30015-44134

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:
21 T, 24 S, 29 E, NMPM Eddy, NM
-32.20045 -102.99675

I, Drew Mikkonen certify that; I am employed by Drilling & Measurements, a division of Schlumberger Technology Corporation; that I did on the day(s) of June 03, 2017 through June 08, 2017, conduct or supervise the taking of the Telepacer&SlimPulse surveys from a depth of 157.00 feet to a depth of 19941.00 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 Fed Com 34H Well (Original Hole) API No. 30-015-44134 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
Drew Mikkonen
FS
D. Mikkonen

JENNIFER ALLEMAND
Notary Public
State of Colorado
Notary ID # 20164047962
My Commission Expires 12-20-2020

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

My Commission expires:
12-20-2020

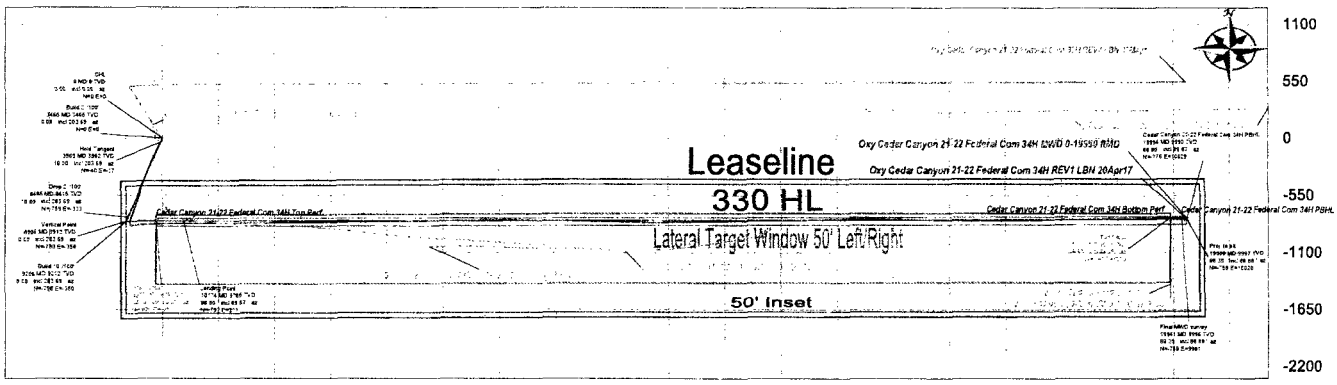
J Allemand (signature)
Notary Public
Adams County Colorado
(County State)

