

Cimarex Canyonlands 2 State Com 2H Rev2 RM 23July18 Anti-Collision Summary Report

Analysis Date-24hr Time: July 24, 2018 - 08:26

Client: Cimarex

Field: NM Lea County (NAD 83)

Structure: Cimarex Canyonlands 2 State Com 2H

Siot: Cimarex Canyonlands 2 State Com 2H

Well: Cimarex Canyonlands 2 State Com 2H

Borehole: Original Borehole

Scan MD Range: 11727.00ft ~ 16216.93ft

Analysis Method:

Reference Trajectory:

Depth Interval:

Rule Set:

Min Pts:

Version / Patch:

Database \ Project:

3D Least Distance

Cimarex Canyonlands 2 State Com 2H Rev2 RM 23July18 (Non-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.slb.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 Trajectories Summary

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 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 State 1 #2 (Offset) Inc.
Only 06-130488 (Def Survey)

Warning Alert

2598.90	783.58	2072.75	1813.32	4.95	OSF1.50	13450.00	11654.17	OSF<5.00
1366.01	780.38	844.82	585.63	2.63	OSF1.50	15680.00	11594.93	
1475.34	779.15	955.08	696.19	2.84	OSF1.50	16216.93	11580.00	

Enter Alert
MinPts
TD

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

Pass

581.70	79.45	527.90	502.25	11.25	OSF1.50	11727.00	11570.17	
609.43	177.34	490.37	432.05	5.21	OSF1.50	16216.93	11580.00	

MinPts
MinPts

Cimarex Canyonlands 2 State Com 2H Rev2 RM 23July18 Proposal

Geodetic Report

(Non-Def Plan)

