

Chisholm Minis 1 Fed Com WCA 16H MWD 0' to 19030' MD Survey

Geodetic Report
(Def Survey)

HOBBS OCD

DEC 31 2019

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Report Date: September 18, 2019 - 12:58 PM
 Client: Chisholm
 Field: NM Lea County (NAD 83)
 Structure / Slot: Chisholm Minis 1 Fed Com WCA 16H / New Slot
 Well: Chisholm Minis 1 Fed Com WCA 16H
 Borehole: Original Borehole
 UWI / API#: Unknown / Unknown
 Survey Name: Chisholm Minis 1 Fed Com WCA 16H MWD 0' to 19030' MD
 Survey Date: August 22, 2019
 Tort / AHD / DDI / ERD Ratio: 234.438' / 8639.740' R / 0.522 / 0.745
 Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
 Location Lat / Long: N 32° 31' 17.88315", W 103° 37' 25.58585"
 Location Grid N/E Y/X: N 554209.100 RUS, E 760040.800 RUS
 CRS Grid Convergence Angle: 0.3815°
 Grid Scale Factor: 0.99996387
 Version / Patch: 2.10.760.0

Survey / DLS Computation: Minimum Curvature / Lubinski
 Vertical Section Azimuth: 179.570° (Grid North)
 Vertical Section Origin: 0.000 R, 0.000 N
 TVD Reference Datum: RKB
 TVD Reference Elevation: 3753.000 ft above MSL
 Seabed / Ground Elevation: 3722.000 ft above MSL
 Magnetic Declination: 6.877°
 Total Gravity Field Strength: 988.481mgm (8.0665 Based)
 Gravity Model: GARM
 Total Magnetic Field Strength: 48135.274 nT
 Magnetic Dip Angle: 60.370°
 Declination Date: July 30, 2019
 Magnetic Declination Model: HDGM 2019
 North Reference: Grid North
 Grid Convergence Used: 0.3815°
 Total Corr Mag North-Grid: 6.2955°
 Local Coord Referenced To: Well Head

