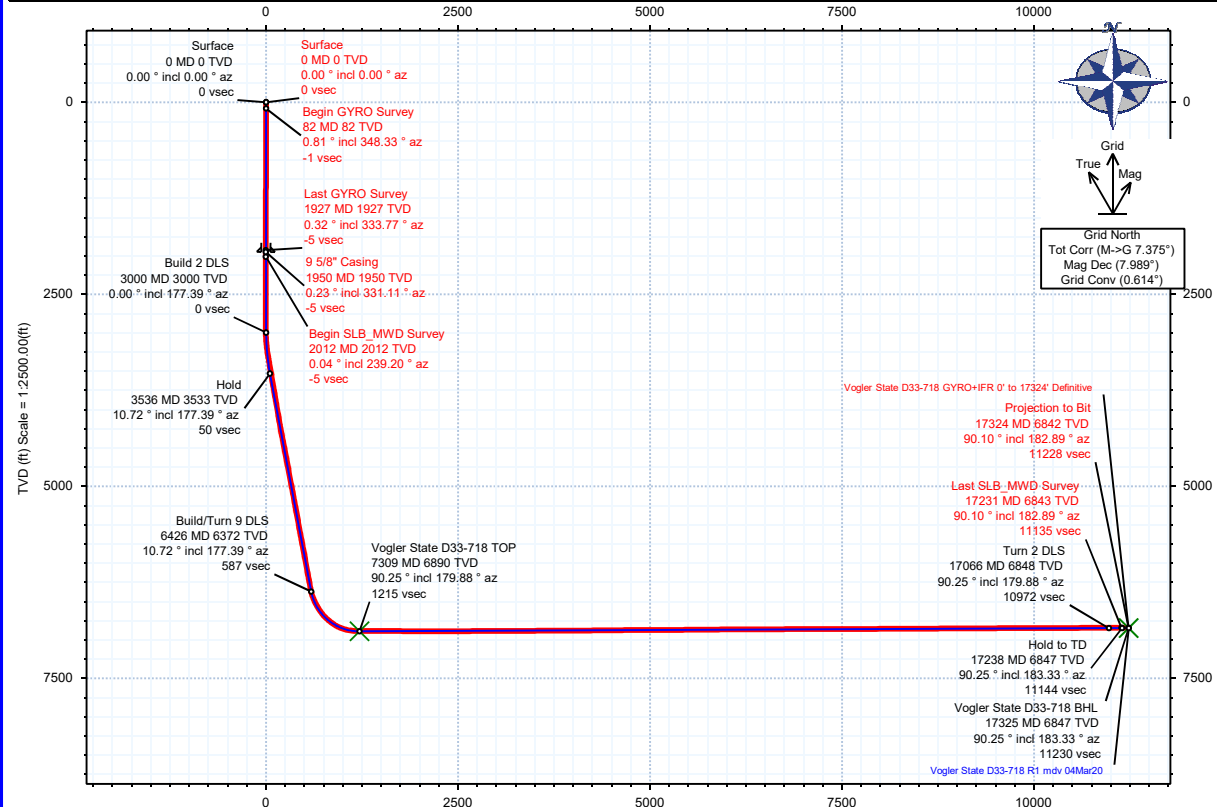


<b>Borehole:</b>	<b>Well:</b>	<b>Field:</b>	<b>Structure:</b>
Original Hole	Vogler State D33-718	CO, Weld County (NAD 83 NZ) - 2019	Noble 21-03N-64W (Vogler State D33 Pad)

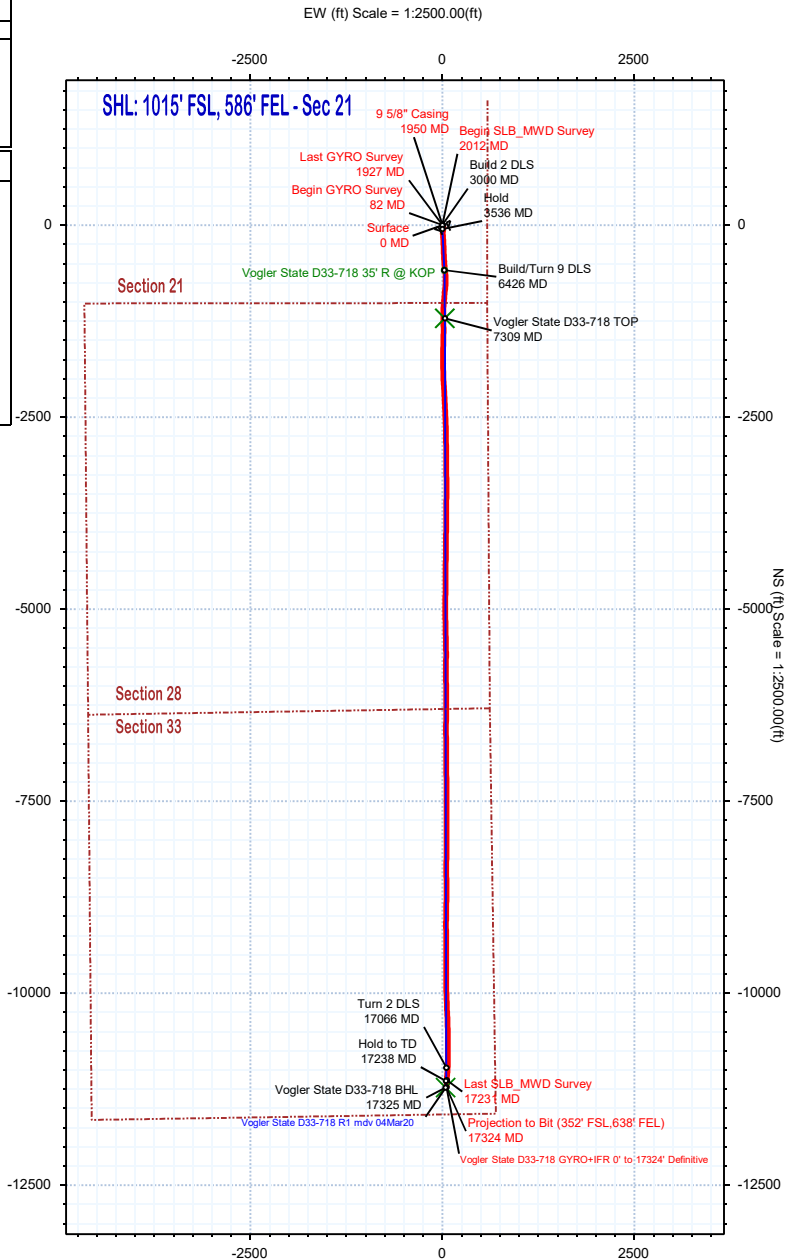
<b>Gravity &amp; Magnetic Parameters</b>	<b>Surface Location</b>	<b>NAD83 Colorado State Plane, Northern Zone, US Feet</b>	<b>Miscellaneous</b>
Model: Magvar IFR	Dip: 66.63°	Date: 06-Mar-2020	Slot: Vogler State D33-718
MagDec: 7.989°	FS: 51974nT	Gravity FS: 999.019mgn (9.80665 Based)	TVD Ref: KB 16.3ft(4835.3ft above MSL)
			Plan: Vogler State D33-718 GYRO+IFR 0' to 17324' Definitive

Surface Location		NAD83 Colorado State Plane, Northern Zone, US Feet		Miscellaneous	
North: 1319464.0238735	East: 3265615.23144933	Latitude: N 40 12 23.10	Longitude: W 104 32 56.39	VSec Azimuth: 179.78	
Target Description	Grid Coord	Local Coord			
Target Name	Latitude	Longitude	North	East	Depth
Vogler State D33 Pad Sec 28-33	N 40 12 23.09	W 104 32 55.90	1319464.07	3265653.25	4835.30
Vogler State D33 Pad Sec 28-33 - CL	N 40 12 23.09	W 104 32 55.90	1319464.07	3265653.25	4835.30
Vogler State D33-718 35' R @ KOP	N 40 12 17.30	W 104 32 56.13	1318877.30	3265641.97	6371.98
Vogler State D33-718 BHL	N 40 10 32.13	W 104 32 57.39	1308234.60	3265657.96	6846.95
Vogler State D33-718 TOP	N 40 12 11.09	W 104 32 56.14	1318249.05	3265647.42	6890.30

Critical Points		Surface Location		NAD83 Colorado State Plane, Northern Zone, US Feet		Miscellaneous	
Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)
Surface	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin GYRO Survey	82.00	0.81	348.33	82.00	-0.57	0.57	-0.12
Last GYRO Survey	1927.00	0.32	333.77	1926.98	-4.60	4.60	-0.07
9 5/8" Casing	1950.00	0.23	331.11	1949.98	-4.70	4.70	-0.12
Begin SLB_MWD Survey	2012.00	0.04	239.20	2011.98	-4.80	4.80	-0.20
Last SLB_MWD Survey	17231.00	90.10	182.89	6842.51	11134.68	-11134.54	57.87
Projection to Bit (352' FSL,638' FEL)	17324.00	90.10	182.89	6842.35	11227.54	-11227.42	53.18



Vertical Section (ft) Azim = 179.78° Scale = 1:2500.00(ft) Origin = 0N/-S, 0E/-W



# Vogler State D33-718 GYRO+IFR 0' to 17324' Definitive Survey Geodetic Report (Def Survey)

**Report Date:** March 19, 2020 - 12:56 PM  
**Client:** Noble Energy  
**Field:** CO, Weld County (NAD 83 NZ) - 2019  
**Structure / Slot:** Noble 21-03N-64W (Vogler State D33 Pad) / Vogler State D33-718  
**Well:** Vogler State D33-718  
**Borehole:** Original Hole  
**UWI / API#:** Unknown / 05-123-48569  
**Survey Name:** Vogler State D33-718 GYRO+IFR 0' to 17324' Definitive  
**Survey Date:** March 09, 2020  
**Tort / AHD / DDI / ERD Ratio:** 221.531 ° / 11249.768 ft / 6.797 / 1.633  
**Coordinate Reference