Provide Signature Page for Directional Survey

Schlumberger

Oxy Iridium MDP1 28-21 Federal Com 41H Gyro + MWD 0-18072ft MD

Survey Geodetic Report

(Def Survey)

30-015-45075

Report Date:	November 19, 2018 - 09:52 AM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	OXY	**Vertical Section Azimuth:**	1.125 ° (Grid North)
Field:	NM Eddy County (NAD 83)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Oxy Iridium MDP1 28-21 Federal Com 41H / Iridium MDP1 28-21 Federal Com 41H	**TVD Reference Datum:**	RKB=26.5'
Well:	Iridium MDP1 28-21 Federal Com 41H	**TVD Reference Elevation:**	3394.300 ft above MSL
Borehole:	Original Borehole	**Seabed / Ground Elevation:**	3367.800 ft above MSL
UWI / API#:	H&P 617 / 30-015-45075	**Magnetic Declination:**	6.889 °
Survey Name:	Oxy Iridium MDP1 28-21 Federal Com 41H Gyro + MWD 0-18072ft MD	**Total Gravity Field Strength:**	998.4516mgn (9.80665 Based)
Survey Date:	September 28, 2018	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	290.274 ° / 9544.882 ft / 6.724 / 1.009	**Total Magnetic Field Strength:**	48034.300 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	60.007 °
Location Lat / Long:	N 32° 16' 11.48410", W 103° 47' 20.70102"	**Declination Date:**	October 29, 2018
Location Grid N/E Y/X:	N 462333.440 ftUS, E 709553.510 ftUS	**Magnetic Declination Model:**	IIFR1
CRS Grid Convergence Angle:	0.2906 °	**North Reference:**	Grid North
Grid Scale Factor:	0.9999415	**Grid Convergence Used:**	0.2906 °
Version / Patch:	2.10.740.0	**Total Corr Mag North->Grid North:**	6.5984 °
		Local Coord Referenced To:	Well Head

