

Oilfield Services, Central U.S. Land
Schlumberger Drilling and Measurements
Drilling Group
Geo Market Area: South West Texas Basin
7220 W I-H 20
Midland, Texas 79706
Phone : (432) 742-5400 (Main)
Fax : (432) 742-5606 (Shared)

Schlumberger

OCD - HOBBS
03/18/2020
RECEIVED

Well Reference:
19, 26S, 35E, Lea NM
32.02253 103.41080

I, Tamer Ahmed certify that; I am employed by Drilling & Measurements, a division of Schlumberger Technology Corporation; that I did on the day(s) of February 13, 2019 through February 17, 2019, conduct or supervise the taking of the SlimPulse surveys from a depth of 13460.00 feet to a depth of 20358.00 feet referenced to driller's depth; that the data is true, correct, complete and within the limitations of the tool as set forth by Drilling & Measurements, a division of Schlumberger Technology Corporation; that I am authorized and qualified to make this report; that this survey was conducted at the request of Marathon Oil Permian LLC for the Madera 19 WA Fed Com 2H ST01 Well (Side Track) API No. 30-025-44900 in New Mexico; and that I have reviewed this report and find that it conforms to the principals and procedures as set forth by Drilling & Measurements, a division of Schlumberger Technology Corporation.

Tamer Ahmed

By
Tamer Ahmed
FE

Subscribed and Sworn to before me this 21st day of February (month) 2019 (yr)

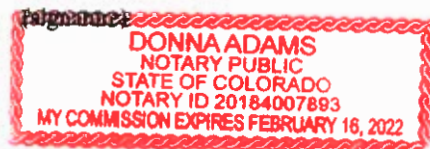
My Commission expires:

2-16-2022

Notary Public

Donna Adams

Adams County Colorado
(County State)



Marathon Madera 19 WA Fed Com 2H ST01 MWD 12036' to 20402' Survey

Geodetic Report

(Def Survey)

Report Date: February 18, 2019 - 03:27 PM
Client: Marathon Oil Corporation
Field: NM Lea County (NAD 27)
Structure / Slot: Marathon Madera 19 Federal Com 26 35 19 (1-2-5-6) / Madera 19 WA Fed Com 2H
Well: Madera 19 WA Fed Com 2H
Borehole: ST01
UWI / API#: Unknown / Unknown
Survey Name: Marathon Madera 19 WA Fed Com 2H ST01 MWD 12036' to 20402'
Survey Date: February 08, 2019
Tort / AHD / DDI / ERD Ratio: 263.401 ° / 8832.279 ft / 6.568 / 0.688

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 359.500 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: KB 26.5ft
TVD Reference Elevation: 3211.500 ft above
Seabed / Ground Elevation: 3185.000 ft above
Magnetic Declination: 6.619 °
Total Gravity Field Strength: 998.4547mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 47684.355 nT

Coordinate Reference System: NAD27 New Mexico State Plane, Eastern Zone, US Feet

Location Lat / Long: N 32° 1' 20.65541", W 103° 24' 37.22559"
Location Grid N/E Y/X: N 373098.900 ftUS, E 786058.750 ftUS