System:** NAD83 Colorado State Plane, Northern Zone, US Feet  
**Location Lat / Long:** N 40° 12' 23.09760", W 104° 32' 56.39136"  
**Location Grid N/E Y/X:** N 1319464.024 ftUS, E 3265615.231 ftUS  
**CRS Grid Convergence Angle:** 0.6145 °  
**Grid Scale Factor:** 0.99995714  
**Version / Patch:** 2.10.787.0

**Survey / DLS Computation:** Minimum Curvature / Lubinski  
**Vertical Section Azimuth:** 179.780 ° (Grid North)  
**Vertical Section Origin:** 0.000 ft, 0.000 ft  
**TVD Reference Datum:** KB 16.3ft  
**TVD Reference Elevation:** 4835.300 ft above MSL  
**Seabed / Ground Elevation:** 4819.000 ft above MSL  
**Magnetic Declination:** 7.989 °  
**Total Gravity Field Strength:** 999.0192mgn (9.80665 Based)  
**Gravity Model:** GARM  
**Total Magnetic Field Strength:** 51974.000 nT  
**Magnetic Dip Angle:** 66.630 °  
**Declination Date:** March 06, 2020  
**Magnetic Declination Model:** Magvar IFR  
**North Reference:** Grid North  
**Grid Convergence Used:** 0.6145 °  
**Total Corr Mag North->Grid North:** 7.3745 °  
**Local Coord Referenced To:** Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (°)	Longitude (°)
Surface	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	1319464.02	3265615.23	40.206416	-104.548998
Begin GYRO	82.00	0.81	348.33	82.00	-0.57	0.57	-0.12	0.99	1319464.59	3265615.11	40.206418	-104.548998
Survey	141.00	0.44	313.62	140.99	-1.13	1.13	-0.37	0.87	1319465.16	3265614.87	40.206419	-104.548999
	235.00	0.31	68.26	234.99	-1.48	1.48	-0.39	0.68	1319465.50	3265614.84	40.206420	-104.548999
	323.00	0.21	147.82	322.99	-1.43	1.43	-0.08	0.39	1319465.45	3265615.15	40.206420	-104.548998
	411.00	0.62	341.39	410.99	-1.74	1.74	-0.15	0.94	1319465.77	3265615.08	40.206421	-104.548998
	498.00	0.56	330.12	497.99	-2.56	2.56	-0.51	0.15	1319466.58	3265614.72	40.206423	-104.548999
	586.00	0.30	352.99	585.98	-3.16	3.16	-0.75	0.35	1319467.18	3265614.48	40.206425	-104.549000
	672.00	0.32	286.72	671.98	-3.45	3.45	-1.01	0.39	1319467.47	3265614.22	40.206426	-104.549001
	760.00	0.15	108.61	759.98	-3.49	3.48	-1.14	0.53	1319467.51	3265614.09	40.206426	-104.549002
	847.00	0.26	127.16	846.98	-3.33	3.33	-0.87	0.15	1319467.35	3265614.36	40.206425	-104.549001
	935.00	0.23	353.86	934.98	-3.39	3.38	-0.73	0.51	1319467.41	3265614.50	40.206425	-104.549000
	1022.00	0.32	73.33	1021.98	-3.63	3.63	-0.52	0.41	1319467.65	3265614.71	40.206426	-104.548999
	1109.00	0.17	70.78	1108.98	-3.74	3.74	-0.16	0.17	1319467.76	3265615.07	40.206426	-104.548998
	1197.00	0.14	54.61	1196.98	-3.84	3.84	0.05	0.06	1319467.87	3265615.28	40.206427	-104.548997
	1284.00	0.20	33.61	1283.98	-4.03	4.03	0.22	0.10	1319468.06	3265615.45	40.206427	-104.548997
	1371.00	0.12	22.01	1370.98	-4.24	4.24	0.34	0.10	1319468.27	3265615.57	40.206428	-104.548996
