

NM OIL CONSERVATION
ARTESIA DISTRICT

AUG 01 2017

RECEIVED

Schlumberger

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)

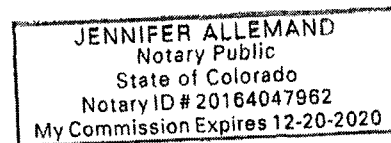
Well Reference:

32.20050 -103.99683

I, Rasheed Atanda certify that; I am employed by Drilling & Measurements, a division of Schlumberger Technology Corporation; that I did on the day(s) of May 11, 2017 through June 22, 2017, conduct or supervise the taking of the TelePacer & SlimPulse surveys from a depth of 152.00 feet to a depth of 19912.00 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 OXY USA INC. for the Cedar Canyon 21-22 Federal Com 33H Well (Original Hole) API No. 30-015-44133 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
Rasheed Atanda
FE

R. Atanda



Subscribed and Sworn to before me this 5 day of July (month) 2017 (yr)

My Commission expires:

12-20-2020
J. Allemmand

Notary Public

Adams County Colorado
(County State)

(signature)



Critical Points

Survey	MIN	MAX	AVG	STD	MIN	MAX	AVG	STD	MIN	MAX	AVG	STD	MIN	MAX	AVG	STD	MIN	MAX	AVG	STD
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
SHL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler	234.00	0.00	328.26	234.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Slatado	682.00	0.00	328.26	682.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Castile (Anhydrite)	1304.00	0.00	328.26	1304.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Luna/Delaware	2882.00	0.00	328.26	2882.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dell Canyon	2697.00	0.00	328.26	2697.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cherry Canyon	3599.00	0.00	328.26	3599.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Build 2 1/2 102	4500.00	0.00	328.26	4500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hold Target	5000.00	10.00	328.26	4997.56	-20.93	37.03	-22.90	37.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brushy Canyon	5043.19	10.00	328.26	5040.00	-24.03	43.39	-25.84	43.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dome Spring	6053.33	10.00	328.26	6049.00	-15.13	27.17	-17.11	27.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drop 2 1/2 102	7782.26	10.00	328.26	7737.44	-253.23	447.87	-277.10	447.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vertical Point	8282.36	0.00	328.26	8238.00	-274.17	485.00	-300.00	485.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ICP	9197.36	0.00	328.26	9150.00	-274.17	485.00	-300.00	485.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Build 0 5 1/2 102	9250.34	0.00	328.26	9202.00	-274.17	485.00	-300.00	485.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landing Point, Turn 2 1/2 102	10187.19																			



Oxy Cedar Canyon 21-22 Federal Com 33H MWD 0-19,951ft MD Survey

Geodetic Report

(Def Survey)

