

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)

HOBBS OGD **Schlumberger**

DEC 23 2019

RECEIVED

Well Reference:

19, 26S, 35E, Lea NM
32.02240 103.41024

I, Jorge Pantoja certify that: I am employed by Drilling & Measurements, a division of Schlumberger Technology Corporation; that I did on the day(s) of January 25, 2019 through February 01, 2019, conduct or supervise the taking of the SlimPulse surveys from a depth of 13052.00 feet to a depth of 20020.00 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 TB Fed Com 1H Well (Original Hole) API No. 30-025-44899 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.

By Jorge Pantoja
Jorge Pantoja
FE

Subscribed and Sworn to before me this 7th day of February (month) 2019 (yr)

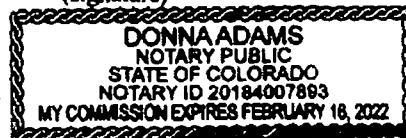
My Commission expires:

2-16-2022

D. Adams
Notary Public

Adams County Colorado
(County State)

(signature)





Marathon Madera 19 Fed Com 26-35-19 TB 1H MWD 0' to 20068' Survey
Geodetic Report
(Def Survey)



Report Date: January 31, 2019 - 04:04 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
Well: Federal Com 26 35 19 TB 1H
Borehole: Madera 19 Federal Com 26 35 19 TB 1H
UWI / API#: Original Hole
Survey Name: Unknown / Unknown
Survey Date: Marathon Madera 19 Fed Com 26-35-19 TB 1H MWD 0' to 20068'
Tort / AHD / DDI / ERD Ratio: January 17, 2019
Coordinate Reference System: 256,176' / 8540,833' ft / 6.548' / 0.881
Location Lat / Long: NAD27 New Mexico State Plane, Eastern Zone, US Feet
Location Grid N/E Y/X: N 32° 1' 20.65258", W 103° 24' 36.87693"
CRS Grid Convergence Angle: N 373098.870 ftUS, E 786088.770 ftUS
Grid Scale Factor: 0.4895"
Version / Patch: 1.00000284
2.10.753.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 359.480 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: KB 26.50 ft
TVD Reference Elevation: 3211.500 ft above
Seabed / Ground Elevation: 3185.000 ft above
Magnetic Declination: 6.825 °
Total Gravity Field Strength: 988.4547mgn (9.80685 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 47690.877 nT
Magnetic Dip Angle: 59.871 °
Declination Date: January 17, 2019
Magnetic Declination Model: HDGM 2019
North Reference: Grid North
Grid Convergence Used: 0.4895"
Total Corr Mag North→Grid: 6.1354"
North: Well Head
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	0.00	0.00	0.00	0.00	0.00	N/A	373098.87	786088.77	N 32 1 20.65 W 103 24 36.88	
Begin Third Party MWD Survey	178.00	0.80	78.60	177.99	0.23	0.25	1.22	0.45	373099.12	786089.99	N 32 1 20.65 W 103 24 36.88	
	239.00	0.90	84.60	238.99	0.36	0.37	2.11	0.22	373099.24	786090.88	N 32 1 20.66 W 103 24 36.85	
	331.00	1.00	82.40	330.97	0.52	0.55	3.63	0.12	373099.42	786092.40	N 32 1 20.68 W 103 24 36.83	
	422.00	0.70	106.00	421.97	0.46	0.50	4.95	0.50	373099.37	786093.72	N 32 1 20.68 W 103 24 36.82	
	513.00	0.40	188.10	512.98	-0.02	0.03	5.44	0.83	373098.90	786094.21	N 32 1 20.65 W 103 24 36.81	
	605.00	0.40	203.20	604.96	-0.83	-0.58	5.27	0.11	373098.29	786094.04	N 32 1 20.65 W 103 24 36.82	
	696.00	0.50	198.00	695.96	-1.30	-1.25	5.03	0.13	373097.62	786093.60	N 32 1 20.64 W 103 24 36.82	
	788.00	0.80	198.20	787.95	-2.14	-2.10	4.77	0.11	373096.77	786093.54	N 32 1 20.63 W 103 24 36.82	
	879.00	0.50	199.30	878.95	-2.97	-2.92	4.49	0.11	373095.95	786093.26	N 32 1 20.62 W 103 24 36.83	
