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Schlumberger

Oxy Iridium MDP1 28-21 Federal Com 21H Gyro + MWD 0-19056' MD
Survey Geodetic Report
(Def Survey)

30-015-45074

Report Date:	November 29, 2018 - 12:31 PM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	OXY	**Vertical Section Azimuth:**	358.100 ° (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 21H / Iridium MDP1 28-21 Federal Com 21H	**TVD Reference Datum:**	RKB=26.5
Well:	Iridium MDP1 28-21 Federal Com 21H	**TVD Reference Elevation:**	3394.900 ft above MSL
Borehole:	Original Borehole	**Seabed / Ground Elevation:**	3368.400 ft above MSL
UWI / API#:	H&P 617 / 30-015-45074	**Magnetic Declination:**	6.885 °
Survey Name:	Oxy Iridium MDP1 28-21 Federal Com 21H Gyro + MWD 0-19056' MD	**Total Gravity Field Strength:**	998.4515mgn (9.80665 Based)
Survey Date:	September 28, 2018	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	263.035 ° / 11264.789 ft / 6.810 / 1.288	**Total Magnetic Field Strength:**	48029.600 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	60.006 °
Location Lat / Long:	N 32° 16' 11.48397", W 103° 47' 21.10868"	**Declination Date:**	November 14, 2018
Location Grid N/E Y/X:	N 462333.250 ftUS, E 709518.510 ftUS	**Magnetic Declination Model:**	IFR1
CRS Grid Convergence Angle:	0.2905 °	**North Reference:**	Grid North
Grid Scale Factor:	0.99994149	**Grid Convergence Used:**	0.2905 °
Version / Patch:	2.10.753.0	**Total Corr Mag North->Grid North:**	6.5945 °
		Local Coord Referenced To:	Well Head

