



# Verdad Resources

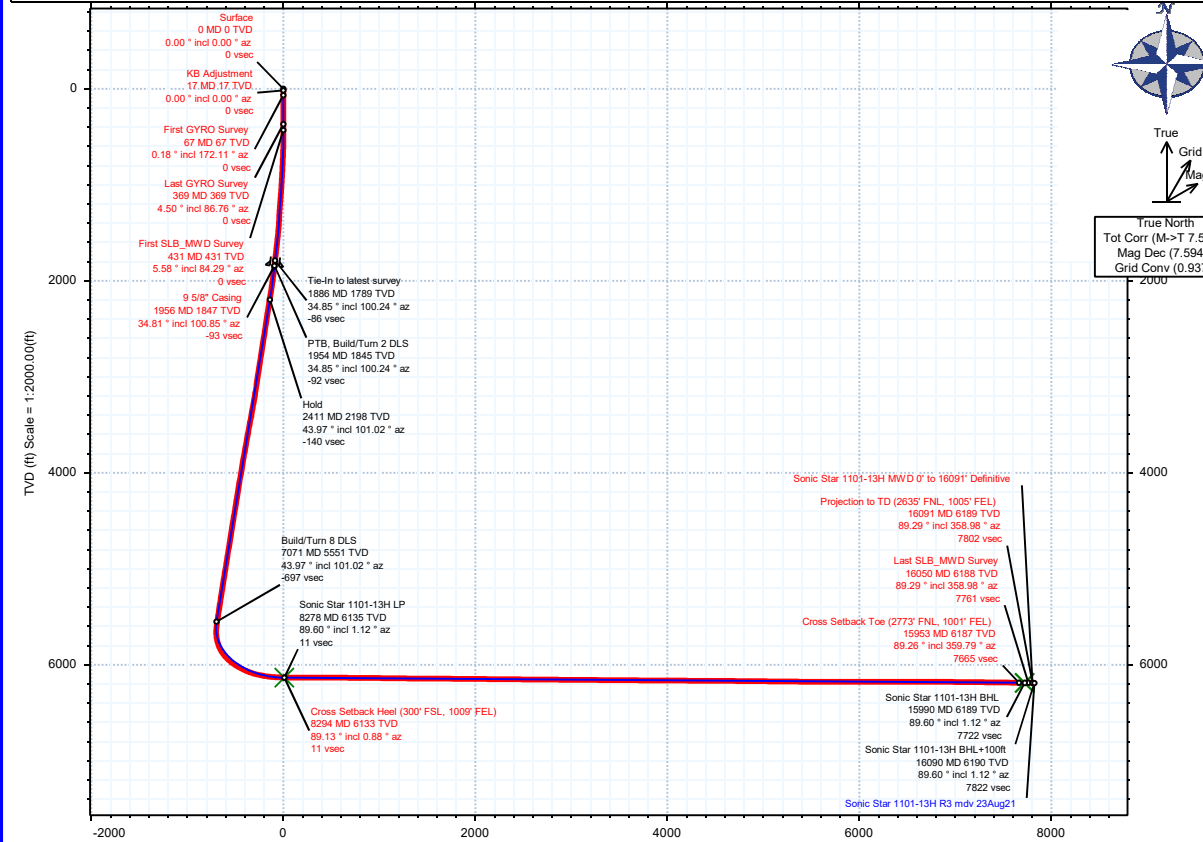


<b>Borehole:</b>  Original Hole	<b>Well:</b>  Sonic Star 1101-13H	<b>Field:</b>  CO, Weld County (NAD 83 NZ) - 2019	<b>Structure:</b>  Verdad 11-08N-60W (Sonic Star 1101 Pad)
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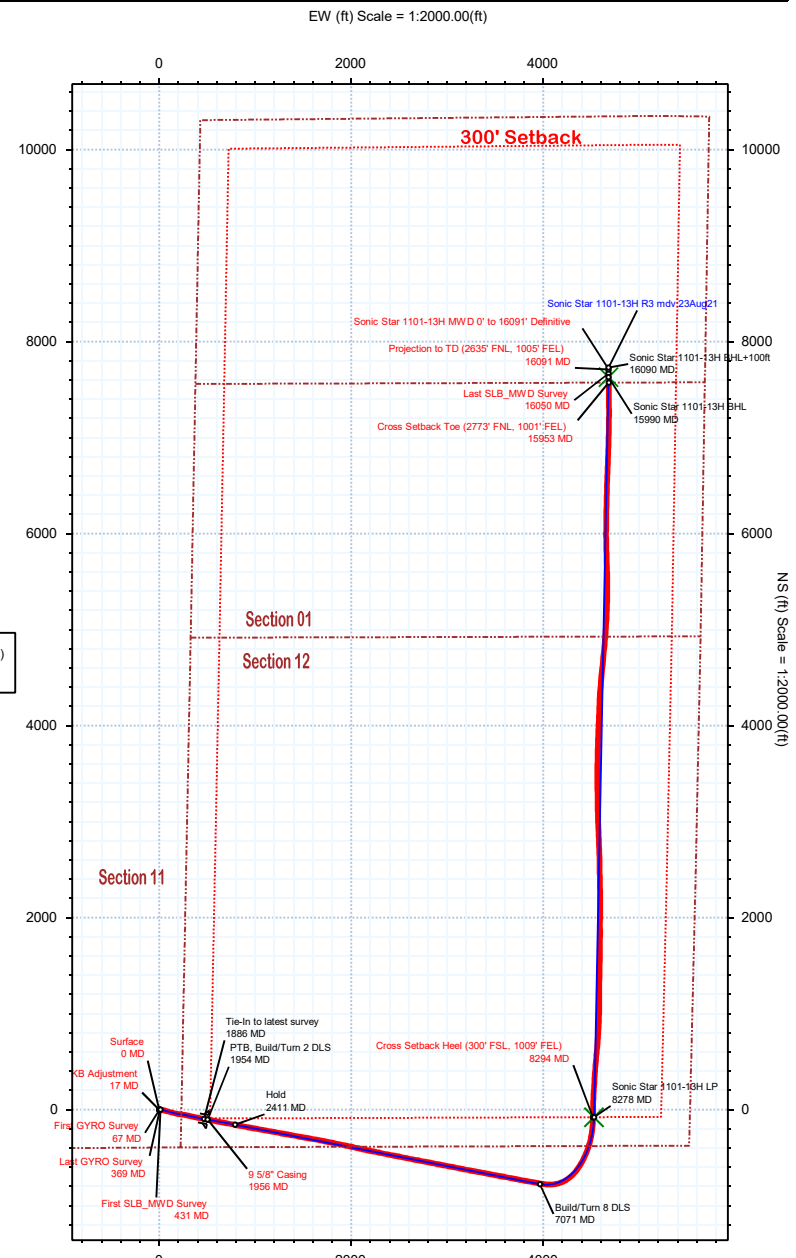
<b>Gravity &amp; Magnetic Parameters</b> Model: HDGM 2021 Dip: 66.856° Date: 23-Aug-2021 MagDec: 7.594° FS: 52149.21nT Gravity FS: 999.077mgn (9.80665 Based)	<b>Surface Location</b> NAD83 Colorado State Plane, Northern Zone, US Feet Lat: N 40 40 15.30 Northing: 1490550.84ftUS Grid Conv: 0.9375° Lon: W 104 2 56.77 Easting: 3402456.99ftUS Scale Fact: 0.99998369	<b>Miscellaneous</b> Slot: Sonic Star 1101-13H TVD Ref: KB 21ft(4903ft above MSL) Plan: Sonic Star 1101-13H MWD 0' to 16091' Definitive
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Target Description	Latitude	Longitude	Northing	Easting	TVD	VSec	N(+)/S(-)	E(+)/W(-)
Sonic Star 1101 Pad Sec 12-01 - 300' SB	N 40 40 14.42	W 104 2 56.80	1490460.83	3402456.52	4903.00	-90.01	-89.99	-1.94
Sonic Star 1101 Pad Sec 01 - Mid	N 40 40 14.42	W 104 2 56.80	1490460.83	3402456.52	4903.00	-90.01	-89.99	-1.94
Sonic Star 1101 Pad Sec 12-01 - CL	N 40 40 14.42	W 104 2 56.80	1490460.83	3402456.52	4903.00	-90.01	-89.99	-1.94
Sonic Star 1101 Pad Sec 12-01	N 40 40 14.42	W 104 2 56.80	1490460.83	3402456.52	4903.00	-90.01	-89.99	-1.94
Sonic Star 1101-13H LP	N 40 40 14.53	W 104 1 58.01	1490547.13	6135.00	6135.00	10.71	-77.80	4527.67
Sonic Star 1101-13H BHL	N 40 41 30.72	W 104 1 56.04	1498258.54	3407009.26	6189.00	7722.31	7632.33	4677.86

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
Surface	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
KB Adjustment	17.00	0.00	0.00	17.00	0.00	0.00	0.00	0.00
First GYRO Survey	67.00	0.18	172.11	67.00	-0.08	-0.08	0.01	0.36
Last GYRO Survey	369.00	4.50	86.76	368.84	-0.17	-0.29	6.16	2.97
First SLB_MWD Survey	431.00	5.58	84.29	430.60	0.38	0.15	11.59	1.78
9 5/8" Casing	1956.00	34.81	100.85	1846.64	-92.58	-102.47	504.78	0.50
Cross Setback Heel (300' FSL, 1009' FEL)	8293.98	89.13	0.88	6133.26	10.96	-77.35	4517.25	3.98
Cross Setback Toe (2773' FNL, 1001' FEL)	15953.10	89.26	359.79	6187.06	7664.55	7574.50	4681.13	0.67
Last SLB_MWD Survey	16050.00	89.29	358.98	6188.29	7761.40	7671.39	4680.25	1.06
Projection to TD (2635' FNL, 1005' FEL)	16091.00	89.29	358.98	6188.80	7802.37	7712.38	4679.53	0.01



Vertical Section (ft) Azim = 1.12° Scale = 1:2000.00(ft) Origin = 0N/-S, 0E/-W



SHL: 393' FSL, 230' FEL - Sec 11

# Sonic Star 1101-13H MWD 0' to 16091' Definitive Survey Geodetic Report

(Def Survey)