Report Date: July 24, 2018 - 08:26 AM
Client: Cimarex
Field: NM Lea County (NAD 83)
Structure / Slot: Cimarex Canyonlands 2 State Com 2H / Cimarex Canyonlands 2 State Com 2H
Well: Cimarex Canyonlands 2 State Com 2H
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Canyonlands 2 State Com 2H Rev2 RM 23July18
Survey Date: June 22, 2018
Tort / AHD / DDI / ERD Ratio: 170.650 ° / 5516.187 ft / 8.116 / 0.472
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 14' 25.30017", W 103° 26' 7.60538"
Location Grid N/E Y/X: N 452337.390 NUS, E 818948.260 NUS
CRS Grid Convergence Angle: 0.4790 °
Grid Scale Factor: 0.99999736
Version / Patch: 2.10.740.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 359.297 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3448.900 ft above MSL
Seabed / Ground Elevation: 3425.900 ft above MSL
Magnetic Declination: 6.731 °
Total Gravity Field Strength: 988.4634mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 48019.391 nT
Magnetic Dip Angle: 59.963 °
Declination Date: July 24, 2018
Magnetic Declination Model: HDGM 2018
North Reference: Grid North
Grid Convergence Used: 0.4790 °
Total Corr Mag North->Grid North: 6.2517 °
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, 1000' FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	452337.39	818948.26	N 32 14 25.30	W 103 26 7.61
	198.00	1.14	27.96	197.99	1.73	1.74	0.92	0.58	452339.13	818949.18	N 32 14 25.32	W 103 26 7.59
	291.00	1.15	28.17	290.97	3.36	3.38	1.80	0.01	452340.77	818950.06	N 32 14 25.33	W 103 26 7.58
	389.00	1.25	36.20	388.95	5.07	5.11	2.89	0.20	452342.50	818951.15	N 32 14 25.35	W 103 26 7.57
	480.00	1.34	32.24	479.92	6.76	6.81	4.05	0.14	452344.20	818952.31	N 32 14 25.37	W 103 26 7.56
	570.00	1.32	28.60	569.90	8.55	8.61	5.10	0.10	452346.00	818953.36	N 32 14 25.38	W 103 26 7.55
	662.00	1.03	29.01	661.88	10.19	10.26	6.01	0.32	452347.65	818954.27	N 32 14 25.40	W 103 26 7.53
	753.00	1.08	15.81	752.86	11.72	11.80	6.64	0.27	452349.19	818954.90	N 32 14 25.42	W 103 26 7.53
	844.00	1.23	25.06	843.85	13.42	13.51	7.30	0.27	452350.80	818955.56	N 32 14 25.43	W 103 26 7.52
	926.00	1.44	23.45	925.82	15.15	15.25	8.09	0.26	452352.84	818956.35	N 32 14 25.45	W 103 26 7.51
	1023.00	1.28	23.26	1022.80	17.25	17.36	9.00	0.17	452354.75	818957.26	N 32 14 25.47	W 103 26 7.50
	1118.00	0.91	40.53	1117.78	18.79	18.91	9.91	0.52	452356.30	818958.17	N 32 14 25.49	W 103 26 7.49
	1213.00	0.38	76.82	1212.77	19.42	19.56	10.71	0.68	452356.95	818958.97	N 32 14 25.49	W 103 26 7.48
	1307.00	0.52	37.66	1306.77	19.82	19.96	11.27	0.35	452357.35	818959.53	N 32 14 25.50	W 103 26 7.47
	1400.00	0.68	154.70	1399.77	19.85	19.80	11.77	1.10	452357.19	818960.03	N 32 14 25.50	W 103 26 7.47
	1495.00	1.71	188.55	1494.75	17.74	17.89	11.80	1.27	452355.28	818960.06	N 32 14 25.48	W 103 26 7.47
	1589.00	1.55	183.66	1588.71	15.09	15.23	11.51	0.23	452352.62	818959.77	N 32 14 25.45	W 103 26 7.47
	1684.00	1.52	175.83	1683.67	12.55	12.69	11.52	0.22	452350.08	818959.78	N 32 14 25.42	W 103 26 7.47
	1778.00	1.32	183.33	1777.65	10.23	10.37	11.55	0.29	452347.76	818959.81	N 32 14 25.40	W 103 26 7.47
	1872.00	1.57	178.72	1871.62	7.86	8.00	11.51	0.29	452345.39	818959.77	N 32 14 25.38	W 103 26 7.47
	1966.00	1.50	180.81	1965.58	5.34	5.48	11.52	0.10	452342.87	818959.78	N 32 14 25.35	W 103 26 7.47
	2060.00	1.66	178.17	2059.55	2.75	2.89	11.55	0.19	452340.28	818959.81	N 32 14 25.33	W 103 26 7.47
	2155.00	1.63	184.02	2154.51	0.03	0.17	11.50	0.18	452337.56	818959.76	N 32 14 25.30	W 103 26 7.47
	2249.00	1.71	184.65	2248.47	-2.70	-2.56	11.29	0.09	452334.83	818959.55	N 32 14 25.27	W 103 26 7.47
	2344.00	1.80	181.32	2343.42	-5.60	-5.47	11.14	0.14	452331.92	818959.40	N 32 14 25.25	W 103 26 7.48
	2439.00	1.75	186.06	2438.38	-8.53	-8.40	10.95	0.16	452328.99	818959.21	N 32 14 25.22	W 103 26 7.48
	2533.00	1.67	181.09	2532.34	-11.33	-11.20	10.78	0.18	452326.19	818959.04	N 32 14 25.19	W 103 26 7.48
	2627.00	1.67	187.25	2626.30	-14.05	-13.93	10.58	0.19	452323.46	818958.84	N 32 14 25.16	W 103 26 7.48