CRS Grid Convergence Angle: 0.4894 °

Grid Scale Factor: 1.00000282

Version / Patch: 2.10.720.0

Magnetic Dip Angle: 59.669 °
Declination Date: February 08, 2019
Magnetic Declination Model: HDGM 2019
North Reference: Grid North
Grid Convergence Used: 0.4894 °
Total Corr Mag North->Grid North: 6.1293 °
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 ° ' ")
Surface	0.00	0.00	351.82	0.00	0.00	0.00	0.00	N/A	373098.90	786058.75	N 32° 1' 20.66" W 103° 24' 37.23"	
	178.00	0.40	313.50	178.00	0.43	0.43	-0.45	0.22	373099.33	786058.30	N 32° 1' 20.66" W 103° 24' 37.23"	
	239.00	0.50	321.60	239.00	0.79	0.78	-0.77	0.19	373099.68	786057.98	N 32° 1' 20.66" W 103° 24' 37.23"	
	331.00	0.60	329.40	330.99	1.52	1.51	-1.27	0.14	373100.41	786057.48	N 32° 1' 20.67" W 103° 24' 37.24"	
	422.00	0.50	340.90	421.99	2.31	2.30	-1.64	0.16	373101.20	786057.11	N 32° 1' 20.68" W 103° 24' 37.24"	
	513.00	0.40	345.40	512.99	3.00	2.98	-1.85	0.12	373101.88	786056.90	N 32° 1' 20.69" W 103° 24' 37.25"	
	605.00	0.40	345.40	604.98	3.62	3.60	-2.01	0.00	373102.50	786056.74	N 32° 1' 20.69" W 103° 24' 37.25"	
	696.00	0.40	352.50	695.98	4.24	4.22	-2.13	0.05	373103.12	786056.62	N 32° 1' 20.70" W 103° 24' 37.25"	
	788.00	0.40	350.70	787.98	4.88	4.86	-2.22	0.01	373103.76	786056.53	N 32° 1' 20.70" W 103° 24' 37.25"	
	879.00	0.40	349.70	878.98	5.51	5.49	-2.33	0.01	373104.39	786056.42	N 32° 1' 20.71" W 103° 24' 37.25"	
	970.00	0.40	345.10	969.97	6.13	6.10	-2.47	0.04	373105.00	786056.28	N 32° 1' 20.72" W 103° 24' 37.25"	
	1061.00	0.40	333.00	1060.97	6.72	6.69	-2.70	0.09	373105.59	786056.05	N 32° 1' 20.72" W 103° 24' 37.26"	
	1121.00	0.50	337.80	1120.97	7.15	7.12	-2.89	0.18	373106.02	786055.86	N 32° 1' 20.73" W 103° 24' 37.26"	
	1244.00	0.40	337.50	1243.97	8.05	8.02	-3.26	0.08	373106.92	786055.49	N 32° 1' 20.74" W 103° 24' 37.26"	
	1336.00	0.40	304.90	1335.96	8.53	8.50	-3.64	0.24	373107.40	786055.11	N 32° 1' 20.74" W 103° 24' 37.27"	
	1430.00	1.50	245.90	1429.95	8.23	8.18	-5.04	1.42	373107.08	786053.71	N 32° 1' 20.74" W 103° 24' 37.28"	
	1525.00	3.90	242.60	1524.84	6.27	6.19	-9.04	2.53	373105.09	786049.71	N 32° 1' 20.72" W 103° 24' 37.33"	
	1619.00	5.90	245.10	1618.49	2.82	2.68	-16.26	2.14	373101.58	786042.49	N 32° 1' 20.68" W 103° 24' 37.41"	
	1714.00	6.90	248.40	1712.90	-1.25	-1.47	-26.00	1.12	373097.43	786032.75	N 32° 1' 20.64" W 103° 24' 37.53"	
	1808.00	6.80	247.90	1806.23	-5.33	-5.65	-36.40	0.12	373093.25	786022.35	N 32° 1' 20.60" W 103° 24' 37.65"	
	1903.00	6.80	245.70	1900.56	-9.67	-10.08	-46.74	0.27	373088.82	786012.01	N 32° 1' 20.56" W 103° 24' 37.77"	
	1997.00	7.80	247.10	1993.80	-14.35	-14.85	-57.69	1.08	373084.05	786001.06	N 32° 1' 20.51" W 103° 24' 37.90"	
	2092.00	9.80	250.90	2087.67	-19.38	-20.00	-71.27	2.19	373078.90	785987.48	N 32° 1' 20.46" W 103° 24' 38.06"	
