

Cimarex Canyonlands 2 State Com 1H Rev3 RM 23July18 Anti-Collision Summary Report

Analysis Date-24hr Time: July 23, 2018 - 10:39

Client:

Field: NM Lea County (NAD 83)

Structure: Cimarex Canyonlands 2 State Com 1H

Slot: Cimarex Canyonlands 2 State Com 1H

Well: Cimarex Canyonlands 2 State Com 1H

Borehole: Original Borehole

Scan MD Range: 0.00ft ~ 16034.42ft

Analysis Method:

Reference Trajectory:

Depth Interval:

Rule Set:

Min Pts:

Version / Patch:

Database \ Project:

3D Least Distance

Cimarex Canyonlands 2 State Com 1H Rev3 RM 23July18 (Def Plan)

Every 10.00 Measured Depth (ft)

NAL Procedure: D&M AntiCollision Standard S002

All local minima indicated.

2.10.740.0

US1153APP452.dir.aib.com/drilling-NM Lea 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:

Selection filters:

Not performed!

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 Canyonlands 2 State
Com 2H Rev1 RM 16July18
(Def Plan)

19.93	16.45	17.43	3.48	N/A	MAS = 5.02 (m)	0.00	0.00	CtCt<=15m<15.00	Enter Alert	Warning Alert			
19.93	16.45	17.43	3.48	18994.18	MAS = 5.02 (m)	10.00	10.00		MinPts				
19.94	16.45	17.44	3.49	3213.83	MAS = 5.02 (m)	23.00	23.00		WRP				
20.05	16.45	17.40	3.59	117.53	MAS = 5.02 (m)	70.00	70.00		MINPT-O-EQU				
31.32	17.09	19.09	14.23	2.96	OSF1.50	2250.00	2250.00		MinPt-CtCt				
31.51	17.69	18.86	13.82	2.86	OSF1.50	2340.00	2340.00		MINPT-O-EQU				
32.22	18.63	18.97	13.55	2.76	OSF1.50	2480.00	2480.00		MinPt-O-ADP				
32.84	22.35	17.11	10.49	2.29	OSF1.50	3020.00	3020.00		MinPt-CtCt				
33.01	22.87	16.94	10.15	2.25	OSF1.50	3090.00	3090.00		MINPT-O-EQU				
33.14	23.01	16.96	10.13	2.24	OSF1.50	3110.00	3110.00		MinPt-O-ADP				
33.33	23.16	17.06	10.17	2.24	OSF1.50	3130.00	3130.00		MinPt-O-SF				
90.62	28.97	70.48	61.65	4.99	OSF1.50	4000.00	4000.00	OSF>5.00	Exit Alert				
618.88	60.65	577.61	558.23	15.90	OSF1.50	8540.00	8540.00		MinPt-O-SF				
603.18	74.49	552.70	528.70	12.52	OSF1.50	10590.00	10590.00		MinPt-CtCt				
603.23	74.61	552.66	528.62	12.50	OSF1.50	10610.00	10610.00		MINPT-O-EQU				
569.11	79.73	515.12	489.37	11.00	OSF1.50	11390.00	11332.58		MinPt-CtCt				
569.12	79.80	515.09	489.33	11.00	OSF1.50	11400.00	11338.70		MinPts				
569.90	79.99	515.74	489.91	10.95	OSF1.50	11430.00	11356.10		MinPt-O-SF				
607.26	170.82	492.55	436.44	5.39	OSF1.50	15790.00	11345.68		MinPt-CtCt				
607.41	171.49	492.26	435.93	5.37	OSF1.50	15810.00	11345.22		MinPts				
608.83	172.29	483.14	436.55	5.35	OSF1.50	15840.00	11344.52		MinPt-O-SF				
652.30	170.12	538.06	482.18	5.81	OSF1.50	16034.42	11340.00		TD				

Cimarex Canyonlands 2 State
Com 2H OR to Update (Non-Def
Survey)

