00	6082.00	479.83	-480.28	5.22	W 103 38 19.716	N 32 17 42.991	755940.92	471848.74	12.00	0.00
PBHL	14245.20	90.00	176.50	9825.00	6082.00	4626.70	-4619.49	258.21	W 103 38 17.081	N 32 17 2.018	755193.90	467709.70	0.00	



Vertical Section (ft) Azim = 176.8° Scale = 1:78(ft) Origin = ON-S, OE-W



CONDITIONS OF APPROVAL

OPERATOR'S NAME:	CIMAREX ENERGY
LEASE NO.:	NM127894
WELL NAME & NO.:	8 – DIAMONDTAIL 23 FEDERAL
SURFACE HOLE FOOTAGE:	0330'/N. & 600'/E.
BOTTOM HOLE FOOTAGE	0330'/S. & 375'/E.
LOCATION:	Section 23, T. 23 S., R. 32 E., NMPM
COUNTY:	Lea County, New Mexico

I. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

- a. Spudding well (minimum of 24 hours)
- b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
- c. BOPE tests (minimum of 4 hours)

☒ **Lea County**

Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240,
(575) 393-3612

1. A Hydrogen Sulfide (H₂S) Drilling Plan shall be activated 500 feet prior to drilling into the Delaware formation. **As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.**
2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a “Major” violation.**
3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.

4. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

Wait on cement (WOC) time prior to drilling out for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. IF OPERATOR DOES NOT HAVE THE WELL SPECIFIC CEMENT DETAILS ONSITE PRIOR TO PUMPING THE CEMENT FOR EACH CASING STRING, THE WOC WILL BE 30 HOURS. See individual casing strings for details regarding lead cement slurry requirements.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

Possible water flows in the Salado and Artesia groups.

Possible loss of circulation in the Delaware and Bone Spring formations.

1. The 13-3/8 inch surface casing shall be set at approximately 1340 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **Fresh water mud to be used to setting depth. Additional cement will be required as excess calculates to 9%**
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

- b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.
 - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
 - d. If cement falls back, remedial cementing will be done prior to drilling out that string.
2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:
- ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.
Additional cement will be required as excess calculates to negative 5%

Centralizers approved as written.

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:
- ☒ Cement as proposed. Operator shall provide method of verification.
4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. Variance approved to use flex line from BOP to choke manifold. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. **Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.** If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **3000 (3M)** psi.
 - a. **For surface casing only:** If the BOP/BOPE is to be tested against casing, the wait on cement (WOC) time for that casing is to be met (see WOC statement at start of casing section). Independent service company required.
4. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
 - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
 - b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
 - c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
 - d. The results of the test shall be reported to the appropriate BLM office.
 - e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

- f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

E. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

CRW 102114