NM OIL CONSERVATION
ARTESIA DISTRICT

DEC 26 2018

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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	462333.25	709518.51	N 32 16 11.48	W 103 47 21.11
SLH	26.50	0.00	0.00	26.50	0.00	0.00	0.00	0.00	462333.25	709518.51	N 32 16 11.48	W 103 47 21.11
	98.50	0.49	26.62	98.50	0.27	0.28	0.14	0.68	462333.53	709518.65	N 32 16 11.49	W 103 47 21.11
	154.50	0.61	22.01	154.50	0.75	0.77	0.38	0.23	462334.02	709518.87	N 32 16 11.49	W 103 47 21.10
	240.50	0.68	9.25	240.49	1.67	1.69	0.61	0.19	462334.94	709519.12	N 32 16 11.50	W 103 47 21.10
	332.50	0.70	2.61	332.48	2.77	2.79	0.72	0.09	462336.04	709519.23	N 32 16 11.51	W 103 47 21.10
	427.50	0.64	356.15	427.48	3.88	3.90	0.71	0.10	462337.15	709519.22	N 32 16 11.52	W 103 47 21.10
	522.50	0.63	347.85	522.47	4.92	4.94	0.57	0.10	462338.19	709519.08	N 32 16 11.53	W 103 47 21.10
Last Gyro	611.50	0.48	342.22	611.47	5.76	5.78	0.35	0.18	462339.03	709518.88	N 32 16 11.54	W 103 47 21.10
	664.00	0.53	340.26	663.97	6.20	6.21	0.20	0.10	462339.46	709518.71	N 32 16 11.55	W 103 47 21.11
	754.00	0.37	338.61	753.96	6.87	6.88	-0.04	0.18	462340.13	709518.47	N 32 16 11.55	W 103 47 21.11
	846.00	0.18	11.51	845.96	7.29	7.29	-0.12	0.26	462340.54	709518.39	N 32 16 11.56	W 103 47 21.11
	938.00	0.04	117.97	935.96	7.42	7.42	-0.07	0.22	462340.67	709518.44	N 32 16 11.56	W 103 47 21.11
	1027.00	0.02	133.36	1026.96	7.39	7.39	-0.03	0.02	462340.64	709518.48	N 32 16 11.56	W 103 47 21.11
	1117.00	0.04	296.13	1116.96	7.39	7.40	-0.04	0.07	462340.65	709518.47	N 32 16 11.56	W 103 47 21.11
	1207.00	0.04	185.05	1206.96	7.38	7.38	-0.08	0.07	462340.63	709518.43	N 32 16 11.56	W 103 47 21.11
	1298.00	0.04	278.59	1297.96	7.35	7.35	-0.11	0.06	462340.60	709518.40	N 32 16 11.56	W 103 47 21.11
	1391.00	0.04	107.83	1390.96	7.35	7.35	-0.11	0.09	462340.60	709518.40	N 32 16 11.56	W 103 47 21.11
	1485.00	0.04	120.34	1484.96	7.32	7.32	-0.05	0.01	462340.57	709518.46	N 32 16 11.56	W 103 47 21.11
	1580.00	0.04	240.76	1579.96	7.28	7.29	-0.05	0.07	462340.54	709518.46	N 32 16 11.56	W 103 47 21.11
	1675.00	0.06	346.80	1674.96	7.32	7.32	-0.09	0.09	462340.57	709518.42	N 32 16 11.56	W 103 47 21.11
	1769.00	0.04	246.13	1768.96	7.35	7.35	-0.13	0.08	462340.60	709518.38	N 32 16 11.56	W 103 47 21.11
	1864.00	0.04	37.95	1863.96	7.37	7.37	-0.14	0.08	462340.62	709518.37	N 32 16 11.56	W 103 47 21.11
	1958.00	0.10	306.40	1957.96	7.44	7.44	-0.19	0.12	462340.69	709518.32	N 32 16 11.56	W 103 47 21.11
	2053.00	0.10	8.93	2052.96	7.58	7.57	-0.24	0.11	462340.82	709518.27	N 32 16 11.56	W 103 47 21.11
	2148.00	0.10	201.77	2147.96	7.58	7.58	-0.26	0.21	462340.83	709518.25	N 32 16 11.56	W 103 47 21.11
	2242.00	0.02	303.68	2241.96	7.52	7.51	-0.30	0.11	462340.76	709518.21	N 32 16 11.56	W 103 47 21.11
	2337.00	0.04	69.97	2336.96	7.54	7.53	-0.29	0.06	462340.78	709518.22	N 32 16 11.56	W 103 47 21.11
	2431.00	0.14	91.54	2430.96	7.54	7.54	-0.14	0.11	462340.79	709518.37	N 32 16 11.56	W 103 47 21.11
	2526.00	0.02	10.69	2525.96	7.55	7.55	-0.02	0.15	462340.80	709518.49	N 32 16 11.56	W 103 47 21.11
	2621.00	0.15	88.33	2620.96	7.56	7.57	0.11	0.15	462340.82	709518.62	N 32 16 11.56	W 103 47 21.11
	2715.00	0.02	31.43	2714.96	7.58	7.59	0.24	0.15	462340.84	709518.75	N 32 16 11.56	W 103 47 21.11
	2810.00	0.06	203.57	2809.96	7.55	7.56	0.23	0.08	462340.81	709518.74	N 32 16 11.56	W 103 47 21.11
	2905.00	0.04	243.26	2904.96	7.49	7.50	0.18	0.04	462340.75	709518.69	N 32 16 11.56	W 103 47 21.11
	2999.00	0.21	298.59	2998.96	7.56	7.57	0.00	0.20	462340.81	709518.51	N 32 16 11.56	W 103 47 21.11
	3094.00	0.06	210.22	3093.96	7.61	7.61	-0.18	0.23	462340.86	709518.33	N 32 16 11.56	W 103 47 21.11
	3188.00	0.04	89.21	3187.96	7.57	7.58	-0.17	0.09	462340.81	709518.34	N 32 16 11.56	W 103 47 21.11
	3283.00	0.12	298.61	3282.96	7.61	7.61	-0.23	0.16	462340.86	709518.28	N 32 16 11.56	W 103 47 21.11
	3377.00	0.11	152.99	3376.96	7.58	7.57	-0.28	0.23	462340.82	709518.23	N 32 16 11.56	W 103 47 21.11
