

Sugarloaf D 20-37-48 #5104H 0 to 21258'MD Survey Geodetic Report

(Def Survey)

Report Date: November 13, 2018 - 02:45 PM
Client: Oasis
Field: TX Winkler County (NAD 27)
Structure / Slot: Oasis Sugarloaf D 20-37-48 #5104H / Oasis Sugarloaf D 20-37-48 #5104H
Well: Sugarloaf D 20-37-48 #5104H
Borehole: Sugarloaf D 20-37-48 #5104H
UWI / API#: Unknown / Unknown
Survey Name: Sugarloaf D 20-37-48 #5104H 0 to 21258'MD
Survey Date: September 18, 2018
Tort / AHD / DDI / ERD Ratio: 293.538 ° / 10397.652 ft / 6.748 / 0.897
Coordinate Reference System: NAD27 Texas State Plane, Central Zone, US Feet
Location Lat / Long: N 31° 40' 38.13023", W 103° 15' 36.79086"
Location Grid N/E Y/X: N 743219.440 ftUS, E 1089583.960 ftUS
CRS Grid Convergence Angle: -1.5075 °
Grid Scale Factor: 0.99995114
Version / Patch: 2.10.740.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 165.460 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 2794.200 ft above MSL
Seabed / Ground Elevation: 2761.000 ft above MSL
Magnetic Declination: 6.980 °
Total Gravity Field Strength: 998.4777mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 47487.477 nT
Magnetic Dip Angle: 59.545 °
Declination Date: September 18, 2018
Magnetic Declination Model: HDGM 2018
North Reference: Grid North
Grid Convergence Used: -1.5075 °
Total Corr Mag North->Grid North: 8.4873 °
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 (N/S ° ' ")	Longitude (E/W ° ' ")
SHL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	743219.44	1089583.96	N 31 40 38.13	W 103 15 36.79
	139.43	0.13	35.10	139.43	-0.10	0.13	0.09	0.09	743219.57	1089584.05	N 31 40 38.13	W 103 15 36.79
	234.15	0.23	32.47	234.15	-0.30	0.38	0.25	0.11	743219.82	1089584.21	N 31 40 38.13	W 103 15 36.79
	328.87	0.36	35.73	328.87	-0.62	0.78	0.53	0.14	743220.22	1089584.49	N 31 40 38.14	W 103 15 36.78
	423.59	0.44	8.31	423.59	-1.15	1.38	0.76	0.22	743220.82	1089584.72	N 31 40 38.14	W 103 15 36.78
	518.31	0.53	0.25	518.30	-1.91	2.18	0.81	0.12	743221.62	1089584.77	N 31 40 38.15	W 103 15 36.78
	613.03	0.48	359.29	613.02	-2.71	3.01	0.81	0.05	743222.45	1089584.77	N 31 40 38.16	W 103 15 36.78
	644.60	0.47	0.08	644.59	-2.97	3.28	0.81	0.04	743222.72	1089584.77	N 31 40 38.16	W 103 15 36.78
	739.32	0.41	351.97	739.30	-3.68	4.00	0.76	0.09	743223.44	1089584.72	N 31 40 38.17	W 103 15 36.78
	834.04	0.42	2.05	834.02	-4.35	4.68	0.73	0.08	743224.12	1089584.69	N 31 40 38.18	W 103 15 36.78
	928.76	0.47	8.01	928.74	-5.04	5.41	0.79	0.07	743224.85	1089584.75	N 31 40 38.18	W 103 15 36.78
	1023.48	0.47	13.42	1023.46	-5.74	6.18	0.94	0.05	743225.62	1089584.90	N 31 40 38.19	W 103 15 36.78
	1118.20	0.35	25.29	1118.17	-6.31	6.82	1.15	0.15	743226.26	1089585.11	N 31 40 38.20	W 103 15 36.78
	1212.92	0.58	25.47	1212.89	-6.90	7.51	1.48	0.24	743226.95	1089585.44	N 31 40 38.20	W 103 15 36.78
	1307.64	0.60	24.31	1307.61	-7.65	8.40	1.89	0.02	743227.83	1089585.85	N 31 40 38.21	W 103 15 36.77
	1402.36	0.65	34.85	1402.32	-8.39	9.29	2.40	0.13	743228.73	1089586.36	N 31 40 38.22	W 103 15 36.77
