

Cimarex Hallertau 5 Federal #8H MWD Final Survey Geodetic Report

(Def Survey)

Report Date: October 30, 2017 - 03:56 PM
 Client: Cimarex
 Field: NM Lea County (NAD 83)
 Structure / Slot: Cimarex Hallertau 5 Federal #8H / Cimarex Hallertau 5 Federal #8H
 Well: Cimarex Hallertau 5 Federal #8H
 Borehole: Original Borehole
 UWI / API#: Unknown / Unknown
 Survey Name: Cimarex Hallertau 5 Federal #8H MWD Final
 Survey Date: October 09, 2017
 Tort / AHD / DDI / ERD Ratio: 186.113 * / 4651.593 ft / 6.071 / 0.393
 Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
 Location Lat / Long: N 32° 3' 58.49976", W 103° 42' 16.82506"
 Location Grid N/E Y/X: N 388406.470 ftUS, E 736075.970 ftUS
 CRS Grid Convergence Angle: 0.3338 *
 Grid Scale Factor: 0.99995253
 Version / Patch: 2.10.565.0

Survey / DLS Computation: Minimum Curvature / Lubinski
 Vertical Section Azimuth: 359.530 * (Grid North)
 Vertical Section Origin: 0.000 ft, 0.000 ft
 TVD Reference Datum: RKB
 TVD Reference Elevation: 3296.700 ft above MSL
 Seabed / Ground Elevation: 3271.700 ft above MSL
 Magnetic Declination: 6.832 *
 Total Gravity Field Strength: 998.4254mgN (9.80665 Based)
 Gravity Model: GARM
 Total Magnetic Field Strength: 47917.881 nT
 Magnetic Dip Angle: 59.736 *
 Declination Date: October 19, 2017
 Magnetic Declination Model: HDGM 2017
 North Reference: Grid North
 Grid Convergence Used: 0.3338 *
 Total Corr Mag North->Grid North: 6.4984 *
 Local Coord Referenced To: Structure Reference Point

HOBBS OCD
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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 [491' FSL, 358 FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	388406.47	736075.97	N 32 3 58.50	W 103 42 16.83
	175.00	0.40	281.01	175.00	0.12	0.12	-0.60	0.23	388406.59	736075.37	N 32 3 58.50	W 103 42 16.83
	274.00	0.31	275.32	274.00	0.22	0.21	-1.21	0.10	388406.68	736074.76	N 32 3 58.50	W 103 42 16.84
	395.00	0.40	262.89	394.99	0.20	0.19	-1.95	0.10	388406.66	736074.02	N 32 3 58.50	W 103 42 16.85
	516.00	0.22	333.80	515.99	0.36	0.34	-2.47	0.32	388406.81	736073.50	N 32 3 58.50	W 103 42 16.85
	636.00	0.09	351.91	635.99	0.66	0.64	-2.59	0.11	388407.11	736073.38	N 32 3 58.51	W 103 42 16.86
	758.00	0.22	5.22	757.99	0.99	0.97	-2.58	0.11	388407.44	736073.39	N 32 3 58.51	W 103 42 16.85
	878.00	0.22	326.92	877.99	1.41	1.39	-2.68	0.12	388407.86	736073.29	N 32 3 58.51	W 103 42 16.86
	998.00	0.22	88.21	997.99	1.61	1.59	-2.58	0.32	388408.06	736073.39	N 32 3 58.52	W 103 42 16.85