	3472.00	0.13	167.21	3471.96	7.39	7.39	-0.21	0.04	462340.64	709518.30	N 32 16 11.56	W 103 47 21.11
	3567.00	0.12	177.24	3566.96	7.18	7.18	-0.18	0.03	462340.43	709518.33	N 32 16 11.56	W 103 47 21.11
	3661.00	0.06	171.48	3660.96	7.04	7.03	-0.17	0.06	462340.28	709518.34	N 32 16 11.55	W 103 47 21.11
	3756.00	0.08	155.25	3755.96	6.93	6.92	-0.14	0.03	462340.17	709518.37	N 32 16 11.55	W 103 47 21.11
	3851.00	0.19	178.69	3850.96	6.71	6.71	-0.10	0.13	462339.96	709518.41	N 32 16 11.55	W 103 47 21.11
	3945.00	0.08	253.78	3944.96	6.53	6.53	-0.16	0.20	462339.76	709518.35	N 32 16 11.55	W 103 47 21.11
	4040.00	0.06	80.08	4039.96	6.53	6.52	-0.18	0.15	462339.77	709518.33	N 32 16 11.55	W 103 47 21.11
	4135.00	0.05	291.64	4134.96	6.55	6.55	-0.17	0.11	462339.80	709518.34	N 32 16 11.55	W 103 47 21.11
	4163.00	0.16	327.70	4162.96	6.59	6.58	-0.20	0.44	462339.83	709518.31	N 32 16 11.55	W 103 47 21.11
	4351.00	0.54	233.28	4350.96	6.31	6.28	-1.05	0.31	462339.53	709517.48	N 32 16 11.55	W 103 47 21.12
	4477.00	2.56	227.36	4476.90	4.13	4.02	-3.60	1.61	462337.27	709514.91	N 32 16 11.52	W 103 47 21.15
	4572.00	3.82	224.95	4571.75	0.58	0.34	-7.39	1.33	462333.59	709511.12	N 32 16 11.49	W 103 47 21.19
	4666.00	5.65	224.79	4665.43	-4.73	-5.16	-12.87	1.95	462328.09	709505.64	N 32 16 11.43	W 103 47 21.26
	4762.00	7.31	224.21	4760.81	-12.21	-12.89	-20.45	1.73	462320.36	709498.06	N 32 16 11.36	W 103 47 21.35
	4858.00	9.04	220.57	4855.83	-22.01	-23.00	-29.62	1.88	462310.25	709488.89	N 32 16 11.26	W 103 47 21.45
	4953.00	10.51	215.72	4949.45	-34.38	-35.71	-39.53	1.77	462297.55	709478.98	N 32 16 11.13	W 103 47 21.57
	5049.00	12.05	209.22	5043.60	-49.89	-51.56	-49.54	2.08	462281.69	709468.98	N 32 16 10.98	W 103 47 21.69
	5145.00	13.65	202.68	5137.20	-68.76	-70.75	-58.83	2.22	462262.51	709459.68	N 32 16 10.79	W 103 47 21.80
	5240.00	15.75	199.75	5229.09	-90.92	-93.21	-67.55	2.36	462240.04	709450.96	N 32 16 10.57	W 103 47 21.90
	5336.00	15.92	197.60	5321.44	-115.44	-118.02	-75.93	0.64	462215.23	709442.58	N 32 16 10.32	W 103 47 22.00
	5431.00	15.88	198.09	5412.81	-139.94	-142.80	-83.91	0.15	462190.48	709434.61	N 32 16 10.08	W 103 47 22.09
	5526.00	16.03	197.87	5504.15	-164.50	-167.64	-91.97	0.17	462165.62	709426.55	N 32 16 9.83	W 103 47 22.19
	5620.00	15.51	195.27	5594.61	-188.72	-192.11	-99.26	0.93	462141.15	709419.25	N 32 16 9.59	W 103 47 22.28
	5715.00	15.78	191.37	5686.09	-213.43	-217.03	-105.16	1.14	462116.23	709413.36	N 32 16 9.34	W 103 47 22.35
	5810.00	15.56	187.07	5777.57	-238.59	-242.34	-109.27	1.24	462090.92	709409.25	N 32 16 9.09	W 103 47 22.40
	5905.00	15.55	187.32	5869.09	-263.74	-267.62	-112.46	0.07	462065.65	709406.06	N 32 16 8.84	W 103 47 22.43
	5999.00	15.40	186.42	5959.68	-288.53	-292.52	-115.46	0.30	462040.75	709403.06	N 32 16 8.60	W 103 47 22.47
	6093.00	15.49	186.83	6050.28	-313.28	-317.38	-118.35	0.15	462015.89	709400.17	N 32 16 8.35	W 103 47 22.51
	6188.00	15.79	185.76	6141.77	-338.63	-342.84	-121.16	0.44	461990.43	709397.36	N 32 16 8.10	W 103 47 22.54
	6283.00	15.38	188.68	6233.28	-363.83	-368.15	-124.35	0.93	461965.12	709394.16	N 32 16 7.85	W 103 47 22.58
	6377.00	15.34	192.95	6323.92	-388.10	-392.59	-129.02	1.20	461940.68	709389.50	N 32 16 7.61	W 103 47 22.63
	6472.00	15.18	196.49	6415.57	-412.05	-416.77	-135.37	0.99	461916.51	709383.15	N 32 16 7.37	W 103 47 22.71
	6756.00	15.30	216.12	6689.77	-476.90	-482.73	-168.03	1.81	461850.55	709350.49	N 32 16 6.72	W 103 47 23.09
	6851.00	14.77	220.23	6781.52	-495.75	-502.10	-183.24	1.25	461831.18	709335.28	N 32 16 6.52	W 103 47 23.27
	6946.00	14.41	221.44	6873.46	-513.33	-520.21	-198.89	0.50	461813.07	709319.63	N 32 16 6.35	W 103 47 23.46
	7041.00	13.71	222.19	6965.61	-530.01	-537.41	-214.27	0.76	461795.87	709304.25	N 32 16 6.18	W 103 47 23.64
	7135.00	11.01	219.86	7057.42	-544.71	-552.56	-227.51	2.92	461780.72	709291.02	N 32 16 6.03	W 103 47 23.79
	7326.00	10.40	219.31	7245.10	-571.29	-579.90	-250.12	0.32	461753.39	709268.41	N 32 16 5.76	W 103 47 24.06