**Report Date:** August 31, 2021 - 08:29 AM  
**Client:** Verdad Resources  
**Field:** CO, Weld County (NAD 83 NZ) - 2019  
**Structure / Slot:** Verdad 11-08N-60W (Sonic Star 1101 Pad) / Sonic Star 1101-13H  
**Well:** Sonic Star 1101-13H  
**Borehole:** Original Hole  
**UWI / API#:** Unknown / 05-123-48990  
**Survey Name:** Sonic Star 1101-13H MWD 0' to 16091' Definitive  
**Survey Date:** August 23, 2021  
**Tort / AHD / DDI / ERD Ratio:** 226.003 ° / 12857.393 ft / 6.878 / 2.078  
**Coordinate Reference System:** NAD83 Colorado State Plane, Northern Zone, US Feet  
**Location Lat / Long:** N 40° 40' 15.30480", W 104° 2' 56.77080"  
**Location Grid N/E Y/X:** N 1490550.841 ftUS, E 3402456.988 ftUS  
**CRS Grid Convergence Angle:** 0.9375 °  
**Grid Scale Factor:** 0.99998369  
**Version / Patch:** 2.10.824.0

**Survey / DLS Computation:** Minimum Curvature / Lubinski  
**Vertical Section Azimuth:** 1.120 ° (True North)  
**Vertical Section Origin:** 0.000 ft, 0.000 ft  
**TVD Reference Datum:** KB 21ft  
**TVD Reference Elevation:** 4903.000 ft above MSL  
**Seabed / Ground Elevation:** 4882.000 ft above MSL  
**Magnetic Declination:** 7.594 °  
**Total Gravity Field Strength:** 999.0768mgn (9.80665 Based)  
**Gravity Model:** GARM  
**Total Magnetic Field Strength:** 52149.210 nT  
**Magnetic Dip Angle:** 66.856 °  
**Declination Date:** August 23, 2021  
**Magnetic Declination Model:** HDGM 2021  
**North Reference:** True North  
**Grid Convergence Used:** 0.0000 °  
**Total Corr Mag North→True North:** 7.5938 °  
**Local Coord Referenced To:** Well Head

Comments	MD (ft)	Incl (°)	Azim True (°)	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	1490550.84	3402456.99	40.670918	-104.049103
KB Adjustment	17.00	0.00	0.00	17.00	0.00	0.00	0.00	0.00	1490550.84	3402456.99	40.670918	-104.049103
First GYRO Survey	67.00	0.18	172.11	67.00	-0.08	-0.08	0.01	0.36	1490550.76	3402457.00	40.670918	-104.049103
	117.00	0.20	178.24	117.00	-0.24	-0.24	0.02	0.06	1490550.60	3402457.02	40.670917	-104.049103
	167.00	0.17	177.02	167.00	-0.40	-0.40	0.03	0.06	1490550.44	3402457.03	40.670917	-104.049103
	217.00	0.26	117.36	217.00	-0.53	-0.53	0.14	0.46	1490550.31	3402457.13	40.670917	-104.049103
	267.00	1.45	92.80	266.99	-0.60	-0.61	0.87	2.44	1490550.24	3402457.87	40.670916	-104.049100
	317.00	2.96	84.70	316.95	-0.47	-0.53	2.79	3.08	1490550.36	3402459.78	40.670917	-104.049093
Last GYRO Survey	369.00	4.50	86.76	368.84	-0.17	-0.29	6.16	2.97	1490550.66	3402463.15	40.670917	-104.049081
First SLB_MWD Survey	431.00	5.58	84.29	430.60	0.38	0.15	11.59	1.78	1490551.18	3402468.57	40.670918	-104.049061
	461.00	5.68	87.96	460.46	0.63	0.35	14.52	1.25	1490551.43	3402471.50	40.670919	-104.049051
	491.00	5.73	87.56	490.31	0.81	0.47	17.50	0.21	1490551.59	3402474.48	40.670919	-104.049040
	521.00	5.75	89.17	520.16	0.95	0.55	20.50	0.54	1490551.73	3402477.48	40.670920	-104.049029
	551.00	6.02	101.24	550.00	0.73	0.27	23.55	4.21	1490551.49	3402480.53	40.670919	-104.049018
	581.00	6.36	105.74	579.83	0.03	-0.49	26.69	1.97	1490550.79	3402483.68	40.670917	-104.049007
	611.00	6.81	104.07	609.63	-0.79	-1.37	30.01	1.63	1490549.96	3402487.02	40.670914	-104.048995
	641.00	7.30	105.23	639.40	-1.65	-2.31	33.58	1.70	1490549.08	3402490.60	40.670912	-104.048982
	671.00	7.83	106.84	669.14	-2.67	-3.40	37.37	1.90	1490548.05	3402494.41	40.670909	-104.048968
	701.00	8.37	106.56	698.84	-3.80	-4.61	41.42	1.80	1490546.91	3402498.48	40.670905	-104.048954
	731.00	8.99	105.36	728.50	-4.96	-5.86	45.77	2.15	1490545.73	3402502.85	40.670902	-104.048938