Report Date: June 21, 2017 05:29 AM Client: OXY Field: NM Eddy County (NAD 83) Structure / Slot: Oxy Cedar Canyon 21-22 Federal Com 33H / Oxy Cedar Canyon 21-22 Federal Com 33H Well: Oxy Cedar Canyon 21-22 Federal Com 33H Borehole: Original Borehole UWI / APH: Unknown / Unknown Survey Name: Oxy Cedar Canyon 21-22 Federal Com 33H MWD 0-19,951ft MD Survey Date: May 04, 2017 Tort / AHD / DDI / ERD Ratio: 216 715' / 10930 722 ft / 6 674' / 1.093 Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet Location Lat / Long: N 32° 12' 1.78714", W 103° 59' 48.59567" Location Grid N/E Y/X: N 43683 / 760 RUS. E 845421.490 RUS CRS Grid Convergence Angle: 0.1793 ° Grid Scale Factor: 0.9999215 Version / Patch: 2.10.302.0	Survey / DLS Computation: Minimum Curvature / Lubinski Vertical Section Azimuth: 86.995 ° (Grid North) Vertical Section Origin: 0.000 ft, 0.000 ft TVD Reference Datum: RKB=26.5 TVD Reference Elevation: 2954.900 ft above MSL Seabed / Ground Elevation: 2928.000 ft above MSL Magnetic Declination: 7.175 ° Total Gravity Field Strength: 998.4674 mgn (9 80665 Based) Gravity Model: GARM Total Magnetic Field Strength: 48132.167 nT Magnetic Dip Angle: 60.043 ° Declination Date: May 04, 2017 Magnetic Declination Model: HDGM 2015 North Reference: Grid North Grid Convergence Used: 0.1793 ° Total Corr Mag North->Grid North: 6.9960 ° 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 (ft/100ft)	Northing (RUS)	Easting (RUS)	Latitude (N/S ° ' '')	Longitude (E/W ° ' '')
SHL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	436837.76	845421.49	N 32 12 1.79	W 103 59 48.60
	152.00	0.24	291.49	152.00	-0.29	0.12	-0.30	0.16	436837.88	845421.19	N 32 12 1.79	W 103 59 48.60
	272.00	0.49	11.63	272.00	-0.39	0.71	-0.43	0.42	436838.47	845421.06	N 32 12 1.79	W 103 59 48.60
	393.00	0.55	31.99	392.99	0.08	1.71	-0.01	0.16	436839.47	845421.48	N 32 12 1.80	W 103 59 48.60
	473.00	0.59	48.29	472.99	0.62	2.31	0.50	0.21	436840.07	845421.99	N 32 12 1.81	W 103 59 48.59
	571.00	0.13	29.13	570.99	1.07	2.74	0.93	0.48	436840.50	845422.42	N 32 12 1.81	W 103 59 48.58
	670.00	0.10	27.36	669.99	1.17	2.92	1.02	0.03	436840.68	845422.51	N 32 12 1.82	W 103 59 48.58
	823.00	0.13	267.42	822.99	1.07	3.03	0.91	0.13	436840.79	845422.40	N 32 12 1.82	W 103 59 48.58
	945.00	0.08	158.23	944.99	0.96	2.94	0.80	0.14	436840.70	845422.29	N 32 12 1.82	W 103 59 48.59
	1005.00	0.06	218.31	1004.99	0.95	2.88	0.80	0.12	436840.64	845422.29	N 32 12 1.82	W 103 59 48.59
	1150.00	0.13	30.13	1149.99	0.99	2.96	0.83	0.13	436840.72	845422.32	N 32 12 1.82	W 103 59 48.59
	1341.00	0.18	338.26	1340.99	1.01	3.43	0.83	0.07	436841.19	845422.32	N 32 12 1.82	W 103 59 48.59
	1531.00	0.08	95.29	1530.99	1.05	3.69	0.85	0.12	436841.45	845422.34	N 32 12 1.82	W 103 59 48.59
	1626.00	0.08	272.00	1625.99	1.05	3.69	0.85	0.17	436841.45	845422.34	N 32 12 1.82	W 103 59 48.59