	1119.00	0.49	35.11	1118.99	2.04	2.02	-2.05	0.33	388408.49	736073.92	N 32 3 58.52	W 103 42 16.85
	1308.00	0.71	27.71	1307.98	3.73	3.72	-1.04	0.12	388410.19	736074.93	N 32 3 58.54	W 103 42 16.84
	1403.00	0.62	22.90	1402.97	4.72	4.72	-0.57	0.11	388411.19	736075.40	N 32 3 58.55	W 103 42 16.83
	1497.00	0.49	31.41	1496.97	5.53	5.53	-0.16	0.16	388412.00	736075.81	N 32 3 58.55	W 103 42 16.83
	1591.00	0.40	347.11	1590.96	6.19	6.19	-0.02	0.37	388412.66	736075.95	N 32 3 58.56	W 103 42 16.82
	1686.00	0.62	349.22	1685.96	7.02	7.02	-0.19	0.23	388413.49	736075.78	N 32 3 58.57	W 103 42 16.83
	1780.00	0.88	5.53	1779.95	8.24	8.24	-0.22	0.36	388414.71	736075.75	N 32 3 58.58	W 103 42 16.83
	1874.00	1.19	4.43	1873.94	9.93	9.93	-0.07	0.33	388416.40	736075.90	N 32 3 58.60	W 103 42 16.83
	1969.00	1.50	357.11	1968.91	12.15	12.15	-0.06	0.37	388418.62	736075.91	N 32 3 58.62	W 103 42 16.82
	2063.00	1.41	354.99	2062.88	14.54	14.53	-0.22	0.11	388421.00	736075.75	N 32 3 58.64	W 103 42 16.83
	2158.00	1.59	9.90	2157.85	17.00	17.00	-0.10	0.45	388423.47	736075.87	N 32 3 58.67	W 103 42 16.83
	2252.00	0.62	332.92	2251.83	18.73	18.73	-0.11	1.23	388425.20	736075.86	N 32 3 58.69	W 103 42 16.83
	2346.00	0.09	301.81	2345.83	19.23	19.23	-0.40	0.58	388425.70	736075.57	N 32 3 58.69	W 103 42 16.83
	2441.00	0.31	279.99	2440.83	19.32	19.31	-0.72	0.24	388425.78	736075.25	N 32 3 58.69	W 103 42 16.83
	2535.00	0.31	236.41	2534.83	19.22	19.21	-1.18	0.24	388425.68	736074.79	N 32 3 58.69	W 103 42 16.84
	2629.00	0.40	208.60	2628.83	18.80	18.78	-1.55	0.20	388425.25	736074.42	N 32 3 58.69	W 103 42 16.84
	2723.00	0.40	254.39	2722.82	18.42	18.41	-2.02	0.33	388424.88	736073.95	N 32 3 58.68	W 103 42 16.85
	2818.00	0.49	237.03	2817.82	18.12	18.10	-2.68	0.17	388424.57	736073.29	N 32 3 58.68	W 103 42 16.85
	2912.00	0.71	225.30	2911.82	17.50	17.47	-3.43	0.27	388423.94	736072.54	N 32 3 58.67	W 103 42 16.86
	3006.00	0.71	209.40	3005.81	16.59	16.55	-4.13	0.21	388423.02	736071.84	N 32 3 58.66	W 103 42 16.87
	3101.00	0.71	235.53	3100.80	15.75	15.71	-4.91	0.34	388422.18	736071.06	N 32 3 58.66	W 103 42 16.88
	3195.00	0.80	231.61	3194.79	15.02	14.97	-5.90	0.11	388421.44	736070.07	N 32 3 58.65	W 103 42 16.89
	3289.00	0.40	169.52	3288.79	14.29	14.24	-6.36	0.75	388420.71	736069.61	N 32 3 58.64	W 103 42 16.90
	3384.00	0.49	107.12	3383.79	13.84	13.79	-5.91	0.49	388420.26	736070.06	N 32 3 58.64	W 103 42 16.89
	3478.00	0.71	103.11	3477.78	13.58	13.54	-4.96	0.24	388420.01	736071.01	N 32 3 58.63	W 103 42 16.88