Comments	MD (ft)	Incl (°)	Azim Grd (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (ft/100m)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")	Closure (ft)	Closure Azimuth (°)
SHL	0.00	0.00	173.04	0.00	0.00	0.00	0.00	N/A	554209.10	760040.80	N 32 31 17.68 W 103 37 25.59		0.00	0.00
Begin SLB	190.00	0.45	177.45	190.00	0.75	-0.75	0.03	0.24	554208.35	760040.63	N 32 31 17.68 W 103 37 25.59		0.75	177.45
MWD Surveys														
	284.00	0.83	197.14	283.89	1.81	-1.81	-0.10	0.27	554207.49	760040.50	N 32 31 17.67 W 103 37 25.59		1.81	183.85
	378.00	0.58	201.53	378.89	2.55	-2.55	-0.43	0.07	554206.55	760040.17	N 32 31 17.68 W 103 37 25.59		2.59	189.82
	473.00	0.83	170.55	472.88	3.98	-3.87	-0.50	0.48	554205.43	760040.10	N 32 31 17.65 W 103 37 25.59		3.70	187.70
	568.00	0.96	178.08	567.97	5.14	-5.14	-0.33	0.16	554203.96	760040.27	N 32 31 17.63 W 103 37 25.59		5.15	183.66
	634.00	0.80	185.42	633.96	6.15	-6.15	-0.33	0.32	554202.85	760040.27	N 32 31 17.62 W 103 37 25.59		6.16	183.11
	728.00	0.89	173.89	727.95	7.53	-7.53	-0.32	0.20	554201.57	760040.28	N 32 31 17.61 W 103 37 25.59		7.54	182.42
	823.00	1.25	187.72	822.94	9.29	-9.29	-0.38	0.48	554199.81	760040.22	N 32 31 17.59 W 103 37 25.59		9.30	182.34
	917.00	1.32	178.29	916.91	11.38	-11.38	-0.45	0.28	554197.71	760040.15	N 32 31 17.57 W 103 37 25.59		11.40	182.25
	1012.00	1.25	173.79	1011.89	13.51	-13.51	-0.26	0.09	554195.59	760040.34	N 32 31 17.55 W 103 37 25.59		13.51	181.12
	1106.00	1.41	174.08	1105.88	15.68	-15.68	-0.03	0.17	554193.42	760040.57	N 32 31 17.53 W 103 37 25.59		15.68	180.12
	1201.00	1.29	142.22	1200.84	17.69	-17.69	0.74	0.79	554191.41	760041.34	N 32 31 17.51 W 103 37 25.58		17.70	177.60
	1296.00	1.18	161.35	1295.82	19.47	-19.46	1.71	0.45	554189.64	760042.31	N 32 31 17.49 W 103 37 25.57		19.53	174.98
	1390.00	1.26	153.81	1389.79	21.32	-21.30	2.48	0.19	554187.80	760043.08	N 32 31 17.47 W 103 37 25.56		21.45	173.37
	1485.00	1.58	138.48	1484.77	23.21	-23.18	3.83	0.55	554185.92	760044.43	N 32 31 17.45 W 103 37 25.54		23.49	170.62
	1555.00	2.06	123.40	1554.73	24.80	-24.58	5.53	0.92	554184.54	760046.13	N 32 31 17.44 W 103 37 25.52		25.18	167.30
	1675.00	2.39	114.28	1674.64	26.85	-26.78	6.62	0.40	554182.32	760050.22	N 32 31 17.42 W 103 37 25.48		28.45	160.25
	1768.00	4.37	103.25	1768.47	28.52	-28.41	14.88	2.21	554180.70	760055.49	N 32 31 17.40 W 103 37 25.41		32.07	152.34
	1864.00	6.18	100.11	1863.07	30.31	-30.13	23.45	1.93	554178.87	760064.05	N 32 31 17.38 W 103 37 25.31		38.18	142.11
	1958.00	6.03	99.62	1956.53	32.09	-31.85	33.30	0.17	554177.26	760073.89	N 32 31 17.37 W 103 37 25.20		46.07	133.72
	2052.00	6.58	98.92	2049.97	32.71	-32.38	43.53	1.58	554176.72	760084.12	N 32 31 17.36 W 103 37 25.08		54.25	126.65
	2147.00	7.59	77.48	2144.29	31.14	-30.73	55.07	0.63	554176.37	760095.67	N 32 31 17.38 W 103 37 24.95		63.06	119.18
	2240.00	7.55	76.75	2236.44	28.50	-28.00	67.01	0.11	554181.10	760107.81	N 32 31 17.40 W 103 37 24.81		72.63	112.68
	2335.00	7.68	71.41	2330.81	25.14	-24.55	78.09	0.75	554184.55	760119.89	N 32 31 17.44 W 103 37 24.66		82.81	107.24
	2430.00	7.87	66.14	2424.74	20.58	-19.90	91.04	0.78	554189.20	760131.83	N 32 31 17.48 W 103 37 24.52		93.19	102.33
	2524.00	8.18	66.67	2517.82	15.42	-14.65	103.06	0.34	554194.45	760143.68	N 32 31 17.53 W 103 37 24.38		104.10	98.09
	2618.00	8.51	66.66	2611.81	10.06	-9.19	115.72	0.35	554199.91	760156.32	N 32 31 17.58 W 103 37 24.24		116.09	94.54
	2713.00	8.88	67.86	2704.73	4.68	-3.70	128.83	0.44	554205.40	760168.43	N 32 31 17.64 W 103 37 24.08		128.88	91.84
	2808.00	8.88	68.08	2798.58	-1.00	2.07	142.40	0.31	554211.17	760182.98	N 32 31 17.69 W 103 37 23.92		142.41	89.17
	2902.00	9.91	67.13	2891.43	-6.71	7.81	155.83	0.19	554216.98	760196.41	N 32 31 17.75 W 103 37 23.77		156.01	87.11
	2997.00	9.10	67.15	2988.28	-12.38	13.85	169.51	0.20	554222.75	760210.11	N 32 31 17.81 W 103 37 23.61		170.06	85.40
	3092.00	8.80	68.70	3079.11	-17.83	19.21	183.21	0.41	554228.31	760223.80	N 32 31 17.86 W 103 37 23.44		184.21	84.01
	3187.00	8.42	72.30	3173.04	-22.49	23.96	196.60	0.69	554233.06	760237.20	N 32 31 17.91 W 103 37 23.29		198.06	83.05
	3281.00	7.90	71.88	3268.08	-28.49	28.06	209.30	0.58	554237.18	760249.89	N 32 31 17.95 W 103 37 23.14		211.17	82.36