	2186.00	10.70	252.90	2180.17	-24.43	-25.19	-87.17	1.03	373073.71	785971.58	N 32° 1' 20.41" W 103° 24' 38.24"	
	2281.00	11.20	254.60	2273.44	-29.32	-30.23	-104.49	0.63	373068.67	785954.26	N 32° 1' 20.37" W 103° 24' 38.44"	
	2375.00	11.50	255.80	2365.60	-33.88	-34.95	-122.38	0.41	373063.95	785936.37	N 32° 1' 20.32" W 103° 24' 38.65"	
	2470.00	10.60	256.80	2458.84	-38.05	-39.27	-140.07	0.97	373059.63	785918.68	N 32° 1' 20.28" W 103° 24' 38.86"	
	2564.00	10.10	257.30	2551.31	-41.69	-43.06	-156.52	0.54	373055.84	785902.23	N 32° 1' 20.24" W 103° 24' 39.05"	
	2658.00	10.20	258.00	2643.84	-45.09	-46.60	-172.70	0.17	373052.30	785886.04	N 32° 1' 20.21" W 103° 24' 39.24"	
	2753.00	10.10	258.60	2737.35	-48.34	-50.00	-189.10	0.15	373048.90	785869.65	N 32° 1' 20.18" W 103° 24' 39.43"	
	2847.00	10.10	259.50	2829.90	-51.33	-53.13	-205.28	0.17	373045.77	785853.47	N 32° 1' 20.15" W 103° 24' 39.62"	
	2942.00	9.90	259.90	2923.45	-54.14	-56.08	-221.51	0.22	373042.82	785837.24	N 32° 1' 20.12" W 103° 24' 39.80"	
	3036.00	9.60	261.50	3016.10	-56.58	-58.65	-237.22	0.43	373040.25	785821.53	N 32° 1' 20.10" W 103° 24' 39.99"	
	3130.00	9.30	263.00	3108.82	-58.53	-60.74	-252.51	0.41	373038.16	785806.24	N 32° 1' 20.08" W 103° 24' 40.16"	
	3225.00	8.90	263.90	3202.63	-60.12	-62.45	-267.44	0.45	373036.45	785791.31	N 32° 1' 20.06" W 103° 24' 40.34"	
	3319.00	9.30	263.90	3295.44	-61.57	-64.03	-282.22	0.43	373034.87	785776.53	N 32° 1' 20.05" W 103° 24' 40.51"	
	3414.00	9.70	262.40	3389.14	-63.31	-65.91	-297.79	0.50	373032.99	785760.96	N 32° 1' 20.03" W 103° 24' 40.69"	
	3508.00	8.70	263.80	3481.93	-64.99	-67.72	-312.70	1.09	373031.18	785746.05	N 32° 1' 20.01" W 103° 24' 40.86"	
	3603.00	8.80	263.30	3575.82	-66.49	-69.35	-327.06	0.13	373029.55	785731.69	N 32° 1' 20.00" W 103° 24' 41.03"	
	3697.00	9.70	256.30	3668.60	-69.07	-72.06	-341.90	1.53	373026.84	785716.85	N 32° 1' 19.97" W 103° 24' 41.20"	
	3791.00	10.60	251.80	3761.13	-73.51	-76.64	-357.81	1.28	373022.26	785700.94	N 32° 1' 19.93" W 103° 24' 41.39"	
	3886.00	10.90	253.50	3854.47	-78.64	-81.92	-374.72	0.46	373016.98	785684.03	N 32° 1' 19.88" W 103° 24' 41.59"	
	3980.00	10.90	254.80	3946.77	-83.35	-86.77	-391.82	0.26	373012.13	785666.93	N 32° 1' 19.83" W 103° 24' 41.78"	
	4075.00	10.30	256.50	4040.15	-87.54	-91.11	-408.74	0.71	373007.79	785650.01	N 32° 1' 19.79" W 103° 24' 41.98"	
	4169.00	8.80	261.90	4132.85	-90.38	-94.08	-424.03	1.86	373004.82	785634.71	N 32° 1' 19.76" W 103° 24' 42.16"	
	4264.00	8.80	259.70	4226.73	-92.58	-96.41	-438.38	0.35	373002.49	785620.37	N 32° 1' 19.74" W 103° 24' 42.33"	
	4358.00	9.40	255.80	4319.54	-95.62	-99.58	-452.90	0.92	372999.32	785605.85	N 32° 1' 19.71" W 103° 24' 42.50"	
	4452.00	9.10	255.90	4412.32	-99.19	-103.27	-467.55	0.32	372995.63	785591.20	N 32° 1' 19.67" W 103° 24' 42.67"	