19.93	16.45	17.43	3.48	N/A	MAS = 5.02 (m)	0.00	0.00	CtCt<=15m<15.00	Enter Alert	Warning Alert			
19.93	16.45	17.43	3.48	18994.18	MAS = 5.02 (m)	10.00	10.00		MinPts				
19.94	16.45	17.44	3.49	3213.83	MAS = 5.02 (m)	23.00	23.00		WRP				
20.05	16.45	17.40	3.59	117.53	MAS = 5.02 (m)	70.00	70.00		MINPT-O-EQU				
31.32	17.09	19.09	14.23	2.96	OSF1.50	2250.00	2250.00		MinPt-CtCt				
31.51	17.69	18.86	13.82	2.86	OSF1.50	2340.00	2340.00		MINPT-O-EQU				
32.22	18.63	18.97	13.55	2.76	OSF1.50	2480.00	2480.00		MinPt-O-ADP				
32.84	22.35	17.11	10.49	2.29	OSF1.50	3020.00	3020.00		MinPt-CtCt				
33.01	22.87	16.94	10.15	2.25	OSF1.50	3090.00	3090.00		MINPT-O-EQU				
33.14	23.01	16.96	10.13	2.24	OSF1.50	3110.00	3110.00		MinPt-O-ADP				
33.33	23.16	17.06	10.17	2.24	OSF1.50	3130.00	3130.00		MinPt-O-SF				
90.62	28.97	70.48	61.65	4.99	OSF1.50	4000.00	4000.00	OSF>5.00	Exit Alert				
618.88	60.65	577.61	558.23	15.90	OSF1.50	8540.00	8540.00		MinPt-O-SF				
603.18	74.49	552.70	528.70	12.52	OSF1.50	10590.00	10590.00		MinPt-CtCt				
603.23	74.61	552.66	528.62	12.50	OSF1.50	10610.00	10610.00		MINPT-O-EQU				
577.96	79.32	524.28	498.67	11.24	OSF1.50	11360.00	11313.30		MinPts				
578.05	79.41	524.28	498.64	11.23	OSF1.50	11370.00	11319.88		MinPt-O-ADP				
579.30	80.17	525.02	499.13	11.14	OSF1.50	11470.00	11376.97		MinPts				
579.52	80.23	525.20	499.29	11.14	OSF1.50	11500.00	11390.81		MinPt-O-SF				
582.09	80.56	527.55	501.53	11.14	OSF1.50	11560.00	11413.56		MinPt-O-SF				
4644.34	83.23	4588.02	4561.11	86.25	OSF1.50	16034.42	11340.00		TD				

Cimarex State 1 #2 (Offset) Inc
Only Off-13045ft (Def Survey)

4346.45	32.81	4343.95	4313.64	N/A	MAS = 10.00 (m)	0.00	0.00		Surface	Warning Alert			
4346.40	32.81	4343.90	4313.60	625198.70	MAS = 10.00 (m)	10.00	10.00		MinPt-O-SF				
4346.36	32.81	4343.86	4313.57	N/A	MAS = 10.00 (m)	23.00	23.00		WRP				
2512.07	759.48	2003.91	1752.59	4.99	OSF1.50	13100.00	11408.24	OSF<5.00	Enter Alert				
818.56	758.17	312.21	60.40	1.62	OSF1.50	15470.00	11353.13		MinPts				
818.58	758.09	312.28	60.48	1.62	OSF1.50	15480.00	11352.89		MinPt-CtCt				
990.98	755.56	486.45	235.43	1.97	OSF1.50	16034.42	11340.00		TD				

Cimarex Canyonlands 2 State Com 1H Rev3 RM 23July18 Proposal

Geodetic Report

(Def Plan)