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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 ° ' ")
RKB	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	462333.44	709553.51	N 32 16 11.48	W 103 47 20.70
SHL	26.50	0.00	0.00	26.50	0.00	0.00	0.00	0.00	462333.44	709553.51	N 32 16 11.48	W 103 47 20.70
	98.50	0.61	352.10	98.50	0.38	0.38	-0.05	0.85	462333.82	709553.46	N 32 16 11.49	W 103 47 20.70
	154.50	0.70	347.15	154.49	1.00	1.01	-0.17	0.19	462334.45	709553.34	N 32 16 11.49	W 103 47 20.70
	240.50	0.72	345.57	240.49	2.04	2.04	-0.42	0.03	462335.48	709553.09	N 32 16 11.50	W 103 47 20.71
	332.50	0.78	340.10	332.48	3.18	3.19	-0.78	0.10	462336.63	709552.73	N 32 16 11.52	W 103 47 20.71
Rustler	*424.03*	*0.71*	*335.38*	*424.00*	*4.27*	*4.30*	*-1.23*	*0.10*	*462337.74*	*709552.28*	*N 32 16 11.53*	*W 103 47 20.72*
	427.50	0.71	335.18	427.47	4.31	4.33	-1.25	0.10	462337.77	709552.26	N 32 16 11.53	W 103 47 20.72
	522.50	0.63	337.13	522.47	5.32	5.35	-1.70	0.09	462338.79	709551.81	N 32 16 11.54	W 103 47 20.72
Last Gyro	591.50	0.51	324.28	591.48	5.91	5.95	-2.02	0.25	462339.39	709551.49	N 32 16 11.54	W 103 47 20.72
	695.00	0.60	348.09	694.96	6.80	6.85	-2.40	0.24	462340.29	709551.11	N 32 16 11.55	W 103 47 20.73
Salado	*782.04*	*0.01*	*58.03*	*782.00*	*7.25*	*7.30*	*-2.49*	*0.68*	*462340.74*	*709551.02*	*N 32 16 11.56*	*W 103 47 20.73*
	785.00	0.02	131.17	784.96	7.25	7.30	-2.49	0.68	462340.74	709551.02	N 32 16 11.56	W 103 47 20.73
	877.00	0.07	85.26	876.96	7.25	7.30	-2.42	0.06	462340.74	709551.09	N 32 16 11.56	W 103 47 20.73
	967.00	0.07	288.27	966.96	7.27	7.32	-2.42	0.15	462340.76	709551.09	N 32 16 11.56	W 103 47 20.73
	1058.00	0.05	71.75	1057.96	7.30	7.35	-2.43	0.13	462340.79	709551.08	N 32 16 11.56	W 103 47 20.73
	1148.00	0.09	52.43	1147.96	7.36	7.41	-2.34	0.05	462340.84	709551.17	N 32 16 11.56	W 103 47 20.73
	1238.00	0.09	115.71	1237.96	7.37	7.42	-2.22	0.10	462340.86	709551.29	N 32 16 11.56	W 103 47 20.73
	1329.00	0.09	212.95	1328.96	7.28	7.33	-2.19	0.15	462340.77	709551.32	N 32 16 11.56	W 103 47 20.73
	1422.00	0.09	151.36	1421.96	7.16	7.20	-2.20	0.10	462340.64	709551.31	N 32 16 11.56	W 103 47 20.73
	1516.00	0.09	91.22	1515.96	7.09	7.13	-2.09	0.10	462340.57	709551.42	N 32 16 11.55	W 103 47 20.72
	1611.00	0.09	23.01	1610.96	7.16	7.20	-1.99	0.11	462340.64	709551.52	N 32 16 11.56	W 103 47 20.72
	1678.00	0.05	147.31	1677.96	7.19	7.23	-1.95	0.19	462340.67	709551.56	N 32 16 11.56	W 103 47 20.72
	1706.00	0.05	129.87	1705.96	7.17	7.21	-1.93	0.05	462340.65	709551.58	N 32 16 11.56	W 103 47 20.72
	1800.00	0.05	154.82	1799.96	7.11	7.14	-1.88	0.02	462340.58	709551.63	N 32 16 11.55	W 103 47 20.72
	1895.00	0.05	68.63	1894.96	7.08	7.12	-1.83	0.07	462340.56	709551.68	N 32 16 11.55	W 103 47 20.72
	1989.00	0.09	10.28	1988.96	7.17	7.21	-1.78	0.08	462340.65	709551.73	N 32 16 11.56	W 103 47 20.72
	2084.00	0.05	137.75	2083.96	7.22	7.25	-1.74	0.13	462340.69	709551.77	N 32 16 11.56	W 103 47 20.72
	2179.00	0.05	149.97	2178.96	7.15	7.19	-1.69	0.01	462340.63	709551.82	N 32 16 11.56	W 103 47 20.72
	2273.00	0.09	295.13	2272.96	7.15	7.18	-1.73	0.14	462340.62	709551.78	N 32 16 11.56	W 103 47 20.72
	2368.00	0.09	344.31	2367.96	7.25	7.28	-1.82	0.08	462340.72	709551.69	N 32 16 11.56	W 103 47 20.72
	2462.00	0.05	102.05	2461.96	7.31	7.35	-1.80	0.13	462340.79	709551.71	N 32 16 11.56	W 103 47 20.72
	2557.00	0.09	16.96	2556.96	7.37	7.41	-1.74	0.10	462340.85	709551.77	N 32 16 11.56	W 103 47 20.72
	2652.00	0.05	50.86	2651.96	7.47	7.51	-1.69	0.06	462340.95	709551.82	N 32 16 11.56	W 103 47 20.72
Castile	*2716.04*	*0.05*	*28.65*	*2716.00*	*7.52*	*7.55*	*-1.65*	*0.03*	*462340.99*	*709551.86*	*N 32 16 11.56*	*W 103 47 20.72*
	2746.00	0.05	18.46	2745.96	7.54	7.57	-1.64	0.03	462341.01	709551.87	N 32 16 11.56	W 103 47 20.72
	2841.00	0.05	336.52	2840.96	7.62	7.65	-1.64	0.04	462341.09	709551.87	N 32 16 11.56	W 103 47 20.72
	2935.00	0.05	308.00	2934.96	7.68	7.71	-1.69	0.03	462341.15	709551.82	N 32 16 11.56	W 103 47 20.72
	3030.00	0.09	261.03	3029.95	7.69	7.73	-1.80	0.07	462341.17	709551.71	N 32 16 11.56	W 103 47 20.72
	3125.00	0.05	26.68	3124.95	7.71	7.75	-1.85	0.13	462341.19	709551.66	N 32 16 11.56	W 103 47 20.72
	3219.00	0.05	157.18	3218.95	7.71	7.75	-1.82	0.10	462341.19	709551.69	N 32 16 11.56	W 103 47 20.72
	3314.00	0.05	195.48	3313.95	7.64	7.67	-1.81	0.03	462341.11	709551.70	N 32 16 11.56	W 103 47 20.72
	3408.00	0.11	64.78	3407.95	7.64	7.67	-1.74	0.16	462341.11	709551.77	N 32 16 11.56	W 103 47 20.72
	3503.00	0.09	218.62	3502.95	7.62	7.65	-1.71	0.21	462341.09	709551.80	N 32 16 11.56	W 103 47 20.72
	3598.00	0.05	157.34	3597.95	7.52	7.56	-1.74	0.08	462341.00	709551.77	N 32 16 11.56	W 103 47 20.72
	3692.00	0.11	122.79	3691.95	7.44	7.47	-1.65	0.08	462340.91	709551.86	N 32 16 11.56	W 103 47 20.72
	3787.00	0.05	163.93	3786.95	7.35	7.38	-1.56	0.08	462340.82	709551.95	N 32 16 11.56	W 103 47 20.72
	3882.00	0.05	236.14	3881.95	7.28	7.32	-1.58	0.06	462340.76	709551.93	N 32 16 11.56	W 103 47 20.72
	3976.00	0.05	206.36	3975.95	7.22	7.26	-1.63	0.03	462340.70	709551.88	N 32 16 11.56	W 103 47 20.72
	4069.00	0.02	16.71	4068.95	7.20	7.24	-1.65	0.08	462340.68	709551.86	N 32 16 11.56	W 103 47 20.72
	4164.00	0.05	210.86	4163.95	7.18	7.22	-1.66	0.07	462340.66	709551.85	N 32 16 11.56	W 103 47 20.72
Lamar	*4202.05*	*0.06*	*218.65*	*4202.00*	*7.15*	*7.19*	*-1.68*	*0.03*	*462340.63*	*709551.83*	*N 32 16 11.56*	*W 103 47 20.72*
Bell Canyon	*4225.05*	*0.06*	*222.32*	*4225.00*	*7.13*	*7.17*	*-1.70*	*0.03*	*462340.61*	*709551.81*	*N 32 16 11.56*	*W 103 47 20.72*
	4288.00	0.08	229.68	4287.95	7.08	7.11	-1.76	0.03	462340.55	709551.75	N 32 16 11.55	W 103 47 20.72
	4383.00	0.05	62.62	4382.95	7.05	7.09	-1.77	0.14	462340.53	709551.74	N 32 16 11.55	W 103 47 20.72
	4478.00	0.03	235.85	4477.95	7.06	7.10	-1.76	0.08	462340.54	709551.75	N 32 16 11.55	W 103 47 20.72
	4573.00	0.05	58.78	4572.95	7.07	7.10	-1.74	0.08	462340.54	709551.77	N 32 16 11.55	W 103 47 20.72
	4667.00	0.07	286.42	4666.95	7.10	7.14	-1.76	0.12	462340.58	709551.75	N 32 16 11.55	W 103 47 20.72
	4763.00	0.17	293.99	4762.95	7.18	7.22	-1.95	0.11	462340.65	709551.56	N 32 16 11.56	W 103 47 20.72
	4859.00	0.18	150.63	4858.95	7.10	7.14	-2.00	0.35	462340.58	709551.51	N 32 16 11.55	W 103 47 20.72
	4954.00	0.10	142.69	4953.95	6.91	6.95	-1.88	0.09	462340.39	709551.63	N 32 16 11.55	W 103 47 20.72
	5050.00	0.14	318.03	5049.95	6.93	6.97	-1.91	0.25	462340.41	709551.60	N 32 16 11.55	W 103 47 20.72
Cherry Canyon	*5101.05*	*1.21*	*189.62*	*5101.00*	*6.44*	*6.48*	*-2.04*	*2.54*	*462339.92*	*709551.47*	*N 32 16 11.55*	*W 103 47 20.72*
	5141.00	2.22	187.40	5140.93	5.26	5.30	-2.21	2.54	462338.74	709551.30	N 32 16 11.54	W 103 47 20.73
	5237.00	7.46	189.01	5236.56	-2.77	-2.70	-3.43	5.46	462330.74	709550.09	N 32 16 11.46	W 103 47 20.74
	5333.00	12.15	184.82	5331.13	-19.03	-18.94	-5.25	4.94	462314.51	709548.26	N 32 16 11.30	W 103 47 20.76
	5523.00	15.03	174.78	5515.82	-63.49	-63.41	-4.69	1.95	462270.04	709548.82	N 32 16 10.86	W 103 47 20.76
	5617.00	14.75	175.88	5606.66	-87.52	-87.48	-2.72	0.42	462245.96	709550.79	N 32 16 10.62	W 103 47 20.74
	5699.00	15.18	176.77	5685.88	-108.62	-108.61	-1.37	0.59	462224.83	709552.14	N 32 16 10.41	W 103 47 20.72
	5731.00	15.20	175.68	5716.76	-116.97	-116.98	-0.81	0.89	462216.47	709552.70	N 32 16 10.33	W 103 47 20.72
	5752.00	14.45	169.03	5737.06	-122.27	-122.30	-0.11	8.85	462211.15	709553.40	N 32 16 10.27	W 103 47 20.71
	5772.00	14.08	157.86	5756.45	-126.95	-127.00	1.28	13.86	462206.45	709554.79	N 32 16 10.23	W 103 47 20.69
	5794.00	14.08	145.63	5777.79	-131.59	-131.69	3.80	13.50	462201.76	709557.31	N 32 16 10.18	W 103 47 20.66
	5826.00	15.11	133.51	5808.77	-137.57	-137.77	9.03	10.05	462195.67	709562.54	N 32 16 10.12	W 103 47 20.60
	5857.00	14.58	125.58	5838.74	-142.50	-142.83	15.13	6.77	462190.62	709568.64	N 32 16 10.07	W 103 47 20.53
	5889.00	13.36	115.81	5869.79	-146.33	-146.78	21.74	8.28	462186.67	709575.25	N 32 16 10.03	W 103 47 20.46
	5920.00	12.65	110.06	5900.00	-148.92	-149.51	28.15	4.76	462183.94	709581.66	N 32 16 10.00	W 103 47 20.38