	761.00	9.61	107.16	758.10	-6.23	-7.22	50.43	2.28	1490544.45	3402507.53	40.670898	-104.048921
	791.00	10.22	107.03	787.65	-7.65	-8.74	55.37	2.03	1490543.01	3402512.49	40.670894	-104.048903
	821.00	10.89	105.01	817.15	-9.06	-10.25	60.65	2.55	1490541.59	3402517.79	40.670890	-104.048884
	851.00	11.59	104.41	846.57	-10.43	-11.73	66.30	2.37	1490540.20	3402523.47	40.670886	-104.048864
	881.00	12.25	104.03	875.92	-11.84	-13.25	72.31	2.22	1490538.77	3402529.50	40.670882	-104.048842
	911.00	12.91	105.16	905.20	-13.36	-14.90	78.63	2.35	1490537.23	3402535.85	40.670877	-104.048820
	941.00	13.59	105.66	934.41	-15.06	-16.73	85.26	2.30	1490535.51	3402542.51	40.670872	-104.048796
	971.00	14.19	105.07	963.53	-16.83	-18.64	92.21	2.05	1490533.72	3402549.48	40.670867	-104.048771
	1001.00	14.84	104.26	992.57	-18.59	-20.54	99.48	2.27	1490531.93	3402556.79	40.670862	-104.048744
	1031.00	15.43	103.67	1021.53	-20.33	-22.43	107.08	2.03	1490530.17	3402564.42	40.670856	-104.048717
	1061.00	16.13	102.94	1050.40	-22.05	-24.31	115.02	2.43	1490528.42	3402572.39	40.670851	-104.048688
	1091.00	16.70	104.46	1079.18	-23.90	-26.31	123.26	2.38	1490526.55	3402580.66	40.670846	-104.048659
	1121.00	16.98	106.70	1107.89	-26.07	-28.65	131.63	2.36	1490524.35	3402589.06	40.670839	-104.048629
	1151.00	17.47	106.43	1136.54	-28.44	-31.18	140.14	1.65	1490521.96	3402597.62	40.670832	-104.048598
	1181.00	18.29	105.08	1165.10	-30.76	-33.68	149.01	3.06	1490519.60	3402606.52	40.670826	-104.048566
	1211.00	18.99	103.91	1193.52	-32.98	-36.08	158.29	2.65	1490517.36	3402615.84	40.670819	-104.048532
	1241.00	19.69	103.80	1221.83	-35.17	-38.46	167.93	2.34	1490515.14	3402625.53	40.670812	-104.048498
	1271.00	20.29	102.88	1250.02	-37.34	-40.82	177.91	2.26	1490512.93	3402635.54	40.670806	-104.048462
	1301.00	21.11	101.54	1278.08	-39.38	-43.06	188.28	3.16	1490510.86	3402645.94	40.670800	-104.048424
	1331.00	22.12	99.58	1305.97	-41.18	-45.08	199.14	4.14	1490509.02	3402656.84	40.670794	-104.048385
	1361.00	23.01	97.68	1333.68	-42.68	-46.81	210.52	3.83	1490507.48	3402668.24	40.670790	-104.048344
	1391.00	24.16	97.38	1361.17	-44.02	-48.38	222.42	3.85	1490506.11	3402680.17	40.670785	-104.048301
	1421.00	25.34	97.48	1388.42	-45.40	-50.00	234.87	3.94	1490504.69	3402692.65	40.670781	-104.048256
	1451.00	26.49	97.53	1415.40	-46.86	-51.72	247.87	3.83	1490503.19	3402705.67	40.670776	-104.048209
	1481.00	27.56	99.45	1442.12	-48.61	-53.73	261.35	4.60	1490501.39	3402719.18	40.670771	-104.048161
	1511.00	28.58	101.95	1495.07	-53.32	-58.98	289.09	2.59	1490496.60	3402747.00	40.670756	-104.048061
	1541.00	29.16	101.85	1521.34	-56.03	-61.97	303.26	1.94	1490493.84	3402761.22	40.670748	-104.048010
	1601.00	29.98	102.04	1547.43	-58.81	-65.04	317.74	2.75	1490491.01	3402775.75	40.670739	-104.047958
	1631.00	30.23	102.13	1573.38	-61.67	-68.19	332.46	0.85	1490488.10	3402790.51	40.670731	-104.047905
	1661.00	30.56	102.65	1599.26	-64.64	-71.44	347.28	1.41	1490485.09	3402805.39	40.670722	-104.047851
	1691.00	30.98	102.24	1625.04	-67.65	-74.75	362.27	1.56	1490482.03	3402820.43	40.670713	-104.047797