	1458.00	0.06	314.92	1457.98	-4.36	4.36	0.34	0.13	1319468.38	3265615.57	40.206428	-104.548996
	1546.00	0.10	344.46	1545.98	-4.47	4.47	0.28	0.06	1319468.49	3265615.52	40.206428	-104.548996
	1634.00	0.12	336.31	1633.98	-4.62	4.63	0.23	0.03	1319468.65	3265615.46	40.206429	-104.548997
	1721.00	0.15	273.75	1720.98	-4.72	4.72	0.08	0.16	1319468.74	3265615.31	40.206429	-104.548997
	1809.00	0.18	175.45	1808.98	-4.59	4.59	-0.03	0.28	1319468.61	3265615.20	40.206429	-104.548998
	1896.00	0.07	346.57	1895.98	-4.50	4.50	-0.03	0.29	1319468.53	3265615.20	40.206428	-104.548998
Last GYRO	1927.00	0.32	333.77	1926.98	-4.60	4.60	-0.07	0.81	1319468.62	3265615.16	40.206429	-104.548998
Survey	1950.00	0.23	331.11	1949.98	-4.70	4.70	-0.12	0.38	1319468.72	3265615.11	40.206429	-104.548998
9 5/8" Casing	1950.00	0.23	331.11	1949.98	-4.70	4.70	-0.12	0.38	1319468.72	3265615.11	40.206429	-104.548998
Begin	2012.00	0.04	239.20	2011.98	-4.80	4.80	-0.20	0.38	1319468.82	3265615.03	40.206429	-104.548998
SLB_MWD	2100.00	0.10	43.62	2099.98	-4.84	4.84	-0.17	0.16	1319468.86	3265615.06	40.206429	-104.548998
Survey	2187.00	0.02	155.10	2186.98	-4.88	4.88	-0.12	0.13	1319468.90	3265615.12	40.206429	-104.548998
	2275.00	0.05	25.45	2274.98	-4.90	4.90	-0.09	0.07	1319468.92	3265615.14	40.206429	-104.548998
	2362.00	0.04	241.16	2361.98	-4.92	4.92	-0.10	0.10	1319468.94	3265615.13	40.206429	-104.548998
	2450.00	0.06	15.08	2449.98	-4.95	4.95	-0.12	0.10	1319468.97	3265615.11	40.206430	-104.548998
	2537.00	0.14	273.22	2536.98	-5.00	5.00	-0.21	0.19	1319469.02	3265615.02	40.206430	-104.548998
	2625.00	0.05	140.36	2624.98	-4.97	4.97	-0.30	0.20	1319469.00	3265614.94	40.206430	-104.548998
	2712.00	0.09	258.29	2711.98	-4.93	4.93	-0.34	0.14	1319468.95	3265614.89	40.206430	-104.548999
	2800.00	0.04	250.75	2799.98	-4.91	4.91	-0.43	0.06	1319468.93	3265614.80	40.206429	-104.548999
	2887.00	0.03	204.83	2886.98	-4.88	4.87	-0.47	0.03	1319468.90	3265614.76	40.206429	-104.548999
	2975.00	0.04	13.95	2974.98	-4.89	4.88	-0.48	0.08	1319468.91	3265614.76	40.206429	-104.548999
	3062.00	2.60	158.73	3061.95	-3.07	3.07	0.25	3.03	1319467.10	3265615.48	40.206424	-104.548997
	3150.00	5.93	149.67	3149.69	2.72	-2.71	3.27	3.85	1319461.31	3265618.50	40.206408	-104.548986
	3237.00	8.70	156.26	3235.98	12.65	-12.62	8.19	3.32	1319451.41	3265623.42	40.206381	-104.548969
	3325.00	11.11	165.69	3322.66	26.98	-26.93	12.96	3.29	1319437.10	3265628.19	40.206342	-104.548952
	3412.00	9.71	192.06	3408.28	42.28	-42.23	13.50	5.65	1319421.79	3265628.73	40.206300	-104.548951
	3500.00	9.79	192.55	3495.01	56.83	-56.79	10.33	0.13	1319407.23	3265625.56	40.206260	-104.548963
	3587.00	9.86	184.27	3580.74	71.47	-71.44	8.16	1.62	1319392.59	3265623.40	40.206220	-104.548971