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 ° ' ")
	5952.00	11.18	116.97	5931.31	-151.41	-152.11	34.21	6.39	462181.34	709587.72	N 32 16 9.98	W 103 47 20.31
	5983.00	11.05	117.41	5961.73	-154.04	-154.84	39.52	0.50	462178.60	709593.03	N 32 16 9.95	W 103 47 20.25
	5992.00	10.94	118.49	5970.56	-154.81	-155.65	41.04	2.59	462177.80	709594.55	N 32 16 9.94	W 103 47 20.23
	6015.00	10.33	122.75	5993.17	-156.90	-157.81	44.69	4.32	462175.64	709598.20	N 32 16 9.92	W 103 47 20.19
	6046.00	9.82	127.77	6023.69	-159.93	-160.93	49.12	3.27	462172.52	709602.63	N 32 16 9.89	W 103 47 20.14
	6078.00	9.67	136.20	6055.23	-163.47	-164.54	53.14	4.48	462168.91	709606.64	N 32 16 9.85	W 103 47 20.09
	6109.00	9.79	142.07	6085.79	-167.36	-168.50	56.56	3.22	462164.95	709610.07	N 32 16 9.81	W 103 47 20.05
	6190.00	10.27	141.43	6165.55	-178.26	-179.58	65.29	0.61	462153.88	709618.80	N 32 16 9.70	W 103 47 19.95
	6285.00	10.68	149.43	6258.97	-192.27	-193.78	75.05	1.59	462139.67	709628.56	N 32 16 9.56	W 103 47 19.84
	6379.00	11.25	158.45	6351.26	-208.14	-209.81	82.85	1.92	462123.65	709636.36	N 32 16 9.40	W 103 47 19.75
Brushy Canyon	*6419.54*	*11.52*	*162.66*	*6391.00*	*-215.63*	*-217.35*	*85.51*	*2.16*	*462116.10*	*709639.01*	*N 32 16 9.33*	*W 103 47 19.72*
	6474.00	11.98	167.99	6444.32	-226.29	-228.07	88.31	2.16	462105.38	709641.81	N 32 16 9.22	W 103 47 19.69
	6568.00	10.91	165.68	6536.45	-244.37	-246.23	92.54	1.24	462087.22	709646.04	N 32 16 9.04	W 103 47 19.64
	6663.00	9.65	183.54	6629.95	-260.99	-262.90	94.27	3.59	462070.56	709647.77	N 32 16 8.88	W 103 47 19.62
	6758.00	11.05	191.19	6723.41	-277.92	-279.78	92.01	2.06	462053.68	709645.51	N 32 16 8.71	W 103 47 19.65
	6853.00	11.87	189.04	6816.51	-296.56	-298.36	88.71	0.97	462035.10	709642.21	N 32 16 8.53	W 103 47 19.69
	6947.00	12.05	184.32	6908.47	-315.93	-317.69	86.45	1.06	462015.77	709639.95	N 32 16 8.34	W 103 47 19.71
	7042.00	11.86	176.33	7001.42	-335.56	-337.32	86.33	1.75	461996.14	709639.83	N 32 16 8.14	W 103 47 19.72
	7137.00	10.83	162.73	7094.58	-353.76	-355.59	89.60	3.01	461977.87	709643.11	N 32 16 7.96	W 103 47 19.68
	7232.00	10.63	160.64	7187.92	-370.44	-372.38	95.16	0.46	461961.08	709648.66	N 32 16 7.79	W 103 47 19.61
	7328.00	10.70	163.80	7282.26	-387.24	-389.29	100.58	0.61	461944.17	709654.08	N 32 16 7.63	W 103 47 19.55
	7422.00	10.75	169.08	7374.62	-404.14	-406.28	104.67	1.05	461927.19	709658.18	N 32 16 7.46	W 103 47 19.51
	7517.00	10.82	168.45	7467.94	-421.51	-423.71	108.14	0.14	461909.75	709661.64	N 32 16 7.29	W 103 47 19.47
	7706.00	10.78	170.70	7653.60	-456.20	-458.54	114.55	0.22	461874.93	709668.05	N 32 16 6.94	W 103 47 19.39
	7801.00	10.53	170.61	7746.96	-473.47	-475.87	117.40	0.26	461857.60	709670.90	N 32 16 6.77	W 103 47 19.36
	7896.00	10.81	172.64	7840.31	-490.82	-493.27	119.96	0.49	461840.20	709673.46	N 32 16 6.60	W 103 47 19.33
	7991.00	9.70	178.89	7933.80	-507.63	-510.11	121.25	1.65	461823.36	709674.76	N 32 16 6.43	W 103 47 19.32
BS Intersection Bone Spring	*8075.42*	*9.82*	*170.00*	*8017.00*	*-521.80*	*-524.31*	*122.64*	*1.79*	*461809.16*	*709676.14*	*N 32 16 6.29*	*W 103 47 19.30*
	8085.00	9.85	169.01	8026.44	-523.40	-525.92	122.94	1.79	461807.55	709676.44	N 32 16 6.27	W 103 47 19.30
	8180.00	10.01	157.57	8120.03	-538.92	-541.53	127.64	2.08	461791.94	709681.14	N 32 16 6.12	W 103 47 19.25
	8274.00	8.56	140.45	8212.81	-551.72	-554.48	135.21	3.30	461779.00	709688.71	N 32 16 5.99	W 103 47 19.16
	8369.00	8.59	120.65	8306.77	-560.58	-563.55	145.82	3.09	461769.93	709699.32	N 32 16 5.90	W 103 47 19.04
	8463.00	8.74	94.57	8399.73	-564.47	-567.70	158.98	4.15	461765.78	709712.48	N 32 16 5.86	W 103 47 18.88
	8557.00	9.90	73.29	8492.52	-562.42	-565.94	173.85	3.84	461767.53	709727.35	N 32 16 5.88	W 103 47 18.71
	8652.00	10.69	58.33	8586.00	-555.15	-558.97	189.17	2.93	461774.51	709742.67	N 32 16 5.94	W 103 47 18.53
	8746.00	10.79	49.91	8678.36	-544.63	-548.72	203.32	1.67	461784.75	709756.82	N 32 16 6.04	W 103 47 18.37