	1497.08	0.73	38.28	1497.03	-9.10	10.20	3.08	0.10	743229.64	1089587.04	N 31 40 38.23	W 103 15 36.76
	1591.80	0.98	37.51	1591.74	-9.96	11.32	3.95	0.26	743230.76	1089587.91	N 31 40 38.24	W 103 15 36.75
	1686.52	1.07	54.15	1686.45	-10.78	12.48	5.16	0.33	743231.92	1089589.12	N 31 40 38.26	W 103 15 36.73
	1781.24	1.30	57.26	1781.15	-11.44	13.58	6.78	0.25	743233.02	1089590.74	N 31 40 38.27	W 103 15 36.72
	1875.96	1.52	56.43	1875.84	-12.19	14.85	8.73	0.23	743234.29	1089592.69	N 31 40 38.28	W 103 15 36.69
	1970.68	1.14	43.31	1970.53	-13.10	16.23	10.42	0.51	743235.67	1089594.38	N 31 40 38.29	W 103 15 36.68
	2065.40	1.07	42.30	2065.24	-14.08	17.57	11.66	0.08	743237.01	1089595.62	N 31 40 38.31	W 103 15 36.66
	2160.12	1.16	26.51	2159.94	-15.29	19.09	12.69	0.34	743238.53	1089596.65	N 31 40 38.32	W 103 15 36.65
	2254.84	1.16	22.09	2254.64	-16.78	20.83	13.48	0.09	743240.27	1089597.44	N 31 40 38.34	W 103 15 36.64
	2349.56	0.75	337.15	2349.35	-18.16	22.29	13.60	0.87	743241.73	1089597.56	N 31 40 38.35	W 103 15 36.64
	2444.28	1.13	294.41	2444.05	-19.37	23.25	12.51	0.81	743242.69	1089596.46	N 31 40 38.36	W 103 15 36.65
	2539.00	0.89	292.64	2538.76	-20.40	23.92	10.98	0.26	743243.36	1089594.94	N 31 40 38.37	W 103 15 36.67
	2633.72	0.76	287.82	2633.47	-21.18	24.39	9.70	0.16	743243.83	1089593.66	N 31 40 38.37	W 103 15 36.69
	2728.44	0.81	243.52	2728.18	-21.38	24.29	8.50	0.63	743243.73	1089592.46	N 31 40 38.37	W 103 15 36.70
	2823.16	1.27	212.65	2822.89	-20.52	23.11	7.34	0.75	743242.54	1089591.30	N 31 40 38.36	W 103 15 36.71
	2917.88	1.53	199.48	2917.58	-18.76	21.03	6.35	0.44	743240.47	1089590.31	N 31 40 38.34	W 103 15 36.72
	3012.60	1.41	184.37	3012.27	-16.61	18.68	5.84	0.43	743238.11	1089589.80	N 31 40 38.32	W 103 15 36.73
	3107.32	1.29	180.35	3106.96	-14.48	16.45	5.74	0.16	743235.89	1089589.70	N 31 40 38.29	W 103 15 36.73
	3202.04	1.24	173.34	3201.66	-12.43	14.36	5.85	0.17	743233.80	1089589.81	N 31 40 38.27	W 103 15 36.73
	3296.76	1.28	168.62	3296.36	-10.36	12.31	6.18	0.12	743231.75	1089590.14	N 31 40 38.25	W 103 15 36.72
	3391.48	1.28	167.68	3391.05	-8.25	10.24	6.62	0.02	743229.68	1089590.58	N 31 40 38.23	W 103 15 36.72
	3486.20	1.26	168.75	3485.75	-6.15	8.18	7.05	0.03	743227.62	1089591.00	N 31 40 38.21	W 103 15 36.71
	3580.92	1.20	175.56	3580.45	-4.14	6.17	7.33	0.17	743225.61	1089591.28	N 31 40 38.19	W 103 15 36.71
	3675.64	1.37	180.95	3675.14	-2.07	4.05	7.38	0.22	743223.49	1089591.34	N 31 40 38.17	W 103 15 36.71
	3770.36	1.74	182.75	3769.83	0.40	1.48	7.30	0.39	743220.92	1089591.26	N 31 40 38.15	W 103 15 36.71
	3865.08	1.82	193.40	3864.50	3.10	-1.42	6.88	0.36	743218.02	1089590.84	N 31 40 38.12	W 103 15 36.71
	3959.80	2.11	214.38	3959.17	5.57	-4.32	5.54	0.81	743215.12	1089589.50	N 31 40 38.09	W 103 15 36.73
	4054.52	2.22	224.41	4053.82	7.67	-7.07	3.28	0.42	743212.37	1089587.24	N 31 40 38.06	W 103 15 36.75
	4149.24	2.20	241.54	4148.47	9.05	-9.25	0.39	0.70	743210.19	1089584.35	N 31 40 38.04	W 103 15 36.78