	3674.00	9.73	183.24	3666.47	86.24	-86.21	7.19	0.25	1319377.82	3265622.43	40.206179	-104.548975
	3762.00	9.51	181.59	3753.23	100.93	-100.90	6.57	0.40	1319363.13	3265621.80	40.206139	-104.548978
	3849.00	10.00	179.74	3838.97	115.66	-115.64	6.41	0.67	1319348.39	3265621.64	40.206098	-104.548979
	3936.00	10.00	175.46	3924.65	130.75	-130.72	7.04	0.85	1319333.31	3265622.27	40.206057	-104.548977
	4023.00	9.83	176.08	4010.35	145.69	-145.66	8.15	0.23	1319318.37	3265623.38	40.206016	-104.548974
	4111.00	9.45	174.08	4097.11	160.38	-160.34	9.40	0.58	1319303.69	3265624.64	40.205976	-104.548970
	4198.00	10.02	173.96	4182.86	175.01	-174.97	10.94	0.66	1319289.06	3265626.17	40.205935	-104.548965
	4286.00	10.81	176.21	4269.41	190.87	-190.82	12.29	1.01	1319273.21	3265627.52	40.205892	-104.548961
	4373.00	10.96	176.21	4354.84	207.26	-207.21	13.37	0.17	1319256.82	3265628.60	40.205847	-104.548958
	4461.00	10.82	178.79	4441.26	223.87	-223.82	14.10	0.58	1319240.21	3265629.33	40.205801	-104.548956
	4548.00	10.71	178.04	4526.73	240.12	-240.06	14.55	0.20	1319223.97	3265629.78	40.205757	-104.548955
	4635.00	10.68	178.63	4612.22	256.26	-256.20	15.02	0.13	1319207.83	3265630.25	40.205712	-104.548954
	4723.00	10.60	178.62	4698.70	272.50	-272.44	15.41	0.09	1319191.59	3265630.64	40.205668	-104.548953
	4810.00	10.78	178.45	4784.19	288.64	-288.58	15.82	0.21	1319175.46	3265631.05	40.205623	-104.548952
	4898.00	10.78	178.71	4870.64	305.09	-305.03	16.23	0.06	1319159.01	3265631.46	40.205578	-104.548951
	4986.00	10.79	178.53	4957.08	321.56	-321.49	16.63	0.04	1319142.54	3265631.86	40.205533	-104.548950
	5073.00	10.87	175.99	5042.54	337.88	-337.82	17.41	0.56	1319126.22	3265632.64	40.205488	-104.548948
	5161.00	10.24	177.69	5129.05	353.98	-353.91	18.30	0.80	1319110.13	3265633.54	40.205444	-104.548946
	5248.00	10.86	175.62	5214.58	369.88	-369.81	19.24	0.84	1319094.23	3265634.47	40.205400	-104.548943
	5336.00	10.81	178.60	5301.01	386.40	-386.33	20.08	0.64	1319077.72	3265635.31	40.205355	-104.548941
	5423.00	10.66	177.47	5386.49	402.60	-402.52	20.63	0.30	1319061.52	3265635.86	40.205311	-104.548939
	5510.00	9.14	176.60	5472.19	417.54	-417.46	21.40	1.76	1319046.58	3265636.63	40.205270	-104.548937
	5598.00	10.75	178.22	5558.86	432.72	-432.64	22.07	1.86	1319031.40	3265637.30	40.205228	-104.548935
	5685.00	10.75	175.19	5644.34	448.92	-448.83	23.00	0.65	1319015.21	3265638.23	40.205183	-104.548932
	5773.00	10.41	177.74	5730.84	465.05	-464.96	24.00	0.66	1318999.09	3265639.23	40.205139	-104.548930
	5860.00	10.77	175.21	5816.36	481.00	-480.91	24.99	0.68	1318983.13	3265640.22	40.205095	-104.548927
	5947.00	10.67	176.87	5901.84	497.15	-497.05	26.11	0.37	1318966.99	3265641.34	40.205051	-104.548923