	8841.00	11.94	43.31	8771.50	-531.48	-535.84	216.87	1.83	461797.63	709770.36	N 32 16 6.17	W 103 47 18.21
	8931.00	11.17	39.33	8859.68	-517.73	-522.33	228.78	1.23	461811.14	709782.28	N 32 16 6.30	W 103 47 18.07
KOP Actual	9003.00	9.96	35.76	8930.46	-507.13	-511.88	236.84	1.91	461821.59	709790.33	N 32 16 6.41	W 103 47 17.97
100' FSL Crossing	*9023.00*	*11.25*	*25.74*	*8950.12*	*-503.93*	*-508.72*	*238.70*	*11.22*	*461824.75*	*709792.19*	*N 32 16 6.44*	*W 103 47 17.95*
	9098.00	17.83	4.19	9022.73	-485.79	-490.65	242.72	11.22	461842.82	709796.21	N 32 16 6.62	W 103 47 17.90
	9192.00	26.93	1.02	9109.56	-450.05	-454.93	244.15	9.76	461878.53	709797.65	N 32 16 6.97	W 103 47 17.88
	9287.00	36.03	357.17	9190.50	-400.56	-405.41	243.15	9.81	461928.06	709796.65	N 32 16 7.46	W 103 47 17.89
	9381.00	40.49	0.28	9264.30	-342.43	-347.24	241.94	5.17	461986.22	709795.43	N 32 16 8.04	W 103 47 17.90
	9476.00	51.81	1.84	9330.01	-274.03	-278.86	243.29	11.97	462054.59	709796.79	N 32 16 8.71	W 103 47 17.88
	9570.00	59.12	4.26	9383.26	-196.71	-201.60	247.48	8.06	462131.85	709800.97	N 32 16 9.48	W 103 47 17.83
	9664.00	70.82	3.51	9422.97	-111.78	-116.77	253.21	12.47	462216.67	709806.71	N 32 16 10.32	W 103 47 17.76
	9759.00	78.24	359.27	9448.30	-20.31	-25.33	255.37	8.91	462308.11	709808.87	N 32 16 11.22	W 103 47 17.73
	9853.00	88.40	356.38	9459.22	72.76	67.83	251.81	11.23	462401.27	709805.30	N 32 16 12.14	W 103 47 17.76
	9931.00	90.64	356.77	9459.88	150.51	145.68	247.15	2.91	462479.12	709800.65	N 32 16 12.91	W 103 47 17.81
	9975.00	89.37	356.16	9459.87	194.36	189.60	244.44	3.20	462523.03	709797.93	N 32 16 13.35	W 103 47 17.84
	10070.00	90.09	356.71	9460.32	289.04	284.41	238.53	0.95	462617.84	709792.03	N 32 16 14.29	W 103 47 17.91
	10165.00	90.12	357.20	9460.15	383.79	379.28	233.48	0.52	462712.70	709786.98	N 32 16 15.23	W 103 47 17.96
	10259.00	90.02	356.86	9460.03	477.55	473.15	228.61	0.38	462806.56	709782.11	N 32 16 16.15	W 103 47 18.01
	10353.00	90.67	357.68	9459.46	571.33	567.04	224.14	1.11	462900.45	709777.63	N 32 16 17.08	W 103 47 18.06
	10447.00	89.75	357.02	9459.12	665.13	660.94	219.79	1.20	462994.34	709773.29	N 32 16 18.01	W 103 47 18.10
	10638.00	90.64	359.49	9458.48	853.87	849.84	214.04	1.39	463183.22	709767.53	N 32 16 19.88	W 103 47 18.16
	10730.00	90.33	0.23	9457.68	947.85	943.83	213.81	0.85	463277.21	709767.30	N 32 16 20.81	W 103 47 18.16
	10823.00	89.09	0.14	9458.15	1040.83	1036.83	214.11	1.34	463370.20	709767.60	N 32 16 21.73	W 103 47 18.15
	10916.00	90.26	359.31	9458.68	1133.80	1129.82	213.66	1.54	463463.19	709767.16	N 32 16 22.65	W 103 47 18.15
	11010.00	89.99	0.69	9458.47	1227.78	1223.82	213.66	1.50	463557.19	709767.16	N 32 16 23.58	W 103 47 18.14
	11103.00	89.71	3.79	9458.72	1320.75	1316.74	217.29	3.35	463650.10	709770.79	N 32 16 24.50	W 103 47 18.09
	11196.00	90.47	4.51	9458.57	1413.62	1409.49	224.02	1.13	463742.85	709777.52	N 32 16 25.42	W 103 47 18.01
	11287.00	89.92	5.05	9458.26	1504.43	1500.17	231.61	0.85	463833.52	709785.10	N 32 16 26.32	W 103 47 17.91
	11383.00	89.95	3.09	9458.37	1600.30	1595.93	238.42	2.04	463929.27	709791.92	N 32 16 27.26	W 103 47 17.83
	11477.00	89.78	2.14	9458.59	1694.27	1689.83	242.71	1.03	464023.17	709796.20	N 32 16 28.19	W 103 47 17.77
	11663.00	89.68	1.50	9459.47	1880.25	1875.73	248.62	0.35	464209.06	709802.11	N 32 16 30.03	W 103 47 17.69
	11757.00	91.36	0.19	9458.62	1974.24	1969.71	250.00	2.27	464303.03	709803.50	N 32 16 30.96	W 103 47 17.67
	11850.00	92.19	359.36	9455.73	2067.17	2062.66	249.64	1.26	464395.98	709803.13	N 32 16 31.88	W 103 47 17.67
	11943.00	89.61	359.51	9454.27	2160.11	2155.64	248.72	2.78	464488.95	709802.22	N 32 16 32.80	W 103 47 17.68
	12036.00	92.33	358.58	9452.70	2253.02	2248.60	247.17	3.09	464581.91	709800.67	N 32 16 33.72	W 103 47 17.69
	12131.00	91.48	358.66	9449.54	2347.88	2343.52	244.88	0.90	464676.82	709798.38	N 32 16 34.66	W 103 47 17.71