	4547.00	8.60	255.80	4506.19	-102.64	-106.84	-481.72	0.53	372992.06	785577.03	N 32° 1' 19.64" W 103° 24' 42.83"	
	4641.00	8.10	255.50	4599.19	-105.90	-110.23	-494.94	0.53	372988.67	785563.81	N 32° 1' 19.61" W 103° 24' 42.98"	
	4736.00	8.20	251.90	4693.24	-109.57	-114.01	-507.86	0.55	372984.89	785550.89	N 32° 1' 19.57" W 103° 24' 43.14"	
	4830.00	8.70	248.90	4786.21	-114.10	-118.65	-520.87	0.71	372980.25	785537.88	N 32° 1' 19.53" W 103° 24' 43.29"	
	4925.00	8.70	247.20	4880.12	-119.35	-124.02	-534.19	0.27	372974.88	785524.56	N 32° 1' 19.47" W 103° 24' 43.44"	
	5019.00	9.50	244.50	4972.94	-125.33	-130.11	-547.75	0.96	372968.79	785511.00	N 32° 1' 19.41" W 103° 24' 43.60"	
	5114.00	9.00	242.80	5066.70	-131.98	-136.89	-561.44	0.60	372962.01	785497.31	N 32° 1' 19.35" W 103° 24' 43.76"	
	5208.00	9.10	246.80	5159.53	-138.15	-143.17	-574.81	0.68	372955.73	785483.94	N 32° 1' 19.29" W 103° 24' 43.92"	
	5302.00	9.80	250.40	5252.26	-143.64	-148.79	-589.18	0.97	372950.11	785469.57	N 32° 1' 19.23" W 103° 24' 44.08"	
	5348.00	9.60	252.00	5297.60	-146.07	-151.28	-596.51	0.73	372947.62	785462.24	N 32° 1' 19.21" W 103° 24' 44.17"	
	5421.00	8.80	253.80	5369.66	-149.42	-154.72	-607.66	1.16	372944.18	785451.09	N 32° 1' 19.18" W 103° 24' 44.30"	
	5484.00	8.70	252.50	5431.93	-152.11	-157.50	-616.84	0.35	372941.40	785441.91	N 32° 1' 19.15" W 103° 24' 44.41"	
	5579.00	9.30	255.00	5525.76	-156.13	-161.65	-631.10	0.75	372937.25	785427.65	N 32° 1' 19.11" W 103° 24' 44.57"	
	5673.00	10.30	255.20	5618.39	-160.11	-165.76	-646.56	1.06	372933.14	785412.18	N 32° 1' 19.07" W 103° 24' 44.75"	
	5768.00	10.20	254.80	5711.87	-164.34	-170.14	-662.89	0.13	372928.76	785395.86	N 32° 1' 19.03" W 103° 24' 44.94"	
	5862.00	9.90	254.60	5804.43	-168.53	-174.46	-678.72	0.32	372924.44	785380.03	N 32° 1' 18.99" W 103° 24' 45.13"	
	5957.00	9.60	253.20	5898.05	-172.86	-178.92	-694.17	0.40	372919.98	785364.58	N 32° 1' 18.94" W 103° 24' 45.31"	
	6051.00	10.40	258.30	5990.63	-176.71	-182.91	-709.98	1.27	372915.99	785348.76	N 32° 1' 18.91" W 103° 24' 45.49"	
	6145.00	11.20	259.10	6082.96	-180.00	-186.36	-727.26	0.87	372912.54	785331.49	N 32° 1' 18.87" W 103° 24' 45.69"	
	6240.00	10.60	258.00	6176.25	-183.41	-189.92	-744.86	0.67	372908.98	785313.89	N 32° 1' 18.84" W 103° 24' 45.90"	
	6334.00	10.20	258.10	6268.70	-186.78	-193.43	-761.46	0.43	372905.47	785297.28	N 32° 1' 18.81" W 103° 24' 46.09"	
	6429.00	10.00	257.90	6362.23	-190.10	-196.89	-777.76	0.21	372902.01	785280.99	N 32° 1' 18.77" W 103° 24' 46.28"	
	6523.00	9.90	257.60	6454.82	-193.41	-200.34	-793.63	0.12	372898.56	785265.12	N 32° 1' 18.74" W 103° 24' 46.46"	
	6617.00	10.10	257.60	6547.39	-196.77	-203.84	-809.58	0.21	372895.05	785249.17	N 32° 1' 18.71" W 103° 24' 46.65"	
	6712.00	10.00	25									