	6035.00	10.56	176.04	5988.33	513.33	-513.23	27.11	0.21	1318950.81	3265642.34	40.205006	-104.548920
	6122.00	10.58	176.24	6073.86	529.26	-529.16	28.18	0.05	1318934.89	3265643.41	40.204963	-104.548917
	6209.00	10.39	175.31	6159.41	545.05	-544.94	29.35	0.29	1318919.10	3265644.58	40.204919	-104.548915

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (°)	Longitude (°)
	6297.00	10.74	175.12	6245.91	561.14	-561.02	30.70	0.40	1318903.03	3265645.93	40.204875	-104.548909
	6384.00	10.03	175.88	6331.49	576.77	-576.66	31.93	0.83	1318887.39	3265647.16	40.204832	-104.548905
	6471.00	17.74	171.07	6415.89	597.47	-597.34	34.54	8.95	1318866.71	3265649.76	40.204775	-104.548897
	6559.00	25.71	171.89	6497.57	629.68	-629.53	39.32	9.06	1318834.52	3265654.55	40.204687	-104.548881
	6646.00	30.25	176.57	6574.39	670.28	-670.12	43.29	5.79	1318793.94	3265658.52	40.204575	-104.548868
	6734.00	36.23	180.65	6647.97	718.46	-718.30	44.32	7.25	1318745.76	3265659.55	40.204443	-104.548867
	6821.00	45.97	184.59	6713.46	775.48	-775.33	41.52	11.58	1318688.73	3265656.75	40.204287	-104.548879
	6909.00	52.30	186.40	6771.01	841.65	-841.53	35.10	7.36	1318622.54	3265650.33	40.204105	-104.548904
	6996.00	60.85	185.23	6818.89	913.80	-913.70	27.79	9.89	1318550.37	3265643.02	40.203907	-104.548933
	7084.00	70.85	184.27	6854.85	993.69	-993.62	21.18	11.41	1318470.45	3265636.41	40.203688	-104.548960
	7171.00	80.23	184.46	6876.55	1077.57	-1077.53	14.77	10.78	1318386.55	3265630.00	40.203458	-104.548986
	7258.00	89.63	179.21	6884.23	1164.05	-1164.01	12.03	12.36	1318300.06	3265627.26	40.203221	-104.548999
	7346.00	90.03	178.58	6884.49	1252.04	-1252.00	13.72	0.85	1318212.08	3265628.95	40.202979	-104.548997
	7433.00	90.12	179.02	6884.38	1339.03	-1338.98	15.55	0.52	1318125.11	3265630.78	40.202740	-104.548993
	7521.00	89.54	181.67	6884.64	1427.01	-1426.97	15.02	3.08	1318037.12	3265630.25	40.202499	-104.548999
	7608.00	89.68	181.50	6885.23	1513.97	-1513.93	12.61	0.25	1317950.16	3265627.84	40.202260	-104.549011
	7696.00	89.71	180.62	6885.70	1601.94	-1601.91	10.98	1.00	1317862.18	3265626.21	40.202019	-104.549020
	7784.00	89.27	179.83	6886.48	1689.94	-1689.91	10.64	1.03	1317774.19	3265625.87	40.201777	-104.549024
	7871.00	89.70	180.83	6887.27	1776.93	-1776.90	10.13	1.25	1317687.20	3265625.37	40.201538	-104.549030
	7959.00	89.56	178.91	6887.83	1864.92	-1864.90	10.33	2.19	1317599.21	3265625.57	40.201297	-104.549032
	8047.00	89.33	178.75	6888.69	1952.91	-1952.87	12.13	0.32	1317511.24	3265627.36	40.201055	-104.549029
	8134.00	90.01	175.82	6889.19	2039.81	-2039.76	16.25	3.46	1317424.35	3265631.48	40.200817	-104.549018
	8222.00	90.20	177.09	6889.03	2127.66	-2127.59	21.69	1.46	1317336.52	3265636.92	40.200575	-104.549002