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 ° ' ")
	7401.00	10.24	219.85	7318.89	-581.35	-590.25	-258.68	0.25	461743.03	709259.85	N 32 16 5.66	W 103 47 24.16
	7467.00	10.35	219.89	7383.82	-590.15	-599.31	-266.24	0.17	461733.98	709252.28	N 32 16 5.57	W 103 47 24.24
	7495.00	8.98	223.41	7411.42	-593.56	-602.82	-269.36	5.33	461730.46	709249.17	N 32 16 5.53	W 103 47 24.28
	7531.00	7.62	227.41	7447.05	-597.09	-606.48	-273.04	4.10	461726.81	709245.48	N 32 16 5.50	W 103 47 24.32
	7562.00	6.44	244.82	7477.82	-599.12	-608.61	-276.13	7.81	461724.68	709242.40	N 32 16 5.48	W 103 47 24.36
	7594.00	6.90	271.07	7509.61	-599.73	-609.34	-279.68	9.55	461723.95	709238.85	N 32 16 5.47	W 103 47 24.40
	7641.00	6.88	292.24	7556.28	-598.43	-608.22	-285.11	5.37	461725.07	709233.42	N 32 16 5.48	W 103 47 24.47
	7688.00	6.39	308.02	7602.96	-595.60	-605.54	-289.77	4.00	461727.74	709228.75	N 32 16 5.51	W 103 47 24.52
	7734.00	5.05	323.74	7648.74	-592.29	-602.34	-292.99	4.46	461730.95	709225.54	N 32 16 5.54	W 103 47 24.56
	7783.00	4.88	342.52	7697.56	-588.50	-598.61	-294.89	3.32	461734.68	709223.64	N 32 16 5.58	W 103 47 24.58
	7832.00	5.26	354.51	7746.37	-584.25	-594.38	-295.73	2.29	461738.90	709222.80	N 32 16 5.62	W 103 47 24.59
	7878.00	6.40	358.10	7792.13	-579.58	-589.72	-296.02	2.60	461743.56	709222.51	N 32 16 5.66	W 103 47 24.59
	7972.00	8.63	3.08	7885.32	-567.32	-577.44	-295.81	2.47	461755.84	709222.72	N 32 16 5.79	W 103 47 24.59
	8067.00	8.73	19.60	7979.24	-553.51	-563.53	-293.01	2.62	461769.75	709225.52	N 32 16 5.92	W 103 47 24.55
	8133.00	8.07	21.64	8044.53	-544.60	-554.51	-289.62	1.10	461778.78	709228.91	N 32 16 6.01	W 103 47 24.51
KOP Actual	8243.00	6.15	19.59	8153.68	-532.04	-541.78	-284.60	1.76	461791.51	709233.73	N 32 16 6.14	W 103 47 24.46
	8338.00	14.63	6.96	8247.05	-515.42	-525.04	-281.63	9.19	461808.24	709236.89	N 32 16 6.30	W 103 47 24.42
100' FSL Cross	*8384.58*	*18.56*	*5.56*	*8291.68*	*-502.25*	*-511.82*	*-280.20*	*8.48*	*461821.46*	*709238.33*	*N 32 16 6.43*	*W 103 47 24.40*
	8432.00	22.57	4.62	8338.07	-485.72	-495.23	-278.74	8.48	461838.05	709239.79	N 32 16 6.60	W 103 47 24.38
	8527.00	28.29	6.47	8421.83	-445.30	-454.65	-274.73	6.08	461878.62	709243.80	N 32 16 7.00	W 103 47 24.34
Avalon Shale												
Avalon Intersection	*8559.23*	*29.88*	*5.57*	*8450.00*	*-429.78*	*-439.07*	*-273.09*	*5.12*	*461894.20*	*709245.44*	*N 32 16 7.15*	*W 103 47 24.32*
	8621.00	32.94	4.06	8502.71	-397.81	-407.00	-270.41	5.12	461926.27	709248.12	N 32 16 7.47	W 103 47 24.28
	8715.00	36.02	359.88	8580.20	-344.75	-353.85	-268.65	4.13	461979.42	709249.87	N 32 16 8.00	W 103 47 24.26
	8810.00	47.97	4.96	8650.70	-281.55	-290.52	-265.65	13.07	462042.75	709252.88	N 32 16 8.62	W 103 47 24.22
	8904.00	65.74	4.12	8701.89	-203.65	-212.37	-259.50	18.92	462120.89	709259.02	N 32 16 9.40	W 103 47 24.14
	8999.00	86.06	2.12	8724.91	-112.34	-120.85	-254.59	21.49	462212.41	709263.94	N 32 16 10.30	W 103 47 24.08
	9093.00	87.71	359.38	8730.02	-18.60	-27.01	-253.38	3.40	462306.24	709265.17	N 32 16 11.23	W 103 47 24.06
	9156.00	87.51	357.93	8732.65	44.35	35.92	-254.84	2.32	462369.16	709263.69	N 32 16 11.85	W 103 47 24.07
	9287.00	87.18	356.40	8738.71	175.18	166.61	-261.31	1.19	462499.85	709257.22	N 32 16 13.15	W 103 47 24.14
	9382.00	88.15	355.51	8742.59	270.04	261.29	-268.01	1.39	462594.53	709250.52	N 32 16 14.08	W 103 47 24.21
	9478.00	89.15	355.61	8744.80	383.92	354.98	-275.28	1.07	462688.21	709243.25	N 32 16 15.01	W 103 47 24.29
	9570.00	90.59	356.90	8745.01	457.86	448.78	-281.42	2.06	462782.00	709237.11	N 32 16 15.94	W 103 47 24.36
	9665.00	94.00	359.09	8741.21	552.77	543.62	-284.74	4.26	462876.84	709233.79	N 32 16 16.88	W 103 47 24.39
	9760.00	93.88	0.02	8734.70	647.51	638.40	-285.48	0.99	462971.61	709233.05	N 32 16 17.82	W 103 47 24.40
	9854.00	93.03	358.80	8729.05	741.31	732.22	-286.44	1.57	463065.43	709232.08	N 32 16 18.74	W 103 47 24.40