	2722.00	0.58	197.22	2721.28	-15.88	-15.76	10.26	1.16	452321.63	818958.52	N 32 14 25.14	W 103 26 7.49
	2816.00	1.32	6.89	2815.27	-15.26	-15.14	10.25	2.01	452322.25	818958.51	N 32 14 25.15	W 103 26 7.49
	2909.00	1.71	13.77	2908.24	-12.86	-12.73	10.71	0.46	452324.66	818958.67	N 32 14 25.17	W 103 26 7.48
	3004.00	2.23	15.17	3003.18	-9.71	-9.57	11.53	0.55	452327.82	818959.79	N 32 14 25.20	W 103 26 7.47
	3098.00	2.52	17.41	3097.10	-5.98	-5.83	12.63	0.32	452331.56	818960.89	N 32 14 25.24	W 103 26 7.46
	3193.00	3.24	26.50	3191.98	-1.61	-1.43	14.45	0.90	452335.96	818962.71	N 32 14 25.28	W 103 26 7.44
	3288.00	2.45	34.57	3286.86	2.43	2.64	16.80	0.93	452340.03	818965.06	N 32 14 25.32	W 103 26 7.41
	3382.00	2.80	36.73	3380.76	5.90	6.14	19.31	0.39	452343.53	818967.57	N 32 14 25.36	W 103 26 7.38
	3476.00	1.55	49.69	3474.69	8.53	8.80	21.66	1.42	452346.19	818969.92	N 32 14 25.39	W 103 26 7.35
	3571.00	2.99	60.76	3569.82	10.53	10.84	24.80	1.58	452348.23	818973.06	N 32 14 25.41	W 103 26 7.32
	3666.00	4.64	75.00	3664.41	12.67	13.04	30.67	1.99	452350.43	818978.93	N 32 14 25.43	W 103 26 7.25
	3761.00	5.72	84.02	3759.02	14.05	14.53	39.09	1.42	452351.92	818987.35	N 32 14 25.44	W 103 26 7.15
	3855.00	7.81	89.31	3852.36	14.48	15.10	50.14	2.32	452352.49	818998.40	N 32 14 25.45	W 103 26 7.02
	3950.00	8.07	100.27	3946.45	13.21	13.99	63.15	1.61	452351.38	819011.41	N 32 14 25.43	W 103 26 6.87
	4044.00	8.31	99.14	4039.50	10.79	11.73	76.35	0.31	452349.12	819024.61	N 32 14 25.41	W 103 26 6.72
	4138.00	7.79	91.56	4132.57	9.38	10.48	89.43	1.26	452347.87	819037.69	N 32 14 25.40	W 103 26 6.56
	4232.00	9.49	95.20	4225.50	8.33	9.60	103.52	1.90	452346.99	819051.77	N 32 14 25.39	W 103 26 6.40
	4326.00	10.44	95.43	4318.08	6.62	8.09	119.71	1.01	452345.48	819067.97	N 32 14 25.37	W 103 26 6.21
	4421.00	10.55	97.50	4411.49	4.46	6.14	136.90	0.41	452343.53	819085.16	N 32 14 25.35	W 103 26 6.01
	4515.00	8.75	95.18	4504.16	2.50	4.38	152.56	1.96	452341.77	819100.82	N 32 14 25.33	W 103 26 5.83
	4609.00	8.53	94.23	4597.09	1.17	3.22	168.83	0.28	452340.61	819114.89	N 32 14 25.32	W 103 26 5.67
	4704.00	9.74	99.40	4690.89	-0.84	1.38	181.58	1.54	452338.77	819129.84	N 32 14 25.30	W 103 26 5.49
	4798.00	9.67	98.21	4783.54	-3.48	-1.04	197.24	0.23	452336.35	819145.50	N 32 14 25.27	W 103 26 5.31
	4893.00	8.95	97.58	4877.29	-5.76	-3.16	212.47	0.77	452334.23	819160.72	N 32 14 25.25	W 103 26 5.13
	4986.00	8.27	94.33	4969.24	-7.39	-4.62	226.31	0.90	452332.77	819174.56	N 32 14 25.24	W 103 26 4.97
	5081.00	6.64	94.62	5063.44	-8.50	-5.57	238.59	1.72	452331.82	819186.85	N 32 14 25.23	W 103 26 4.83
	5176.00	5.75	93.07	5157.88	-9.32	-6.27	248.82	0.95	452331.12	819197.08	N 32 14 25.22	W 103 26 4.71
	5270.00	5.12	92.49	5251.46	-9.87	-6.71	257.71	0.67	452330.68	819205.97	N 32 14 25.21	W 103 26 4.61
	5364.00	5.87	85.50	5345.03	-9.78	-6.51	266.70	1.07	452330.88	819214.95	N 32 14 25.21	W 103 26 4.50
	5458.00	6.87	82.68	5438.45	-8.82	-5.42	277.06	1.11	452331.97	819225.32	N 32 14 25.22	W 103 26 4.38
	5554.00	6.82	82.10	5533.76	-7.44	-3.90	288.41	0.09	452333.49	819236.66	N 32 14 25.24	W 103 26 4.25
	5648.00	7.16	80.87	5627.06	-5.88	-2.21	299.72	0.40	452335.18	819247.88	N 32 14 25.25	W 103 26 4.12
	5743.00	6.98	79.78	5721.34	-4.06	-0.24	311.24	0.24	452337.15	819259.50	N 32 14 25.27	W 103 26 3.98
	5836.00	6.99	78.94	5813.85	-2.11	1.85	322.36	0.11	452339.24	819270.82	N 32 14 25.29	W 103 26 3.85
	5932.00	6.70	78.11	5908.97	0.03	4.12	333.57	0.32	452341.51	819281.83	N 32 14 25.31	W 103 26 3.72
	6026.00	5.52	74.39	6002.43	2.25	8.47	343.29	1.32	452343.86	819291.55	N 32 14 25.34	W 103 26 3.61
	6120.00	6.45	83.99	6095.92	3.91	8.24	352.90	1.45	452345.63	819301.16	N 32 14 25.35	W 103 26 3.50
	6215.00	6.49	85.78	6190.31	4.73	9.19	363.56	0.22	452346.58	819311.82	N 32 14 25.36	W 103 26 3.37
	6309.00	6.20	83.08	6283.74	5.60	10.19	373.90	0.44	452347.58	819322.15	N 32 14 25.37	W 103 26 3.25
	6403.00	6.01	86.68	6377.21	6.38	11.09	383.85	0.45	452348.48	819332.11	N 32 14 25.38	W 103 26 3.14