	1721.00	31.53	101.40	1650.68	-70.54	-77.94	377.51	2.34	1490479.09	3402835.71	40.670704	-104.047742
	1751.00	31.95	101.55	1676.20	-73.38	-81.08	392.97	1.42	1490476.21	3402851.23	40.670695	-104.047686
	1781.00	32.27	101.61	1701.61	-76.28	-84.28	408.59	1.07	1490473.26	3402866.90	40.670687	-104.047630
	1811.00	32.88	101.15	1726.89	-79.15	-87.46	424.43	2.19	1490470.33	3402882.78	40.670678	-104.047573
	1841.00	33.65	100.49	1751.97	-81.92	-90.55	440.59	2.84	1490467.51	3402898.99	40.670669	-104.047515
	1871.00	34.40	100.54	1776.84	-84.66	-93.62	457.10	2.50	1490464.72	3402915.55	40.670661	-104.047455
	1886.00	34.85	100.24	1789.18	-86.04	-95.15	465.48	3.21	1490463.32	3402923.95	40.670657	-104.047425
9 5/8" Casing	1956.00	34.81	100.85	1846.64	-92.58	-102.47	504.78	0.50	1490456.64	3402963.37	40.670637	-104.047283
	1973.00	34.80	101.00	1860.60	-94.24	-104.31	514.31	0.50	1490454.96	3402972.93	40.670632	-104.047249
	2062.00	37.14	101.44	1932.62	-103.41	-114.48	565.58	2.64	1490445.63	3403024.36	40.670604	-104.047064
	2151.00	38.91	100.92	2002.73	-112.98	-125.11	619.37	2.03	1490435.89	3403078.31	40.670575	-104.046870
	2240.00	40.90	100.67	2070.99	-122.57	-135.80	675.45	2.24	1490426.12	3403134.56	40.670545	-104.046668
	2330.00	43.11	100.13	2137.87	-132.28	-146.66	734.69	2.49	1490416.22	3403193.96	40.670515	-104.046455
	2419.00	44.22	100.76	2202.25	-142.24	-157.81	795.12	1.34	1490406.06	3403254.57	40.670485	-104.046237
	2508.00	43.71	101.01	2266.31	-152.72	-169.48	855.79	0.61	1490395.39	3403315.42	40.670453	-104.046018
	2598.00	44.12	100.10	2331.14	-162.95	-180.91	917.15	0.84	1490384.96	3403376.96	40.670421	-104.045797
	2687.00	44.29	100.55	2394.94	-172.87	-192.03	978.20	0.41	1490374.84	3403438.18	40.670391	-104.045577
	2777.00	44.01	100.28	2459.51	-183.00	-203.36	1039.86	0.37	1490364.52	3403500.02	40.670360	-104.045354
	2866.00	43.92	100.19	2523.57	-192.79	-214.34	1100.67	0.13	1490354.54	3403561.00	40.670330	-104.045135
	2955.00	43.97	100.08	2587.65	-202.46	-225.20	1161.47	0.10	1490344.67	3403621.97	40.670300	-104.044916
	3045.00	44.14	100.76	2652.33	-212.57	-236.52	1223.02	0.56	1490334.37	3403683.69	40.670269	-104.044694
	3134.00	43.73	100.67	2716.42	-222.86	-248.00	1283.69	0.46	1490323.88	3403744.54	40.670237	-104

Comments	MD (ft)	Incl (°)	Azim True (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (°)	Longitude (°)
	3402.00	43.78	100.61	2909.31	-252.55	-281.27	1466.75	0.49	1490293.61	3403928.12	40.670146	-104.043816
	3492.00	44.19	99.94	2974.07	-262.49	-292.41	1528.25	0.69	1490283.47	3403989.79	40.670115	-104.043594
	3581.00	43.61	100.11	3038.20	-272.04	-303.16	1589.02	0.66	1490273.73	3404050.72	40.670086	-104.043375
	3670.00	44.03	100.09	3102.42	-281.66	-313.96	1649.68	0.47	1490263.92	3404111.56	40.670056	-104.043156
	3760.00	44.07	101.15	3167.10	-291.99	-325.50	1711.19	0.82	1490253.39	3404173.24	40.670024	-104.042934
	3849.00	43.89	101.30	3231.15	-302.83	-337.53	1771.80	0.23	1490242.36	3404234.04	40.669991	-104.042716
	3939.00	44.38	102.03	3295.74	-314.30	-350.20	1833.18	0.79	1490230.69	3404295.62	40.669957	-104.042495