	970.00	0.50	211.00	969.94	-3.68	-3.64	4.16	0.11	373095.23	786092.93	N 32 1 20.62 W 103 24 36.83	
	1061.00	0.50	217.80	1060.94	-4.33	-4.29	3.71	0.07	373094.58	786092.48	N 32 1 20.61 W 103 24 36.83	
	1121.00	0.50	225.10	1120.94	-4.72	-4.69	3.36	0.11	373094.18	786092.13	N 32 1 20.61 W 103 24 36.84	
	1245.00	0.10	279.10	1244.94	-5.08	-5.05	2.87	0.36	373093.82	786091.64	N 32 1 20.60 W 103 24 36.84	
	1337.00	0.00	158.50	1336.94	-5.06	-5.04	2.79	0.11	373093.83	786091.56	N 32 1 20.60 W 103 24 36.84	
	1431.00	0.10	63.00	1430.94	-5.03	-5.00	2.87	0.11	373093.87	786091.64	N 32 1 20.60 W 103 24 36.84	
	1528.00	0.10	132.10	1525.94	-5.05	-5.02	3.00	0.12	373093.85	786091.77	N 32 1 20.60 W 103 24 36.84	
	1620.00	0.30	151.10	1619.94	-5.32	-5.29	3.18	0.22	373093.58	786091.95	N 32 1 20.60 W 103 24 36.84	
	1715.00	0.10	159.60	1714.94	-5.81	-5.58	3.33	0.21	373093.29	786092.10	N 32 1 20.60 W 103 24 36.84	
	1809.00	1.60	236.00	1808.92	-6.42	-6.39	2.27	1.68	373092.48	786091.04	N 32 1 20.59 W 103 24 36.85	
	1904.00	3.50	233.40	1903.83	-8.85	-8.87	-1.16	2.00	373090.00	786087.81	N 32 1 20.56 W 103 24 36.89	
	1998.00	5.30	238.70	1997.54	-12.90	-12.96	-7.09	1.93	373085.91	786081.68	N 32 1 20.52 W 103 24 36.98	
	2093.00	6.60	243.30	2092.03	-17.68	-17.82	-15.64	1.54	373081.05	786073.13	N 32 1 20.48 W 103 24 37.08	
	2187.00	8.80	249.60	2185.18	-22.49	-22.73	-27.21	2.51	373076.14	786061.56	N 32 1 20.43 W 103 24 37.20	
	2282.00	9.20	250.10	2279.01	-27.45	-27.83	-41.17	0.42	373071.04	786047.60	N 32 1 20.38 W 103 24 37.36	
	2376.00	8.90	249.50	2371.84	-32.43	-32.93	-55.05	0.33	373065.94	786033.72	N 32 1 20.33 W 103 24 37.52	
	2470.00	8.80	249.30	2464.72	-37.40	-38.02	-68.59	0.11	373060.85	786020.18	N 32 1 20.28 W 103 24 37.68	
	2565.00	8.50	249.50	2558.64	-42.30	-43.05	-81.96	0.32	373055.82	786006.81	N 32 1 20.23 W 103 24 37.83	
	2659.00	8.10	248.70	2651.68	-47.02	-47.89	-94.64	0.44	373050.88	785994.13	N 32 1 20.19 W 103 24 37.98	
	2754.00	8.60	249.70	2745.65	-51.80	-52.78	-107.53	0.55	373046.09	785981.24	N 32 1 20.14 W 103 24 38.13	
	2848.00	9.00	249.40	2838.54	-56.71	-57.81	-121.01	0.43	373041.06	785967.76	N 32 1 20.09 W 103 24 38.28	
	2942.00	8.60	249.40	2931.43	-61.84	-62.67	-134.47	0.43	373036.00	785954.30	N 32 1 20.04 W 103 24 38.44	
	3037.00	8.90	250.00	3025.33	-66.53	-67.88	-148.02	0.33	373030.89	785940.75	N 32 1 19.99 W 103 24 38.60	
	3131.00	10.30	250.60	3118.01	-71.68	-73.16	-162.78	1.49	373025.71	785925.99	N 32 1 19.94 W 103 24 38.77	
	3226.00	10.20	249.80	3211.49	-77.26	-78.88	-178.69	0.18	373019.99	785910.08	N 32 1 19.89 W 103 24 38.96	
	3320.00	9.70	251.00	3304.08	-82.57	-84.33	-193.99	0.58	373014.54	785894.78	N 32 1 19.83 W 103 24 39.14	
	3414.00	8.70	251.90	3396.87	-87.23	-89.12	-208.23	1.07	373009.75	785880.54	N 32 1 19.79 W 103 24 39.30	
	3509.00	8.40	248.90	3490.81	-91.84	-93.85	-221.54	0.57	373005.02	785867.23	N 32 1 19.74 W 103 24 39.46	
	3603.00	9.80	250.30	3583.63	-96.88	-99.02	-235.47	1.51	372999.85	785853.30	N 32 1 19.69 W 103 24 39.62	
	3698.00	9.20	253.10	3677.33	-101.88	-103.95	-250.35	0.80	372994.92	785838.42	N 32 1 19.65 W 103 24 39.79	
	3792.00	9.70	252.30	3770.05	-106.14	-108.55	-265.09	0.55	372990.32	785823.68	N 32 1 19.60 W 103 24 39.97	
	3887.00	10.60	252.30	3863.56	-111.08	-113.64	-281.04	0.95	372985.23	785807.73	N 32 1 19.55 W 103 24 40.15	