	1721.00	0.18	187.88	1720.98	0.95	3.54	0.77	0.20	436841.30	845422.26	N 32 12 1.82	W 103 59 48.59
	1815.00	0.06	133.20	1814.98	0.96	3.36	0.78	0.18	436841.12	845422.27	N 32 12 1.82	W 103 59 48.59
	1909.00	0.16	5.45	1908.98	1.01	3.46	0.83	0.22	436841.22	845422.32	N 32 12 1.82	W 103 59 48.59
	2004.00	0.20	151.48	2003.98	1.10	3.45	0.92	0.38	436841.21	845422.41	N 32 12 1.82	W 103 59 48.58
	2098.00	0.13	99.11	2097.98	1.28	3.29	1.11	0.17	436841.05	845422.60	N 32 12 1.82	W 103 59 48.58
	2193.00	0.08	173.90	2192.98	1.39	3.20	1.22	0.14	436840.98	845422.71	N 32 12 1.82	W 103 59 48.58
	2288.00	0.00	319.12	2287.98	1.39	3.14	1.23	0.08	436840.90	845422.72	N 32 12 1.82	W 103 59 48.58
	2383.00	0.18	74.56	2382.98	1.53	3.18	1.37	0.19	436840.54	845422.86	N 32 12 1.82	W 103 59 48.58
	2477.00	0.24	266.93	2476.98	1.48	3.21	1.32	0.44	436840.97	845422.81	N 32 12 1.82	W 103 59 48.58
	2667.00	0.20	230.34	2666.98	0.82	2.97	0.66	0.08	436840.73	845422.15	N 32 12 1.82	W 103 59 48.59
	2761.00	0.08	125.71	2760.98	0.74	2.83	0.59	0.25	436840.59	845422.08	N 32 12 1.82	W 103 59 48.59
	2856.00	0.13	47.95	2855.98	0.87	2.86	0.72	0.14	436840.82	845422.21	N 32 12 1.82	W 103 59 48.59
	2950.00	0.13	1.48	2949.98	0.96	3.04	0.81	0.11	436840.80	845422.30	N 32 12 1.82	W 103 59 48.59
	3045.00	0.08	107.92	3044.98	1.03	3.13	0.87	0.18	436840.89	845422.38	N 32 12 1.82	W 103 59 48.59
	3139.00	0.08	68.35	3138.98	1.16	3.11	1.00	0.03	436840.87	845422.49	N 32 12 1.82	W 103 59 48.58
	3233.00	0.18	62.50	3232.98	1.36	3.18	1.20	0.12	436840.94	845422.69	N 32 12 1.82	W 103 59 48.58
	3423.00	0.20	46.74	3422.98	1.89	3.55	1.70	0.03	436841.31	845423.19	N 32 12 1.82	W 103 59 48.58
	3516.00	0.18	332.03	3515.98	1.95	3.79	1.75	0.25	436841.55	845423.24	N 32 12 1.82	W 103 59 48.58
	3611.00	0.20	220.52	3610.98	1.77	3.79	1.57	0.33	436841.55	845423.06	N 32 12 1.82	W 103 59 48.58
	3705.00	0.11	156.12	3704.98	1.69	3.58	1.50	0.19	436841.34	845422.89	N 32 12 1.82	W 103 59 48.58
	3797.00	0.06	367.96	3796.98	1.69	3.53	1.50	0.18	436841.29	845422.99	N 32 12 1.82	W 103 59 48.58
	3989.00	0.08	230.34	3988.98	1.50	3.51	1.32	0.05	436841.27	845422.81	N 32 12 1.82	W 103 59 48.58
	4083.00	0.11	196.42	4082.98	1.42	3.38	1.24	0.07	436841.14	845422.73	N 32 12 1.82	W 103 59 48.58
	4275.00	0.00	181.80	4274.98	1.38	3.20	1.19	0.06	436840.96	845422.66	N 32 12 1.82	W 103 59 48.58
	4465.00	4.58	201.75	4464.78	-1.82	-3.84	-1.62	2.41	436833.92	845419.87	N 32 12 1.75	W 103 59 48.61
	4560.00	7.88	201.82	4559.20	-6.14	-13.42	-5.45	3.47	436824.35	845416.04	N 32 12 1.65	W 103 59 48.66
	4655.00	8.41	201.18	4653.24	-11.72	-25.94	-10.38	0.57	436811.82	845411.11	N 32 12 1.63	W 103 59 48.72
	4750.00	6.76	206.68	4747.41	-17.36	-37.41	-15.42	1.91	436800.36	845406.07	N 32 12 1.42	W 103 59 48.78
	4845.00	4.98	213.25	4841.91	-22.59	-45.84	-20.21	1.99	436791.92	845401.29	N 32 12 1.33	W 103 59 48.83
	4941.00	3.15	230.27	4937.67	-27.18	-51.01	-24.52	2.26	436786.75	845398.97	N 32 12 1.28	W 103 59 48.88