	3572.00	0.31	91.52	3571.78	13.44	13.40	-4.13	0.44	388419.87	736071.84	N 32 3 58.63	W 103 42 16.87
	3666.00	0.22	119.19	3665.78	13.34	13.31	-3.72	0.16	388419.78	736072.25	N 32 3 58.63	W 103 42 16.87
	3761.00	0.71	114.61	3760.77	13.00	12.98	-3.03	0.52	388419.44	736072.94	N 32 3 58.63	W 103 42 16.86
	3855.00	1.10	119.50	3854.76	12.30	12.29	-1.71	0.42	388418.76	736074.26	N 32 3 58.62	W 103 42 16.84
	3950.00	0.80	156.30	3949.75	11.24	11.23	-0.65	0.70	388417.70	736075.32	N 32 3 58.61	W 103 42 16.83
	4044.00	1.59	147.53	4043.73	9.53	9.53	0.31	0.86	388416.00	736076.28	N 32 3 58.59	W 103 42 16.82
	4138.00	2.61	144.79	4137.66	6.86	6.88	2.24	1.09	388413.15	736078.21	N 32 3 58.57	W 103 42 16.80
	4232.00	2.12	142.59	4231.58	3.52	3.55	4.54	0.53	388410.02	736080.50	N 32 3 58.53	W 103 42 16.77
	4327.00	0.49	87.51	4326.56	2.05	2.10	6.01	1.90	388408.57	736081.98	N 32 3 58.52	W 103 42 16.76
	4421.00	1.02	305.51	4420.55	2.49	2.54	5.72	1.56	388409.01	736081.89	N 32 3 58.52	W 103 42 16.76
	4515.00	0.71	308.11	4514.54	3.34	3.38	4.58	0.33	388409.85	736080.55	N 32 3 58.53	W 103 42 16.77
	4610.00	0.80	296.21	4609.53	4.01	4.04	3.53	0.19	388410.51	736079.50	N 32 3 58.54	W 103 42 16.78
	4704.00	0.80	304.32	4703.52	4.68	4.70	2.39	0.12	388411.17	736078.36	N 32 3 58.55	W 103 42 16.80
	4798.00	0.88	302.11	4797.51	5.44	5.45	1.24	0.09	388411.92	736077.21	N 32 3 58.55	W 103 42 16.81
	4893.00	1.02	314.01	4892.50	6.43	6.43	0.02	0.25	388412.90	736075.99	N 32 3 58.56	W 103 42 16.82
	4987.00	0.71	315.73	4986.49	7.43	7.43	-0.99	0.33	388413.90	736074.88	N 32 3 58.57	W 103 42 16.84
	5082.00	0.80	309.52	5081.48	8.28	8.27	-1.92	0.13	388414.74	736074.05	N 32 3 58.58	W 103 42 16.85
	5176.00	0.80	311.02	5175.47	9.14	9.12	-2.92	0.02	388415.59	736073.05	N 32 3 58.59	W 103 42 16.86
	5271.00	0.80	304.89	5270.46	9.96	9.93	-3.96	0.09	388416.40	736072.01	N 32 3 58.60	W 103 42 16.87
	5365.00	0.62	284.22	5364.46	10.47	10.43	-4.99	0.33	388416.90	736070.98	N 32 3 58.60	W 103 42 16.88
	5459.00	0.49	300.31	5458.45	10.81	10.76	-5.83	0.21	388417.23	736070.14	N 32 3 58.61	W 103 42 16.89
	5553.00	0.62	293.61	5552.45	11.22	11.17	-6.65	0.15	388417.64	736069.32	N 32 3 58.61	W 103 42 16.90
	5647.00	0.49	302.29	5646.44	11.65	11.59	-7.45	0.16	388418.05	736068.58	N 32 3 58.61	W 103 42 16.91
	5742.00	0.62	314.32	5741.44	12.23	12.16	-8.16	0.18	388418.63	736067.81	N 32 3 58.62	W 103 42 16.92
	5836.00	0.62	294.40	5835.43	12.80	12.73	-8.99	0.23	388419.20	736066.98	N 32 3 58.63	W 103 42 16.93