	3981.00	11.40	253.10	3955.83	-116.25	-118.87	-296.18	0.87	372979.90	785790.81	N 32 1 19.50 W 103 24 40.35	
	4076.00	11.20	253.30	4048.99	-121.47	-124.35	-315.98	0.21	372974.52	785772.79	N 32 1 19.45 W 103 24 40.56	
	4170.00	9.70	256.80	4141.43	-125.78	-128.78	-332.44	1.73	372970.09	785756.33	N 32 1 19.41 W 103 24 40.75	
	4264.00	10.10	257.30	4234.03	-129.23	-132.40	-348.19	0.44	372966.47	785740.58	N 32 1 19.37 W 103 24 40.93	
	4359.00	11.50	254.20	4327.35	-133.49	-136.81	-365.43	1.59	372962.06	785723.34	N 32 1 19.33 W 103 24 41.13	
	4453.00	11.40	251.90	4419.48	-138.78	-142.25	-383.27	0.50	372958.62	785705.50	N 32 1 19.28 W 103 24 41.34	
	4547.00	10.80	254.10	4511.75	-143.68	-147.50	-400.42	0.98	372951.37	785688.35	N 32 1 19.23 W 103 24 41.54	
	4642.00	10.30	250.90	4603.18	-148.68	-152.67	-418.65	0.69	372946.20	785671.92	N 32 1 19.18 W 103 24 41.73	
	4736.00	10.40	247.00	4697.65	-154.81	-158.74	-432.60	0.75	372940.13	785656.17	N 32 1 19.12 W 103 24 41.92	
	4831.00	9.50	247.50	4791.22	-161.02	-165.09	-447.73	0.95	372933.78	785641.04	N 32 1 19.06 W 103 24 42.09	
	4925.00	8.70	244.50	4884.03	-168.92	-171.12	-461.32	0.99	372927.75	785627.45	N 32 1 19.00 W 103 24 42.25	
	5020.00	8.50	242.90	4977.97	-173.10	-177.41	-474.05	0.33	372921.46	785614.72	N 32 1 18.94 W 103 24 42.40	
	5114.00	9.60	244.00	5070.79	-179.58	-184.01	-487.28	1.18	372914.86	785601.49	N 32 1 18.87 W 103 24 42.55	
	5209.00	10.10	245.30	5164.39	-186.40	-190.96	-501.97	0.58	372907.91	785586.80	N 32 1 18.81 W 103 24 42.73	
	5303.00	9.30	246.50	5257.05	-192.74	-197.44	-516.42	0.88	372901.43	785572.35	N 32 1 18.74 W 103 24 42.89	
	5392.00	8.80	246.40	5305.44	-195.76	-200.52	-523.49	1.02	372896.35	785556.28	N 32 1 18.71 W 103 24 42.98	
	5483.00	8.30	246.80	5434.98	-203.33	-208.25	-541.36	0.38	372890.82	785547.41	N 32 1 18.64 W 103 24 43.19	
	5578.00	9.70	250.60	5528.81	-208.57	-213.81	-555.22	1.60	372885.26	785533.55	N 32 1 18.59 W 103 24 43.35	
	5673.00	10.50	251.20	5622.34	-213.87	-219.06	-570.96	0.85	372879.81	785517.81	N 32 1 18.53 W 103 24 43.53	
	5767.00	10.40	249.20	5714.78	-219.50	-224.83	-587.00	0.40	372874.04	785501.77	N 32 1 18.48 W 103 24 43.72	
	5862.00	10.10	249.40	5808.26	-225.33	-230.81	-602.81	0.32	372868.06	785485.96	N 32 1 18.42 W 103 24 43.90	
	5956.00	9.80	249.90	5900.85	-230.84	-236.48	-618.04	0.33	372862.41	785470.73	N 32 1 18.36 W 103 24 44.08	
	6050.00	9.60	250.80	5993.51	-236.03	-241.79	-632.95	0.27	372857.08	785455.82	N 32 1 18.31 W 103 24 44.25	
	6145.00	9.70	249.40	6087.18	-241.32	-247.21	-647.93	0.27	372851.86	785440.84	N 32 1 18.26 W 103 24 44.43	
	6239.00	7.60	254.20	6180.09	-245.67	-251.89	-661.32	2.36	372847.18	785427.45	N 32 1 18.22 W 103 24 44.58	
	6333.00	6.60	248.50	6273.37	-249.42	-255.53	-672.26	1.47	372843.34	785416.51	N 32 1 18.16 W 103 24 44.71	
	6428.00	4.70	247.30	6367.90	-253.02	-259.21	-680.86	2.00	372839.66	785407.91	N 32 1 18.15 W 103 24 44.81	
	6522.00	2.60	248.50	6461.71	-255.24	-261.48	-688.39	2.24	372837.39	785402.38	N 32 1 18.12 W 103 24 44.87	
	6617.00	0.80	271.60	6556.67	-255.99	-262.26	-688.90	2.17	372836.61	785399.67	N 32 1 18.12 W 103 24 44.90	
	6711.00	0.60	267.40	6650.66	-255.74	-262.02	-689.82	0.28	372836.85	785398.94	N 32 1 18.12 W 103 24 44.91	
	6805.00	0.50	267.10	6744.66	-255.53	-261.81	-690.67	0.32	372837.06	785398.10	N 32 1 1	