	12224.00	91.41	357.51	9447.20	2440.72	2436.44	241.78	1.24	464769.73	709795.27	N 32 16 35.58	W 103 47 17.74
	12411.00	89.38	358.30	9445.91	2627.41	2623.30	234.94	1.16	464956.58	709788.44	N 32 16 37.43	W 103 47 17.81
	12504.00	90.41	356.48	9446.08	2720.20	2716.20	230.71	2.25	465049.47	709784.20	N 32 16 38.35	W 103 47 17.85
	12598.00	89.65	357.99	9446.03	2813.98	2810.09	226.17	1.80	465143.36	709779.67	N 32 16 39.28	W 103 47 17.90
	12693.00	89.62	357.59	9446.63	2908.82	2905.01	222.51	0.42	465238.28	709776.01	N 32 16 40.22	W 103 47 17.94
	12787.00	90.27	357.00	9446.72	3002.61	2998.91	218.07	0.93	465332.17	709771.57	N 32 16 41.15	W 103 47 17.98
	12882.00	90.51	358.38	9446.08	3097.44	3093.83	214.25	1.47	465427.08	709767.74	N 32 16 42.09	W 103 47 18.02
	13071.00	91.96	359.47	9442.00	3286.24	3282.74	210.70	0.96	465615.98	709764.20	N 32 16 43.96	W 103 47 18.05
	13260.00	89.58	0.51	9439.46	3475.17	3471.71	210.67	1.37	465804.94	709764.16	N 32 16 45.83	W 103 47 18.04
	13355.00	91.61	0.00	9438.48	3570.15	3566.70	211.09	2.20	465899.92	709764.59	N 32 16 46.77	W 103 47 18.03
	13450.00	89.86	359.78	9437.26	3665.12	3661.68	210.91	1.86	465994.90	709764.41	N 32 16 47.71	W 103 47 18.03
	13544.00	89.65	0.81	9437.66	3759.11	3755.68	211.39	1.12	466088.89	709764.89	N 32 16 48.64	W 103 47 18.02
	13639.00	90.03	359.77	9437.93	3854.10	3850.68	211.87	1.17	466183.88	709765.37	N 32 16 49.58	W 103 47 18.01
	13734.00	90.03	0.56	9437.88	3949.08	3945.68	212.15	0.83	466278.88	709765.64	N 32 16 50.52	W 103 47 18.00
	13828.00	88.41	359.59	9439.16	4043.05	4039.66	212.27	2.01	466372.86	709765.77	N 32 16 51.45	W 103 47 17.99
	13923.00	87.90	358.03	9442.21	4137.92	4134.59	210.30	1.73	466467.78	709763.80	N 32 16 52.39	W 103 47 18.01
	14017.00	88.76	358.87	9444.95	4231.78	4228.51	207.76	1.28	466561.70	709761.25	N 32 16 53.31	W 103 47 18.03
	14206.00	89.86	357.75	9447.23	4420.53	4417.41	202.18	0.83	466750.59	709755.68	N 32 16 55.18	W 103 47 18.09
	14300.00	90.31	356.79	9447.09	4514.32	4511.30	197.71	1.13	466844.47	709751.20	N 32 16 56.11	W 103 47 18.13
	14395.00	90.58	0.21	9446.35	4609.20	4606.25	195.22	3.61	466939.42	709748.72	N 32 16 57.05	W 103 47 18.15
	14490.00	90.24	359.62	9445.67	4704.18	4701.25	195.08	0.72	467034.41	709748.58	N 32 16 57.99	W 103 47 18.15
	14584.00	90.27	359.24	9445.25	4798.13	4795.25	194.14	0.41	467128.40	709747.64	N 32 16 58.92	W 103 47 18.16
	14678.00	90.10	358.93	9444.95	4892.07	4889.23	192.64	0.38	467222.38	709746.14	N 32 16 59.85	W 103 47 18.17
	14867.00	90.86	358.43	9443.37	5080.89	5078.17	188.29	0.48	467411.31	709741.79	N 32 17 1.72	W 103 47 18.21
	14962.00	89.17	359.74	9443.34	5175.83	5173.16	186.77	2.25	467506.28	709740.27	N 32 17 2.66	W 103 47 18.22
	15057.00	89.89	0.75	9444.12	5270.81	5268.15	187.18	1.31	467601.27	709740.68	N 32 17 3.60	W 103 47 18.21
	15151.00	89.65	0.22	9444.50	5364.80	5362.15	187.97	0.62	467695.26	709741.47	N 32 17 4.53	W 103 47 18.19
	15245.00	91.06	0.82	9443.92	5458.79	5456.14	188.83	1.63	467789.25	709742.33	N 32 17 5.46	W 103 47 18.18
	15434.00	90.93	0.52	9440.64	5647.76	5645.10	191.04	0.17	467978.19	709744.53	N 32 17 7.33	W 103 47 18.14
	15623.00	91.13	358.10	9437.24	5836.62	5834.04	188.76	1.28	468167.12	709742.26	N 32 17 9.20	W 103 47 18.16
	15744.00	91.20	357.91	9434.78	5957.41	5954.94	184.55	0.17	468288.02	709738.05	N 32 17 10.40	W 103 47 18.20
	15812.00	90.03	358.25	9434.05	6025.31	6022.90	182.27	1.79	468355.97	709735.77	N 32 17 11.07	W 103 47 18.22
	15907.00	89.35	0.42	9434.56	6120.26	6117.88	181.17	2.39	468450.95	709734.67	N 32 17 12.01	W 103 47 18.23
	16002.00	89.31	1.11	9435.67	6215.25	6212.87	182.44	0.73	468545.93	709735.94	N 32 17 12.95	W 103 47 18.21
	16191.00	90.21	0.91	9436.46	6404.25	6401.83	185.77	0.49	468734.89	709739.27	N 32 17 14.82	W 103 47 18.16
	16286.00	91.13	0.25	9435.35	6499.23	6496.82	186.73	1.19	468829.87	709740.23	N 32 17 15.76	W 103 47 18.14