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 ° ' ")
	6497.00	8.92	86.81	6470.61	6.85	11.69	394.41	0.97	452349.08	819342.67	N 32 14 25.38	W 103 26 3.01
	6591.00	7.18	88.00	6563.90	7.23	12.21	405.94	0.32	452349.60	819354.20	N 32 14 25.39	W 103 26 2.88
	6686.00	7.23	87.60	6658.15	7.54	12.67	417.85	0.07	452350.08	819366.10	N 32 14 25.39	W 103 26 2.74
	6760.00	6.76	87.04	6751.45	7.93	13.20	429.28	0.51	452350.59	819377.54	N 32 14 25.40	W 103 26 2.61
	6874.00	6.45	85.84	6844.82	8.47	13.87	440.07	0.38	452351.26	819388.33	N 32 14 25.40	W 103 26 2.48
	6968.00	6.04	84.75	6938.26	9.18	14.70	450.26	0.45	452352.09	819398.52	N 32 14 25.41	W 103 26 2.36
	7062.00	5.79	84.04	7031.76	10.01	15.65	459.90	0.28	452353.04	819408.16	N 32 14 25.42	W 103 26 2.25
	7157.00	5.52	81.79	7126.30	11.04	16.80	469.19	0.37	452354.19	819417.45	N 32 14 25.43	W 103 26 2.14
	7251.00	5.37	83.08	7219.88	12.11	17.97	478.03	0.21	452355.36	819428.29	N 32 14 25.44	W 103 26 2.04
	7348.00	5.94	83.27	7314.41	13.11	19.09	487.33	0.60	452356.48	819435.58	N 32 14 25.45	W 103 26 1.93
	7441.00	7.35	91.52	7408.78	13.39	19.50	498.28	1.79	452356.89	819446.54	N 32 14 25.45	W 103 26 1.80
	7536.00	8.90	93.86	7503.04	12.70	18.96	510.05	0.56	452356.35	819458.31	N 32 14 25.45	W 103 26 1.67
	7630.00	5.49	96.15	7596.49	11.71	18.09	520.16	1.52	452355.48	819468.41	N 32 14 25.44	W 103 26 1.55
	7725.00	5.70	91.50	7691.04	10.99	17.48	529.39	0.53	452354.87	819477.65	N 32 14 25.43	W 103 26 1.44
	7819.00	5.65	90.60	7784.58	10.70	17.31	538.68	0.11	452354.70	819488.94	N 32 14 25.43	W 103 26 1.33
	7914.00	4.85	86.75	7879.18	10.77	17.49	547.37	0.92	452354.88	819495.63	N 32 14 25.43	W 103 26 1.23
	8009.00	5.43	86.76	7973.80	11.15	17.67	555.87	0.61	452355.36	819504.13	N 32 14 25.43	W 103 26 1.13
	8104.00	5.38	93.08	8068.38	11.06	17.99	564.80	0.63	452355.38	819513.06	N 32 14 25.43	W 103 26 1.03
	8198.00	4.75	90.40	8162.01	10.69	17.72	573.10	0.72	452355.11	819521.35	N 32 14 25.43	W 103 26 0.93
	8293.00	4.41	89.26	8256.71	10.62	17.74	580.68	0.37	452355.13	819528.94	N 32 14 25.43	W 103 26 0.84
	8387.00	4.07	84.77	8350.45	10.88	18.09	587.62	0.51	452355.48	819535.87	N 32 14 25.43	W 103 26 0.76
	8482.00	3.54	82.06	8445.24	11.52	18.81	593.88	0.59	452356.20	819542.14	N 32 14 25.44	W 103 26 0.69
	8576.00	4.15	100.76	8539.03	11.21	18.57	600.09	1.47	452355.96	819548.35	N 32 14 25.43	W 103 26 0.62
	8670.00	4.05	106.08	8632.79	9.57	17.02	606.63	0.42	452354.41	819554.88	N 32 14 25.42	W 103 26 0.54
	8765.00	2.60	125.83	8727.63	7.32	14.83	611.60	1.92	452352.22	819559.85	N 32 14 25.40	W 103 26 0.48
	8859.00	1.52	130.45	8821.57	5.23	12.77	614.27	1.16	452350.16	819562.53	N 32 14 25.38	W 103 26 0.45