	5035.00	2.54	288.59	5031.67	-31.16	-51.99	-28.48	3.02	436785.78	845393.02	N 32 12 1.27	W 103 59 48.93
	5130.00	4.35	323.63	5126.40	-35.09	-48.39	-32.59	2.83	436783.37	845398.90	N 32 12 1.31	W 103 59 48.98
	5224.00	6.67	326.53	5219.87	-39.94	-40.51	-36.87	2.77	436787.26	845394.62	N 32 12 1.39	W 103 59 49.03
	5319.00	9.04	342.32	5314.07	-42.77	-28.33	-41.34	2.63	436809.43	845390.16	N 32 12 1.51	W 103 59 49.08
	5414.00	11.06	358.92	5407.63	-44.35	-12.11	-43.78	2.70	436825.86	845377.72	N 32 12 1.67	W 103 59 49.11
	5509.00	11.81	346.88	5500.75	-45.75	6.48	-46.16	2.83	436844.24	845375.34	N 32 12 1.85	W 103 59 49.13
	5603.00	12.35	347.01	5592.67	-49.18	26.84	-50.60	0.58	436883.40	845370.00	N 32 12 2.04	W 103 59 49.18
	5697.00	12.86	348.37	5689.41	-52.50	45.67	-54.97	0.62	436883.43	845366.53	N 32 12 2.24	W 103 59 49.23
	5792.00	13.45	349.87	5776.92	-55.45	68.90	-59.04	0.73	436904.85	845362.46	N 32 12 2.45	W 103 59 49.28
	5887.00	13.90	350.42	5869.22	-58.13	89.02	-62.88	0.49	436926.78	845358.61	N 32 12 2.67	W 103 59 49.32
	5982.00	14.40	351.20	5961.34	-60.63	111.95	-66.59	0.56	436949.70	845354.91	N 32 12 2.80	W 103 59 49.37
	6072.00	14.89	350.96	6048.46	-62.96	134.28	-70.09	0.33	436972.03	845351.40	N 32 12 3.12	W 103 59 49.41
	6168.00	14.58	350.50	6139.41	-65.55	157.70	-73.91	0.19	436995.45	845347.58	N 32 12 3.35	W 103 59 49.45
	6261.00	14.88	347.23	6231.29	-68.97	181.30	-78.58	0.94	437018.12	845342.91	N 32 12 3.58	W 103 59 49.50
	6360.00	15.85	340.80	6326.76	-74.89	208.54	-85.84	1.98	437044.29	845335.88	N 32 12 3.83	W 103 59 49.59
	6455.00	17.17	335.42	6417.85	-83.67	231.55	-95.94	2.12	437069.29	845325.56	N 32 12 4.08	W 103 59 49.70
	6550.00	17.84	332.39	6508.45	-94.89	257.20	-108.52	1.19	437094.94	845312.98	N 32 12 4.34	W 103 59 49.85
	6645.00	17.03	330.41	6599.09	-107.17	282.19	-122.13	1.06	437119.93	845299.37	N 32 12 4.58	W 103 59 50.01
	6739.00	16.50	328.62	6689.09	-118.67	305.56	-135.88	0.79	437143.29	845285.82	N 32 12 4.81	W 103 59 50.17
	6836.00	15.86	327.49	6782.25	-132.75	328.49	-150.17	0.74	437166.23	845271.33	N 32 12 5.04	W 103 59 50.33
	6930.00	13.94	325.27	6873.08	-145.03	348.83	-163.53	2.13	437186.37	845257.97	N 32 12 5.24	W 103 59 50.49
	7025.00	12.35	323.85	6965.59	-156.60	366.24	-176.04	1.71	437203.97	845245.46	N 32 12 5.42	W 103 59 50.63
	7120.00	10.80	317.95	7058.69	-167.66	380.94	-187.89	2.22	437218.67	845233.62	N 32 12 5.68	W 103 59 50.77
	7216.00	9.14	312.83	7153.27	-178.54	392.68	-199.40	1.77	437230.41	845222.11	N 32 12 5.88	W 103 59 50.90
	7311.00	7.78	310.90	7247.24	-189.43	402.02	-209.79	1.46	437239.74	845211.72	N 32 12 6.07	W 103 59 51.02
	7408.00	6.37	308.73	7343.49	-197.18	409.68	-218.95	1.48	437247.41	845202.56	N 32 12 6.55	W 103 59 51.13
	7504.00	5.47	303.63	7438.98	-204.82	415.55	-226.91	1.08	437253.28	845194.59	N 32 12 6.91	W 103 59 51.22