	4028.00	44.40	101.72	3359.34	-325.92	-363.01	1894.11	0.24	1490218.88	3404356.75	40.669921	-104.042275
	4117.00	44.11	102.00	3423.09	-337.49	-375.77	1954.89	0.40	1490207.11	3404417.73	40.669886	-104.042056
	4207.00	43.82	102.51	3487.87	-349.56	-389.03	2015.94	0.51	1490194.85	3404478.99	40.669850	-104.041836
	4297.00	44.44	101.98	3552.47	-361.64	-402.32	2077.18	0.81	1490182.56	3404540.44	40.669813	-104.041615
	4386.00	44.47	101.77	3615.99	-373.27	-415.15	2138.18	0.17	1490170.74	3404601.63	40.669778	-104.041395
	4476.00	44.25	101.85	3680.34	-384.95	-428.03	2199.77	0.24	1490158.87	3404663.43	40.669743	-104.041173
	4565.00	44.09	101.70	3744.17	-396.41	-440.68	2260.49	0.22	1490147.21	3404724.34	40.669708	-104.040954
	4654.00	43.67	101.94	3808.32	-407.87	-453.32	2320.87	0.51	1490135.56	3404784.92	40.669673	-104.040737
	4744.00	43.70	101.47	3873.40	-419.29	-465.93	2381.74	0.36	1490123.95	3404845.99	40.669639	-104.040517
	4833.00	43.97	101.08	3937.60	-430.15	-477.98	2442.19	0.42	1490112.89	3404906.63	40.669606	-104.040299
	4923.00	43.76	100.59	4002.49	-440.68	-489.70	2503.45	0.43	1490102.17	3404968.07	40.669574	-104.040079
	5012.00	43.26	101.82	4067.04	-451.40	-501.61	2563.55	1.10	1490091.25	3405028.36	40.669541	-104.039862
	5102.00	44.16	100.73	4132.10	-462.35	-513.75	2624.54	1.30	1490080.11	3405089.53	40.669507	-104.039642
	5191.00	43.39	101.28	4196.37	-472.92	-525.50	2684.97	0.96	1490069.35	3405150.15	40.669475	-104.039424
	5281.00	43.80	100.64	4261.55	-483.52	-537.30	2745.90	0.68	1490058.55	3405211.26	40.669443	-104.039205
	5370.00	43.73	100.96	4325.82	-493.88	-548.84	2806.38	0.27	1490048.00	3405271.92	40.669411	-104.038987
	5460.00	43.54	101.18	4390.95	-504.61	-560.76	2867.33	0.27	1490037.08	3405333.05	40.669378	-104.038767
	5549.00	43.82	100.75	4455.32	-515.12	-572.45	2927.67	0.46	1490026.38	3405393.58	40.669346	-104.038549
	5638.00	43.65	101.03	4519.63	-525.56	-584.07	2988.09	0.29	1490015.74	3405454.18	40.669314	-104.038332
	5728.00	43.93	100.24	4584.60	-535.85	-595.56	3049.30	0.68	1490005.26	3405515.57	40.669283	-104.038111
	5817.00	43.55	101.73	4648.90	-546.39	-607.29	3109.70	1.23	1489994.52	3405576.15	40.669251	-104.037893
	5907.00	43.37	100.74	4714.23	-557.26	-619.35	3170.42	0.79	1489983.46	3405637.06	40.669217	-104.037674
	5997.00	43.99	100.74	4779.31	-567.64	-630.93	3231.49	0.69	1489972.88	3405698.31	40.669186	-104.037454
	6086.00	43.62	100.71	4843.54	-577.92	-642.39	3292.03	0.42	1489962.41	3405759.02	40.669154	-104.037236
	6175.00	43.85	100.53	4907.85	-588.07	-653.73	3352.50	0.30	1489952.06	3405819.68	40.669123	-104.037018
	6264.00	43.83	100.70	4972.04	-598.24	-665.08	3413.10	0.14	1489941.70	3405880.45	40.669092	-104.036800
	6354.00	43.80	100.54	5036.97	-608.53	-676.57	3474.34	0.13	1489931.22	3405941.87	40.669060	-104.036579
	6443.00	43.89	100.55	5101.16	-618.63	-687.85	3534.96	0.09	1489920.93	3406002.66	40.669029	-104.036360
	6533.00	43.38	100.94	5166.30	-629.01	-699.43	3595.97	0.64	1489910.35	3406063.86	40.668998	-104.036140
	6622.00	43.79	100.29	5230.77	-639.13	-710.73	3656.28	0.69	1489900.04	3406124.34	40.668966	-104.035923