	4243.96	3.39	273.49	4243.08	8.62	-9.94	-4.00	2.02	743209.50	1089579.96	N 31 40 38.03	W 103 15 36.83
	4338.68	3.23	280.67	4337.64	6.62	-9.28	-9.42	0.47	743210.16	1089574.54	N 31 40 38.04	W 103 15 36.90
	4433.40	3.81	284.65	4432.19	3.94	-7.99	-15.08	0.66	743211.45	1089568.88	N 31 40 38.05	W 103 15 36.96
	4528.12	4.09	287.05	4526.68	0.64	-6.20	-21.36	0.34	743213.24	1089562.60	N 31 40 38.06	W 103 15 37.04
	4622.84	4.01	297.29	4621.17	-3.34	-3.69	-27.53	0.77	743215.75	1089556.43	N 31 40 38.09	W 103 15 37.11
	4717.56	4.28	294.58	4715.64	-7.78	-0.70	-33.69	0.35	743218.74	1089550.27	N 31 40 38.11	W 103 15 37.18
	4812.28	5.07	291.34	4810.04	-12.46	2.29	-40.80	0.88	743221.73	1089543.16	N 31 40 38.14	W 103 15 37.26
	4907.00	5.15	292.57	4904.39	-17.48	5.44	-48.63	0.14	743224.88	1089535.34	N 31 40 38.17	W 103 15 37.36
	4987.00	5.88	288.84	4984.01	-21.90	8.15	-55.82	1.02	743227.59	1089528.14	N 31 40 38.20	W 103 15 37.44
	5175.00	5.81	288.13	5171.04	-32.33	14.22	-73.98	0.05	743233.66	1089509.99	N 31 40 38.25	W 103 15 37.65
	5364.00	5.56	286.55	5359.11	-42.23	19.80	-91.84	0.16	743239.24	1089492.12	N 31 40 38.30	W 103 15 37.86
	5552.00	5.06	284.79	5546.30	-50.99	24.51	-108.59	0.28	743243.95	1089475.37	N 31 40 38.34	W 103 15 38.05
	5741.00	4.94	282.16	5734.58	-58.73	28.35	-124.60	0.14	743247.79	1089459.36	N 31 40 38.38	W 103 15 38.24
	5931.00	4.69	279.87	5923.91	-65.61	31.41	-140.25	0.17	743250.85	1089443.71	N 31 40 38.40	W 103 15 38.42
	6120.00	5.25	279.69	6112.20	-72.36	34.19	-156.39	0.30	743253.63	1089427.58	N 31 40 38.43	W 103 15 38.61
	6308.00	5.69	280.40	6299.34	-79.82	37.32	-174.04	0.24	743256.76	1089409.93	N 31 40 38.45	W 103 15 38.82
	6497.00	6.13	283.56	6487.34	-88.52	41.38	-193.06	0.29	743260.81	1089390.91	N 31 40 38.49	W 103 15 39.04
	6686.00	5.56	274.95	6675.36	-96.33	44.53	-211.99	0.55	743263.97	1089371.98	N 31 40 38.52	W 103 15 39.26
	6875.00	5.50	276.88	6863.48	-102.69	46.41	-230.11	0.10	743265.84	1089353.86	N 31 40 38.53	W 103 15 39.47
	7062.00	5.06	276.88	7049.69	-108.98	48.47	-247.19	0.24	743267.91	1089336.78	N 31 40 38.55	W 103 15 39.67
	7251.00	4.88	277.23	7237.97	-115.00	50.48	-263.44	0.10	743269.92	1089320.53	N 31 40 38.56	W 103 15 39.85
	7440.00	4.56	276.18	7426.33	-120.64	52.30	-278.89	0.18	743271.74	1089305.09	N 31 40 38.58	W 103 15 40.03
	7629.00	4.00	274.60	7614.81	-125.46	53.64	-292.93	0.30	743273.07	1089291.05	N 31 40 38.58	W 103 15 40.20
	7817.00	4.06	272.84	7802.34	-129.60	54.49	-306.11	0.07	743273.93	1089277.87	N 31 40 38.59	W 103 15 40.35
	8005.00	3.44	274.07	7989.94	-133.39	55.22	-318.38	0.33	743274.66	1089265.59	N 31 40 38.59	W 103 15 40.49
	8195.00	2.75	273.54	8179.66	-136.62	55.91	-328.62	0.36	743275.35	1089255.36	N 31 40 38.60	W 103 15 40.61
	8383.00	2.44	270.20	8367.47	-139.04	56.20	-337.12	0.18	743275.64	1089246.86	N 31 40 38.60	W 103 15 40.71
	8571.00	1.88	263.00	8555.33	-140.46	55.84	-344.18	0.33	743275.28	1089239.79	N 31 40 38.59	W 103 15 40.79
	8760.00	1.56	271.									