Schlumberger

Final PVA - Rev1 **OXY** RKB = 26.5 ft

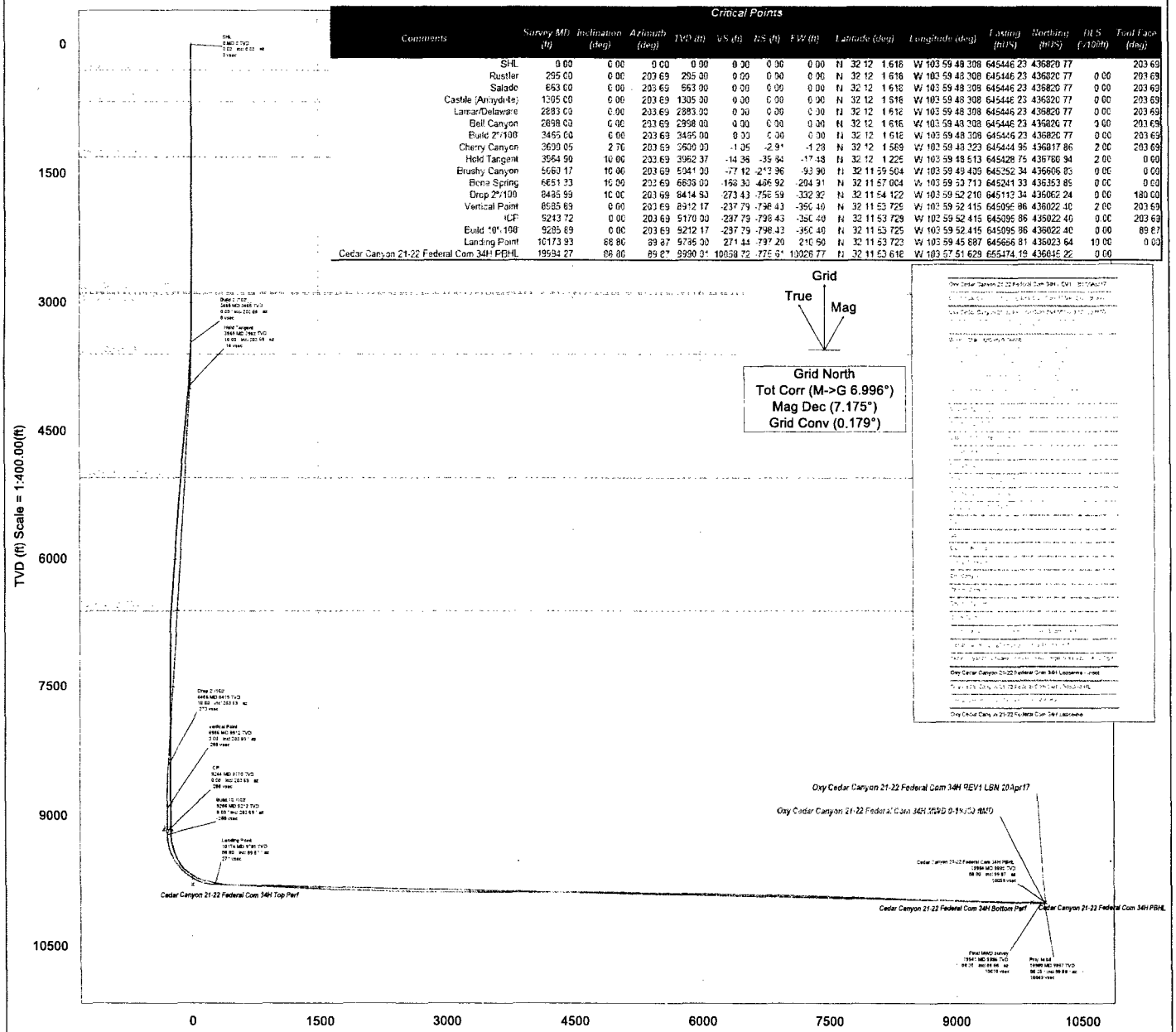
Borehole:	Well:	Field:	Structure:
Original Borehole	Oxy Cedar Canyon 21-22 Federal Com 34H	NM Eddy County (NAD 83)	Oxy Cedar Canyon 21-22 Federal Com 34H

Gravity & Magnetic Parameters					Surface Location	NAD83 New Mexico State Plane, Eastern Zone, US Feet				Miscellaneous
Model:	HDGM 2016	Dip:	60.043°	Date:	04-May-2017	Lat:	N 32 12 1.62	Northing:	436820.77ftUS	Grid Conv:	0.1794°	Slot:	Oxy Cedar Canyon 21-22 Federal Com 34H	TVD Ref.	RKB=26.5'(2954.5ft above MSL)
MagDec:	7.175°	FS:	48132.161nT	Gravity FS	998.467mgn (9.80665 Based)	Lon.	W 103 59 48.31	Easting:	645446.23ftUS	Scale Fact:	0.9999215	Plan:	Cedar Canyon 21-22 Federal Com 34H REV1 LBN 20Apr17		