	6711.00	43.09	101.54	5295.39	-649.53	-722.31	3716.37	1.25	1489889.44	3406184.61	40.668935	-104.035706
	6801.00	44.12	100.03	5360.56	-659.95	-733.92	3777.34	1.63	1489878.73	3406245.76	40.668903	-104.035487
	6890.00	43.69	100.47	5424.68	-669.74	-744.90	3838.08	0.59	1489868.85	3406306.67	40.668873	-104.035268
	6980.00	43.84	100.14	5489.68	-679.68	-756.04	3899.33	0.30	1489858.71	3406368.09	40.668842	-104.035047
	7069.00	43.95	100.49	5553.81	-689.55	-767.10	3960.04	0.30	1489848.65	3406428.97	40.668812	-104.034828
	7159.00	44.74	95.96	5618.19	-697.31	-776.08	4022.27	3.63	1489840.69	3406491.34	40.668787	-104.034604
	7248.00	43.04	88.00	5682.38	-698.30	-778.28	4083.82	6.49	1489839.50	3406552.92	40.668781	-104.034382
	7338.00	42.58	77.36	5748.49	-689.38	-770.53	4144.31	8.04	1489848.23	3406613.27	40.668802	-104.034164
	7427.00	44.57	65.28	5813.08	-668.57	-750.85	4202.16	9.61	1489868.86	3406670.79	40.668856	-104.033955
	7517.00	48.24	54.00	5875.24	-634.48	-717.85	4258.12	9.94	1489902.77	3406726.20	40.668947	-104.033735
	7607.00	52.93	44.26	5932.45	-587.93	-672.31	4310.44	9.84	1489949.15	3406777.77	40.669072	-104.033565
	7696.00	58.74	35.50	5982.47	-530.50	-615.79	4357.41	10.43	1490006.43	3406823.81	40.669227	-104.033395
	7785.00	63.50	28.74	6025.48	-463.72	-549.81	4398.71	8.53	1490073.08	3406864.02	40.669408	-104.033247
	7875.00	68.09	24.55	6062.39	-389.66	-476.45	4435.45	6.64	1490147.03	3406899.56	40.669609	-104.033114
	7964.00	73.87	18.65	6091.40	-310.89	-398.27	4466.32	9.01	1490225.71	3406929.15	40.669824	-104.033003
	8054.00	79.88	13.15	6111.85	-226.21	-314.03	4490.27	8.95	1490310.32	3406951.71	40.670055	-104.032916
	8143.00	83.65	8.35	6124.61	-139.40	-227.54	4506.67	6.82	1490397.07	3406966.70	40.670292	-104.032857
	8233.00	87.57	2.74	6131.50	-49.99	-138.27	4515.33	7.59	1490486.46	3406973.89	40.670537	-104.032826
Cross Setback Heel (300' FSL, 1009' FEL)	8293.98	89.13	0.88	6133.26	10.96	-77.35	4517.25	3.98	1490547.41	3406974.82	40.670705	-104.032819
	8322.00	89.84	0.02	6133.51	38.97	-49.34	4517.47	3.98	1490575.42	3406974.58	40.670781	-104.032818
	8412.00	89.80	1.37	6133.79	128.97	40.65	4518.56	1.49	1490665.42	3406974.20	40.671028	-104.032814
	8501.00	89.90	3.15	6134.02	217.95	129.58	4522.07	2.01	1490754.39	3406976.25	40.671273	-104.032801
	8591.00	89.51	3.62	6134.48	307.88	219.42	4527.39	0.67	1490844.30	3406980.09	40.671519	-104.032782
	8680.00	89.87	3.03	6134.96	396.81	308.27	4532.54	0.77	1490933.22	3406983.80	40.671763	-104.032764
	8770.00	90.02	4.41	6135.05	486.71	398.08	4538.38	1.55	1491023.11	3406988.16	40.672009	-104.032742
	8859.00	89.90	5.06	6135.11	575.54	486.78	4545.72	0.74	1491111.91	3406994.06	40.672253	-104.032716
	8943.00	89.46	5.14	6135.57	659.33	570.44	4553.19	0.53	1491195.69	3407000.15	40.672483	-104.032689
	8988.00	89.53	5.21	6135.97	704.22	615.26	4557.25	0.21	1491240.56	3407003.48	40.672606	-104.032674
	9077.00	89.29	5.07	6136.89	792.99	703.89	4565.22	0.31	1491329.32	3407010.00	40.672849	-104.032645
	9167.00	89.51	3.61	6137.82	882.84	793.63	4572.03	1.64	1491419.15	3407015.34	40.673095	-104.032621