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVO (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (ft/100ft)	Northing (ft)	Easting (ft)	Latitude (N/S ° ' '')	Longitude (E/W ° ' '')
	7599.00	4.96	301.79	7533.59	-211.83	420.22	-234.18	0.56	437257.95	645187.33	N 32 12 5.95	W 103 59 51.31
	7791.00	2.03	283.21	7725.22	-221.91	425.37	-244.54	1.82	437283.10	645176.97	N 32 12 6.00	W 103 59 51.43
	7982.00	0.27	157.32	7916.18	-225.01	425.73	-247.86	1.15	437263.45	645173.85	N 32 12 6.01	W 103 59 51.46
	8078.00	0.33	280.85	8012.18	-225.20	425.57	-247.85	0.55	437263.30	645173.68	N 32 12 6.01	W 103 59 51.46
	8172.00	0.31	159.86	8106.18	-225.39	425.38	-249.03	0.50	437263.11	645173.48	N 32 12 6.00	W 103 59 51.47
	8267.00	0.19	74.39	8201.18	-225.16	425.19	-247.79	0.37	437262.91	645173.72	N 32 12 6.00	W 103 59 51.46
	8362.00	0.33	312.07	8296.18	-225.20	425.41	-247.84	0.48	437263.14	645173.67	N 32 12 6.00	W 103 59 51.46
	8457.00	0.40	102.10	8391.17	-225.07	425.53	-247.72	0.74	437263.25	645173.79	N 32 12 6.01	W 103 59 51.46
	8551.00	0.07	114.74	8485.17	-224.70	425.43	-247.34	0.35	437263.16	645174.17	N 32 12 6.00	W 103 59 51.46
	8742.00	0.18	271.57	8676.17	-224.90	425.39	-247.54	0.13	437263.12	645173.97	N 32 12 6.00	W 103 59 51.46
	8838.00	0.30	94.61	8772.17	-224.80	425.38	-247.44	0.50	437263.10	645174.07	N 32 12 6.00	W 103 59 51.46
	8932.00	0.35	340.81	8866.17	-224.64	425.63	-247.29	0.58	437263.35	645174.22	N 32 12 6.01	W 103 59 51.46
	9076.00	0.93	203.65	9010.17	-225.28	424.97	-247.90	0.84	437262.70	645173.61	N 32 12 6.00	W 103 59 51.47
	9248.00	0.80	61.68	9182.16	-224.83	424.26	-247.40	0.95	437261.99	645174.11	N 32 12 6.00	W 103 59 51.46
	9343.00	2.22	60.63	9277.12	-222.58	425.48	-245.22	1.49	437263.21	645176.29	N 32 12 6.00	W 103 59 51.43
	9437.00	15.99	64.88	9369.72	-208.89	431.90	-231.84	14.66	437269.63	645185.67	N 32 12 6.07	W 103 59 51.28
	9531.00	20.56	69.15	9458.96	-181.16	443.28	-204.68	5.06	437281.00	645216.83	N 32 12 6.18	W 103 59 50.96
	9622.00	28.51	70.49	9541.67	-145.07	456.24	-169.22	8.76	437293.96	645252.29	N 32 12 6.31	W 103 59 50.55
	9716.00	37.07	77.29	9620.65	-95.53	469.99	-120.33	9.90	437307.72	645301.17	N 32 12 6.44	W 103 59 49.98
	9774.00	41.14	80.55	9685.65	-59.32	476.98	-84.44	7.86	437314.70	645337.06	N 32 12 6.51	W 103 59 48.56
	9868.00	54.28	86.75	9728.80	9.90	484.25	-15.50	14.79	437321.97	645405.99	N 32 12 6.58	W 103 59 48.76
	9962.00	55.59	87.19	9775.81	91.13	488.53	65.61	12.04	437326.25	645487.09	N 32 12 6.62	W 103 59 47.81
	10056.00	60.87	86.94	9802.86	180.86	493.13	155.23	16.26	437330.85	645576.70	N 32 12 6.66	W 103 59 46.77
	10150.00	67.95	90.06	9812.25	274.29	496.56	248.66	7.93	437333.28	645670.13	N 32 12 6.68	W 103 59 45.68