	9948.00	93.10	359.97	8724.02	835.15	826.08	-287.45	1.25	463159.28	709231.08	N 32 16 19.67	W 103 47 24.41
	10043.00	91.59	0.12	8720.14	930.02	921.00	-287.38	1.60	463254.19	709231.15	N 32 16 20.61	W 103 47 24.40
	10137.00	90.83	359.74	8718.15	1023.95	1014.97	-287.49	0.90	463348.16	709231.03	N 32 16 21.54	W 103 47 24.40
	10232.00	90.59	0.69	8716.97	1118.87	1109.97	-287.14	1.03	463443.15	709231.39	N 32 16 22.48	W 103 47 24.39
	10326.00	90.25	359.74	8716.28	1212.81	1203.96	-286.78	1.07	463537.14	709231.74	N 32 16 23.41	W 103 47 24.38
	10421.00	91.24	0.59	8715.05	1307.74	1298.95	-286.51	1.37	463632.12	709232.02	N 32 16 24.35	W 103 47 24.37
	10515.00	90.28	0.80	8713.80	1401.63	1392.93	-285.37	1.05	463726.10	709233.16	N 32 16 25.28	W 103 47 24.35
	10609.00	90.28	0.69	8713.34	1495.53	1486.92	-284.15	0.12	463820.08	709234.38	N 32 16 26.21	W 103 47 24.33
	10704.00	89.25	359.89	8713.73	1590.46	1581.92	-283.67	1.37	463915.07	709234.86	N 32 16 27.15	W 103 47 24.32
	10797.00	91.62	1.88	8713.03	1683.33	1674.90	-282.23	3.33	464008.04	709236.30	N 32 16 28.07	W 103 47 24.30
	10890.00	90.14	0.83	8711.60	1776.17	1767.85	-280.03	1.95	464101.00	709238.49	N 32 16 28.99	W 103 47 24.27
	10984.00	90.07	0.22	8711.43	1870.08	1861.85	-279.17	0.65	464194.99	709239.36	N 32 16 29.92	W 103 47 24.25
	11077.00	90.68	1.13	8710.83	1962.99	1954.84	-278.08	1.17	464287.97	709240.45	N 32 16 30.84	W 103 47 24.23
	11170.00	90.25	0.54	8710.09	2055.88	2047.83	-276.72	0.77	464380.95	709241.81	N 32 16 31.76	W 103 47 24.21
	11264.00	90.11	0.29	8709.80	2149.80	2141.82	-276.04	0.30	464474.94	709242.49	N 32 16 32.69	W 103 47 24.20
	11357.00	90.35	0.39	8709.43	2242.73	2234.82	-275.49	0.28	464567.94	709243.04	N 32 16 33.61	W 103 47 24.19
	11450.00	90.55	1.00	8708.70	2335.63	2327.81	-274.36	0.69	464660.92	709244.17	N 32 16 34.53	W 103 47 24.17
	11544.00	89.90	0.77	8708.33	2429.52	2421.80	-272.91	0.73	464754.90	709245.62	N 32 16 35.46	W 103 47 24.14
	11637.00	90.49	358.83	8708.01	2522.47	2514.79	-273.23	2.18	464847.89	709245.29	N 32 16 36.38	W 103 47 24.14
	11731.00	90.21	356.89	8707.44	2616.46	2608.72	-276.74	2.09	464941.81	709241.78	N 32 16 37.31	W 103 47 24.18
	11824.00	90.00	356.03	8707.27	2709.42	2701.54	-282.48	0.95	465034.63	709236.04	N 32 16 38.23	W 103 47 24.24
	11917.00	90.45	357.63	8706.90	2802.40	2794.40	-287.63	1.79	465127.48	709230.90	N 32 16 39.15	W 103 47 24.29
	12010.00	90.14	357.89	8706.42	2895.39	2887.32	-291.26	0.44	465220.40	709227.27	N 32 16 40.07	W 103 47 24.33
	12104.00	90.14	359.15	8706.19	2989.39	2981.29	-293.69	1.34	465314.36	709224.84	N 32 16 41.00	W 103 47 24.35
	12197.00	90.07	0.77	8706.02	3082.34	3074.29	-293.75	1.74	465407.35	709224.77	N 32 16 41.92	W 103 47 24.35
	12290.00	90.21	0.81	8705.79	3175.23	3167.28	-292.47	0.16	465500.34	709226.06	N 32 16 42.84	W 103 47 24.33
	12384.00	89.90	0.53	8705.70	3269.14	3261.27	-291.37	0.44	465594.32	709227.15	N 32 16 43.77	W 103 47 24.31
	12477.00	90.25	0.66	8705.58	3362.05	3354.27	-290.41	0.40	465687.31	709228.12	N 32 16 44.69	W 103 47 24.29
	12572.00	90.31	0.93	8705.12	3456.94	3449.26	-289.09	0.29	465782.30	709229.44	N 32 16 45.63	W 103 47 24.27
	12666.00	90.42	0.98	8704.52	3550.83	3543.24	-287.52	0.13	465876.28	709231.00	N 32 16 46.56	W 103 47 24.25
	12760.00	89.73	0.51	8704.40	3644.72	3637.23	-286.30	0.89	465970.26	709232.23	N 32 16 47.49	W 103 47 24.23
	12855.00	90.00	359.37	8704.62	3739.67	3732.23	-286.40	1.23	466065.25	709232.13	N 32 16 48.43	W 103 47 24.22
	12949.00	89.97	0.74	8704.64	3833.62	3826.23	-286.31	1.46	466159.25	709232.22	N 32 16 49.36	W 103 47 24.22
	13044.00	90.14	0.76	8704.55	3928.51	3921.22	-285.07	0.18	466254.23	709233.46	N 32 16 50.30	W 103 47 24.20
	13138.00	90.42	0.52	8704.09	4022.42	4015.21	-284.02	0.39	466348.22	709234.51	N 32 16 51.23	W 103 47 24.18
	13233.00	89.94	0.04	8703.80	4117.35	4110.21	-283.55	0.71	466443.21	709234.98	N 32 16 52.17	W 103 47 24.17