	9256.00	89.46	2.57	6138.62	971.79	882.49	4576.82	1.17	1491508.08	3407018.67	40.673339	-104.032604
	9345.00	89.24	1.73	6139.63	1060.77	971.43	4580.16	0.97	1491597.05	3407020.56	40.673583	-104.032591
	9434.00	89.24	0.75	6140.82	1149.76	1060.40	4582.09	1.11	1491686.04	3407021.03	40.673827	-104.032584
	9524.00	89.33	0.02	6141.94	1239.74	1150.39	4582.69	0.82	1491776.03	3407020.16	40.674074	-104.032582
	9613.00	89.66	0.40	6142.72	1328.73	1239.38	4583.01	0.57	1491865.02	3407019.02	40.674319	-104.032581
	9703.00	89.68	0.57	6143.23	1418.72	1329.38	4583.77	0.18	1491955.01	3407018.31	40.674566	-104.032578
	9792.00	89.75	0.83	6143.67	1507.72	1418.37	4584.85	0.31	1492044.01	3407017.94	40.674810	-104.032574
	9882.00	89.57	1.26	6144.20	1597.71	1508.35	4586.50	0.52	1492134.00	3407018.11	40.675057	-104.032568
	9971.00	89.41	1.13	6144.99	1686.71	1597.33	4588.35	0.23	1492223.00	3407018.51	40.675301	-104.032562
	10061.00	89.47	0.82	6145.87	1776.71	1687.31	4589.89	0.35	1492312.99	3407018.57	40.675548	-104.032556
	10151.00	89.41	0.21	6146.75	1866.70	1777.30	4590.70	0.68	1492402.98	3407017.91	40.675795	-104.032553
	10240.00	89.50	359.85	6147.60	1955.68	186						

Comments	MD (ft)	Incl (°)	Azim True (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (°)	Longitude (°)
	12834.00	89.48	5.21	6168.05	4547.92	4458.86	4600.14	1.01	1495084.28	3406983.48	40.683155	-104.032517
	12924.00	89.69	5.73	6168.70	4637.66	4548.44	4608.72	0.63	1495173.99	3406990.59	40.683401	-104.032486
	13013.00	89.51	5.65	6169.31	4726.37	4637.00	4617.55	0.23	1495262.68	3406997.97	40.683644	-104.032454
	13103.00	89.49	5.67	6170.10	4816.09	4726.56	4626.43	0.03	1495352.37	3407005.38	40.683890	-104.032422
	13192.00	89.40	5.61	6170.96	4904.81	4815.12	4635.17	0.13	1495441.07	3407012.67	40.684133	-104.032391
	13282.00	89.31	4.60	6171.98	4994.58	4904.76	4643.18	1.12	1495530.82	3407019.21	40.684379	-104.032362
	13371.00	89.44	4.18	6172.95	5083.43	4993.49	4649.99	0.50	1495619.65	3407024.57	40.684623	-104.032337
	13461.00	89.30	3.34	6173.94	5173.33	5083.29	4655.89	0.95	1495709.54	3407029.00	40.684869	-104.032316
	13550.00	89.54	2.49	6174.85	5262.28	5172.17	4660.41	0.99	1495798.48	3407032.07	40.685113	-104.032299
	13640.00	89.35	1.89	6175.72	5352.26	5262.10	4663.85	0.70	1495888.45	3407034.03	40.685360	-104.032287
	13729.00	89.39	0.55	6176.71	5441.25	5351.08	4665.74	1.50	1495977.44	3407034.47	40.685604	-104.032280
	13819.00	89.45	0.25	6177.62	5531.24	5441.07	4666.37	0.34	1496067.43	3407033.63	40.685851	-104.032278
	13908.00	89.65	358.91	6178.32	5620.20	5530.06	4665.72	1.53	1496156.40	3407031.52	40.686095	-104.032280
	13997.00	90.08	357.99	6178.53	5709.11	5619.03	4663.30	1.14	1496245.31	3407027.65	40.686340	-104.032289
	14087.00	89.97	358.16	6178.49	5798.98	5708.98	4660.28	0.23	1496335.20	3407023.15	40.686587	-104.032299
	14176.00	90.26	358.22	6178.32	5887.86	5797.93	4657.47	0.34	1496424.09	3407018.89	40.686831	-104.032309
	14265.00	90.10	358.76	6178.04	5976.77	5886.90	4655.12	0.63	1496513.01	3407015.09	40.687075	-104.032318
	14355.00	90.13	359.80	6177.86	6066.72	5976.89	4653.99	1.16	1496602.97	3407012.48	40.687322	-104.032322