	10196.00	67.04	90.84	9814.36	320.16	495.20	294.61	2.15	437332.92	645718.07	N 32 12 6.68	W 103 59 45.15
	10290.00	69.76	89.55	9817.01	413.95	494.08	389.56	3.20	437332.60	645810.02	N 32 12 6.67	W 103 59 44.06
	10384.00	68.90	88.52	9818.11	507.89	496.47	482.54	1.43	437334.19	645903.99	N 32 12 6.68	W 103 59 42.96
	10479.00	69.66	89.66	9819.30	602.81	497.81	577.52	1.62	437335.53	645998.96	N 32 12 6.70	W 103 59 41.86
	10573.00	69.38	89.43	9820.09	696.71	498.39	671.51	0.55	437336.11	646092.95	N 32 12 6.70	W 103 59 40.76
	10667.00	69.07	89.13	9821.36	790.63	499.57	765.49	0.46	437337.29	646186.92	N 32 12 6.71	W 103 59 39.67
	10761.00	69.04	90.71	9822.91	884.49	499.70	859.48	1.68	437337.42	646280.90	N 32 12 6.71	W 103 59 38.58
	10856.00	69.49	91.44	9824.13	979.24	497.92	954.45	0.90	437335.64	646376.87	N 32 12 6.68	W 103 59 37.47
	10950.00	69.59	91.72	9824.88	1072.94	495.33	1048.41	0.32	437333.05	646469.82	N 32 12 6.66	W 103 59 36.38
	11044.00	69.31	91.28	9825.79	1166.64	492.87	1142.36	0.55	437330.59	646563.78	N 32 12 6.63	W 103 59 35.28
	11138.00	69.28	91.21	9826.96	1261.37	490.80	1237.35	0.08	437328.52	646658.74	N 32 12 6.61	W 103 59 34.18
	11233.00	69.49	91.55	9827.96	1355.09	488.54	1331.31	0.43	437326.28	646752.70	N 32 12 6.58	W 103 59 33.08
	11328.00	68.83	91.30	9829.38	1449.80	486.18	1426.27	0.74	437323.90	646847.65	N 32 12 6.55	W 103 59 31.98
	11423.00	69.00	91.12	9831.16	1544.52	484.17	1521.24	0.26	437321.89	646942.60	N 32 12 6.53	W 103 59 30.87
	11517.00	68.97	91.29	9832.82	1638.25	482.20	1615.20	0.18	437319.92	647036.56	N 32 12 6.51	W 103 59 29.78
	11612.00	69.04	91.53	9834.47	1732.96	479.86	1710.16	0.26	437317.58	647131.51	N 32 12 6.48	W 103 59 28.68
	11707.00	68.80	91.38	9836.26	1827.65	477.45	1805.11	0.30	437315.17	647226.45	N 32 12 6.46	W 103 59 27.57
	11802.00	68.94	91.14	9838.14	1922.37	475.36	1900.07	0.29	437313.08	647321.41	N 32 12 6.43	W 103 59 26.47
	11899.00	69.07	91.47	9839.82	2017.08	473.15	1997.03	0.37	437310.87	647416.36	N 32 12 6.41	W 103 59 25.34
	11992.00	69.11	91.52	9841.30	2111.79	470.72	2089.99	0.07	437308.45	647511.31	N 32 12 6.38	W 103 59 24.26
	12087.00	68.93	91.25	9842.92	2206.49	468.43	2184.64	0.34	437306.15	647606.26	N 32 12 6.35	W 103 59 23.15
	12182.00	69.18	91.41	9844.48	2301.21	466.22	2279.90	0.31	437303.95	647701.21	N 32 12 6.33	W 103 59 22.05
	12276.00	69.00	91.68	9845.98	2394.90	463.69	2373.86	0.35	437301.41	647795.16	N 32 12 6.30	W 103 59 20.95
	12371.00	68.80	91.36	9847.80	2489.59	461.17	2468.81	0.40	437298.89	647890.10	N 32 12 6.27	W 103 59 19.85
	12466.00	68.80	91.38	9849.79	2584.29	458.90	2563.76	0.02	437296.62	647985.04	N 32 12 6.25	W 103 59 18.74
	12560.00	68.49	91.33	9852.02	2677.99	456.68	2657.71	0.33	437294.40	648078.98	N 32 12 6.22	W 103 59 17.65