	8955.00	0.98	116.06	8917.55	4.03	11.58	615.98	0.65	452348.97	819564.24	N 32 14 25.38	W 103 26 0.43
	9050.00	0.33	92.45	9012.54	3.84	11.22	616.98	0.73	452348.61	819565.24	N 32 14 25.36	W 103 26 0.42
	9144.00	0.09	145.16	9106.54	3.57	11.14	617.30	0.30	452348.53	819565.55	N 32 14 25.36	W 103 26 0.42
	9239.00	0.35	286.61	9201.54	3.59	11.17	617.06	0.45	452348.56	819565.32	N 32 14 25.36	W 103 26 0.42
	9333.00	0.57	285.71	9295.53	3.81	11.37	616.34	0.23	452348.76	819564.59	N 32 14 25.36	W 103 26 0.43
	9427.00	0.75	272.67	9389.53	3.98	11.53	615.27	0.25	452348.92	819563.53	N 32 14 25.36	W 103 26 0.44
	9521.00	1.12	306.82	9483.52	4.58	12.11	613.92	0.89	452349.50	819562.18	N 32 14 25.37	W 103 26 0.46
	9616.00	1.69	316.43	9578.49	6.17	13.88	612.21	0.65	452351.07	819560.47	N 32 14 25.38	W 103 26 0.48
	9711.00	2.12	289.38	9673.44	7.80	15.28	609.59	1.04	452352.67	819557.85	N 32 14 25.40	W 103 26 0.51
	9805.00	2.66	264.33	9767.36	8.21	15.84	605.78	1.24	452353.03	819554.04	N 32 14 25.40	W 103 26 0.55
	9900.00	2.95	254.44	9862.24	7.39	14.77	601.23	0.59	452352.16	819549.49	N 32 14 25.40	W 103 26 0.60
	9993.00	2.45	244.60	9955.14	5.95	13.28	597.13	0.73	452350.67	819545.39	N 32 14 25.38	W 103 26 0.65
	10088.00	1.93	253.31	10050.07	4.66	11.95	593.76	0.85	452349.34	819542.02	N 32 14 25.37	W 103 26 0.69
	10184.00	1.34	266.74	10146.03	4.16	11.42	591.09	0.73	452348.81	819539.35	N 32 14 25.36	W 103 26 0.72
	10280.00	0.69	292.65	10242.02	4.34	11.58	589.44	0.81	452348.97	819537.70	N 32 14 25.37	W 103 26 0.74
	10375.00	1.53	295.11	10337.00	5.12	12.33	587.76	0.89	452349.72	819536.02	N 32 14 25.37	W 103 26 0.76
	10469.00	1.90	307.60	10430.96	6.63	13.82	585.39	0.56	452351.21	819533.65	N 32 14 25.39	W 103 26 0.79
	10563.00	1.63	326.79	10524.91	8.76	15.92	583.48	0.78	452353.31	819531.74	N 32 14 25.41	W 103 26 0.81
	10658.00	1.42	13.58	10619.88	11.08	18.24	583.08	1.21	452355.63	819531.34	N 32 14 25.43	W 103 26 0.82
	10752.00	1.43	11.54	10713.85	10.36	20.52	583.59	0.05	452357.91	819531.85	N 32 14 25.45	W 103 26 0.81
	10846.00	1.11	358.69	10807.83	15.41	22.58	583.80	0.45	452359.97	819532.06	N 32 14 25.48	W 103 26 0.81
	10940.00	0.90	309.59	10901.82	16.80	23.96	583.21	0.91	452361.35	819531.47	N 32 14 25.49	W 103 26 0.81
	11035.00	1.16	312.14	10996.80	17.94	25.08	581.92	0.28	452362.47	819530.18	N 32 14 25.50	W 103 26 0.83
	11113.00	1.26	324.06	11074.78	19.17	26.30	580.84	0.35	452363.69	819529.09	N 32 14 25.51	W 103 26 0.84
	11159.00	1.50	319.34	11120.77	20.05	27.17	580.15	0.58	452364.56	819528.40	N 32 14 25.52	W 103 26 0.85
	11191.00	2.92	16.59	11152.75	21.15	28.27	580.11	7.68	452365.66	819528.36	N 32 14 25.53	W 103 26 0.85