Comments	MD (m)	Incl (°)	Azim Grid (°)	TVD (m)	VSEC (m)	NS (m)	EW (m)	DLS (°/100m)	Northing (mUS)	Easting (mUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	17239.00	91.55	2.04	12519.33	4644.80	4638.28	-738.82	1.03	377737.18	785349.85	N 32 2 6.81	W 103 24 43.00
	17333.00	91.38	2.42	12516.82	4738.68	4732.18	-735.28	0.44	377831.05	785353.51	N 32 2 7.54	W 103 24 44.85
	17428.00	90.24	1.44	12515.58	4933.56	4827.11	-732.06	1.58	377925.99	785356.70	N 32 2 8.48	W 103 24 44.90
	17522.00	91.07	0.14	12514.51	4927.53	4921.10	-730.77	1.84	378019.87	785358.00	N 32 2 9.41	W 103 24 44.88
	17617.00	90.38	0.03	12513.31	5022.51	5016.09	-730.63	0.74	378114.96	785358.14	N 32 2 10.35	W 103 24 44.87
	17711.00	90.27	0.14	12512.77	5116.51	5110.09	-730.49	0.17	378208.96	785358.28	N 32 2 11.28	W 103 24 44.86
	17805.00	90.45	0.49	12512.18	5210.49	5204.08	-729.87	0.42	378302.96	785358.80	N 32 2 12.21	W 103 24 44.84
	17900.00	90.65	0.65	12511.27	5305.47	5299.07	-729.03	0.27	378397.95	785359.74	N 32 2 13.15	W 103 24 44.82
	17994.00	90.41	359.95	12510.40	5399.46	5393.07	-728.53	0.79	378491.94	785360.23	N 32 2 14.08	W 103 24 44.80
	18088.00	90.24	359.77	12509.87	5493.45	5487.07	-728.76	0.28	378585.94	785360.01	N 32 2 15.01	W 103 24 44.80
	18183.00	90.41	359.78	12509.33	5588.45	5582.06	-729.14	0.18	378680.94	785359.63	N 32 2 15.95	W 103 24 44.79
	18278.00	90.52	0.56	12508.58	5683.44	5677.06	-728.88	0.83	378775.93	785359.81	N 32 2 16.89	W 103 24 44.78
	18372.00	90.55	0.73	12507.88	5777.42	5771.05	-727.80	0.18	378869.92	785360.97	N 32 2 17.82	W 103 24 44.76
	18467.00	91.13	0.48	12506.29	5872.39	5866.03	-726.81	0.67	378964.91	785361.96	N 32 2 18.76	W 103 24 44.74
	18561.00	90.03	359.04	12505.33	5966.38	5960.02	-727.22	1.91	379058.90	785361.55	N 32 2 19.69	W 103 24 44.73
	18656.00	90.69	0.24	12504.74	6061.37	6055.02	-727.82	1.44	379153.89	785360.95	N 32 2 20.63	W 103 24 44.73
	18750.00	90.90	359.93	12503.43	6155.36	6149.01	-727.68	0.40	379247.88	785361.09	N 32 2 21.56	W 103 24 44.72
	18844.00	90.55	0.03	12502.24	6249.35	6243.00	-727.71	0.39	379341.88	785361.06	N 32 2 22.49	W 103 24 44.71
	18939.00	91.38	359.41	12500.64	6344.33	6337.99	-728.18	1.09	379436.86	785360.59	N 32 2 23.43	W 103 24 44.71
	19033.00	90.62	358.29	12499.00	6438.31	6431.95	-730.06	1.44	379530.83	785358.71	N 32 2 24.36	W 103 24 44.72
	19127.00	90.00	358.07	12498.50	6532.28	6525.90	-733.05	0.70	379624.78	785355.72	N 32 2 25.29	W 103 24 44.74
	19222.00	89.93	359.06	12498.55	6627.27	6620.87	-735.43	1.04	379719.75	785353.34	N 32 2 26.23	W 103 24 44.76
	19316.00	91.17	0.90	12497.65	6721.26	6714.86	-735.46	2.38	379813.73	785353.31	N 32 2 27.16	W 103 24 44.75
	19410.00	91.27	0.90	12495.65	6815.21	6808.83	-733.98	0.11	379907.70	785354.79	N 32 2 28.09	W 103 24 44.73
	19504.00	89.59	359.83	12494.94	6909.19	6902.82	-733.38	2.12	380001.69	785355.39	N 32 2 29.02	W 103 24 44.71
	19599.00	89.86	358.27	12495.40	7004.18	6997.70	-734.96	1.67	380096.68	785353.81	N 32 2 29.96	W 103 24 44.72
	19693.00	89.93	357.79	12495.57	7098.15	7091.74	-738.19	0.52	380190.62	785350.58	N 32 2 30.89	W 103 24 44.75
	19786.00	89.86	357.91	12495.74	7191.11	7184.68	-741.68	0.15	380283.55	785347.09	N 32 2 31.81	W 103 24 44.78
	19882.00	89.86	357.99	12495.98	7287.08	7280.62	-745.11	0.08	380379.49	785343.66	N 32 2 32.76	W 103 24 44.81
	19977.00	89.93	358.19	12496.15	7382.05	7375.56	-748.28	0.22	380474.44	785340.49	N 32 2 33.70	W 103 24 44.84
Final SLB MWD Survey	20020.00	90.03	358.47	12496.17	7425.04	7418.55	-749.53	0.69	380517.42	785339.24	N 32 2 34.13	W 103 24 44.85
Projection to Bit	20068.00	90.03	358.47	12496.14	7473.03	7466.53	-750.81	0.00	380565.40	785337.95	N 32 2 34.60	W 103 24 44.88