	8310.00	90.22	176.89	6888.70	2215.56	-2215.47	26.31	0.23	1317248.65	3265641.54	40.200334	-104.548988
	8397.00	89.99	176.58	6888.54	2302.43	-2302.33	31.27	0.44	1317161.80	3265646.50	40.200096	-104.548974
	8485.00	90.30	177.26	6888.32	2390.32	-2390.20	36.00	0.85	1317073.93	3265651.23	40.199854	-104.548961
	8573.00	90.31	177.64	6887.85	2478.25	-2478.11	39.91	0.43	1316986.02	3265655.14	40.199613	-104.548950
	8660.00	90.24	177.93	6887.44	2566.20	-2566.05	43.27	0.34	1316899.09	3265658.50	40.199374	-104.548941
	8748.00	90.09	178.66	6887.18	2653.17	-2653.01	45.89	0.85	1316811.13	3265661.12	40.199133	-104.548935
	8835.00	90.41	179.54	6886.80	2740.16	-2740.00	47.26	1.08	1316724.15	3265662.49	40.198894	-104.548934
	8922.00	90.09	179.09	6886.42	2827.15	-2826.99	48.30	0.63	1316637.16	3265663.53	40.198655	-104.548933
	9010.00	90.36	179.27	6886.08	2915.15	-2914.98	49.56	0.37	1316549.18	3265664.79	40.198413	-104.548932
	9097.00	90.31	180.14	6885.57	3002.15	-3001.98	50.01	1.00	1316462.18	3265665.24	40.198175	-104.548934
	9185.00	90.14	179.02	6885.22	3090.14	-3089.97	50.65	1.29	1316374.19	3265665.88	40.197933	-104.548935
	9272.00	90.66	179.95	6884.62	3177.14	-3176.96	51.43	1.22	1316287.20	3265666.66	40.197694	-104.548935
	9360.00	90.14	178.45	6884.00	3265.13	-3264.95	52.66	1.80	1316199.22	3265667.89	40.197453	-104.548934
	9447.00	89.97	179.55	6883.92	3352.12	-3351.94	54.18	1.28	1316112.24	3265669.41	40.197214	-104.548932
	9535.00	90.45	180.81	6883.60	3440.11	-3439.93	53.90	1.53	1316024.25	3265669.13	40.196972	-104.548937
	9623.00	90.44	180.35	6882.91	3528.10	-3527.93	53.01	0.52	1315936.26	3265668.24	40.196731	-104.548943
	9710.00	89.85	180.61	6882.69	3615.10	-3614.92	52.28	0.74	1315849.26	3265667.51	40.196492	-104.548949
	9797.00	90.48	180.65	6882.44	3702.09	-3701.92	51.33	0.73	1315762.27	3265666.56	40.196253	-104.548956
	9885.00	90.04	180.35	6882.04	3790.08	-3789.91	50.56	0.61	1315674.28	3265665.79	40.196012	-104.548962
	9972.00	89.90	180.42	6882.09	3877.07	-3876.91	49.98	0.18	1315587.29	3265665.20	40.195773	-104.548968
	10060.00	90.28	180.79	6881.95	3965.06	-3964.90	49.05	0.60	1315499.30	3265664.28	40.195532	-104.548974
	10148.00	90.70	180.83	6881.20	4053.04	-4052.89	47.80	0.48	1315411.31	3265663.03	40.195290	-104.548982
	10235.00	90.75	180.34	6880.10	4140.03	-4139.88	46.91	0.57	1315324.33	3265662.14	40.195051	-104.548989
	10323.00	90.61	179.98	6879.05	4228.02	-4227.87	46.67	0.44	1315236.34	3265661.90	40.194810	-104.548993
	10410.00	90.64	181.22	6878.10	4315.00	-4314.86	45.76	1.43	1315149.36	3265660.99	40.194571	-104.548999
	10498.00	90.55	181.16	6877.19	4402.97	-4402.84	43.93	0.12	1315061.38	3265659.16	40.194330	-104.549009
	10585.00	90.70	179.91	6876.24	4489.96	-4489.83	43.12	1.45	1314974.40	3265658.35	40.194091	-104.549016