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 ° ' ")
	9513.00	1.13	17.43	9497.09	-146.08	56.88	-362.57	0.79	743276.32	1089221.41	N 31 40 38.60	W 103 15 41.00
	9701.00	0.88	87.74	9685.07	-147.35	58.71	-360.57	0.63	743278.14	1089223.41	N 31 40 38.62	W 103 15 40.98
	9890.00	0.81	136.26	9874.05	-145.87	57.80	-358.20	0.37	743277.23	1089225.78	N 31 40 38.61	W 103 15 40.95
	10079.00	0.94	182.31	10063.03	-143.22	55.28	-357.34	0.37	743274.72	1089226.64	N 31 40 38.58	W 103 15 40.94
	10266.00	1.25	190.22	10249.99	-139.90	51.74	-357.76	0.18	743271.18	1089226.22	N 31 40 38.55	W 103 15 40.95
	10455.00	1.69	234.34	10438.94	-137.03	48.09	-360.39	0.62	743267.53	1089223.59	N 31 40 38.51	W 103 15 40.97
	10642.00	2.44	283.91	10625.83	-137.93	47.44	-366.49	0.99	743266.88	1089217.48	N 31 40 38.50	W 103 15 41.04
	10830.00	2.38	288.31	10813.66	-141.95	49.63	-374.08	0.10	743269.06	1089209.89	N 31 40 38.52	W 103 15 41.13
	10895.00	2.44	289.19	10878.60	-143.45	50.51	-376.67	0.11	743269.94	1089207.31	N 31 40 38.53	W 103 15 41.16
	10972.00	0.38	273.02	10955.58	-144.44	51.06	-378.48	2.70	743270.50	1089205.50	N 31 40 38.54	W 103 15 41.18
	11004.00	2.63	114.46	10987.57	-144.01	50.76	-377.91	9.33	743270.20	1089206.07	N 31 40 38.53	W 103 15 41.18
	11035.00	5.63	138.54	11018.49	-142.21	49.33	-376.26	10.97	743268.76	1089207.72	N 31 40 38.52	W 103 15 41.16
	11066.00	9.19	141.35	11049.22	-138.59	46.25	-373.70	11.54	743265.69	1089210.27	N 31 40 38.49	W 103 15 41.13
	11098.00	11.63	148.74	11080.69	-133.17	41.50	-370.43	8.68	743260.94	1089213.54	N 31 40 38.44	W 103 15 41.09
	11130.00	13.94	150.85	11111.90	-126.35	35.37	-366.88	7.36	743254.81	1089217.10	N 31 40 38.38	W 103 15 41.05
	11161.00	16.75	146.63	11141.79	-118.51	28.38	-362.61	9.75	743247.82	1089221.37	N 31 40 38.32	W 103 15 40.99
	11193.00	19.88	147.16	11172.17	-108.97	19.96	-357.12	9.79	743239.39	1089226.86	N 31 40 38.23	W 103 15 40.93
	11224.00	23.06	148.21	11201.01	-98.17	10.36	-351.06	10.33	743229.80	1089232.92	N 31 40 38.14	W 103 15 40.85
	11255.00	25.38	151.37	11229.28	-85.92	-0.63	-344.68	8.57	743218.81	1089239.30	N 31 40 38.03	W 103 15 40.78
	11287.00	27.69	158.58	11257.92	-71.88	-13.58	-338.67	12.38	743205.87	1089245.30	N 31 40 37.91	W 103 15 40.70
	11319.00	30.38	161.92	11285.89	-56.42	-28.19	-333.44	9.81	743191.25	1089250.53	N 31 40 37.76	W 103 15 40.64
	11350.00	32.81	162.98	11312.30	-40.21	-43.68	-328.55	8.04	743175.76	1089255.42	N 31 40 37.61	W 103 15 40.58
	11381.00	35.38	164.38	11337.97	-22.84	-60.36	-323.68	8.67	743159.09	1089260.30	N 31 40 37.45	W 103 15 40.52
	11413.00	38.63	163.50	11363.52	-3.59	-78.86	-318.34	10.29	743140.58	1089265.63	N 31 40 37.27	W 103 15 40.45