Survey Type: Non-Def Survey

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma
Survey Program:

Description	Part	MD From (m)	MD To (m)	EOU Freq (m)	Hole Size	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	1	0.000	26.500	1/88.425	30.000	30.000	NAL_MWD-NON_SLB-Depth Only	Original Hole / Marathon Madera 19 Fed Com 26-35-19 TB 1H MWD 0' to 20068'
	1	26.500	26.500	Act Stns	30.000	30.000	NAL_MWD-NON_SLB-Depth Only	Original Hole / Marathon Madera 19 Fed Com 26-35-19 TB 1H MWD 0' to 20068'
	1	26.500	11873.000	Act Stns	30.000	30.000	NAL_MWD-NON_SLB	Original Hole / Marathon Madera 19 Fed Com 26-35-19 TB 1H
	1	11873.000	20068.000	Act Stns	30.000	30.000	NAL_MWD_1.0_DEG	Original Hole / Marathon Madera 19 Fed Com 26-35-19 TB 1H

Schlumberger

H&P 480

Marathon Oil Corporation

Final PVA

MarathonOil

Borehole: Original Hole Well: Madera 19 Federal Com 26 35 19 TB 1H Field: NM Lea County (NAD 27) Structure: Marathon Madera 19 Federal Com 26 35 19 (1-2-5-6)

Gravity & Magnetic Parameters Model: HDGM 2019 Dip: 61.671° Date: 17-Jan-2019 Surface Location NAD27 New Mexico State Plane, Eastern Zone, US Feet Lat: N 32 1 20.86 Northing: 372083.878US Grid Conv: 0.4895° MagDec: 0.822° FB: 47690.877mT Gravity FB: 998.455mgm (IGEM85 Based) Longitude: W 103 24 38.68 Easting: 788083.778US Scale Fact: 1.00000284 Miscellaneous Madera 19 Federal Com 26 35 19 TB 1H Plot: Marathon Madera 19 Fed Com 26-35-19 TB 1H MWD 0' to 20068'