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 ° ' ")
	16380.00	91.55	0.35	9433.15	6593.20	6590.79	187.22	0.46	468923.83	709740.72	N 32 17 16.69	W 103 47 18.13
	16474.00	91.17	0.36	9430.92	6687.16	6684.76	187.80	0.40	469017.80	709741.30	N 32 17 17.62	W 103 47 18.12
	16569.00	89.21	359.96	9430.61	6782.14	6779.76	188.07	2.11	469112.79	709741.57	N 32 17 18.56	W 103 47 18.11
	16663.00	90.24	1.36	9431.06	6876.14	6873.75	189.15	1.85	469206.77	709742.65	N 32 17 19.49	W 103 47 18.09
	16758.00	90.51	1.41	9430.44	6971.13	6968.72	191.45	0.29	469301.74	709744.95	N 32 17 20.43	W 103 47 18.06
	16852.00	91.23	1.58	9429.01	7065.12	7062.67	193.90	0.79	469395.69	709747.40	N 32 17 21.36	W 103 47 18.02
	16946.00	89.06	358.13	9428.77	7159.08	7156.65	193.66	4.34	469489.66	709747.16	N 32 17 22.29	W 103 47 18.02
	17041.00	89.10	357.35	9430.30	7253.90	7251.57	189.92	0.82	469584.57	709743.42	N 32 17 23.23	W 103 47 18.06
	17136.00	87.38	356.96	9433.22	7348.62	7346.40	185.20	1.86	469679.40	709738.70	N 32 17 24.17	W 103 47 18.11
	17230.00	89.30	358.81	9435.94	7442.42	7440.29	181.74	2.84	469773.28	709735.24	N 32 17 25.10	W 103 47 18.14
	17324.00	90.85	359.71	9435.82	7536.37	7534.28	180.52	1.91	469867.26	709734.02	N 32 17 26.03	W 103 47 18.15
	17419.00	92.61	0.06	9432.95	7631.30	7629.23	180.33	1.89	469962.21	709733.83	N 32 17 26.97	W 103 47 18.15
	17513.00	91.92	0.68	9429.23	7725.22	7723.15	180.94	0.99	470056.13	709734.44	N 32 17 27.90	W 103 47 18.14
	17608.00	91.71	1.16	9426.22	7820.17	7818.09	182.46	0.55	470151.06	709735.96	N 32 17 28.83	W 103 47 18.11
	17702.00	93.36	1.36	9422.07	7914.07	7911.98	184.53	1.77	470244.94	709738.03	N 32 17 29.76	W 103 47 18.08
	17796.00	95.61	1.20	9414.72	8007.78	8005.66	186.62	2.40	470338.61	709740.12	N 32 17 30.69	W 103 47 18.05
	17891.00	98.13	1.24	9403.35	8102.09	8099.95	188.63	2.65	470432.90	709742.13	N 32 17 31.62	W 103 47 18.02
	17985.00	98.55	1.79	9389.72	8195.09	8192.92	191.09	0.73	470525.87	709744.59	N 32 17 32.54	W 103 47 17.99
Final MWD	18028.00	97.92	1.52	9383.56	8237.65	8235.46	192.32	1.59	470568.40	709745.82	N 32 17 32.96	W 103 47 17.97
Proj to TD	18073.00	97.92	1.52	9377.36	8282.22	8280.01	193.50	0.00	470612.95	709747.00	N 32 17 33.40	W 103 47 17.96