	11444.00	42.63	163.33	11387.04	16.58	-98.20	-312.58	12.91	743121.24	1089271.39	N 31 40 37.08	W 103 15 40.38
	11476.00	45.75	162.80	11409.98	38.86	-119.54	-306.08	9.82	743099.91	1089277.89	N 31 40 36.87	W 103 15 40.30
	11507.00	47.44	162.62	11431.28	61.36	-141.04	-299.39	5.47	743078.41	1089284.59	N 31 40 36.66	W 103 15 40.21
	11539.00	50.31	163.33	11452.33	85.44	-164.09	-292.34	9.12	743055.36	1089291.64	N 31 40 36.43	W 103 15 40.12
	11570.00	54.50	163.85	11471.24	109.98	-187.64	-285.40	13.58	743031.81	1089298.57	N 31 40 36.20	W 103 15 40.04
	11601.00	57.13	165.26	11488.65	135.62	-212.36	-278.58	9.28	743007.09	1089305.40	N 31 40 35.96	W 103 15 39.95
	11633.00	59.56	166.32	11505.45	162.86	-238.76	-271.89	8.10	742980.69	1089312.08	N 31 40 35.70	W 103 15 39.86
Last Non SLB Survey	11664.00	62.00	169.13	11520.58	189.88	-265.20	-266.15	11.16	742954.26	1089317.82	N 31 40 35.44	W 103 15 39.79
	11783.00	76.39	162.79	11562.77	300.76	-372.69	-238.97	13.07	742846.77	1089345.00	N 31 40 34.38	W 103 15 39.44
	11873.00	87.04	155.42	11575.74	389.07	-455.69	-207.20	14.33	742763.78	1089376.77	N 31 40 33.57	W 103 15 39.05
	11962.00	93.34	159.72	11575.45	477.17	-537.89	-173.27	8.57	742681.58	1089410.70	N 31 40 32.76	W 103 15 38.63
	12051.00	91.17	163.17	11571.94	565.86	-622.18	-144.97	4.58	742597.29	1089438.99	N 31 40 31.94	W 103 15 38.28
	12122.00	91.58	163.55	11570.24	636.79	-690.19	-124.65	0.79	742529.29	1089459.32	N 31 40 31.27	W 103 15 38.02
	12211.00	90.76	163.83	11568.42	725.73	-775.59	-99.66	0.97	742443.89	1089484.31	N 31 40 30.43	W 103 15 37.71
	12301.00	90.38	163.71	11567.53	815.69	-862.00	-74.51	0.44	742357.49	1089509.46	N 31 40 29.58	W 103 15 37.39
	12390.00	89.49	164.95	11567.63	904.67	-947.69	-50.47	1.71	742271.80	1089533.49	N 31 40 28.74	W 103 15 37.09
	12480.00	89.66	164.35	11568.30	994.65	-1034.47	-26.65	0.69	742185.02	1089557.32	N 31 40 27.89	W 103 15 36.78
	12569.00	89.62	164.09	11568.86	1083.63	-1120.12	-2.44	0.30	742099.38	1089581.52	N 31 40 27.05	W 103 15 36.48
	12659.00	89.62	163.92	11569.45	1173.60	-1206.63	22.36	0.19	742012.87	1089606.32	N 31 40 26.20	W 103 15 36.16
	12748.00	89.69	164.20	11569.99	1262.57	-1292.21	46.80	0.32	741927.30	1089630.76	N 31 40 25.36	W 103 15 35.86
	12837.00	89.59	164.10	11570.55	1351.55	-1377.82	71.11	0.16	741841.69	1089655.06	N 31 40 24.52	W 103 15 35.55
	12927.00	89.62	164.09	11571.17	1441.52	-1464.38	95.77	0.04	741755.14	1089679.72	N 31 40 23.67	W 103 15 35.24
	13016.00	89.76	164.21	11571.65	1530.49	-1549.99	120.08	0.21	741669.53	1089704.03	N 31 40 22.83	W 103 15 34.93