	14445.00	90.12	0.94	6177.67	6156.71	6066.89	4654.57	1.27	1496692.96	3407011.59	40.687569	-104.032320
	14534.00	90.07	0.75	6177.52	6245.71	6155.88	4655.88	0.22	1496781.96	3407011.45	40.687813	-104.032315
	14623.00	90.00	1.07	6177.46	6334.71	6244.87	4657.30	0.36	1496870.96	3407011.41	40.688057	-104.032310
	14713.00	90.15	1.21	6177.35	6424.71	6334.85	4659.09	0.23	1496960.95	3407011.72	40.688304	-104.032303
	14802.00	90.16	1.41	6177.11	6513.71	6423.83	4661.12	0.23	1497049.95	3407012.30	40.688549	-104.032296
	14892.00	89.97	1.77	6177.01	6603.70	6513.79	4663.62	0.44	1497139.94	3407013.33	40.688796	-104.032287
	14981.00	90.14	1.94	6176.92	6692.70	6602.74	4666.50	0.27	1497228.93	3407014.75	40.689040	-104.032276
	15071.00	89.28	2.29	6177.38	6782.68	6692.68	4669.83	1.04	1497318.91	3407016.60	40.689287	-104.032264
	15160.00	89.53	1.93	6178.31	6871.66	6781.61	4673.11	0.50	1497407.88	3407018.43	40.689531	-104.032252
	15250.00	89.54	1.78	6179.04	6961.65	6871.56	4676.02	0.16	1497497.86	3407019.87	40.689778	-104.032242
	15339.00	89.38	1.70	6179.88	7050.64	6960.52	4678.73	0.20	1497586.85	3407021.12	40.690022	-104.032232
	15424.00	89.55	1.41	6180.67	7135.64	7045.48	4681.03	0.40	1497671.84	3407022.04	40.690255	-104.032224
	15429.00	89.55	1.41	6180.71	7140.64	7050.48	4681.15	0.00	1497676.84	3407022.08	40.690269	-104.032223
	15518.00	89.36	1.09	6181.56	7229.63	7139.46	4683.10	0.42	1497765.83	3407022.56	40.690513	-104.032216
	15608.00	89.16	0.24	6182.72	7319.62	7229.44	4684.14	0.97	1497855.82	3407022.13	40.690760	-104.032212
	15697.00	89.48	359.25	6183.77	7408.59	7318.43	4683.74	1.16	1497944.79	3407020.28	40.691004	-104.032214
	15787.00	89.15	359.48	6184.85	7498.54	7408.42	4682.74	0.45	1498034.75	3407017.81	40.691251	-104.032217
	15876.00	89.28	359.27	6186.07	7587.49	7497.41	4681.77	0.28	1498123.71	3407015.38	40.691495	-104.032221
Cross Setback Toe (2773' FNL, 1001' FEL)	15953.10	89.26	359.79	6187.06	7664.55	7574.50	4681.13	0.67	1498200.78	3407013.48	40.691707	-104.032223
	15966.00	89.25	359.87	6187.22	7677.45	7587.40	4681.09	0.67	1498213.67	3407013.23	40.691742	-104.032223
Last SLB_MWD Survey	16050.00	89.29	358.98	6188.29	7761.40	7671.39	4680.25	1.06	1498297.63	3407011.02	40.691973	-104.032226
Projection to TD (2635' FNL, 1005' FEL)	16091.00	89.29	358.98	6188.80	7802.37	7712.38	4679.53	0.01	1498338.61	3407009.62	40.692085	-104.032229

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	17.000	1/98.425	13.500	9.625	NAL_NSG+MSHOT-Depth Only	Original Hole / Sonic Star 1101-13H MWD 0' to 16091' Definitive
	1	17.000	21.000	Act Stns	13.500	9.625	NAL_NSG+MSHOT-Depth Only	Original Hole / Sonic Star 1101-13H MWD 0' to 16091' Definitive
	1	21.000	369.000	Act Stns	13.500	9.625	NAL_NSG+MSHOT	Original Hole / Sonic Star 1101-13H MWD 0' to 16091' Definitive
	1	369.000	1886.000	Act Stns	13.500	9.625	NAL_MWD_PLUS_0.5_DEG	Original Hole / Sonic Star 1101-13H MWD 0' to 16091' Definitive
	1	1886.000	16091.000	Act Stns	8.500	5.500	NAL_MWD_PLUS_0.5_DEG	Original Hole / Sonic Star 1101-13H MWD 0' to 16091' Definitive