

30-025-43304



Cimarex Hallertau 5 Federal #10H MWD Final Survey Geodetic Report

(Def Survey)

Report Date: January 18, 2018 - 04:28 PM
Client: Cimarex
Field: NM Lea County (NAD 83)
Structure / Slot: Cimarex Hallertau 5 Federal #10H / Cimarex Hallertau 5 Federal #10H
Well: Cimarex Hallertau 5 Federal #10H
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Hallertau 5 Federal #10H MWD Final
Survey Date: October 16, 2017
Tort / AHD / DDI / ERD Ratio: 229.533 * / 5019.176 ft / 6.200 / 0.421
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 3' 56.93508", W 103° 42' 0.26477"
Location Grid N/E Y/X: N 388256.690 ftUS, E 737501.880 ftUS
CRS Grid Convergence Angle: 0.3362 *
Grid Scale Factor: 0.99995316
Version / Patch: 2.10.696.0
Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 359.460 * (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3296.500 ft above MSL
Seabed / Ground Elevation: 3272.500 ft above MSL
Magnetic Declination: 6.833 *
Total Gravity Field Strength: 998.4256mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 47917.291 nT
Magnetic Dip Angle: 59.735 *
Declination Date: October 16, 2017
Magnetic Declination Model: HDGM 2017
North Reference: Grid North
Grid Convergence Used: 0.3362 *
Total Corr Mag North->Grid North: 6.4966 *
Local Coord Referenced To: Structure Reference Point