Report Date: July 23, 2018 - 10:38 AM
Client: Cimarex
Field: NM Lea County (NAD 83)
Structure / Slot: Cimarex Canyonlands 2 State Com 1H / Cimarex Canyonlands 2 State Com 1H
Well: Cimarex Canyonlands 2 State Com 1H
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Canyonlands 2 State Com 1H Rev3 RM 23July18
Survey Date: April 10, 2018
Tort / AHD / DDI / ERD Ratio: 93.498 ° / 4803.297 ft / 5.799 / 0.420
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 14' 25.30073", W 103° 26' 7.83742"
Location Grid N/E Y/X: N 452337.280 RUS, E 818928.330 RUS
CRS Grid Convergence Angle: 0.4790 °
Grid Scale Factor: 0.99999734
Version / Patch: 2.10.740.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 359.280 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3449.300 ft above MSL
Seabed / Ground Elevation: 3428.300 ft above MSL
Magnetic Declination: 6.731 °
Total Gravity Field Strength: 998.4634mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 48019.899 nT
Magnetic Dip Angle: 59.963 °
Declination Date: July 23, 2018
Magnetic Declination Model: HDGM 2018
North Reference: Grid North
Grid Convergence Used: 0.4790 °
Total Corr Mag North->Grid North: 6.2520 °
Local Coord Referenced To: Structure Reference Point

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (RUS)	Easting (RUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL [390° FSL, 1020° FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	100.00	0.00	15.41	100.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	200.00	0.00	15.41	200.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	300.00	0.00	15.41	300.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	400.00	0.00	15.41	400.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	500.00	0.00	15.41	500.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	600.00	0.00	15.41	600.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	700.00	0.00	15.41	700.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	800.00	0.00	15.41	800.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	900.00	0.00	15.41	900.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
Rustler	990.00	0.00	15.41	990.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	1000.00	0.00	15.41	1000.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	1100.00	0.00	15.41	1100.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
Top of Salt	1200.00	0.00	15.41	1200.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	1300.00	0.00	15.41	1300.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	1400.00	0.00	15.41	1400.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	1500.00	0.00	15.41	1500.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	1600.00	0.00	15.41	1600.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	1700.00	0.00	15.41	1700.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	1800.00	0.00	15.41	1800.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	1900.00	0.00	15.41	1900.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	2000.00	0.00	15.41	2000.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	2100.00	0.00	15.41	2100.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	2200.00	0.00	15.41	2200.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	2300.00	0.00	15.41	2300.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	2400.00	0.00	15.41	2400.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	2500.00	0.00	15.41	2500.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	2600.00	0.00	15.41	2600.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	2700.00	0.00	15.41	2700.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	2800.00	0.00	15.41	2800.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	2900.00	0.00	15.41	2900.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	3000.00	0.00	15.41	3000.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	3100.00	0.00	15.41	3100.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	3200.00	0.00	15.41	3200.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	3300.00	0.00	15.41	3300.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	3400.00	0.00	15.41	3400.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	3500.00	0.00	15.41	3500.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	3600.00	0.00	15.41	3600.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	3700.00	0.00	15.41	3700.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	3800.00	0.00	15.41	3800.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	3900.00	0.00	15.41	3900.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	4000.00	0.00	15.41	4000.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	4100.00	0.00	15.41	4100.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	4200.00	0.00	15.41	4200.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	4300.00	0.00	15.41	4300.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	4400.00	0.00	15.41	4400.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	4500.00	0.00	15.41	4500.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	4600.00	0.00	15.41	4600.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	4700.00	0.00	15.41	4700.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	4800.00	0.00	15.41	4800.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
Base of Salt	4875.00	0.00	15.41	4875.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	4900.00	0.00	15.41	4900.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	5000.00	0.00	15.41	5000.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	5100.00	0.00	15.41	5100.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
Lamar	5180.00	0.00	15.41	5180.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	5200.00	0.00	15.41	5200.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
Bell Canyon	5240.00	0.00	15.41	5240.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	5300.00	0.00	15.41	5300.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	5400.00	0.00	15.41	5400.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	5500.00	0.00	15.41	5500.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	5600.00	0.00	15.41	5600.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	5700.00	0.00	15.41	5700.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	5800.00	0.00	15.41	5800.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	5900.00	0.00	15.41	5900.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	6000.00	0.00	15.41	6000.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	6100.00	0.00	15.41	6100.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
Cherry Canyon	6150.00	0.00	15.41	6150.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84
	6200.00	0.00	15.41	6200.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30	W 103 26 7.84