	12655.00	68.76	91.78	9854.30	2772.66	454.10	2752.64	0.56	437291.82	648173.91	N 32 12 6.19	W 103 59 16.54
	12749.00	68.59	91.62	9856.47	2866.32	451.31	2846.58	0.54	437289.04	648267.84	N 32 12 6.16	W 103 59 15.45
	12845.00	68.32	91.18	9859.06	2962.00	448.97	2942.51	0.25	437286.89	648363.77	N 32 12 6.14	W 103 59 14.34
	12940.00	68.39	91.05	9861.79	3058.72	447.12	3037.46	0.16	437284.84	648458.70	N 32 12 6.12	W 103 59 13.23
	13035.00	68.76	91.88	9864.15	3151.40	444.69	3132.40	0.96	437282.42	648553.63	N 32 12 6.09	W 103 59 12.13
	13130.00	68.39	91.04	9866.51	3246.08	442.27	3227.33	0.97	437280.00	648648.56	N 32 12 6.06	W 103 59 11.02
	13219.00	68.21	89.51	9872.12	3343.73	442.35	3316.24	1.13	437280.08	648737.45	N 32 12 6.03	W 103 59 8.82
	13314.00	68.39	89.99	9874.94	3529.63	444.09	3511.18	0.21	437281.82	648832.39	N 32 12 6.07	W 103 59 7.72
	13508.00	68.38	89.20	9877.69	3623.53	445.59	3605.13	0.22	437283.30	648926.33	N 32 12 6.08	W 103 59 6.62
	13603.00	68.45	89.00	9880.21	3718.43	447.07	3700.08	0.28	437284.79	649021.26	N 32 12 6.10	W 103 59 5.52
	13697.00	68.73	89.76	9882.53	3812.32	448.09	3794.05	0.88	437285.81	649115.23	N 32 12 6.09	W 103 59 4.43
	13792.00	68.49	89.28	9884.83	3907.20	448.88	3889.02	0.56	437286.61	649210.20	N 32 12 6.11	W 103 59 3.32
	13886.00	68.52	89.65	9887.28	4001.08	449.76	3982.98	0.39	437287.48	649304.15	N 32 12 6.12	W 103 59 2.23
	13981.00	68.35	89.93	9889.88	4095.97	450.94	4077.94	0.78	437288.86	649499.10	N 32 12 6.12	W 103 59 1.12
	14076.00	68.66	89.20	9892.35	4190.87	452.49	4172.89	0.43	437290.21	649694.05	N 32 12 6.13	W 103 59 0.02
	14171.00	68.87	89.32	9894.40	4285.78	453.71	4267.86	0.25	437291.44	649889.01	N 32 12 6.14	W 103 58 58.91
	14266.00	68.63	88.89	9896.48	4380.69	455.20	4362.83	0.52	437292.92	649973.97	N 32 12 6.15	W 103 58 57.81
	14360.00	69.04	89.54	9898.59	4474.60	456.48	4456.80	0.82	437294.21	650068.93	N 32 12 6.16	W 103 58 56.71
	14454.00	68.63	89.32	9900.30	4568.50	457.42	4550.78	0.49	437295.14	650163.83	N 32 12 6.17	W 103 58 55.62
	14644.00	68.94	89.47	9904.33	4758.29	459.42	4740.72	0.18	437297.15	650258.78	N 32 12 6.19	W 103 58 54.51
	14740.00	69.14	89.71	9905.94	4854.17	460.11	4836.71	0.33	437297.83	650353.78	N 32 12 6.19	W 103 58 53.41
	14835.00	68.94	89.59	9907.53	4949.06	460.69	4931.69	0.25	437298.41	650448.73	N 32 12 6.19	W 103 58 52.31
	15024.00	68.11	88.76	9910.74	5137.89	463.41	5120.64	0.45	437301.13	650543.68	N 32 12 6.21	W 103 58 51.21
	15119.00	68.94	87.33	9912.36	5232.86	466.65	5215.57	1.52	437304.37	650638.64	N 32 12 6.24	W 103 58 50.11
	15214.00	68.76	86.71	9914.27	5327.84	471.59	5310.42	0.88	437309.31	650733.59	N 32 12 6.28	W 103 58 49.01
	15309.00	68.60	87.18	9916.29	5422.82	476.65	5405.27	0.50	437314.37	650828.54	N 32 12 6.33	W 103 58 47.91
	15403.00	68.66	86.75	9918.37	5516.80	481.63						