	13106.00	89.86	164.21	11571.95	1620.47	-1636.59	144.57	0.11	741582.93	1089728.52	N 31 40 21.98	W 103 15 34.62
	13195.00	90.48	163.75	11571.68	1709.44	-1722.14	169.13	0.87	741497.39	1089753.08	N 31 40 21.14	W 103 15 34.31
	13285.00	89.69	163.99	11571.55	1799.41	-1808.59	194.13	0.92	741410.94	1089778.08	N 31 40 20.29	W 103 15 33.99
	13374.00	89.76	163.83	11571.98	1888.37	-1894.11	218.80	0.20	741325.43	1089802.75	N 31 40 19.45	W 103 15 33.68
	13463.00	89.76	163.80	11572.35	1977.34	-1979.58	243.60	0.03	741239.96	1089827.55	N 31 40 18.61	W 103 15 33.37
	13553.00	89.24	163.95	11573.14	2067.30	-2066.03	268.60	0.60	741153.51	1089852.55	N 31 40 17.76	W 103 15 33.06
	13642.00	88.97	164.13	11574.53	2156.26	-2151.59	293.07	0.36	741067.96	1089877.01	N 31 40 16.92	W 103 15 32.75
	13732.00	89.28	163.87	11575.90	2246.22	-2238.10	317.87	0.45	740981.46	1089901.82	N 31 40 16.07	W 103 15 32.43
	13821.00	89.07	164.20	11577.18	2335.18	-2323.65	342.35	0.44	740895.90	1089926.29	N 31 40 15.23	W 103 15 32.12
	13911.00	89.25	164.04	11578.50	2425.15	-2410.21	366.97	0.27	740809.35	1089950.91	N 31 40 14.38	W 103 15 31.81
	14000.00	89.28	164.08	11579.64	2514.11	-2495.78	391.41	0.06	740723.79	1089975.35	N 31 40 13.54	W 103 15 31.50
	14090.00	89.32	163.65	11580.74	2604.07	-2582.23	416.42	0.48	740637.34	1090000.36	N 31 40 12.69	W 103 15 31.19
	14179.00	89.15	164.04	11581.93	2693.03	-2667.71	441.18	0.48	740551.87	1090025.12	N 31 40 11.85	W 103 15 30.88
	14268.00	88.70	163.94	11583.60	2781.98	-2753.24	465.73	0.52	740466.34	1090049.66	N 31 40 11.01	W 103 15 30.57
	14358.00	89.25	164.04	11585.21	2871.94	-2839.73	490.54	0.62	740379.85	1090074.48	N 31 40 10.16	W 103 15 30.25
	14447.00	89.69	163.33	11586.03	2960.89	-2925.15	515.54	0.94	740294.44	1090099.48	N 31 40 9.33	W 103 15 29.94
	14536.00	89.08	163.99	11586.99	3049.84	-3010.55	540.58	1.01	740209.05	1090124.51	N 31 40 8.49	W 103 15 29.62
	14626.00	91.04	164.71	11586.90	3139.82	-3097.20	564.86	2.32	740122.39	1090148.79	N 31 40 7.64	W 103 15 29.31
	14715.00	92.44	163.40	11584.19	3228.75	-3182.74	589.30	2.15	740036.87	1090173.23	N 31 40 6.80	W 103 15 29.01
	14814.00	89.93	162.19	11582.15	3327.61	-3277.28	618.57	2.81	739942.33	1090202.50	N 31 40 5.87	W 103 15 28.64
	14903.00	90.07	159.52	11582.15	3416.31	-3361.35	647.76	3.00	739858.26	1090231.68	N 31 40 5.05	W 103 15 28.28
	14993.00	90.17	155.77	11581.96	3505.46	-3444.57	681.98	4.17	739775.05	1090265.91	N 31 40 4.23	W 103 15 27.85
	15083.00	89.90	154.99	11581.90	3594.07	-3526.39	719.47	0.92	739693.23	1090303.40	N 31 40 3.43	W 103 15 27.40
	15172.00	89.52	156.09	11582.35	3681.74	-3607.39	756.32	1.31	739612.23	1090340.25	N 31 40 2.64	W 103 15 26.94