	3375.00	7.74	71.18	3359.25	-30.35	32.01	221.12	0.60	554241.11	760261.72	N 32 31 17.99 W 103 37 23.00		223.43	81.78
	3470.00	6.97	68.24	3453.53	-34.21	35.86	232.10	0.65	554245.06	760272.69	N 32 31 18.02 W 103 37 22.87		234.87	81.18
	3564.00	6.48	68.95	3546.91	-38.00	39.82	242.22	0.33	554248.82	760282.81	N 32 31 18.06 W 103 37 22.75		245.47	80.86
	3659.00	6.26	68.28	3641.32	-41.76	43.66	252.02	0.22	554252.78	760292.81	N 32 31 18.10 W 103 37 22.64		255.77	80.17
	3753.00	5.89	66.33	3734.81	-45.46	47.42	261.05	0.64	554256.52	760301.64	N 32 31 18.14 W 103 37 22.53		265.32	79.70
	3848.00	5.41	67.02	3829.37	-49.04	51.08	269.48	0.30	554260.18	760310.07	N 32 31 18.17 W 103 37 22.43		274.28	79.27
	3942.00	5.44	65.10	3922.95	-52.58	54.67	277.60	0.20	554263.77	760318.19	N 32 31 18.21 W 103 37 22.34		282.94	78.78
	4037.00	5.79	59.39	4017.12	-56.86	58.01	285.81	0.69	554268.10	760326.40	N 32 31 18.25 W 103 37 22.24		291.84	78.16
	4131.00	5.32	60.09	4111.05	-61.39	63.59	293.67	0.51	554272.69	760334.26	N 32 31 18.29 W 103 37 22.15		300.48	77.78
	4225.00	5.68	60.98	4204.82	-65.78	68.05	301.50	0.39	554277.14	760342.09	N 32 31 18.34 W 103 37 22.06		309.09	77.28
	4320.00	6.28	65.47	4299.10	-70.18	72.51	310.33	0.82	554281.60	760350.82	N 32 31 18.38 W 103 37 21.96		318.69	76.85
	4414.00	5.90	62.77	4392.57	-74.45	76.85	319.30	0.51	554285.95	760358.89	N 32 31 18.42 W 103 37 21.85		328.42	76.47
	4509.00	5.53	64.56	4487.10	-78.59	81.05	327.77	0.43	554290.15	760368.38	N 32 31 18.46 W 103 37 21.75		337.65	76.11
	4603.00	5.45	66.23	4580.87	-82.27	84.80	335.95	0.19	554293.89	760376.54	N 32 31 18.50 W 103 37 21.68		346.49	75.83
	4698.00	5.45	68.96	4675.24	-85.57	88.16	344.32	0.37	554297.26	760384.91	N 32 31 18.53 W 103 37 21.58		355.43	75.64
	4792.00	5.21	70.38	4768.63	-88.48	91.12	352.53	0.26	554300.22	760393.12	N 32 31 18.56 W 103 37 21.48		364.12	75.51
	4887.00	5.20	70.43	4863.44	-91.30	94.01	360.85	0.01	554303.11	760401.24	N 32 31 18.59 W 103 37 21.37		372.70	75.39
	4981.00	5.35	70.59	4957.04	-94.13	96.90	368.80	0.16	554305.99	760409.39	N 32 31 18.62 W 103 37 21.27		381.32	75.28
	5076.00	5.21	69.25	5051.84	-97.08	99.90	377.01	0.20	554308.99	760417.60	N 32 31 18.65 W 103 37 21.18		390.02	75.16
	5170.00	4.95	69.88	5145.28	-99.96	102.85	384.04	0.11	554311.85	760425.52	N 32 31 18.68 W 103 37 21.08		398.44	75.04
	5265.00	4.95	68.49	5238.89	-102.87	105.82	392.73	0.22	554314.91	760433.32	N 32 31 18.70 W 103 37 20.99		406.74	74.92
	5359.00	5.00	67.01	5333.54	-105.80	108.90	400.28	0.15	554318.00	760441.86	N 32 31 18.73 W 103 37 20.90		414.83	74.78
	5454.00	4.99	66.31	5428.17	-108.12	112.18	407.87	0.07	554321.28	760448.45	N 32 31 18.77 W 103 37 20.81		423.02	74.62
	5548.00	4.74	66.11	5521.84	-112.28	115.40	415.18	0.27	554324.48	760455.75	N 32 31 18.80 W 103 37 20.73		430.90	74.47
	5643.00	4.53	66.75	5616.53	-115.30	118.47	422.20	0.23	554327.56	760462.78	N 32 31 18.83 W 103 37 20.65		438.51	74.33
	5734.00	4.24	66.83	5707.29	-117.69	121.21	428.80	0.32	554330.30	760469.18	N 32 31 18.85 W 103 37 20.57		445.40	74.21
	5828.00	3.84	66.37	5698.08	-122.08	125.68	436.69	0.27	554334.47	760476.27	N 32 31 18.89 W 103 37 20.45		456.25	74.05
	5924.00	3.80	65.15	5956.68	-124.57	127.91	444.58	0.24	554337.00	760485.16	N 32 31 18.92 W 103 37 20.38		462.81	73.95
	6078.00	3.91	62.79	6050.44	-127.33	130.72	450.33	0.17	554339.81	760490.91	N 32 31 18.95 W 103 37 20.32		468.92	73.81
	6173.00	3.93												

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DL8 (ft/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' '')	Longitude (E/W ° ' '')	Closure (ft)	Closure Azimuth (°)
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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)	EGU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	1	0.000	31.000	1/88.425	30.000	30.000	NAL_MWD_1.0_DEG-Depth Only	Original Borehole / Chisholm Minis 1 Fed Com WCA 16H MWD 0' to 19030' MD
	1	31.000	31.000	Act Strs	30.000	30.000	NAL_MWD_1.0_DEG-Depth Only	Original Borehole / Chisholm Minis 1 Fed Com WCA 16H MWD 0' to 19030' MD
	1	31.000	19030.000	Act Strs	30.000	30.000	NAL_MWD_1.0_DEG	Original Borehole / Chisholm Minis 1 Fed Com WCA 16H

...Original Borehole\Chisholm Minis 1 Fed Com WCA 16H MWD 0' to 19030' MD