Critical Points

Comments	Survey MD (ft)	Inclination (deg)	Azimuth (deg)	TVD (ft)	VS (ft)	NS (ft)	EW (ft)	Latitude (deg)	Longitude (deg)	Easting (ftUS)	Northing (ftUS)	DLS (°/100ft)	Tool Face (deg)
SHL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N 32 12 1.618	W 103 59 48.308	645446.23	436820.77		203.69
Rustler	295.00	0.00	203.69	295.00	0.00	0.00	0.00	N 32 12 1.618	W 103 59 48.308	645446.23	436820.77	0.00	203.69
Salado	653.00	0.00	203.69	653.00	0.00	0.00	0.00	N 32 12 1.618	W 103 59 48.308	645446.23	436820.77	0.00	203.69
Castile (Anhydrite)	1305.00	0.00	203.69	1305.00	0.00	0.00	0.00	N 32 12 1.618	W 103 59 48.308	645446.23	436820.77	0.00	203.69
Lamar/Delaware	2883.00	0.00	203.69	2883.00	0.00	0.00	0.00	N 32 12 1.618	W 103 59 48.308	645446.23	436820.77	0.00	203.69
Bell Canyon	2898.00	0.00	203.69	2898.00	0.00	0.00	0.00	N 32 12 1.618	W 103 59 48.308	645446.23	436820.77	0.00	203.69
Bulld 2°/100	3465.00	0.00	203.69	3465.00	0.00	0.00	0.00	N 32 12 1.618	W 103 59 48.308	645446.23	436820.77	0.00	203.69
Cherry Canyon	3699.05	2.70	203.69	3699.00	-1.05	-2.91	-1.28	N 32 12 1.589	W 103 59 48.323	645444.95	436817.86	2.00	203.69
Hold Tangent	3964.90	10.00	203.69	3962.37	-14.36	-35.84	-17.48	N 32 12 1.225	W 103 59 48.513	645428.75	436780.94	2.00	0.00
Brushy Canyon	5660.17	10.00	203.69	5641.00	-77.12	-212.96	-93.90	N 32 11 59.504	W 103 59 49.409	645252.34	436606.03	0.00	0.00
Bone Spring	6651.33	10.00	203.69	6603.00	-158.30	-486.92	-204.91	N 32 11 57.004	W 103 59 50.713	645241.33	436353.85	0.00	0.00
Drop 2°/100	8485.99	10.00	203.69	8414.93	-273.43	-756.59	-332.92	N 32 11 54.122	W 103 59 52.210	645113.34	436062.24	0.00	180.00
Vertical Point	8585.69	0.00	203.69	8912.17	-237.79	-798.43	-350.40	N 32 11 53.725	W 103 59 52.415	645095.86	436022.40	2.00	203.69
ICP	9243.72	0.00	203.69	9170.00	-237.79	-798.43	-350.40	N 32 11 53.725	W 103 59 52.415	645095.86	436022.40	0.00	203.69
Build 10°/100	9285.69	0.00	203.69	9212.17	-237.79	-798.43	-350.40	N 32 11 53.725	W 103 59 52.415	645095.86	436022.40	0.00	89.87
Landing Point	10173.93	88.86	89.87	9736.00	271.44	-797.20	210.90	N 32 11 53.723	W 103 59 45.887	645656.81	436023.64	10.00	0.00
Cedar Canyon 21-22 Federal Com 34H PBHL	19594.27	88.86	89.87	9990.00	10658.72	-775.91	10028.77	N 32 11 53.618	W 103 57 51.629	655474.19	436045.26	0.00	



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Oxy Cedar Canyon 21-22 Federal Com 34H MWD 0-19980 ftMD Survey
Geodetic Report
(Def Survey)