	15262.00	89.04	156.20	11583.48	3770.54	-3689.70	792.72	0.55	739529.93	1090376.64	N 31 40 1.83	W 103 15 26.50
	15351.00	88.59	160.09	11585.32	3858.78	-3772.27	825.84	4.40	739447.36	1090409.75	N 31 40 1.03	W 103 15 26.09
	15441.00	88.80	164.54	11587.38	3948.60	-3857.97	853.16	4.95	739361.66	1090437.08	N 31 40 0.19	W 103 15 25.75
	15530.00	89.21	165.23	11588.92	4037.58	-3943.88	876.37	0.90	739275.76	1090460.28	N 31 39 59.34	

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 ° ' ")
	18580.00	91.10	170.26	11562.44	7085.30	-6882.49	1685.83	3.00	736337.30	1091269.70	N 31 39 30.48	W 103 15 15.20
	18670.00	88.04	171.90	11563.11	7174.85	-6971.38	1699.78	3.86	736248.41	1091283.65	N 31 39 29.60	W 103 15 15.01
	18759.00	87.11	170.63	11566.88	7263.31	-7059.27	1713.28	1.77	736160.53	1091297.16	N 31 39 28.74	W 103 15 14.83
	18811.00	87.70	170.58	11569.23	7315.05	-7110.52	1721.76	1.14	736109.28	1091305.63	N 31 39 28.23	W 103 15 14.71
	18899.00	87.28	170.46	11573.09	7402.62	-7197.23	1736.24	0.50	736022.57	1091320.11	N 31 39 27.38	W 103 15 14.52
	18988.00	87.18	170.45	11577.39	7491.18	-7284.90	1750.98	0.11	735934.91	1091334.85	N 31 39 26.52	W 103 15 14.32
	19078.00	87.18	170.72	11581.82	7580.71	-7373.58	1765.69	0.30	735846.24	1091349.56	N 31 39 25.64	W 103 15 14.13
	19117.00	87.49	170.94	11583.63	7619.49	-7412.04	1771.90	0.97	735807.78	1091355.77	N 31 39 25.26	W 103 15 14.04
	19206.00	88.18	168.04	11586.99	7708.20	-7499.47	1788.12	3.35	735720.35	1091371.99	N 31 39 24.40	W 103 15 13.83
	19296.00	88.62	165.63	11589.51	7798.13	-7587.07	1808.61	2.72	735632.76	1091392.47	N 31 39 23.54	W 103 15 13.56
	19385.00	89.14	163.07	11591.25	7887.09	-7672.74	1832.61	2.93	735547.09	1091416.48	N 31 39 22.70	W 103 15 13.26
	19475.00	91.34	162.09	11590.87	7976.97	-7758.61	1859.55	2.68	735461.23	1091443.42	N 31 39 21.86	W 103 15 12.92
	19564.00	90.86	161.00	11589.16	8065.75	-7843.01	1887.72	1.34	735376.82	1091471.58	N 31 39 21.03	W 103 15 12.57
	19653.00	91.44	160.67	11587.37	8154.44	-7927.06	1916.93	0.75	735292.78	1091500.79	N 31 39 20.21	W 103 15 12.21
	19743.00	91.72	160.93	11584.89	8244.11	-8012.03	1946.52	0.42	735207.82	1091530.38	N 31 39 19.37	W 103 15 11.84
	19832.00	90.48	160.08	11583.18	8332.75	-8095.91	1976.21	1.69	735123.95	1091560.07	N 31 39 18.55	W 103 15 11.47
	19922.00	86.97	158.61	11585.19	8422.20	-8180.08	2007.94	4.23	735039.77	1091591.80	N 31 39 17.73	W 103 15 11.08
	20012.00	88.14	159.21	11589.03	8511.53	-8263.98	2040.30	1.46	734955.88	1091624.15	N 31 39 16.91	W 103 15 10.68
	20101.00	91.20	162.35	11589.54	8600.21	-8347.99	2069.59	4.93	734871.87	1091653.44	N 31 39 16.08	W 103 15 10.32