	11222.00	7.21	25.99	11183.62	23.64	30.77	581.18	14.05	452366.16	819529.44	N 32 14 25.58	W 103 26 0.84
	11254.00	11.77	23.47	11215.18	28.42	35.58	583.37	14.31	452372.97	819531.62	N 32 14 25.60	W 103 26 0.81
	11286.00	16.49	22.56	11246.20	35.57	42.77	586.41	14.77	452380.16	819534.67	N 32 14 25.67	W 103 26 0.77
	11317.00	21.52	20.22	11275.50	44.93	52.17	590.06	16.41	452389.56	819538.32	N 32 14 25.77	W 103 26 0.73
	11349.00	26.12	17.16	11304.77	57.12	64.42	594.17	14.88	452401.81	819542.43	N 32 14 25.89	W 103 26 0.68
	11380.00	30.17	13.88	11332.10	71.18	78.51	598.06	13.98	452415.90	819546.31	N 32 14 26.03	W 103 26 0.63
	11412.00	32.76	10.70	11359.39	87.44	94.82	601.60	9.61	452432.21	819549.85	N 32 14 26.19	W 103 26 0.59
	11444.00	35.29	7.79	11385.91	105.07	112.49	604.46	9.40	452449.88	819552.71	N 32 14 26.36	W 103 26 0.56
	11475.00	36.28	5.64	11411.06	123.04	130.49	606.57	5.16	452467.88	819554.83	N 32 14 26.54	W 103 26 0.53
	11506.00	4.66	11435.46	11435.46	142.05	149.53	606.26	11.71	452466.92	819556.54	N 32 14 26.73	W 103 26 0.51
	11537.00	43.73	4.40	11458.57	162.62	170.12	609.91	12.50	452507.51	819558.17	N 32 14 26.93	W 103 26 0.49
	11569.00	47.66	4.44	11480.92	185.43	192.95	611.67	12.28	452530.34	819559.93	N 32 14 27.16	W 103 26 0.47
	11601.00	51.07	2.65	11501.75	209.64	217.18	613.17	11.47	452554.57	819561.42	N 32 14 27.40	W 103 26 0.45
	11632.00	53.76	0.83	11520.96	234.18	241.73	613.91	9.85	452579.12	819562.16	N 32 14 27.64	W 103 26 0.43
	11664.00	56.08	359.77	11539.05	260.36	267.92	614.04	7.74	452605.31	819562.30	N 32 14 27.90	W 103 26 0.43
	11696.00	60.24	359.61	11555.93	287.54	295.09	613.89	13.01	452632.48	819562.15	N 32 14 28.17	W 103 26 0.43
	11727.00	65.04	0.43	11570.17	315.06	322.62	613.90	15.66	452660.01	819562.16	N 32 14 28.44	W 103 26 0.43
Tie In												
PTB - Build	11792.00	74.90	0.90	11592.41	378.04	383.61	614.62	15.18	452721.00	819562.88	N 32 14 29.04	W 103 26 0.41
2.32°/100' DLS	11800.00	75.08	0.85	11594.48	383.76	391.33	614.74	2.32	452728.72	819563.00	N 32 14 29.12	W 103 26 0.41
	11900.00	77.34	0.29	11618.32	480.85	488.44	615.70	2.32	452825.83	819563.98	N 32 14 30.08	W 103 26 0.39
	12000.00	79.59	359.73	11638.32	578.81	586.41	615.72	2.32	452923.80	819563.97	N 32 14 31.05	W 103 26 0.38
	12100.00	81.85	359.18	11654.44	677.50	685.09	614.78	2.32	453022.48	819563.03	N 32 14 32.03	W 103 26 0.38
	12200.00	84.11	358.64	11666.67	776.74	784.32	612.88	2.32	453121.70	819561.14	N 32 14 33.01	W 103 26 0.39
Build & Turn	12239.55	85.00	358.42	11670.42	816.10	823.67	611.88	2.32	453161.06	819560.13	N 32 14 33.40	W 103 26 0.40
2.32°/100' DLS	12300.00	86.39	358.61	11674.96	876.38	883.93	610.32	2.32	453221.32	819558.57	N 32 14 34.00	W 103 26 0.41
	12400.00	88.69										