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (ft/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N 32 14 25.30 W 103 26 7.84)	Longitude (E 103 26 7.84)
Brushy Canyon	6300.00	0.00	15.41	6300.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	6400.00	0.00	15.41	6400.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	6500.00	0.00	15.41	6500.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	6600.00	0.00	15.41	6600.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	6700.00	0.00	15.41	6700.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	6800.00	0.00	15.41	6800.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	6900.00	0.00	15.41	6900.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	7000.00	0.00	15.41	7000.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	7100.00	0.00	15.41	7100.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	7200.00	0.00	15.41	7200.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	7300.00	0.00	15.41	7300.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	7400.00	0.00	15.41	7400.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	7500.00	0.00	15.41	7500.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	7575.00	0.00	15.41	7575.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	7600.00	0.00	15.41	7600.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	7700.00	0.00	15.41	7700.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
Bone Spring	7800.00	0.00	15.41	7800.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	7900.00	0.00	15.41	7900.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	8000.00	0.00	15.41	8000.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	8100.00	0.00	15.41	8100.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	8200.00	0.00	15.41	8200.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	8300.00	0.00	15.41	8300.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	8400.00	0.00	15.41	8400.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	8500.00	0.00	15.41	8500.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	8600.00	0.00	15.41	8600.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	8700.00	0.00	15.41	8700.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	8800.00	0.00	15.41	8800.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	8820.00	0.00	15.41	8820.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	8900.00	0.00	15.41	8900.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	9000.00	0.00	15.41	9000.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	9100.00	0.00	15.41	9100.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	9200.00	0.00	15.41	9200.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
1st Bone Spring Sand	9300.00	0.00	15.41	9300.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	9400.00	0.00	15.41	9400.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	9500.00	0.00	15.41	9500.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	9600.00	0.00	15.41	9600.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	9700.00	0.00	15.41	9700.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	9800.00	0.00	15.41	9800.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	9840.00	0.00	15.41	9840.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	9900.00	0.00	15.41	9900.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	10000.00	0.00	15.41	10000.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	10090.00	0.00	15.41	10090.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	10100.00	0.00	15.41	10100.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	10200.00	0.00	15.41	10200.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	10300.00	0.00	15.41	10300.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	10390.00	0.00	15.41	10390.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	10400.00	0.00	15.41	10400.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	10500.00	0.00	15.41	10500.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
10600.00	0.00	15.41	10600.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84	
2nd Bone Spring Sand	10700.00	0.00	15.41	10700.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	10760.00	0.00	15.41	10760.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	10800.00	0.00	15.41	10800.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	10900.00	0.00	15.41	10900.00	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	10955.30	0.00	15.41	10955.30	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	7.84
	11000.00	5.38	15.41	10998.93	2.01	2.02	0.56	12.00	452339.30	818928.89	N 32 14 25.32 W 103 26 7.83	7.83
	11100.00	17.38	15.41	11097.80	20.90	20.98	5.78	12.00	452358.26	818934.11	N 32 14 25.51 W 103 26 7.77	7.77
	11200.00	29.38	15.41	11189.43	58.93	59.14	18.30	12.00	452398.42	818944.63	N 32 14 25.88 W 103 26 7.64	7.64
	11223.95	32.24	15.41	11210.00	70.71	70.96	19.56	12.00	452408.24	818947.69	N 32 14 26.00 W 103 26 7.60	7.60
	11300.00	41.38	15.41	11270.83	114.42	114.83	31.65	12.00	452452.11	818959.98	N 32 14 26.43 W 103 26 7.48	7.48
	11330.30	45.00	15.41	11282.92	134.34	134.82	37.16	12.00	452472.10	818965.49	N 32 14 26.83 W 103 26 7.39	7.39
	11400.00	52.84	11.53	11338.70	185.24	185.88	49.28	12.00	452523.16	818977.61	N 32 14 27.14 W 103 26 7.25	7.25
	11500.00	64.25	7.17	11390.81	269.10	269.91	62.91	12.00	452607.19	818991.24	N 32 14 27.97 W 103 26 7.08	7.08
	11600.00	75.77	3.59	11424.94	382.38	383.31	71.60	12.00	452700.59	818998.93	N 32 14 28.89 W 103 26 6.97	6.97
	11700.00	87.34	0.38	11439.60	481.01	481.98	74.87	12.00	452789.26	819003.30	N 32 14 29.87 W 103 26 6.92	6.92
	11734.45	91.33	359.28	11440.00	485.45	486.43	74.87	12.00	452833.71	819003.19	N 32 14 30.21 W 103 26 6.92	6.92
Landing Point	11800.00	91.33	359.28	11438.								