	5930.00	0.49	298.50	5929.43	13.21	13.13	-9.81	0.14	388419.60	736066.16	N 32 3 58.63	W 103 42 16.94
	6024.00	0.80	286.91	6023.42	13.60	13.51	-10.79	0.36	388419.98	736065.18	N 32 3 58.63	W 103 42 16.95
	6119.00	0.62	276.11	6118.42	13.86	13.76	-11.93	0.24	388420.23	736064.04	N 32 3 58.64	W 103 42 16.96
	6213.00	0.49	269.90	6212.41	13.92	13.81	-12.84	0.15	388420.28	736063.13	N 32 3 58.64	W 103 42 16.97
	6307.00	0.40	281.93	6306.41	13.99	13.88	-13.56	0.14	388420.35	736062.41	N 32 3 58.64	W 103 42 16.98
	6401.00	0.40	292.11	6400.41	14.19	14.07	-14.19	0.08	388420.54	736061.78	N 32 3 58.64	W 103 42 16.99
	6496.00	0.40	278.01	6495.40	14.36	14.24	-14.82	0.10	388420.71	736061.15	N 32 3 58.64	W 103 42 17.00
	6590.00	0.40	263.73	6589.40	14.38	14.25	-15.47	0.11	388420.72	736060.50	N 32 3 58.64	W 103 42 17.00
	6684.00	0.31	267.21	6683.40	14.33	14.20	-16.06	0.10	388420.67	736059.92	N 32 3 58.64	W 103 42 17.01
	6778.00	0.31	300.92	6777.40	14.46	14.32	-16.53	0.19	388420.79	736059.44	N 32 3 58.64	W 103 42 17.02
	6872.00	0.31	304.80	6871.40	14.74	14.60	-16.95	0.02	388421.07	736059.02	N 32 3 58.65	W 103 42 17.02
	6966.00	0.40	330.41	6965.40	15.17	15.03	-17.32	0.19	388421.25	736058.65	N 32 3 58.65	W 103 42 17.03
	7060.00	0.62	337.59	7059.39	15.93	15.78	-17.68	0.24	388422.55	736058.29	N 32 3 58.66	W 103 42 17.03
	7154.00	0.49	331.90	7153.39	16.76	16.61	-18.06	0.15	388423.08	736057.91	N 32 3 58.67	W 103 42 17.03
	7249.00	0.31	343.80	7248.38	17.36	17.21	-18.33	0.21	388423.68	736057.64	N 32 3 58.67	W 103 42 17.04
	7343											

MD	Incl	Azim Grd	TD	VSEC	NS	EW	DLS	Northng	Eastng	Latitude	Longitude
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7531.00	0.22	265.10	7530.38	17.99	17.83	-18.90	0.22	388424.30	736057.07	N 32 3 58.66	E 103 42 17.04
7625.00	0.22	252.41	7624.38	17.92	17.76	-19.26	0.05	388424.23	736056.22	N 32 3 58.66	E 103 42 17.05
7719.00	0.40	252.10	7718.38	17.77	17.61	-19.74	0.19	388424.08	736056.23	N 32 3 58.66	E 103 42 17.06
7813.00	0.62	235.92	7812.38	17.59	17.22	-20.47	0.28	388423.69	736055.50	N 32 3 58.67	E 103 42 17.07
7908.00	0.49	234.51	7907.37	16.87	16.70	-21.23	0.14	388423.17	736054.74	N 32 3 58.67	E 103 42 17.07
8004.00	0.71	215.21	8003.37	15.97	15.77	-21.91	0.31	388422.44	736054.06	N 32 3 58.67	E 103 42 17.08
8098.00	0.71	221.60	8097.36	15.25	15.06	-22.63	0.08	388421.53	736053.34	N 32 3 58.65	E 103 42 17.09
8192.00	0.80	191.35	8191.35	14.32	14.13	-23.44	0.10	388420.60	736052.63	N 32 3 58.64	E 103 42 17.10