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 ° ' ")
	6901.00	9.90	256.60	6827.10	-206.94	-214.43	-857.57	0.22	372884.47	785201.17	N 32 1 18.61 W	103 24 47.21
	6995.00	9.80	256.00	6919.72	-210.61	-218.24	-873.20	0.15	372880.66	785185.55	N 32 1 18.57 W	103 24 47.39
	7089.00	9.40	256.20	7012.40	-214.24	-222.00	-888.41	0.43	372876.90	785170.33	N 32 1 18.53 W	103 24 47.57
	7184.00	9.10	256.70	7106.17	-217.69	-225.58	-903.26	0.33	372873.32	785155.49	N 32 1 18.50 W	103 24 47.74
	7278.00	8.90	256.60	7199.01	-220.96	-228.98	-917.57	0.21	372869.92	785141.18	N 32 1 18.47 W	103 24 47.91
	7373.00	8.40	256.40	7292.93	-224.17	-232.31	-931.46	0.53	372866.59	785127.29	N 32 1 18.44 W	103 24 48.07
	7467.00	8.20	255.10	7385.94	-227.40	-235.65	-944.61	0.29	372863.25	785114.14	N 32 1 18.40 W	103 24 48.22
	7562.00	7.90	254.10	7480.01	-230.82	-239.18	-957.44	0.35	372859.72	785101.31	N 32 1 18.37 W	103 24 48.37
	7656.00	6.00	250.50	7573.31	-234.13	-242.59	-968.28	2.07	372856.31	785090.47	N 32 1 18.34 W	103 24 48.50
	7750.00	5.70	251.00	7666.82	-237.21	-245.75	-977.33	0.32	372853.15	785081.42	N 32 1 18.31 W	103 24 48.60
	7845.00	5.70	250.60	7761.35	-240.24	-248.85	-986.24	0.04	372850.05	785072.51	N 32 1 18.28 W	103 24 48.70
	7939.00	5.40	252.40	7854.91	-243.05	-251.74	-994.86	0.37	372847.16	785063.89	N 32 1 18.25 W	103 24 48.81
	8033.00	2.50	241.80	7948.68	-245.30	-254.05	-1000.88	3.17	372844.85	785057.87	N 32 1 18.23 W	103 24 48.88
	8128.00	0.90	196.20	8043.64	-246.98	-255.74	-1002.92	2.08	372843.16	785055.83	N 32 1 18.21 W	103 24 48.90
	8222.00	0.80	182.40	8137.63	-248.34	-257.11	-1003.15	0.24	372841.79	785055.60	N 32 1 18.20 W	103 24 48.90
	8316.00	0.80	197.90	8231.62	-249.62	-258.39	-1003.38	0.23	372840.51	785055.37	N 32 1 18.18 W	103 24 48.90
	8411.00	0.60	176.40	8326.61	-250.75	-259.61	-1003.55	0.34	372839.39	785055.20	N 32 1 18.17 W	103 24 48.91
	8505.00	0.40	167.80	8420.61	-251.56	-260.33	-1003.45	0.23	372838.57	785055.30	N 32 1 18.16 W	103 24 48.91
	8600.00	0.60	173.20	8515.60	-252.38	-261.14	-1003.32	0.22	372837.76	785055.43	N 32 1 18.16 W	103 24 48.90
	8694.00	0.50	164.60	8609.60	-253.26	-262.03	-1003.15	0.14	372836.87	785055.59	N 32 1 18.15 W	103 24 48.90
	8789.00	0.30	126.70	8704.60	-253.82	-262.58	-1002.84	0.34	372836.32	785055.90	N 32 1 18.14 W	103 24 48.90
	8883.00	0.30	131.10	8798.60	-254.13	-262.89	-1002.46	0.02	372836.01	785056.29	N 32 1 18.14 W	103 24 48.89
	8978.00	0.50	154.90	8893.59	-254.67	-263.42	-1002.10	0.27	372835.48	785056.65	N 32 1 18.13 W	103 24 48.89
	9072.00	0.30	180.40	8967.59	-255.29	-264.04	-1001.93	0.28	372834.86	785056.82	N 32 1 18.13 W	103 24 48.89
	9166.00	0.10	138.90	9061.59	-255.60	-264.35	-1001.87	0.25	372834.55	785056.87	N 32 1 18.12 W	103 24 48.89
	9261.00	0.30	133.60	9176.59	-255.83	-264.68	-1001.64	0.21	372834.32	785057.11	N 32 1 18.12 W	103 24 48.89