Report Date:	June 09, 2017 - 11:26 AM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	OXY	**Vertical Section Azimuth:**	94.422 ° (Grid North)
Field:	NM Eddy County (NAD 83)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Oxy Cedar Canyon 21-22 Federal Com 34H / Oxy Cedar Canyon 21-22 Federal Com 34H	**TVD Reference Datum:**	RKB=26.5'
Well:	Oxy Cedar Canyon 21-22 Federal Com 34H	**TVD Reference Elevation:**	2954.500 ft above MSL
Borehole:	Original Borehole	**Seabed / Ground Elevation:**	2928.000 ft above MSL
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	7.175 °
Survey Name:	Oxy Cedar Canyon 21-22 Federal Com 34H MWD 0-19980 ftMD	**Total Gravity Field Strength:**	9.7916m/s2
Survey Date:	May 04, 2017	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	180.514 ° / 11242.232 ft / 6.608 / 1.125	**Total Magnetic Field Strength:**	48132.161 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	60.043 °
Location Lat / Long:	N 32° 12' 1.61825", W 103° 59' 48.30835"	**Declination Date:**	May 04, 2017
Location Grid N/E Y/X:	N 436820.770 ftUS, E 645446.230 ftUS	**Magnetic Declination Model:**	HDGM 2016
CRS Grid Convergence Angle:	0.1794 °	**North Reference:**	Grid North
Grid Scale Factor:	0.9999215	**Grid Convergence Used:**	0.1794 °
Version / Patch:	2.10.302.0	**Total Corr Mag North->Grid North:**	6.9958 °
		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 ° ' ")
SHL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	436820.77	645446.23	N 32 12 1.62	W 103 59 48.31
	157.00	0.16	69.21	157.00	0.20	0.08	0.20	0.10	436820.85	645446.43	N 32 12 1.62	W 103 59 48.31
	215.00	0.32	100.35	215.00	0.43	0.08	0.44	0.35	436820.85	645446.67	N 32 12 1.62	W 103 59 48.30
	333.00	0.45	102.41	333.00	1.22	-0.08	1.22	0.11	436820.69	645447.45	N 32 12 1.62	W 103 59 48.29
	422.00	0.44	114.53	421.99	1.89	-0.30	1.87	0.11	436820.47	645448.10	N 32 12 1.62	W 103 59 48.29
	471.00	0.62	103.75	470.99	2.32	-0.44	2.30	0.42	436820.33	645448.53	N 32 12 1.61	W 103 59 48.28
	585.00	0.63	111.24	584.99	3.53	-0.81	3.48	0.07	436819.96	645449.71	N 32 12 1.61	W 103 59 48.27
	595.00	0.55	253.46	594.98	3.54	-0.85	3.49	11.17	436819.92	645449.72	N 32 12 1.61	W 103 59 48.27
	685.00	0.57	115.76	684.98	3.55	-1.16	3.48	1.16	436819.61	645449.70	N 32 12 1.61	W 103 59 48.27
	778.00	0.56	114.13	777.98	4.41	-1.55	4.31	0.02	436819.22	645450.54	N 32 12 1.60	W 103 59 48.26
	869.00	0.29	123.02	868.98	5.03	-1.86	4.91	0.30	436818.91	645451.14	N 32 12 1.60	W 103 59 48.25
	952.00	0.03	92.19	951.98	5.24	-1.97	5.10	0.32	436818.80	645451.33	N 32 12 1.60	W 103 59 48.25
	1042.00	0.09	164.08	1041.98	5.29	-2.04	5.15	0.10	436818.73	645451.38	N 32 12 1.60	W 103 59 48.25
	1142.00	0.06	169.24	1141.98	5.33	-2.17	5.18	0.03	436818.60	645451.41	N 32 12 1.60	W 103 59 48.25
	1236.00	0.25	33.33	1235.98	5.44	-2.05	5.30	0.31	436818.72	645451.53	N 32 12 1.60	W 103 59 48.25