	10672.00	90.52	179.91	6875.31	4576.95	-4576.82	43.25	0.21	1314887.41	3265658.48	40.193852	-104.549018
	10760.00	90.65	180.80	6874.42	4664.94	-4664.81	42.71	1.02	1314799.42	3265657.94	40.193611	-104.549024
	10847.00	90.36	181.10	6873.65	4751.92	-4751.80	41.27	0.48	1314712.44	3265656.50	40.193372	-104.549032
	10935.00	90.36	180.68	6873.10	4839.79	-4839.79	39.90	0.48	1314624.45	3265655.13	40.193130	-104.549041
	11022.00	90.41	180.55	6872.51	4926.89	-4926.78	38.97	0.16	1314537.47	3265654.20	40.192892	-104.549047
	11110.00	90.40	179.69	6871.89	5014.89	-5014.78	38.78	0.98	1314449.47	3265654.01	40.192650	-104.549051
	11196.00	90.23	179.16	6871.42	5100.88	-5100.77	39.65	0.65	1314363.48	3265654.87	40.192414	-104.549052
	11284.00	90.36	178.84	6870.96	5188.88	-5188.76	41.18	0.39	1314275.50	3265656.41	40.192173	-104.549049
	11371.00	89.92	178.93	6870.75	5275.86	-5275.74	42.87	0.52	1314188.52	3265658.10	40.191934	-104.549047
	11459.00	90.13	178.49	6870.71	5363.85	-5363.72	44.85	0.55	1314100.55	3265660.08	40.191692	-104.549043
	11546.00	90.26	178.83	6870.42	5450.83	-5450.69	46.89	0.42	1314013.58	3265662.12	40.191453	-104.549039
	11634.00	90.18	179.13	6870.08	5538.82	-5538.68	48.46	0.35	1313925.60	3265663.69	40.191212	-104.549037
	11721.00	90.68	180.62	6869.43	5625.82	-5625.67	48.65	1.81	1313838.60	3265663.88	40.190973	-104.549039
	11809.00	90.78	180.08	6868.30	5713.80	-5713.66	48.11	0.62	1313750.62	3265663.34	40.190732	-104.549045
	11896.00	90.72	179.78	6867.17	5800.80	-5800.65	48.21	0.35	1313663.63	3265663.44	40.190493	-104.549048
	11984.00	90.26	180.19	6866.41	5888.79	-5888.65	48.24	0.70	1313575.64	3265663.47	40.190251	-104.549051
	12071.00	90.34	178.96	6865.96	5975.79	-5975.65	48.88	1.42	1313488.65	3265664.11	40.190012	-104.549052
	12159.00	90.67	180.10	6865.18	6063.78	-6063.64	49.60	1.35	1313400.66	3265664.83	40.189771	-104.549053
	12246.00	90.40	180.13	6864.37	6150.78	-6150.63	49.43	0.31	1313313.67	3265664.66	40.189532	-104.549057
	12333.00	90.28	180.05	6863.85	6237.78	-6237.63	49.29	0.17	1313226.67	3265664.52	40.189293	-104.549061
	12421.00	90.37	180.04	6863.35	6325.77	-6325.63	49.22	0.10	1313138.68	3265664.45	40.189052	-104.549064
	12508.00	89.98	180.31	6863.09	6412.77	-6412.63	48.96	0.55	1313051.68	3265664.19	40.188813	-104.549069
	12596.00	90.04	180.38	6863.07	6500.77	-6500.63	48.43	0.10	1312963.69	3265663.66	40.188571	-104.549074
	12684.00	90.21	179.78	6862.88	6588.76	-6588.63	48.31	0.71	1312875.69	3265663.54	40.188330	-104.549078
	12771.00	90.21	179.64	6862.56	6675.76	-6675.63	48.75	0.16	1312788.70	3265663.98	40.188091	-104.549079
	12858.00	90.35	180.12	6862.14	6762.76	-6762.62	48.93	0.57	1312701.70	3265664.16	40.187852	-104.549082