	9355.00	0.20	102.10	9270.59	-256.04	-264.79	-1001.30	0.18	372834.11	785057.45	N 32 1 18.12 W	103 24 48.88
	9449.00	0.30	3.30	9364.59	-255.83	-264.58	-1001.13	0.41	372834.32	785057.62	N 32 1 18.12 W	103 24 48.88
	9544.00	0.30	334.60	9459.59	-255.36	-264.10	-1001.22	0.16	372834.80	785057.53	N 32 1 18.13 W	103 24 48.88
	9638.00	0.40	109.60	9553.59	-255.25	-263.99	-1001.02	0.69	372834.91	785057.73	N 32 1 18.13 W	103 24 48.88
	9732.00	1.20	126.70	9647.58	-255.95	-264.69	-999.92	0.88	372834.21	785058.83	N 32 1 18.12 W	103 24 48.87
	9826.00	1.50	126.00	9741.55	-257.28	-266.00	-998.13	0.32	372832.90	785060.62	N 32 1 18.11 W	103 24 48.84
	9920.00	0.50	201.40	9835.54	-258.39	-267.11	-997.29	1.55	372831.79	785061.46	N 32 1 18.10 W	103 24 48.83
	10015.00	0.90	258.70	9930.53	-258.92	-267.64	-998.17	0.80	372831.26	785060.58	N 32 1 18.09 W	103 24 48.85
	10109.00	0.90	276.80	10024.52	-258.96	-267.70	-999.63	0.30	372831.20	785059.12	N 32 1 18.09 W	103 24 48.86
	10204.00	0.90	278.00	10119.51	-258.76	-267.50	-1001.11	0.02	372831.40	785057.64	N 32 1 18.09 W	103 24 48.88
	10298.00	1.00	295.60	10213.50	-258.29	-267.05	-1002.58	0.33	372831.85	785056.17	N 32 1 18.10 W	103 24 48.90
	10393.00	0.80	270.70	10308.49	-257.91	-266.68	-1003.99	0.46	372832.22	785054.76	N 32 1 18.10 W	103 24 48.91
	10487.00	0.70	269.80	10402.48	-257.89	-266.67	-1005.22	0.11	372832.23	785053.53	N 32 1 18.10 W	103 24 48.93
	10582.00	1.00	255.30	10497.47	-258.09	-266.89	-1006.60	0.39	372832.01	785052.15	N 32 1 18.10 W	103 24 48.94
	10676.00	1.10	270.70	10591.45	-258.27	-267.08	-1008.30	0.32	372831.82	785050.45	N 32 1 18.10 W	103 24 48.96
	10771.00	1.70	309.00	10686.42	-257.36	-266.19	-1010.30	1.14	372832.71	785048.45	N 32 1 18.11 W	103 24 48.99
	10865.00	1.50	333.70	10780.39	-255.36	-264.21	-1011.93	0.76	372834.69	785046.82	N 32 1 18.13 W	103 24 49.00
	10959.00	1.20	328.20	10874.36	-253.42	-262.27	-1013.00	0.35	372836.63	785045.75	N 32 1 18.15 W	103 24 49.02
	11054.00	1.00	330.90	10969.34	-251.84	-260.70	-1013.92	0.22	372838.20	785044.83	N 32 1 18.16 W	103 24 49.03
	11148.00	1.10	319.00	11063.33	-259.30	-260.91	-1014.91	0.25	372839.60	785043.84	N 32 1 18.18 W	103 24 49.04
	11243.00	1.60	299.90	11158.30	-249.07	-257.95	-1016.66	0.70	372840.95	785042.09	N 32 1 18.19 W	103 24 49.06
	11337.00	1.00	263.00	11252.28	-248.50	-257.39	-1018.61	1.06	372841.50	785040.14	N 32 1 18.19 W	103 24 49.08
	11432.00	0.60	249.50	11347.27	-248.76	-257.67	-1019.90	0.46	372841.23	785038.85	N 32 1 18.19 W	103 24 49.10
	11526.00	0.40	331.40	11441.27	-248.64	-257.55	-1020.52	0.72	372841.35	785038.23	N 32 1 18.19 W	103 24 49.10
	11620.00	0.70	342.70	11535.26	-247.80	-256.72	-1020.85	0.34	372842.18	785037.90	N 32 1 18.20 W	103 24 49.11