	13328.00	89.49	0.12	8704.27	4212.29	4205.21	-283.42	0.48	466538.20	709235.11	N 32 16 53.11	W 103 47 24.16
	13423.00	89.66	0.92	8704.97	4307.20	4300.20	-282.56	0.86	466633.19	709235.97	N 32 16 54.05	W 103 47 24.15
	13518.00	90.14	0.67	8705.14	4402.10	4395.19	-281.24	0.57	466728.18	709237.29	N 32 16 54.99	W 103 47 24.12
	13612.00	90.18	359.06	8704.88	4496.05	4489.19	-281.46	1.71	466822.17	709237.07	N 32 16 55.92	W 103 47 24.12
	13707.00	89.76	357.60	8704.93	4591.05	4584.14	-284.23	1.60	466917.12	709234.30	N 32 16 56.86	W 103 47 24.15
	13802.00	89.42	357.89	8705.61	4686.04	4679.07	-287.97	0.47	467012.04	709230.56	N 32 16 57.80	W 103 47 24.19
	13896.00	89.70	358.16	8706.33	4780.04	4773.01	-291.21	0.41	467105.97	709227.32	N 32 16 58.73	W 103 47 24.22
	13990.00	92.76	359.94	8704.31	4873.99	4866.96	-292.76	3.77	467199.92	709225.76	N 32 16 59.66	W 103 47 24.23
	14085.00	89.39	357.85	8702.53	4968.95	4961.91	-294.60	4.17	467294.88	709223.93	N 32 17 0.60	W 103 47 24.25
	14179.00	89.45	358.07	8703.48	5062.94	5055.84	-297.94	0.24	467388.79	709220.58	N 32 17 1.53	W 103 47 24.28
	14274.00	89.63	358.85	8704.24	5157.94	5150.80	-300.50	0.84	467483.74	709218.03	N 32 17 2.47	W 103 47 24.30
	14368.00	89.80	358.49	8704.71	5251.93	5244.78	-302.68	0.42	467577.71	709215.85	N 32 17 3.40	W 103 47 24.32
	14463.00	89.66	358.33	8705.16	5346.93	5339.74	-305.31	0.22	467672.67	709213.21	N 32 17 4.34	W 103 47 24.35
	14558.00	90.04	357.85	8705.41	5441.93	5434.69	-308.48	0.64	467767.61	709210.05	N 32 17 5.28	W 103 47 24.38
	14652.00	89.70	357.43	8705.62	5535.92	5528.61	-312.35	0.57	467861.52	709206.18	N 32 17 6.20	W 103 47 24.42
	14746.00	88.94	358.21	8706.73	5629.91	5622.53	-315.93	1.16	467955.44	709202.60	N 32 17 7.13	W 103 47 24.46
	14841.00	89.49	359.88	8708.04	5724.89	5717.50	-317.51	1.85	468050.41	709201.02	N 32 17 8.07	W 103 47 24.47
	14935.00	89.73	0.30	8708.68	5818.83	5811.50	-317.36	0.51	468144.40	709201.17	N 32 17 9.00	W 103 47 24.46
	15030.00	89.66	0.49	8709.18	5913.75	5906.50	-316.71	0.21	468239.39	709201.82	N 32 17 9.94	W 103 47 24.45
	15219.00	89.49	359.78	8710.58	6102.63	6095.49	-316.26	0.39	468428.37	709202.27	N 32 17 11.81	W 103 47 24.43
	15313.00	89.73	0.38	8711.22	6196.57	6189.49	-316.13	0.69	468522.36	709202.40	N 32 17 12.74	W 103 47 24.43
	15502.00	90.55	0.85	8710.76	6385.38	6378.47	-314.10	0.50	468711.34	709204.43	N 32 17 14.61	W 103 47 24.39
	15596.00	90.42	0.82	8709.97	6479.27	6472.46	-312.73	0.14	468805.32	709205.80	N 32 17 15.54	W 103 47 24.37
	15691.00	89.73	0.18	8709.84	6574.19	6567.46	-311.90	0.99	468900.31	709206.63	N 32 17 16.48	W 103 47 24.35
	15785.00	90.04	0.52	8710.03	6668.11	6661.45	-311.33	0.49	468994.30	709207.20	N 32 17 17.41	W 103 47 24.34
	15975.00	90.45	0.50	8709.22	6857.94	6851.44	-309.64	0.22	469184.28	709208.89	N 32 17 19.29	W 103 47 24.31
	16070.00	88.53	0.06	8710.06	6952.87	6946.43	-309.17	2.07	469279.26	709209.36	N 32 17 20.23	W 103 47 24.30
	16164.00	89.73	359.90	8711.49	7046.80	7040.42	-309.21	1.29	469373.25	709209.32	N 32 17 21.16	W 103 47 24.29
	16353.00	91.11	1.47	8710.11	7235.60	7229.39	-306.95	1.11	469562.21	709211.58	N 32 17 23.03	W 103 47 24.26
	16542.00	90.52	0.09	8707.42	7424.36	7418.35	-304.37	0.79	469751.15	709214.15	N 32 17 24.90	W 103 47 24.22
	16637.00	91.72	0.83	8705.56	7519.26	7513.33	-303.61	1.48	469846.12	709214.92	N 32 17 25.84	W 103 47 24.20
	16731.00	91.90	1.67	8702.59	7613.07	7607.26	-301.56	0.91	469940.05	709216.97	N 32 17 26.77	W 103 47 24.17
	16825.00	90.31	1.01	8700.78	7706.90	7701.21	-299.36	1.83	470033.99	709219.16	N 32 17 27.70	W 103 47 24.14
	16920.00	90.42	1.12	8700.17	7801.77	7796.19	-297.60	0.16	470128.97	709220.93	N 32 17 28.64	W 103 47 24.11
	17014.00	89.73	0.90	8700.05	7895.65	7890.18	-295.94	0.77	470222.95	709222.59	N 32 17 29.57	W 103 47 24.09
	17109.00	89.56	1.21	8700.64	7990.52	7985.16	-294.19	0.37	470317.93	709224.33	N 32 17 30.51	W 103 47 24.06