HOBBS CCD
MAY 23 2018
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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 [318' FSL, 1782' FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	388256.69	737501.88	N 32 3 56.94	W 103 42 0.26
	249.00	0.64	144.37	248.99	-1.14	-1.13	0.81	0.26	388255.56	737502.69	N 32 3 56.92	W 103 42 0.26
	310.00	0.58	157.73	309.99	-1.70	-1.69	1.13	0.25	388255.00	737503.01	N 32 3 56.92	W 103 42 0.25
	401.00	0.78	161.49	400.98	-2.72	-2.71	1.50	0.23	388253.98	737503.38	N 32 3 56.91	W 103 42 0.25
	492.00	0.83	157.31	491.98	-3.92	-3.90	1.95	0.08	388252.79	737503.83	N 32 3 56.90	W 103 42 0.24
	582.00	1.36	146.48	581.96	-5.42	-5.39	2.79	0.63	388251.30	737504.67	N 32 3 56.88	W 103 42 0.23
	673.00	1.16	143.81	672.94	-7.07	-7.04	3.93	0.23	388249.65	737505.81	N 32 3 56.87	W 103 42 0.22
	764.00	0.70	160.12	763.93	-8.35	-8.30	4.66	0.58	388248.39	737506.54	N 32 3 56.85	W 103 42 0.21
	854.00	0.19	35.83	853.92	-8.75	-8.70	4.94	0.91	388247.99	737506.82	N 32 3 56.85	W 103 42 0.21
	944.00	0.83	321.31	943.92	-8.11	-8.07	4.62	0.89	388246.62	737506.50	N 32 3 56.85	W 103 42 0.21
	1033.00	1.14	312.13	1032.91	-7.01	-6.97	3.56	0.39	388249.72	737505.44	N 32 3 56.87	W 103 42 0.22
	1123.00	1.04	308.84	1122.89	-5.88	-5.86	2.26	0.13	388250.83	737504.14	N 32 3 56.88	W 103 42 0.24
	1309.00	1.01	351.18	1308.86	-3.19	-3.18	0.69	0.40	388253.51	737502.57	N 32 3 56.90	W 103 42 0.26
	1405.00	1.27	235.35	1404.85	-2.95	-2.95	-0.31	2.02	388253.74	737501.57	N 32 3 56.91	W 103 42 0.27
	1499.00	1.38	228.95	1498.83	-4.27	-4.29	-2.03	0.20	388252.40	737499.85	N 32 3 56.89	W 103 42 0.29
	1593.00	0.86	185.96	1592.81	-5.70	-5.73	-2.95	1.01	388250.96	737498.93	N 32 3 56.88	W 103 42 0.30
	1686.00	1.01	152.31	1685.80	-7.13	-7.15	-2.64	0.60	388249.54	737499.24	N 32 3 56.86	W 103 42 0.30
	1781.00	0.96	156.37	1780.79	-8.60	-8.62	-1.94	0.09	388248.07	737499.94	N 32 3 56.85	W 103 42 0.29
	1875.00	1.06	154.10	1874.77	-10.11	-10.12	-1.24	0.11	388246.57	737500.64	N 32 3 56.83	W 103 42 0.28
	1969.00	1.12	150.36	1968.75	-11.70	-11.71	-0.41	0.10	388244.99	737501.47	N 32 3 56.82	W 103 42 0.27
	2064.00	0.47	128.67	2063.74	-12.76	-12.76	0.36	0.74	388243.93	737502.24	N 32 3 56.81	W 103 42 0.26
	2158.00	0.75	45.77	2157.74	-12.58	-12.57	1.10	0.89	388244.12	737502.98	N 32 3 56.81	W 103 42 0.25
	2253.00	1.35	47.51	2252.72	-11.40	-11.38	2.37	0.63	388245.31	737504.25	N 32 3 56.82	W 103 42 0.24
	2348.00	1.42	8.63	2347.70	-9.49	-9.46	3.37	0.97	388247.23	737505.25	N 32 3 56.84	W 103 42 0.23
	2442.00	1.69	350.44	2441.66	-6.81	-6.78	3.29	0.74	388249.91	737505.17	N 32 3 56.87	W 103 42 0.23
	2536.00	1.90	349.68	2535.61	-3.74	-3.72	2.75	0.03	388252.97	737504.63	N 32 3 56.90	W 103 42 0.23
	2630.00	1.91	343.92	2629.56	-0.70	-0.68	2.04	0.20	388256.01	737503.92	N 32 3 56.93	W 103 42 0.24
	2725.00	0.89	325.75	2724.53	1.44	1.45	1.19	1.16	388258.14	737503.07	N 32 3 56.95	W 103 42 0.25
	2819.00	0.44	274.74	2818.52	2.08	2.09	0.42	0.75	388258.78	737502.30	N 32 3 56.96	W 103 42 0.26
	2913.00	0.44	286.91	2912.52	2.22	2.22	-0.29	0.10	388258.91	737501.59	N 32 3 56.96	W 103 42 0.27
	3007.00	0.44	264.82	3006.52	2.30	2.29	-0.99	0.18	388258.98	737500.89	N 32 3 56.96	W 103 42 0.28
	3103.00	0.43	271.72	3102.51	2.29	2.27	-1.72	0.06	388258.96	737500.16	N 32 3 56.96	W 103 42 0.28
	3197.00	0.41	262.41	3196.51	2.26	2.24	-2.41	0.08	388258.93	737499.47	N 32 3 56.96	W 103 42 0.29
	3292.00	0.29	271.18	3291.51	2.23	2.20	-2.99	0.14	388258.89	737498.90	N 32 3 56.96	W 103 42 0.30
	3386.00	0.39	26.54	3385.51	2.52	2.49	-3.08	0.61	388259.18	737498.80	N 32 3 56.96	W 103 42 0.30
	3481.00	0.07	29.14	3480.51	2.86	2.83	-2.91	0.34	388259.52	737498.97	N 32 3 56.96	W 103 42 0.30
	3576.00	0.04	341.83	3575.51	2.94	2.91	-2.89	0.05	388259.60	737498.99	N 32 3 56.96	W 103 42 0.30
	3669.00	0.20	256.78	3668.51	2.93	2.90	-3.06	0.22	388259.59	737498.82	N 32 3 56.96	W 103 42 0.30
	3763.00	0.18	108.67	3762.51	2.85	2.82	-3.08	0.39	388259.51	737498.80	N 32 3 56.96	W 103 42 0.30
	3857.00	0.92	123.39	3856.50	2.38	2.36	-2.31	0.80	388259.05	737499.57	N 32 3 56.96	W 103 42 0.29
	3952.00	0.99	125.08	3951.49	1.47	1.47	-1.00	0.08	388258.16	737500.88	N 32 3 56.95	W 103 42 0.28
	4045.00	1.28	135.33	4044.47	0.26	0.26	0.39	0.38	388256.95	737502.27	N 32 3 56.94	W 103 42 0.26
	4139.00	2.06	137.41	4138.43	-1.75	-1.73	2.27	0.83	388254.96	737504.15	N 32 3 56.92	W 103 42 0.24
	4234.00	1.38	140.01	4233.39	-3.90	-3.86	4.16	0.72	388252.83	737506.04	N 32 3 56.90	W 103 42 0.22
	4329.00	0.76	137.44	4328.37	-5.25	-5.20	5.32	0.65	388251.49	737507.20	N 32 3 56.88	W 103 42 0.20
	4422.00	1.45	186.22	4421.35	-6.88	-6.82	5.61	1.19	388249.87	737507.49	N 32 3 56.87	W 103 42 0.20
	4517.00	2.80	202.40	4516.29	-10.21	-10.16	4.60	1.54	388246.53	737506.48	N 32 3 56.83	W 103 42 0.21
	4610.00	2.57	196.51	4609.18	-14.29	-14.26	3.14	0.39	388242.43	737505.02	N 32 3 56.79	W 103 42 0.23
	4704.00	3.15	211.64	4703.07	-18.49	-18.48	1.19	1.01	388238.21	737503.07	N 32 3 56.75	W 103 42 0.25
	4799.00	3.40	215.10	4797.91	-22.99	-23.01	-1.80	0.34	388233.68	737500.08	N 32 3 56.71	W 103 42 0.29
	4894.00	3.18	211.25	4892.76	-27.52	-27.57	-4.79	0.33	388229.12	737497.09	N 32 3 56.66	W 103 42 0.32
	4987.00	3.18	211.52	4985.61	-31.90	-31.97	-7.48	0.02	388224.72	737494.40	N 32 3 56.62	W 103 42 0.35
	5081.00	3.16	212.68	5079.47	-36.28	-36.37	-10.24	0.07	388220.32	737491.64	N 32 3 56.58	W 103 42 0.39
	5175.00	3.09	209.69	5173.33	-40.63	-40.76	-12.89	0.19	388215.94	737488.99	N 32 3 56.53	W 103 42 0.42
	5269.00	2.84	208.06	5267.20	-44.87	-45.01	-15.24	0.28	388211.68	737486.64	N 32 3 56.49	W 103 42 0.44
	5363.00	2.66	205.79	5361.10	-48.87	-49.03	-17.29	0.22	388207.66	737484.59	N 32 3 56.45	W 103 42 0.47
	5458.00	2.54	206.54	5456.00	-52.72	-52.90	-19.19	0.13	388203.79	737482.69	N 32 3 56.41	W 103 42 0.49
	5552.00	2.51	205.61	5549.91	-56.42	-56.62	-21.01	0.05	388200.07	737480.87	N 32 3 56.38	W 103 42 0.51
	5646.00	2.33	203.86	5643.82	-60.01	-60.22	-22.67	0.21	388196.47	737479.21	N 32 3 56.34	W 103 42 0.53
	5741.00	2.79	206.28	5738.73	-63.83	-64.06	-24.47	0.50	388192.63	737477.41	N 32 3 56.30	W 103 42 0.55
	5836.00	3.14	212.12	5833.60	-68.08	-68.34	-26.88	0.49	388188.36	737475.00	N 32 3 56.26	W 103 42 0.58
	5930.00	3.07	212.48	5927.46	-72.36	-72.64	-29.60	0.08	388184.05	737472.28	N 32 3 56.22	W 103 42 0.61
	6025.00	3.00	210.55	6022.33	-76.62	-76.93	-32.23	0.13	388179.76	737469.65	N 32 3 56.18	W 103 42 0.64
	6119.00	2.80	209.87	6116.21	-80.71	-81.04	-34.63	0.22	388175.66	737467.26	N 32 3 56.14	W 103 42 0.67
	6213.00	2.67	209.97	6210.10	-84.57	-84.93	-36.86	0.14	388171.77	737465.02	N 32 3 56.10	W 103 42 0.70