	11715.00	0.80	357.30	11630.26	-246.58	-255.50	-1021.05	0.23	372843.40	785037.70	N 32 1 18.21 W	103 24 49.11
	11809.00	0.70	338.40	11724.25	-245.39	-254.31	-1021.29	0.28	372844.59	785037.45	N 32 1 18.23 W	103 24 49.11
	11904.00	1.00	297.50	11819.24	-244.46	-253.39	-1022.24	0.69	372845.51	785036.51	N 32 1 18.23 W	103 24 49.12
	11949.00	1.10	278.50	11864.23	-244.21	-253.14	-1023.02	0.80	372845.76	785035.73	N 32 1 18.24 W	103 24 49.13
	12036.00	1.30	252.50	11951.21	-244.37	-253.32	-1024.79	0.66	372845.58	785033.96	N 32 1 18.24 W	103 24 49.15
	12130.00	2.10	169.50	12045.18	-246.37	-255.33	-1025.49	2.48	372843.57	785033.26	N 32 1 18.22 W	103 24 49.16
	12287.00	6.00	22.60	12201.94	-241.65	-250.58	-1021.81	5.00	372848.32	785036.94	N 32 1 18.26 W	103 24 49.12
	12319.00	5.50	25.50	12233.78	-238.73	-247.65	-1020.50	1.81	372851.25	785038.25	N 32 1 18.29 W	103 24 49.10
	12413.00	4.50	21.90	12327.42	-231.28	-240.16	-1017.19	1.11	372858.74	785041.56	N 32 1 18.36 W	103 24 49.06
	12508.00	8.90	17.20	12421.75	-220.82	-229.68	-1013.62	4.66	372869.22	785045.13	N 32 1 18.47 W	103 24 49.02
	12603.00	22.70	356.60	12513.00	-195.38	-204.22	-1012.53	15.46	372894.68	785046.22	N 32 1 18.72 W	103 24 49.01
	12697.00	33.30	0.10	12595.89	-151.33	-160.18	-1013.56	11.41	372938.72	785045.18	N 32 1 19.16 W	103 24 49.01
	12791.00	45.10	1.60	12668.60	-92.05	-100.89	-1012.59	12.59	372998.01	785046.16	N 32 1 19.74 W	103 24 49.00
	12887.00	59.60	1.00	12727.09	-16.28	-25.10	-1010.91	15.11	373073.80	785047.84	N 32 1 20.49 W	103 24 48.97
	12981.00	69.50	0.10	12767.43	68.48	59.67	-1010.12	10.57	373158.57	785048.63	N 32 1 21.33 W	103 24 48.95
	13075.00	75.90	359.70	12795.37	158.18	149.37	-1010.28	6.82	373248.27	785048.47	N 32 1 22.22 W	103 24 48.94
	13170.00	80.60	0.40	12814.71	251.16	242.35	-1010.20	5.00	373341.25	785048.55	N 32 1 23.14 W	103 24 48.93
	13264.00	85.20	0.40	12826.33	344.40	335.60	-1009.54	4.89	373434.50	785049.20	N 32 1 24.06 W	103 24 48.92
	13359.00	90.20	358.80	12830.14	439.29	430.49	-1010.21	5.53	373529.39	785048.54	N 32 1 25.00 W	103 24 48.92
First SLB Survey	13460.00	88.25	358.12	12831.50	540.26	531.44	-1012.92	2.04	373630.34	785045.83	N 32 1 26.00 W	103 24 48.94
	13555.00	88.42	357.92	12834.26	635.19	626.34	-1016.20	0.28	373725.24	785042.54	N 32 1 26.94 W	103 24 48.97
	13649.00	88.25	356.92	12837.00	729.08	720.20	-1020.43	1.08	373819.11	785038.32	N 32 1 27.87 W	103 24 49.01
	13744.00	91.31	356.78	12837.36	823.97	815.05	-1025.65	3.22	373913.95	785033.10	N 32 1 28.81 W	103 24 49.06
	13839.00	92.27	356.70	12834.39	918.81	909.85	-1031.05	1.01	374006.75	785027.70	N 32 1 29.75 W	103 24 49.11
	13934.00	90.62	357.09	12832.00	1013.68	1004.68	-1036.20	1.78	374103.58	785022.55	N 32 1 30.68 W	103 24 49.16
	14030.00	90.52	359.09	12831.04	1109.64	1100.61	-1039.40	2.09	374199.51	785019.35		