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 ° ' ")
	14300.00	91.54	359.30	11631.38	2875.82	2883.01	584.47	0.00	455220.39	819532.72	N 32 14 53.78	W 103 26 0.52
	14400.00	91.54	359.30	11628.70	2975.59	2982.97	583.24	0.00	455320.34	819531.50	N 32 14 54.77	W 103 26 0.52
	14500.00	91.54	359.30	11626.02	3075.55	3082.92	582.01	0.00	455420.30	819530.27	N 32 14 55.76	W 103 26 0.53
	14600.00	91.54	359.30	11623.34	3175.51	3182.88	580.79	0.00	455520.26	819529.05	N 32 14 56.75	W 103 26 0.53
	14700.00	91.54	359.30	11620.66	3275.48	3282.84	579.56	0.00	455620.21	819527.82	N 32 14 57.74	W 103 26 0.54
	14800.00	91.54	359.30	11617.98	3375.44	3382.79	578.34	0.00	455720.17	819526.60	N 32 14 58.72	W 103 26 0.54
	14900.00	91.54	359.30	11615.30	3475.41	3482.75	577.11	0.00	455820.12	819525.37	N 32 14 59.71	W 103 26 0.55
	15000.00	91.54	359.30	11612.62	3575.37	3582.71	575.89	0.00	455920.08	819524.14	N 32 15 0.70	W 103 26 0.55
	15100.00	91.54	359.30	11609.94	3675.34	3682.66	574.66	0.00	456020.04	819522.92	N 32 15 1.69	W 103 26 0.56
	15200.00	91.54	359.30	11607.26	3775.30	3782.62	573.44	0.00	456119.99	819521.69	N 32 15 2.68	W 103 26 0.56
	15300.00	91.54	359.30	11604.58	3875.26	3882.58	572.21	0.00	456219.95	819520.47	N 32 15 3.67	W 103 26 0.56
	15400.00	91.54	359.30	11601.90	3975.23	3982.53	570.98	0.00	456319.90	819519.24	N 32 15 4.66	W 103 26 0.57
	15500.00	91.54	359.30	11599.22	4075.19	4082.49	569.76	0.00	456419.86	819518.02	N 32 15 5.65	W 103 26 0.57
	15600.00	91.54	359.30	11596.54	4175.16	4182.45	568.53	0.00	456519.82	819516.79	N 32 15 6.64	W 103 26 0.58
	15700.00	91.54	359.30	11593.86	4275.12	4282.40	567.31	0.00	456619.77	819515.57	N 32 15 7.63	W 103 26 0.58
	15800.00	91.54	359.30	11591.18	4375.08	4382.36	566.08	0.00	456719.73	819514.34	N 32 15 8.62	W 103 26 0.59
	15900.00	91.54	359.30	11588.50	4475.05	4482.32	564.86	0.00	456819.68	819513.11	N 32 15 9.60	W 103 26 0.59
	16000.00	91.54	359.30	11585.81	4575.01	4582.27	563.63	0.00	456919.64	819511.89	N 32 15 10.59	W 103 26 0.60
	16100.00	91.54	359.30	11583.13	4674.98	4682.23	562.41	0.00	457019.60	819510.66	N 32 15 11.58	W 103 26 0.60
	16200.00	91.54	359.30	11580.45	4774.94	4782.19	561.18	0.00	457119.55	819509.44	N 32 15 12.57	W 103 26 0.61