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 ° ' ")
	17204.00	89.66	0.75	8701.29	8085.40	8080.14	-292.57	0.50	470412.90	709225.96	N 32 17 31.45	W 103 47 24.04
	17298.00	89.73	358.67	8701.79	8179.36	8174.13	-293.04	2.21	470506.89	709225.48	N 32 17 32.38	W 103 47 24.04
	17392.00	89.08	357.83	8702.76	8273.35	8268.08	-295.91	1.13	470600.83	709222.61	N 32 17 33.31	W 103 47 24.07
	17487.00	89.90	358.63	8703.61	8368.34	8363.03	-298.85	1.21	470695.78	709219.68	N 32 17 34.25	W 103 47 24.10
	17581.00	89.73	357.75	8703.91	8462.34	8456.99	-301.82	0.95	470789.72	709216.71	N 32 17 35.18	W 103 47 24.12
	17676.00	90.14	358.23	8704.02	8557.34	8551.93	-305.15	0.66	470884.66	709213.38	N 32 17 36.12	W 103 47 24.16
	17770.00	89.97	358.44	8703.93	8651.34	8645.89	-307.88	0.29	470978.61	709210.65	N 32 17 37.05	W 103 47 24.18
	17864.00	92.79	358.10	8701.66	8745.30	8739.81	-310.72	3.02	471072.53	709207.81	N 32 17 37.98	W 103 47 24.21
	17959.00	90.45	359.20	8698.98	8840.25	8834.73	-312.95	2.72	471167.45	709205.57	N 32 17 38.92	W 103 47 24.23
	18053.00	89.76	359.33	8698.81	8934.23	8928.73	-314.16	0.75	471261.44	709204.37	N 32 17 39.85	W 103 47 24.24
	18242.00	89.73	358.40	8699.65	9123.21	9117.68	-317.90	0.49	471450.38	709200.63	N 32 17 41.72	W 103 47 24.27
	18337.00	92.65	359.18	8697.68	9218.17	9212.63	-319.91	3.18	471545.32	709198.62	N 32 17 42.66	W 103 47 24.29
	18431.00	91.86	359.81	8693.98	9312.07	9306.55	-320.74	1.07	471639.24	709197.79	N 32 17 43.59	W 103 47 24.30
	18526.00	91.62	0.78	8691.09	9406.96	9401.51	-320.25	1.05	471734.19	709198.28	N 32 17 44.53	W 103 47 24.28
	18621.00	92.07	0.49	8688.03	9501.81	9496.45	-319.20	0.56	471829.13	709199.33	N 32 17 45.47	W 103 47 24.27
	18715.00	90.90	358.18	8685.60	9595.75	9590.41	-320.29	2.75	471923.08	709198.24	N 32 17 46.40	W 103 47 24.27
	18810.00	88.84	356.17	8685.81	9690.73	9685.28	-324.97	3.03	472017.95	709193.56	N 32 17 47.34	W 103 47 24.32
	18905.00	89.28	355.06	8687.37	9785.63	9779.99	-332.23	1.26	472112.65	709186.30	N 32 17 48.27	W 103 47 24.40
100' FNL Cross	*18978.13*	*89.09*	*355.14*	*8688.41*	*9858.65*	*9852.64*	*-338.48*	*0.28*	*472185.50*	*709180.05*	*N 32 17 48.99*	*W 103 47 24.47*
	18999.00	89.04	355.16	8688.75	9879.49	9873.64	-340.24	0.28	472206.29	709178.29	N 32 17 49.20	W 103 47 24.49
Final MWD	19012.00	89.18	355.12	8688.95	9892.47	9886.59	-341.34	1.12	472219.24	709177.19	N 32 17 49.33	W 103 47 24.50
Proj to Bit	19056.00	89.18	355.12	8689.58	9936.41	9930.42	-345.09	0.00	472263.07	709173.44	N 32 17 49.76	W 103 47 24.54