8286.00	1.10	208.53	8285.34	13.02	12.82	-24.27	0.40	388419.29	736051.70	N 32 3 58.63	E 103 42 17.11
8381.00	1.10	214.02	8380.32	11.46	11.25	-25.19	0.15	388417.72	736050.78	N 32 3 58.61	E 103 42 17.12
8475.00	1.10	213.01	8474.30	9.96	9.75	-26.19	0.02	388416.22	736049.78	N 32 3 58.60	E 103 42 17.13
8569.00	1.19	207.59	8568.26	8.35	8.13	-27.13	0.15	388414.60	736048.84	N 32 3 58.58	E 103 42 17.14
8663.00	1.28	209.70	8662.26	6.86	6.65	-28.10	0.11	388413.02	736047.87	N 32 3 58.56	E 103 42 17.15
8757.00	0.80	228.41	8756.25	5.22	5.00	-29.10	0.00	388411.45	736046.87	N 32 3 58.55	E 103 42 17.16
8851.00	0.80	271.22	8850.24	4.79	4.55	-30.23	0.05	388411.02	736045.74	N 32 3 58.55	E 103 42 17.16
8945.00	0.80	280.91	8944.23	4.94	4.68	-31.53	0.14	388411.15	736044.44	N 32 3 58.55	E 103 42 17.19
9039.00	0.40	111.51	9038.23	4.85	4.69	-31.87	1.27	388411.16	736044.10	N 32 3 58.55	E 103 42 17.20
9133.00	0.31	89.31	9132.22	4.57	4.31	-33.81	0.17	388411.04	736044.66	N 32 3 58.55	E 103 42 17.19
9228.00	0.82	65.91	9227.22	4.03	3.78	-35.99	0.38	388411.25	736045.39	N 32 3 58.55	E 103 42 17.18
9322.00	0.80	111.92	9321.22	4.75	4.45	-38.51	0.62	388411.22	736046.46	N 32 3 58.55	E 103 42 17.17
9416.00	1.10	120.51	9415.20	4.27	4.04	-42.83	0.35	388410.51	736047.85	N 32 3 58.54	E 103 42 17.15
9510.00	0.80	137.13	9509.19	3.14	2.92	-46.73	0.34	388409.39	736049.34	N 32 3 58.53	E 103 42 17.14
9604.00	0.80	128.09	9603.17	2.07	1.86	-49.60	0.36	388408.33	736050.37	N 32 3 58.52	E 103 42 17.12
9698.00	0.71	117.52	9697.17	1.18	1.01	-54.57	0.18	388407.65	736051.40	N 32 3 58.51	E 103 42 17.11
9793.00	0.80	122.10	9792.16	0.75	0.56	-62.49	0.11	388407.03	736052.48	N 32 3 58.51	E 103 42 17.10
9887.00	1.02	88.70	9886.15	0.23	0.20	-70.10	0.43	388406.70	736053.88	N 32 3 58.50	E 103 42 17.08
9981.00	0.80	110.02	9980.13	0.19	0.22	-78.64	0.43	388406.49	736055.33	N 32 3 58.50	E 103 42 17.06
10075.00	0.40	100.92	10074.13	-0.11	-0.27	-87.70	0.43	388406.20	736056.27	N 32 3 58.50	E 103 42 17.05
10169.00	0.80	92.93	10168.13	-0.20	-0.35	-96.06	0.07	388406.12	736056.82	N 32 3 58.50	E 103 42 17.05
10263.00	0.80	66.09	10262.13	-0.29	-0.44	-104.86	0.34	388406.13	736057.31	N 32 3 58.50	E 103 42 17.04
10357.00	0.80	225.39	10356.13	-0.18	-0.34	-113.04	0.12	388405.72	736057.85	N 32 3 58.50	E 103 42 17.04
10452.00	0.22	198.63	10451.13	-0.59	-0.74	-121.82	0.33	388406.03	736057.25	N 32 3 58.50	E 103 42 17.04