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 ° ' ")
	17050.00	90.10	0.88	12786.73	4127.80	4119.09	-1016.28	1.91	377217.99	785042.47	N 32 2 1.50	W 103 24 48.62
	17145.00	90.69	0.88	12786.07	4222.77	4214.07	-1014.82	0.62	377312.98	785043.93	N 32 2 2.44	W 103 24 48.60
	17240.00	90.24	359.45	12785.30	4317.76	4309.07	-1014.55	1.58	377407.97	785044.20	N 32 2 3.38	W 103 24 48.58
	17334.00	90.65	359.06	12784.57	4411.75	4403.06	-1015.77	0.60	377501.96	785042.98	N 32 2 4.31	W 103 24 48.59
	17429.00	91.07	358.11	12783.15	4506.73	4498.01	-1018.12	1.09	377596.92	785040.63	N 32 2 5.25	W 103 24 48.61
	17523.00	91.48	358.24	12781.05	4600.68	4591.94	-1021.11	0.46	377690.85	785037.64	N 32 2 6.18	W 103 24 48.63
	17618.00	90.14	0.13	12779.71	4695.66	4686.92	-1022.46	2.44	377785.82	785036.29	N 32 2 7.12	W 103 24 48.64
	17712.00	89.69	1.18	12779.85	4789.64	4780.91	-1021.39	1.22	377879.81	785037.36	N 32 2 8.05	W 103 24 48.62
	17806.00	89.86	3.06	12780.22	4883.54	4874.84	-1017.91	2.01	377973.74	785040.84	N 32 2 8.98	W 103 24 48.57
	17901.00	88.73	0.60	12781.39	4978.44	4969.78	-1014.88	2.85	378068.68	785043.87	N 32 2 9.92	W 103 24 48.52
	17995.00	90.00	3.67	12782.43	5072.33	5063.69	-1011.37	3.53	378162.60	785047.38	N 32 2 10.85	W 103 24 48.47
	18089.00	91.17	5.28	12781.47	5165.96	5157.40	-1004.04	2.12	378256.30	785054.71	N 32 2 11.77	W 103 24 48.38
	18184.00	90.10	0.63	12780.42	5260.76	5252.24	-999.15	5.02	378351.14	785059.60	N 32 2 12.71	W 103 24 48.31
	18279.00	89.79	358.45	12780.51	5355.75	5347.23	-999.91	2.32	378446.13	785058.84	N 32 2 13.65	W 103 24 48.31
	18373.00	90.86	357.54	12779.98	5449.71	5441.17	-1003.20	1.49	378540.07	785055.55	N 32 2 14.58	W 103 24 48.34
	18468.00	92.03	357.72	12777.58	5544.63	5536.05	-1007.12	1.25	378634.96	785051.63	N 32 2 15.52	W 103 24 48.38
	18562.00	92.34	357.18	12774.00	5638.50	5629.89	-1011.30	0.66	378728.80	785047.45	N 32 2 16.45	W 103 24 48.41
	18657.00	92.27	355.84	12770.18	5733.29	5724.64	-1017.08	1.41	378823.54	785041.67	N 32 2 17.39	W 103 24 48.47
	18751.00	91.82	354.56	12766.82	5826.97	5818.24	-1024.94	1.44	378917.15	785033.81	N 32 2 18.32	W 103 24 48.55
	18845.00	88.90	352.88	12766.23	5920.47	5911.67	-1035.22	3.58	379010.57	785023.53	N 32 2 19.24	W 103 24 48.66
	18939.00	87.77	352.20	12768.96	6013.74	6004.83	-1047.42	1.40	379103.73	785011.33	N 32 2 20.16	W 103 24 48.80
	19034.00	87.70	352.85	12772.72	6107.96	6098.95	-1059.77	0.69	379197.85	784998.98	N 32 2 21.10	W 103 24 48.93
	19128.00	88.08	354.09	12776.18	6201.38	6192.27	-1070.45	1.38	379291.18	784988.30	N 32 2 22.02	W 103 24 49.05
	19222.00	87.87	355.42	12779.50	6294.99	6285.82	-1079.04	1.43	379384.72	784979.71	N 32 2 22.95	W 103 24 49.14
	19317.00	89.04	356.82	12782.06	6389.79	6380.56	-1085.47	1.92	379479.47	784973.28	N 32 2 23.89	W 103 24 49.20
	19411.00	88.83	356.74	12783.81	6483.67	6474.40	-1090.74	0.24	379573.30	784968.00	N 32 2 24.81	W 103 24 49.25
	19505.00	89.45	358.50	12785.22	6577.60	6568.30	-1094.65	1.98	379667.21	784964.10	N 32 2 25.74	W 103 24 49.29
	19600.00	90.34	0.49	12785.39	6672.60	6663.29	-1095.48	2.29	379762.20	784963.26	N 32 2 26.68	W 103 24 49.29
	19694.00	91.72	1.64	12783.70	6766.54	6757.26	-1093.74	1.91	379856.16	784965.01	N 32 2 27.61	W 103 24 49.26
	19788.00	91.75	3.32	12780.86	6860.37	6851.12	-1089.67	1.79	379950.03	784969.08	N 32 2 28.54	W 103 24 49.20
	19883.00	91.44	3.44	12778.21	6955.11	6945.92	-1084.07	0.35	380044.82	784974.68	N 32 2 29.48	W 103 24 49.13
	19978.00	90.28	3.68	12776.79	7049.86	7040.72	-1078.18	1.25	380139.63	784980.57	N 32 2 30.42	W 103 24 49.05
	20072.00	90.76	3.94	12775.93	7143.59	7134.51	-1071.93	0.58	380233.42	784986.82	N 32 2 31.34	W 103 24 48.97
	20167.00	90.24	2.54	12775.10	7238.39	7229.35	-1066.56	1.57	380328.26	784992.19	N 32 2 32.28	W 103 24 48.90
	20262.00	89.31	2.06	12775.48	7333.27	7324.27	-1062.75	1.10	380423.18	784996.00	N 32 2 33.22	W 103 24 48.84
Last SLB Survey	20358.00	89.72	3.71	12776.29	7429.10	7420.15	-1057.92	1.77	380519.05	785000.83	N 32 2 34.17	W 103 24 48.78
Proj. to Bit	20402.00	89.72	3.71	12776.51	7472.98	7464.05	-1055.07	0.00	380562.96	785003.68	N 32 2 34.60	W 103 24 48.74

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	26.500	1/98.425	30.000	30.000	NAL_MWD-NON_SLB-Depth Only	Original Hole / Marathon Madera 19 WA Fed Com 2H MWD 0' to 12825'
	1	26.500	26.500	Act Stns	30.000	30.000	NAL_MWD-NON_SLB-Depth Only	Original Hole / Marathon Madera 19 WA Fed Com 2H MWD 0' to 12825'
	1	26.500	12036.000	Act Stns	30.000	30.000	NAL_MWD-NON_SLB	Original Hole / Marathon Madera 19 WA Fed Com 2H MWD 0' to ST01 / Marathon Madera 19 WA Fed Com 2H ST01 MWD 12036'
	1	12036.000	13359.000	Act Stns	7.625	6.125	NAL_MWD-NON_SLB	ST01 / Marathon Madera 19 WA Fed Com 2H ST01 MWD 12036'
	1	13359.000	20402.000	Act Stns	7.625	6.125	NAL_MWD_1.0_DEG	ST01 / Marathon Madera 19 WA Fed Com 2H ST01 MWD 12036'