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	26.500	1/98.425	30.000	30.000	NAL_NSG+MSHOT-Depth Only	Original Borehole / Oxy Iridium MDP1 28-21 Federal Com 41H Gyro + MWD 0-18072ft MD
	1	26.500	26.500	Act Stns	30.000	30.000	NAL_NSG+MSHOT-Depth Only	Original Borehole / Oxy Iridium MDP1 28-21 Federal Com 41H Gyro + MWD 0-18072ft MD
	1	26.500	591.500	Act Stns	30.000	30.000	NAL_NSG+MSHOT	Original Borehole / Oxy Iridium MDP1 28-21 Federal Com 41H
	1	591.500	4164.000	Act Stns	30.000	30.000	NAL_MWD_IFR1+MS	Original Borehole / Oxy Iridium MDP1 28-21 Federal Com 41H
	1	4164.000	5794.000	Act Stns	30.000	30.000	NAL_MWD_PLUS_0.5_DEG	Original Borehole / Oxy Iridium MDP1 28-21 Federal Com 41H
	1	5794.000	6109.000	Act Stns	30.000	30.000	NAL_MWD_IFR1+MS	Original Borehole / Oxy Iridium MDP1 28-21 Federal Com 41H
	1	6109.000	6663.000	Act Stns	30.000	30.000	NAL_MWD_PLUS_0.5_DEG	Original Borehole / Oxy Iridium MDP1 28-21 Federal Com 41H
	1	6663.000	18073.000	Act Stns	30.000	30.000	NAL_MWD_IFR1+MS	Original Borehole / Oxy Iridium MDP1 28-21 Federal Com 41H