10546.00	0.31	158.42	10545.13	-1.00	-1.15	-130.04	0.10	388405.32	736057.87	N 32 3 58.49	E 103 42 17.04
10640.00	0.31	211.29	10639.12	-1.45	-1.61	-138.25	0.07	388404.86	736058.22	N 32 3 58.48	E 103 42 17.05
10734.00	0.49	246.59	10733.12	-1.83	-1.99	-146.75	0.32	388404.23	736058.72	N 32 3 58.48	E 103 42 17.05
10829.00	0.80	262.19	10828.11	-2.07	-2.24	-155.05	0.09	388403.83	736059.21	N 32 3 58.48	E 103 42 17.08
10923.00	0.88	262.63	10922.10	-2.39	-2.59	-163.42	0.24	388403.68	736059.70	N 32 3 58.48	E 103 42 17.12
11017.00	1.10	265.41	11016.09	-2.86	-3.09	-171.82	0.17	388403.04	736060.17	N 32 3 58.48	E 103 42 17.16
11111.00	1.28	269.50	11110.05	-3.46	-3.71	-180.25	0.11	388402.80	736060.67	N 32 3 58.47	E 103 42 17.12
11205.00	1.28	274.92	11204.05	-4.02	-4.29	-188.68	0.13	388402.66	736061.17	N 32 3 58.47	E 103 42 17.12
11294.00	1.28	272.41	11293.03	-4.58	-4.87	-197.15	0.11	388402.95	736061.67	N 32 3 58.46	E 103 42 17.16
11381.00	1.39	273.68	11380.02	-5.16	-5.45	-205.62	0.17	388403.04	736062.17	N 32 3 58.46	E 103 42 17.16
11475.00	1.50	275.82	11474.01	-5.74	-6.04	-214.13	0.15	388403.70	736062.67	N 32 3 58.45	E 103 42 17.20
11569.00	1.61	277.93	11568.01	-6.32	-6.63	-222.64	0.15	388404.20	736063.17	N 32 3 58.45	E 103 42 17.20
11663.50	1.63	280.18	11662.50	-6.90	-7.21	-231.15	0.15	388404.58	736063.67	N 32 3 58.44	E 103 42 17.24
11759.00	1.73	282.92	11758.01	-7.48	-7.80	-240.66	0.15	388405.00	736064.17	N 32 3 58.44	E 103 42 17.24
11855.00	1.85	285.66	11854.01	-8.06	-8.38	-250.18	0.15	388405.42	736064.67	N 32 3 58.44	E 103 42 17.24
11951.00	1.97	288.38	11950.01	-8.67	-9.00	-259.70	0.15	388405.84	736065.17	N 32 3 58.44	E 103 42 17.24
12047.00	2.09	291.10	12046.01	-9.28	-9.61	-269.22	0.15	388406.26	736065.67	N 32 3 58.44	E 103 42 17.24
12143.00	2.21	293.81	12142.01	-9.89	-10.22	-278.73	0.15	388406.68	736066.17	N 32 3 58.44	E 103 42 17.24
12239.00	2.33	296.52	12238.01	-10.50	-10.83	-288.24	0.15	388407.10	736066.67	N 32 3 58.44	E 103 42 17.24
12335.00	2.45	300.22	12334.01	-11.11	-11.44	-297.75	0.15	388407.52	736067.17	N 32 3 58.44	E 103 42 17.24
12431.00	2.57	303.93	12430.01	-11.72	-12.05	-307.26	0.15	388407.94	736067.67	N 32 3 58.44	E 103 42 17.24
12527.00	2.69	307.64	12526.01	-12.33	-12.66	-316.77	0.15	388408.36	736068.17	N 32 3 58.44	E 103 42 17.24
12623.00	2.81	311.35	12622.01	-12.94	-13.27	-326.28	0.15	388408.78	736068.67	N 32 3 58.44	E 103 42 17.24
12719.00	2.93	315.06	12718.01	-13.55	-13.88	-335.79	0.15	388409.20	736069.17	N 32 3 58.44	E 103 42 17.24