Comments	MD (ft)	Incl (°)	Azlm Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	18066.00	89.11	89.73	9968.79	8177.21	521.69	8161.08	0.52	437359.41	653681.91	N 32 12 6.69 W 103 58 13.60	
	18255.00	89.04	89.59	9971.84	8365.98	522.81	8350.05	0.08	437360.53	653770.87	N 32 12 6.69 W 103 58 11.40	
	18350.00	88.76	89.60	9973.67	8460.86	523.48	8445.03	0.29	437361.20	653865.84	N 32 12 6.69 W 103 58 10.30	
	18446.00	88.87	90.03	9975.65	8558.73	523.79	8541.01	0.46	437361.51	653961.81	N 32 12 6.69 W 103 58 9.18	
	18541.00	89.04	90.15	9977.39	8651.57	523.84	8636.00	0.22	437361.36	654056.79	N 32 12 6.69 W 103 58 8.07	
	18730.00	89.94	89.96	9980.72	8840.27	523.46	8824.97	0.11	437361.18	654245.75	N 32 12 6.68 W 103 58 5.87	
	18825.00	88.90	89.30	9982.51	8935.16	524.08	8919.95	0.70	437361.79	654340.72	N 32 12 6.68 W 103 58 4.77	
	19015.00	88.76	89.58	9986.39	9124.94	525.93	9109.90	0.16	437363.65	654530.66	N 32 12 6.70 W 103 58 2.56	
	19203.00	88.56	90.75	9990.78	9312.60	525.39	9297.84	0.63	437363.11	654719.58	N 32 12 6.69 W 103 58 0.37	
	19384.00	88.87	91.57	9995.07	9503.05	521.53	9488.75	0.46	437359.24	654909.48	N 32 12 6.64 W 103 57 58.15	
	19583.00	89.62	91.84	9997.56	9691.42	516.23	9677.66	0.40	437353.95	655098.37	N 32 12 6.58 W 103 57 55.95	
	19677.00	89.52	91.36	9998.26	9785.12	513.77	9771.63	0.32	437351.49	655192.33	N 32 12 6.55 W 103 57 54.86	
	19771.00	89.07	90.99	9999.42	9878.87	511.84	9865.60	0.62	437349.56	655286.30	N 32 12 6.53 W 103 57 53.76	
	19859.00	89.28	91.43	10000.69	9966.62	509.99	9953.57	0.55	437347.71	655374.26	N 32 12 6.51 W 103 57 52.74	
Final MWD survey	19912.00	89.38	91.14	10001.31	10019.47	508.80	10006.55	0.58	437346.52	655427.24	N 32 12 6.50 W 103 57 52.12	
Proj. to bit	19951.00	89.38	91.14	10001.73	10058.36	508.02	10045.54	0.00	437345.74	655466.23	N 32 12 6.49 W 103 57 51.67	

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_PLUS_0.5_DEG- Depth Only	Original Borehole / Oxy Cedar Canyon 21-22 Federal Com 33H MWD 0-19,951ft MD
	1	26.500	26.500	Act Stns	30.000	30.000	NAL_MWD_PLUS_0.5_DEG- Depth Only	Original Borehole / Oxy Cedar Canyon 21-22 Federal Com 33H MWD 0-19,951ft MD
	1	26.500	19951.000	Act Stns	30.000	30.000	NAL_MWD_PLUS_0.5_DEG	Original Borehole / Oxy Cedar Canyon 21-22 Federal Com 33H