	20191.00	90.65	163.53	11588.08	8690.11	-8434.02	2095.99	1.45	734785.85	1091679.84	N 31 39 15.24	W 103 15 9.98
	20280.00	90.38	163.13	11587.28	8779.05	-8519.28	2121.52	0.54	734700.60	1091705.37	N 31 39 14.40	W 103 15 9.66
	20370.00	90.38	162.63	11586.69	8868.95	-8605.29	2148.01	0.56	734614.59	1091731.86	N 31 39 13.56	W 103 15 9.33
	20459.00	91.07	162.55	11585.56	8957.83	-8690.20	2174.64	0.78	734529.68	1091758.49	N 31 39 12.72	W 103 15 9.00
	20548.00	91.75	163.76	11583.37	9046.73	-8775.36	2200.42	1.56	734444.53	1091784.27	N 31 39 11.89	W 103 15 8.67
	20640.00	90.48	158.03	11581.58	9138.38	-8862.23	2230.51	6.38	734357.66	1091814.36	N 31 39 11.04	W 103 15 8.30
	20729.00	91.69	156.34	11579.89	9226.44	-8944.25	2265.02	2.34	734275.64	1091848.86	N 31 39 10.23	W 103 15 7.87
	20818.00	92.37	158.64	11576.74	9314.51	-9026.41	2299.07	2.69	734193.49	1091882.91	N 31 39 9.43	W 103 15 7.46
	20908.00	91.65	155.56	11573.58	9403.49	-9109.26	2334.06	3.51	734110.65	1091917.90	N 31 39 8.62	W 103 15 7.03
	20997.00	93.75	159.35	11569.39	9491.51	-9191.34	2368.14	4.86	734028.56	1091951.98	N 31 39 7.82	W 103 15 6.61
	21086.00	95.96	159.53	11561.86	9579.69	-9274.37	2399.28	2.49	733945.54	1091983.12	N 31 39 7.00	W 103 15 6.22
	21175.00	97.14	159.61	11551.71	9667.64	-9357.23	2430.15	1.33	733862.69	1092013.98	N 31 39 6.19	W 103 15 5.84
Final MWD	21200.00	97.79	159.53	11548.46	9692.30	-9380.46	2438.80	2.62	733839.46	1092022.63	N 31 39 5.96	W 103 15 5.73
Proj. to Bit	21258.00	97.79	159.53	11540.60	9749.46	-9434.29	2458.90	0.00	733785.63	1092042.73	N 31 39 5.44	W 103 15 5.48

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	33.200	1/98.425	20.000	16.000	NAL_NSG+MSHOT-Depth Only	Sugarloaf D 20-37-48 #5104H / Sugarloaf D 20-37-48 #5104H 0 to 21258MD
	1	33.200	33.200	Act Stns	20.000	16.000	NAL_NSG+MSHOT-Depth Only	Sugarloaf D 20-37-48 #5104H / Sugarloaf D 20-37-48 #5104H 0 to 21258MD
	1	33.200	328.870	Act Stns	20.000	16.000	NAL_NSG+MSHOT	Sugarloaf D 20-37-48 #5104H / Sugarloaf D 20-37-48 #5104H 0 to
	1	328.870	423.000	Act Stns	20.000	16.000	NAL_MWD-NON_SLB	Sugarloaf D 20-37-48 #5104H / Sugarloaf D 20-37-48 #5104H 0 to
	1	423.000	4987.000	Act Stns	13.500	10.750	NAL_MWD-NON_SLB	Sugarloaf D 20-37-48 #5104H / Sugarloaf D 20-37-48 #5104H 0 to
	1	4987.000	11664.000	Act Stns	9.875	7.625	NAL_MWD-NON_SLB	Sugarloaf D 20-37-48 #5104H / Sugarloaf D 20-37-48 #5104H 0 to
	1	11664.000	21258.000	Act Stns	6.750	5.500	NAL_MWD_1.0_DEG	Sugarloaf D 20-37-48 #5104H / Sugarloaf D 20-37-48 #5104H 0 to

...Sugarloaf D 20-37-48 #5104H\Sugarloaf D 20-37-48 #5104H\Sugarloaf D 20-37-48 #5104H 0 to 21258'MD