12815.00	3.05	318.77	12814.01	-14.16	-14.49	-345.30	0.15	388409.62	736069.67	N 32 3 58.44	E 103 42 17.24
12911.00	3.17	322.48	12910.01	-14.77	-15.10	-354.81	0.15	388410.04	736070.17	N 32 3 58.44	E 103 42 17.24
13007.00	3.29	326.19	13006.01	-15.38	-15.71	-364.32	0.15	388410.46	736070.67	N 32 3 58.44	E 103 42 17.24
13103.00	3.41	329.90	13102.01	-15.99	-16.32	-373.83	0.15	388410.88	736071.17	N 32 3 58.44	E 103 42 17.24
13199.00	3.53	333.61	13198.01	-16.60	-16.93	-383.34	0.15	388411.30	736071.67	N 32 3 58.44	E 103 42 17.24
13295.00	3.65	337.32	13294.01	-17.21	-17.54	-392.85	0.15	388411.72	736072.17	N 32 3 58.44	E 103 42 17.24
13391.00	3.77	341.03	13390.01	-17.82	-18.15	-402.36	0.15	388412.14	736072.67	N 32 3 58.44	E 103 42 17.24
13487.00	3.89	344.74	13486.01	-18.43	-18.76	-411.87	0.15	388412.56	736073.17	N 32 3 58.44	E 103 42 17.24
13583.00	4.01	348.45	13582.01	-19.04	-19.37	-421.38	0.15	388412.98	736073.67	N 32 3 58.44	E 103 42 17.24
13679.00	4.13	352.16	13678.01	-19.65	-19.98	-430.89	0.15	388413.40	736074.17	N 32 3 58.44	E 103 42 17.24
13775.00	4.25	355.87	13774.01	-20.26	-20.59	-440.40	0.15	388413.82	736074.67	N 32 3 58.44	E 103 42 17.24
13871.00	4.37	359.58	13870.01	-20.87	-21.20	-449.91	0.15	388414.24	736075.17	N 32 3 58.44	E 103 42 17.24
13967.00	4.49	363.29	13966.01	-21.48	-21.81	-459.42	0.15	388414.66	736075.67	N 32 3 58.44	E 103 42 17.24
14063.00	4.61	367.00	14062.01	-22.09	-22.42	-468.93	0.15	388415.08	736076.17	N 32 3 58.44	E 103 42 17.24
14159.00	4.73	370.71	14158.01	-22.70	-23.03	-478.44	0.15	388415.50	736076.67	N 32 3 58.44	E 103 42 17.24
14255.00	4.85	374.42	14254.01	-23.31	-23.64	-487.95	0.15	388415.92	736077.17	N 32 3 58.44	E 103 42 17.24
14351.00	4.97	378.13	14350.01	-23.92	-24.25	-497.46	0.15	388416.34	736077.67	N 32 3 58.44	E 103 42 17.24
14447.00	5.09	381.84	14446.01	-24.53	-24.86	-506.97	0.15	388416.76	736078.17	N 32 3 58.44	E 103 42 17.24
14543.00	5.21	385.55	14542.01	-25.14	-25.47	-516.48	0.15	388417.18	736078.67	N 32 3 58.44	E 103 42 17.24
14639.00	5.33	389.26	14638.01	-25.75	-26.08	-525.99	0.15	388417.60	736079.17	N 32 3 58.44	E 103 42 17.24
14735.00	5.45	392.97	14734.01	-26.36	-26.69	-535.50	0.15	388418.02	736079.67	N 32 3 58.44	E 103 42 17.24
14831.00	5.57	396.68	14830.01	-26.97	-27.30	-545.01	0.15	388418.44	736080.17	N 32 3 58.44	E 103 42 17.24
14927.00	5.69	400.39	14926.01	-27.58	-27.91	-554.52	0.15	388418.86	736080.67	N 32 3 58.44	E 103 42 17.24
15023.00	5.81	404.10	15022.01	-28.19	-28.52	-564.03	0.15	388419.28	736081.17	N 32 3 58.44	E 103 42 17.24