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

16216.93 91.54 359.30 11580.00 4791.87 4799.11 560.97 0.00 457136.48 819509.23 N 32 15 12.74 W 103 26 0.61

Survey Type: Non-Def Plan

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

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	23.000	Act Stns	30.000	30.000		NAL_MWD_IFR1+MS-Depth Only	Original Borehole / Cimarex Canyonlands 2 State Com 2H 0ft to Update
	1	23.000	11727.000	Act Stns	30.000	30.000		NAL_MWD_IFR1+MS	Original Borehole / Cimarex Canyonlands 2 State Com 2H 0ft
	1	11727.000	16216.934	1/100.000	30.000	30.000		NAL_MWD_IFR1+MS	Original Borehole / Cimarex Canyonlands 2 State Com 2H

Cimarex Canyonlands 2 State Com 2H Rev2 RM 23July18 Proposal

Geodetic Report

(Non-Def Plan)



Report Date: July 24, 2018 - 08:26 AM
Client: Cimarex
Field: NM Lea County (NAD 83)
Structure / Slot: Cimarex Canyonlands 2 State Com 2H / Cimarex Canyonlands 2 State Com 2H
Well: Cimarex Canyonlands 2 State Com 2H
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Canyonlands 2 State Com 2H Rev2 RM 23July18
Survey Date: June 22, 2018
Tort / AHD / DDI / ERD Ratio: 170.650 ° / 5516.187 ft / 6.116 / 0.472
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 14' 25.30017", W 103° 26' 7.60538"
Location Grid N/E Y/X: N 452337.390 RUS, E 818948.260 RUS
CRS Grid Convergence Angle: 0.4790 °
Grid Scale Factor: 0.99999736
Version / Patch: 2.10.740.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 359.297 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3448.900 ft above MSL
Seabed / Ground Elevation: 3425.900 ft above MSL
Magnetic Declination: 6.731 °
Total Gravity Field Strength: 998.4634mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 48019.391 nT
Magnetic Dip Angle: 59.963 °
Declination Date: July 24, 2018
Magnetic Declination Model: HDGM 2018
North Reference: Grid North
Grid Convergence Used: 0.4790 °
Total Corr Mag North->Grid North: 6.2517 °
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 ° ' ")
Tie In	11727.00	65.04	0.43	11570.17	315.08	322.62	613.90	N/A	452860.01	819562.16	N 32 14 26.44	W 103 26 0.43
PTB - Build 2.32"/100' DLS	11792.00	74.90	0.90	11592.41	378.04	383.61	614.62	15.18	452721.00	819562.88	N 32 14 29.04	W 103 26 0.41
Build & Turn 2.32"/100' DLS	12239.55	85.00	358.42	11670.42	816.10	823.67	611.88	2.32	453161.06	819560.13	N 32 14 33.40	W 103 26 0.40
Landing Point	12523.60	91.54	359.30	11679.00	1099.86	1107.38	608.24	2.32	453444.77	819554.49	N 32 14 36.21	W 103 26 0.44
Cimarex Canyonlands 2 State Com 2H - PBHL (100' FNL, 380' FEL)	16216.93	91.54	359.30	11580.00	4791.87	4799.11	560.97	0.00	457136.48	819509.23	N 32 15 12.74	W 103 26 0.61

Survey Type: Non-Def Plan

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

Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	23.000	Act Stns	30.000	30.000		NAL_MWD_IFR1+MS-Depth Only	Original Borehole / Cimarex Canyonlands 2 State Com 2H Off to Update
	1	23.000	11727.000	Act Stns	30.000	30.000		NAL_MWD_IFR1+MS	Original Borehole / Cimarex Canyonlands 2 State Com 2H Off
	1	11727.000	16216.934	1/100.000	30.000	30.000		NAL_MWD_IFR1+MS	Original Borehole / Cimarex Canyonlands 2 State Com 2H