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 ° ' ")
	14500.00	91.33	359.28	11375.68	3260.25	3261.01	40.12	0.00	455598.27	818968.45	N 32 14 57.56	W 103 26 7.05
	14600.00	91.33	359.28	11373.36	3360.22	3360.97	38.87	0.00	455698.24	818967.20	N 32 14 58.55	W 103 26 7.06
	14700.00	91.33	359.28	11371.03	3460.19	3460.94	37.61	0.00	455798.20	818965.94	N 32 14 59.54	W 103 26 7.06
	14800.00	91.33	359.28	11368.71	3560.17	3560.90	36.36	0.00	455898.17	818964.69	N 32 15 0.53	W 103 26 7.07
	14900.00	91.33	359.28	11366.38	3660.14	3660.87	35.10	0.00	455998.13	818963.43	N 32 15 1.52	W 103 26 7.07
	15000.00	91.33	359.28	11364.06	3760.11	3760.83	33.84	0.00	456098.10	818962.17	N 32 15 2.51	W 103 26 7.08
	15100.00	91.33	359.28	11361.73	3860.08	3860.80	32.59	0.00	456198.06	818960.92	N 32 15 3.50	W 103 26 7.08
	15200.00	91.33	359.28	11359.41	3960.06	3960.76	31.33	0.00	456298.03	818959.66	N 32 15 4.49	W 103 26 7.09
	15300.00	91.33	359.28	11357.08	4060.03	4060.73	30.07	0.00	456397.99	818958.40	N 32 15 5.48	W 103 26 7.09
	15400.00	91.33	359.28	11354.75	4160.00	4160.69	28.82	0.00	456497.95	818957.15	N 32 15 6.47	W 103 26 7.10
	15500.00	91.33	359.28	11352.43	4259.98	4260.66	27.56	0.00	456597.92	818955.89	N 32 15 7.46	W 103 26 7.10
	15600.00	91.33	359.28	11350.10	4359.95	4360.62	26.31	0.00	456697.88	818954.64	N 32 15 8.45	W 103 26 7.11
	15700.00	91.33	359.28	11347.78	4459.92	4460.59	25.05	0.00	456797.85	818953.38	N 32 15 9.44	W 103 26 7.11
	15800.00	91.33	359.28	11345.45	4559.90	4560.55	23.79	0.00	456897.81	818952.12	N 32 15 10.42	W 103 26 7.12
	15900.00	91.33	359.28	11343.13	4659.87	4660.52	22.54	0.00	456997.78	818950.87	N 32 15 11.41	W 103 26 7.12
	16000.00	91.33	359.28	11340.80	4759.84	4760.48	21.28	0.00	457097.74	818949.61	N 32 15 12.40	W 103 26 7.13