15119.00	5.93	407.81	15118.01	-28.80	-29.13	-573.54	0.15	388419.70	736081.67	N 32 3 58.44	E 103 42 17.24
15215.00	6.05	4									

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 ° ' ")
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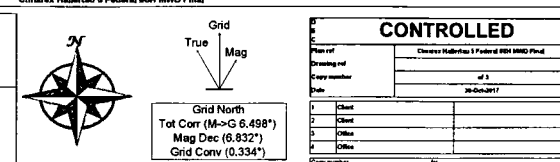
Survey Type: Def Survey

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

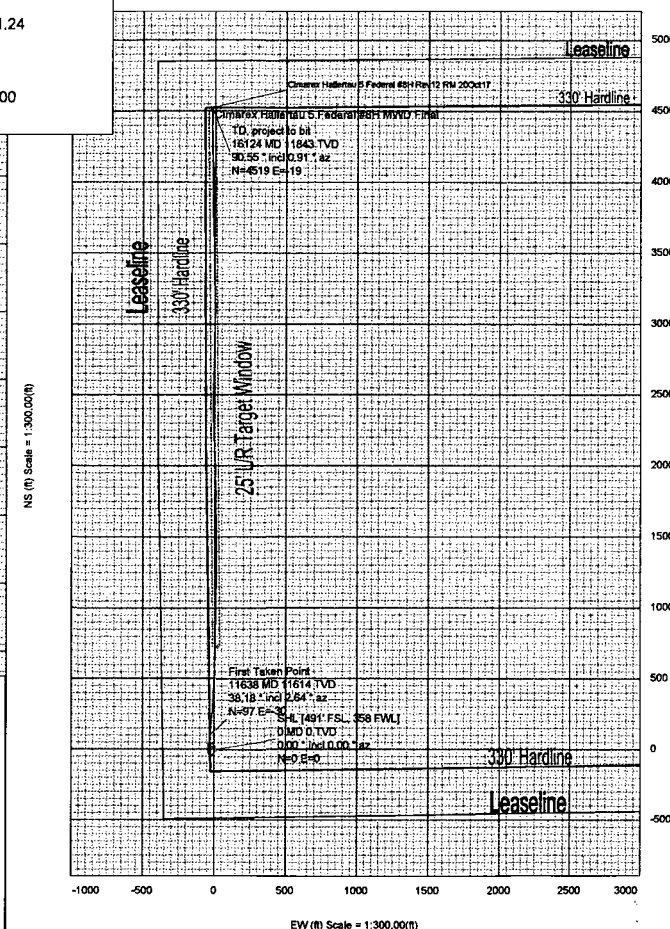
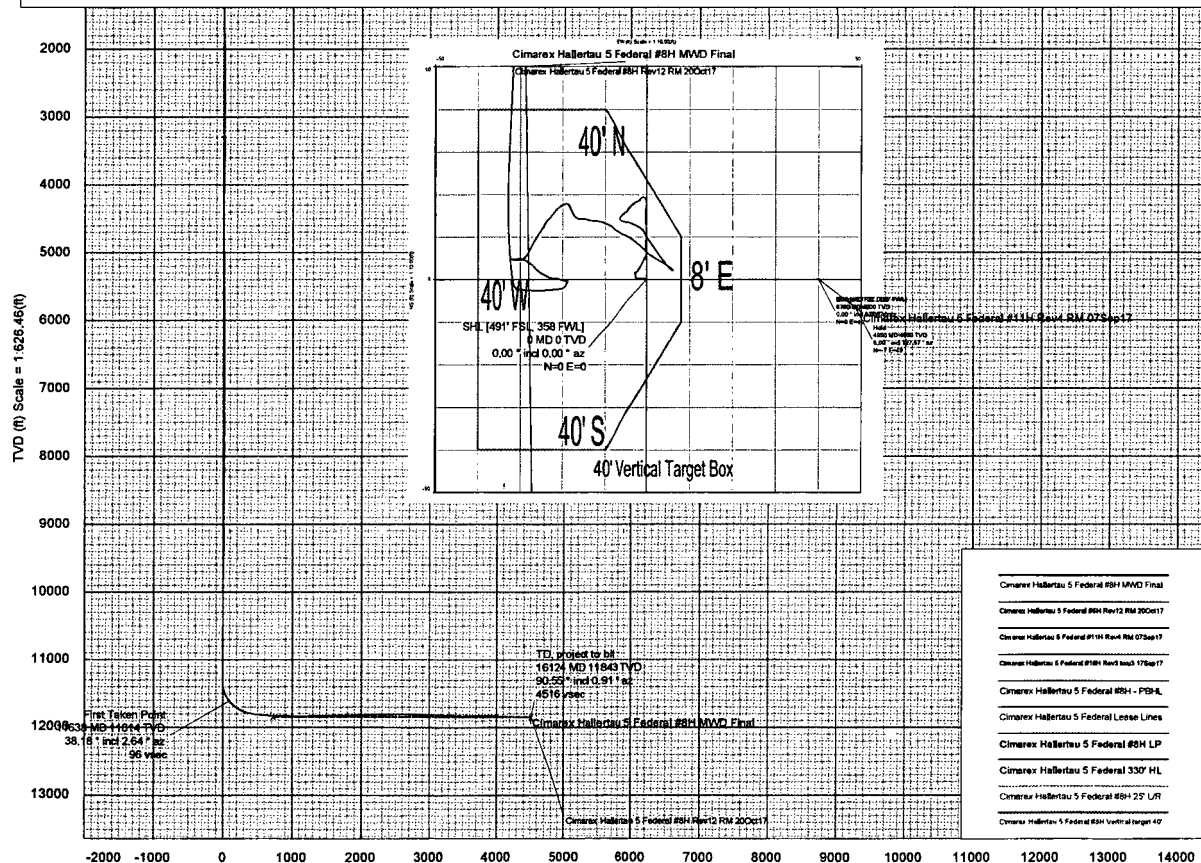
Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	1	0.000	25.000	1/98.425	30.000	30.000	NAL_MWD_PLUS_0.5_DEG- Depth Only	Original Borehole / Cimarex Hallertau 5 Federal #8H MWD Final
	1	25.000	25.000	Act Stns	30.000	30.000	NAL_MWD_PLUS_0.5_DEG- Depth Only	Original Borehole / Cimarex Hallertau 5 Federal #8H MWD Final
	1	25.000	16124.000	Act Stns	30.000	30.000	NAL_MWD_PLUS_0.5_DEG	Original Borehole / Cimarex Hallertau 5 Federal #8H MWD

Borehole: Original Borehole		Well: Cimarex Hallertau 5 Federal #8H		Field: NM Lea County (NAD 83)		Structure: Cimarex Hallertau 5 Federal #8H	
Gravity & Magnetic Parameters		Surface Location		Magnetic Parameters		TVD Ref: RKB(2296.7ft above MSL)	
Model: HDGM 2017	Dip: 69.738°	Date: 18-Oct-2017	Lat: N 32 3 58.60	North: 389406.477RUS	Grid Conv: 0.3338°	Slot: Cimarex Hallertau 5 Federal #8H	TVD Ref: RKB(2296.7ft above MSL)
MagDec: 6.832°	FS: 47917.891nT	Gravity FS: 998.425mga (9.80665 Based)	Lon: W 103 42 16.83	Easting: 736076.977RUS	Scale Fact: 0.99996253	Plan: Cimarex Hallertau 5 Federal #8H MWD Final	

Critical Points								
Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL [491' FSL, 358 FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
First Taken Point	11637.50	38.18	2.64	11613.78	96.88	96.64	-29.61	11.24
TD, project to bit	16124.00	90.55	0.91	11843.41	4518.86	4518.86	-18.90	0.00



CONTROLLED	
Plan of	Cimarex Hallertau 5 Federal #8H MWD Final
Drawing ref	
Copy number	1 of 1
Date	20-Oct-2017
1 Client	
2 Client	
3 Office	
4 Office	
Copy number	1 of 1



- Cimarex Hallertau 5 Federal #8H MWD Final
- Cimarex Hallertau 5 Federal #8H Rev12 RM 20Oct17
- Cimarex Hallertau 5 Federal #8H Rev11 RM 07Sep17
- Cimarex Hallertau 5 Federal #8H Rev10 RM 17Sep17
- Cimarex Hallertau 5 Federal #8H - PDR-L
- Cimarex Hallertau 5 Federal Lease Lines
- Cimarex Hallertau 5 Federal #8H LP
- Cimarex Hallertau 5 Federal 330' HL
- Cimarex Hallertau 5 Federal #8H 25' LR
- Cimarex Hallertau 5 Federal #8H Vertical target 40'