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 ° ' ")
	15032.00	91.01	358.08	11919.66	3147.17	3146.30	-107.09	2.20	391402.83	737394.79	N 32 4 28.07	W 103 42 1.29
	15126.00	89.33	358.42	11919.38	3241.14	3240.25	-109.96	1.82	391496.78	737391.92	N 32 4 29.00	W 103 42 1.32
	15220.00	89.89	359.16	11920.02	3335.13	3334.23	-111.95	0.99	391590.75	737389.94	N 32 4 29.93	W 103 42 1.34
	15314.00	84.50	355.96	11924.62	3428.92	3427.98	-115.94	6.67	391684.50	737385.95	N 32 4 30.86	W 103 42 1.38
	15408.00	91.79	356.48	11927.66	3522.66	3521.66	-122.13	7.77	391778.18	737379.76	N 32 4 31.79	W 103 42 1.44
	15502.00	92.80	358.68	11923.89	3616.53	3615.50	-126.09	2.57	391872.01	737375.79	N 32 4 32.72	W 103 42 1.48
	15596.00	88.99	358.30	11922.42	3710.48	3709.44	-128.57	4.07	391965.95	737373.32	N 32 4 33.65	W 103 42 1.51
	15690.00	89.83	356.65	11923.39	3804.42	3803.34	-132.71	1.97	392059.84	737369.18	N 32 4 34.58	W 103 42 1.55
	15784.00	91.18	359.38	11922.56	3898.37	3897.26	-135.97	3.24	392153.76	737365.92	N 32 4 35.51	W 103 42 1.58
	15878.00	94.09	3.64	11918.24	3992.18	3991.10	-133.50	5.48	392247.60	737368.39	N 32 4 36.44	W 103 42 1.54
	15972.00	91.85	4.82	11913.37	4085.72	4084.71	-126.57	2.69	392341.20	737375.31	N 32 4 37.36	W 103 42 1.46
	16066.00	89.33	3.09	11912.40	4179.42	4178.47	-120.09	3.25	392434.96	737381.80	N 32 4 38.29	W 103 42 1.38
	16160.00	91.01	1.69	11912.12	4273.29	4272.38	-116.17	2.33	392528.86	737385.72	N 32 4 39.22	W 103 42 1.32
	16253.00	94.09	1.18	11907.99	4366.13	4365.25	-113.84	3.36	392621.73	737388.04	N 32 4 40.14	W 103 42 1.29
	16347.00	90.90	1.00	11903.89	4459.99	4459.13	-112.06	3.40	392715.60	737389.83	N 32 4 41.07	W 103 42 1.26
TD, project to bit	16394.00	90.90	1.00	11903.16	4506.97	4506.12	-111.24	0.00	392762.59	737390.65	N 32 4 41.53	W 103 42 1.25