Cimarex
Canyonlands 2
State Com 1H -
PBHL [100' FNL,
940' FEL]

16034.42 91.33 359.28 11340.00 4794.25 4794.89 20.85 0.00 457132.15 818949.18 N 32 15 12.74 W 103 26 7.13

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	23.000	1/100.000	30.000	30.000		NAL_MWD_IFR1+MS-Depth Only	Original Borehole / Cimarex Canyonlands 2 State Com 1H Rev3 RM 23July18
	1	23.000	16034.420	1/100.000	30.000	30.000		NAL_MWD_IFR1+MS	Original Borehole / Cimarex Canyonlands 2 State Com 1H

Cimarex Canyonlands 2 State Com 1H Rev3 RM 23July18 Proposal Geodetic Report (Def Plan)



Report Date: July 23, 2018 - 10:38 AM
Client: Cimarex
Field: NM Lea County (NAD 83)
Structure / Slot: Cimarex Canyonlands 2 State Com 1H / Cimarex Canyonlands 2 State Com 1H
Well: Cimarex Canyonlands 2 State Com 1H
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Canyonlands 2 State Com 1H Rev3 RM 23July18
Survey Date: April 10, 2018
Tort / AHD / DDI / ERD Ratio: 93.498 ° / 4803.297 ft / 5.799 / 0.420
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 14' 25.30073", W 103° 26' 7.83742"
Location Grid N/E Y/X: N 452337.280 ftUS, E 818928.330 ftUS
CRS Grid Convergence Angle: 0.4790 °
Grid Scale Factor: 0.99999734
Version / Patch: 2.10.740.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 359.280 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3449.300 ft above MSL
Seabed / Ground Elevation: 3426.300 ft above MSL
Magnetic Declination: 6.731 °
Total Gravity Field Strength: 988.4634mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 48019.899 nT
Magnetic Dip Angle: 59.963 °
Declination Date: July 23, 2018
Magnetic Declination Model: HDGM 2018
North Reference: Grid North
Grid Convergence Used: 0.4790 °
Total Corr Mag North->Grid North: 6.2520 °
Local Coord Referenced To: Structure Reference Point

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 [390' FSL, 1020' FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	
KOP - Build 12"/100' DLS	10955.30	0.00	15.41	10955.30	0.00	0.00	0.00	0.00	452337.28	818928.33	N 32 14 25.30 W 103 26 7.84	
Build & Turn 12"/100' DLS	11330.30	45.00	15.41	11292.92	134.34	134.82	37.16	12.00	452472.10	818965.49	N 32 14 26.83 W 103 26 7.39	
Landing Point	11734.45	91.33	359.28	11440.00	495.45	496.43	74.87	12.00	452833.71	819003.19	N 32 14 30.21 W 103 26 6.92	
Cimarex Canyonlands 2 State Com 1H - PBHL [100' FNL, 940' FEL]	16034.42	91.33	359.28	11340.00	4794.25	4794.89	20.85	0.00	457132.15	818949.18	N 32 15 12.74 W 103 26 7.13	

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	23.000	1/100.000	30.000	30.000		NAL_MWD_IFR1+MS-Depth Only	Original Borehole / Cimarex Canyonlands 2 State Com 1H Rev3 RM 23July18
	1	23.000	16034.420	1/100.000	30.000	30.000		NAL_MWD_IFR1+MS	Original Borehole / Cimarex Canyonlands 2 State Com 1H

CONTROLLED	
Special	Controlled by _____
Planning unit	_____
Reg. number	_____
Type	_____
1. Name	_____
2. Age	_____
3. Sex	_____
4. Race	_____
5. Religion	_____
6. Education	_____
7. Occupation	_____
8. Address	_____
9. City	_____
10. State	_____
11. Zip	_____
12. Date	_____
13. Signature	_____
14. Initials	_____
15. Remarks	_____