Schlumberger

OXY

OXY

Borehole: Original Borehole

Well: Iridium MDP1 28-21 Federal Com 41H

Field: NM Eddy County (NAD 83)

Structure: Oxy Iridium MDP1 28-21 Federal Com 41H

Gravity & Magnetic Parameters

Model: IFR1 Dip: 60.007° Date: 29-Oct-2018
MagDec: 6.889° FS: 48034.3nT Gravity FS: 998.452mgn (9.80665 Based)

Surface Location NAD83 New Mexico State Plane, Eastern Zone, US Feet

Lat: N 32 16 11.48 Northing: 462333.44RUS Grid Conv: 0.2908°
Lon: W 103 47 20.70 Easting: 709563.61RUS Scale Fact: 0.9998418

Miscellaneous

Slot: Iridium MDP1 28-21 Federal Com 41H TVD Ref: RKB=26.5'(3394.9ft above MSL)
Plan: Oxy Iridium MDP1 28-21 Federal Com 41H Gyro + MWD 0-18072ft MD

Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
RKB	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
SHL	26.50	0.00	0.00	26.50	0.00	0.00	0.00	0.00
Rustler	424.03	0.71	335.38	424.00	4.27	4.30	-1.23	0.10
Last Gyro	591.50	0.51	324.28	591.46	5.91	5.95	-2.02	0.25
Salado	782.04	0.01	58.03	782.00	7.25	7.30	-2.49	0.68
Castile	2716.04	0.05	28.65	2716.00	7.52	7.55	-1.65	0.03
Lamar	4202.05	0.06	218.65	4202.00	7.15	7.19	-1.68	0.03
Bell Canyon	4225.05	0.06	222.32	4225.00	7.13	7.17	-1.70	0.03
Cherry Canyon	5101.05	1.21	189.62	5101.00	6.44	6.48	-2.04	2.54
Brushy Canyon	6419.54	11.52	162.66	6391.00	-215.63	-217.35	85.51	2.16
Bone Spring	8075.42	9.82	170.00	8017.00	-521.80	-524.31	122.64	1.79
BS Intersection	8075.42	9.82	170.00	8017.00	-521.80	-524.31	122.64	1.79
KOP Actual	9003.00	9.96	35.76	8930.46	-507.13	-511.88	236.84	1.91
100' FSL Crossing	9023.00	11.25	25.74	8950.12	-503.93	-508.72	238.70	11.22
Final MWD	18028.00	97.92	1.52	9383.56	8237.65	8235.46	192.32	1.59
Proj to TD	18073.00	97.92	1.52	9377.36	8282.22	8280.01	193.50	0.00