	12946.00	90.15	179.45	6861.75	6850.76	-6850.62	49.26	0.79	1312613.71	3265664.49	40.187611	-104.549084
	13033.00	90.11	179.53	6861.56	6937.76	-6937.62	50.03	0.10	1312526.72	3265665.26	40.187372	-104.549085
	13121.00	90.48										

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (°)	Longitude (°)
	15833.00	90.21	179.29	6848.56	9737.53	-9737.41	49.31	2.00	1309727.05	3265664.54	40.179687	-104.549195
	15920.00	90.42	179.68	6848.08	9824.53	-9824.41	50.09	0.51	1309640.06	3265665.32	40.179448	-104.549195
	16008.00	90.19	179.17	6847.61	9912.53	-9912.40	50.98	0.64	1309552.07	3265666.21	40.179207	-104.549196
	16095.00	90.18	177.53	6847.33	9999.50	-9999.36	53.48	1.89	1309465.11	3265668.71	40.178968	-104.549190
	16183.00	90.15	178.73	6847.08	10087.46	-10087.31	56.35	1.36	1309377.16	3265671.58	40.178726	-104.549183
	16270.00	89.94	178.25	6847.01	10174.43	-10174.28	58.65	0.60	1309290.20	3265673.87	40.178487	-104.549178
	16358.00	90.05	176.29	6847.01	10262.35	-10262.18	62.84	2.23	1309202.30	3265678.07	40.178246	-104.549167
	16445.00	90.47	177.57	6846.62	10349.24	-10349.05	67.50	1.55	1309115.44	3265682.72	40.178008	-104.549153
	16532.00	89.91	179.96	6846.33	10436.21	-10436.02	69.37	2.82	1309028.47	3265684.60	40.177769	-104.549150
	16620.00	90.50	179.22	6846.02	10524.21	-10524.02	70.00	1.08	1308940.47	3265685.23	40.177527	-104.549151
	16707.00	90.54	179.22	6845.23	10611.20	-10611.01	71.18	0.05	1308853.49	3265686.41	40.177288	-104.549150
	16795.00	90.25	179.36	6844.62	10699.20	-10699.00	72.28	0.37	1308765.50	3265687.50	40.177047	-104.549150
	16882.00	90.48	181.35	6844.07	10786.19	-10785.99	71.74	2.30	1308678.52	3265686.96	40.176808	-104.549155
	16969.00	90.06	179.98	6843.66	10873.17	-10872.98	70.73	1.65	1308591.53	3265685.95	40.176569	-104.549162
	17056.00	90.58	181.32	6843.17	10960.16	-10959.97	69.74	1.65	1308504.54	3265684.97	40.176331	-104.549169
	17144.00	90.09	185.68	6842.66	11047.95	-11047.79	64.37	4.99	1308416.73	3265679.60	40.176090	-104.549191
Last SLB_MWD Survey	17231.00	90.10	182.89	6842.51	11134.68	-11134.54	57.87	3.21	1308329.99	3265673.10	40.175852	-104.549218
Projection to Bit (352' FSL,638' FEL)	17324.00	90.10	182.89	6842.35	11227.54	-11227.42	53.18	0.00	1308237.11	3265668.41	40.175597	-104.549238

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	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	1	0.000	16.300	1/98.425	13.500	9.625	NAL_NSG+MSHOT-Depth Only	Original Hole / Vogler State D33-718 GYRO+IFR 0' to 17324' Definitive
	1	16.300	1950.000	Act Stns	13.500	9.625	NAL_NSG+MSHOT	Original Hole / Vogler State D33-718 GYRO+IFR 0' to 17324'
	1	1950.000	17324.000	Act Stns	8.500	5.500	NAL_MWD_IFR1+MS	Original Hole / Vogler State D33-718 GYRO+IFR 0' to 17324'