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)	Hole Size 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 21H Gyro + MWD 0-19056' 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 21H Gyro + MWD 0-19056' MD
	1	26.500	611.500	Act Stns	30.000	30.000	NAL_NSG+MSHOT	Original Borehole / Oxy Iridium MDP1 28-21 Federal Com 21H
	1	611.500	19056.000	Act Stns	30.000	30.000	NAL_MWD_IFR1+MS	Original Borehole / Oxy Iridium MDP1 28-21 Federal Com 21H

Schlumberger

OXY

Borehole:	Well:	Field:	Structure:
Original Borehole	Iridium MDP1 28-21 Federal Com 21H	NM Eddy County (NAD 83)	Oxy Iridium MDP1 28-21 Federal Com 21H

Gravity & Magnetic Parameters

Model: IFR1 Dip: 60.008° Date: 14-Nov-2018
MagDec: 6.885° FS: 48029.8nT Gravity FS: 998.452mgn (9.80665 Gravity)

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

Lat: N 32 16 11.48 Northing: 462333.26ftUS Grid Conv: 0.2908°
Lon: W 103 47 21.11 Easting: 703618.81ftUS Scale Fact: 0.99994143

Miscellaneous

Slot: Iridium MDP1 28-21 Federal Com 21H TVD Ref: RKB=26.5'@3394.9ft above MSL)
Plan: Oxy Iridium MDP1 28-21 Federal Com 21H Gyro + MWD 0-19056' 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	
SLH	26.50	0.00	0.00	26.50	0.00	0.00	0.00	0.00
Rustler	424.02	0.64	356.41	424.00	3.84	3.86	0.72	0.10
Last Gyro	611.50	0.48	342.22	611.47	5.76	5.78	0.35	0.18
Salado	782.04	0.30	344.22	782.00	7.03	7.03	-0.10	0.26
Castile	2716.04	0.02	31.70	2716.00	7.58	7.59	0.24	0.08
Lamar	4202.04	0.16	284.28	4202.00	6.65	6.64	-0.28	0.31
Bell Canyon	4225.04	0.20	265.45	4225.00	6.66	6.65	-0.36	0.31
Cherry Canyon	5107.80	13.01	205.15	5101.00	-61.04	-62.91	-55.35	2.22
Brushy Canyon	6446.54	15.22	195.53	6391.00	-405.70	-410.35	-133.53	0.99
Bone Spring	8105.18	8.35	20.74	8017.00	-548.25	-558.21	-291.06	1.10
KOP Actual	8243.00	6.15	19.59	8153.68	-532.04	-541.78	-284.80	1.76
100' FSL Cross	8384.58	18.56	5.56	8291.68	-502.25	-511.82	-280.20	8.48
Avalon Intersection	8559.23	29.88	5.57	8450.00	-429.78	-439.07	-273.09	5.12
Avalon Shale	8559.23	29.88	5.57	8450.00	-429.78	-439.07	-273.09	5.12
100' FNL Cross	18978.13	89.09	355.14	8688.41	9858.65	9852.84	-338.48	0.28
Final MWD	19012.00	89.18	355.12	8688.95	9892.47	9886.59	-341.34	1.12
Proj to Bit	19056.00	89.18	355.12	8689.58	9936.41	9930.42	-345.09	0.00