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	24.000	1/98.425	30.000	30.000	NAL_MWD_IFR1-Depth Only	Original Borehole / Cimarex Hallertau 5 Federal #10H MWD Final
	1	24.000	24.000	Act Stns	30.000	30.000	NAL_MWD_IFR1-Depth Only	Original Borehole / Cimarex Hallertau 5 Federal #10H MWD Final
	1	24.000	16394.000	Act Stns	30.000	30.000	NAL_MWD_IFR1	Original Borehole / Cimarex Hallertau 5 Federal #10H MWD

Borehole: Original Borehole		Well: Cimarex Hallertau 5 Federal #10H		Field: NM Lea County (NAD 83)		Structure: Cimarex Hallertau 5 Federal #10H	
Gravity & Magnetic Parameters		Surface Location		NAD83 New Mexico State Plane, Eastern Zone, US Feet		Miscellaneous	
Model: HDGM 2017	Dip: 59.735°	Date: 16-Oct-2017	Lat: N 32 3 56.94	North: 388256.89RUS	Grid Conv: 0.3362°	Plan: Cimarex Hallertau 5 Federal #10H	TVD Ref: RKB(3298.5ft above MSL)
MagDec: 8.833°	FS: 47917.291nT	Gravity FS: 998.426mgal (9.80665 Based)	Lon: W 103 42 0.28	Easting: 737501.88RUS	Scale Fact: 0.99995316		

Critical Points								
Critical Point	MD	INCL	AZIM	TVD	VSEC	N(°)/S(°)	E(°)/W(°)	DLS
SHL [318' FSL, 1782' FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
First Legal Take Point	11869.40	55.78	4.44	11791.88	11.49	10.41	-114.74	11.54
TD, project to bit	16394.00	90.90	1.00	11903.16	4506.97	4506.12	-111.24	0.00

CONTROLLED

Plan of
Drawing of
Copy number
Date

Grid North
Tot Corr (M-G 6.497")
Mag Dec (8.833°)
Grid Conv (0.336°)

1 Client
2 Client
3 Office
4 Office

Copy number