	1329.00	0.16	44.74	1328.97	5.62	-1.78	5.50	0.11	436818.99	645451.73	N 32 12 1.60	W 103 59 48.24
	1425.00	0.01	64.36	1424.97	5.72	-1.69	5.60	0.16	436819.08	645451.83	N 32 12 1.60	W 103 59 48.24
	1520.00	0.04	168.57	1519.97	5.73	-1.71	5.62	0.05	436819.06	645451.85	N 32 12 1.60	W 103 59 48.24
	1615.00	0.04	309.34	1614.97	5.72	-1.73	5.60	0.08	436819.04	645451.83	N 32 12 1.60	W 103 59 48.24
	1709.00	0.02	319.57	1708.97	5.68	-1.69	5.56	0.02	436819.08	645451.79	N 32 12 1.60	W 103 59 48.24
	1804.00	0.04	348.78	1803.97	5.66	-1.65	5.55	0.03	436819.12	645451.78	N 32 12 1.60	W 103 59 48.24
	1879.00	0.04	308.89	1878.97	5.63	-1.61	5.52	0.04	436819.16	645451.75	N 32 12 1.60	W 103 59 48.24
	1993.00	0.07	13.34	1992.97	5.61	-1.51	5.51	0.06	436819.26	645451.74	N 32 12 1.60	W 103 59 48.24
	2088.00	0.06	292.78	2087.97	5.57	-1.44	5.47	0.09	436819.33	645451.70	N 32 12 1.60	W 103 59 48.24
	2182.00	0.03	341.83	2181.97	5.51	-1.39	5.42	0.05	436819.38	645451.65	N 32 12 1.60	W 103 59 48.25
	2277.00	0.05	187.83	2276.97	5.50	-1.41	5.41	0.08	436819.36	645451.64	N 32 12 1.60	W 103 59 48.25
	2371.00	0.03	1.52	2370.97	5.50	-1.43	5.40	0.08	436819.34	645451.63	N 32 12 1.60	W 103 59 48.25
	2466.00	0.14	223.63	2465.97	5.42	-1.49	5.32	0.17	436819.28	645451.55	N 32 12 1.60	W 103 59 48.25
	2560.00	0.07	216.51	2559.97	5.32	-1.62	5.21	0.08	436819.15	645451.44	N 32 12 1.60	W 103 59 48.25
	2655.00	0.08	222.37	2654.97	5.25	-1.71	5.13	0.01	436819.06	645451.36	N 32 12 1.60	W 103 59 48.25
	2749.00	0.02	11.06	2748.97	5.21	-1.74	5.09	0.10	436819.03	645451.32	N 32 12 1.60	W 103 59 48.25
	2843.00	0.02	40.42	2842.97	5.22	-1.72	5.10	0.01	436819.05	645451.33	N 32 12 1.60	W 103 59 48.25
	2938.00	0.07	276.81	2937.97	5.17	-1.70	5.06	0.09	436819.07	645451.29	N 32 12 1.60	W 103 59 48.25
	3032.00	0.06	313.38	3031.97	5.08	-1.66	4.96	0.04	436819.11	645451.19	N 32 12 1.60	W 103 59 48.25
	3127.00	0.06	328.71	3126.97	5.01	-1.58	4.90	0.02	436819.19	645451.13	N 32 12 1.60	W 103 59 48.25
	3222.00	0.20	188.98	3221.97	4.97	-1.70	4.85	0.26	436819.07	645451.08	N 32 12 1.60	W 103 59 48.25
	3317.00	1.57	212.01	3316.96	4.35	-2.97	4.13	1.46	436817.80	645450.36	N 32 12 1.59	W 103 59 48.26
	3412.00	3.35	208.47	3411.87	2.62	-6.51	2.12	1.88	436814.26	645448.35	N 32 12 1.55	W 103 59 48.28
	3506.00	5.00	210.02	3505.62	-0.27	-12.47	-1.24	1.76	436808.30	645444.99	N 32 12 1.49	W 103 59 48.32
	3601.00	6.56	208.08	3600.13	-4.24	-20.85	-5.86	1.65	436799.93	645440.37	N 32 12 1.41	W 103 59 48.38
	3695.00	7.96	207.79	3693.37	-8.98	-31.34	-11.43	1.49	436789.43	645434.80	N 32 12 1.31	W 103 59 48.44
	3790.00	9.25	207.40	3787.30	-14.57	-43.94	-18.01	1.36	436776.83	645428.22	N 32 12 1.18	W 103 59 48.52
	3885.00	10.61	206.97	3880.88	-20.90	-58.51	-25.49	1.43	436762.26	645420.74	N 32 12 1.04	W 103 59 48.61
	3979.00	11.49	206.36	3973.13	-27.72	-74.62	-33.57	0.94	436746.16	645412.66	N 32 12 0.88	W 103 59 48.70
	4074.00	12.65	206.06	4066.03	-35.09	-92.44	-42.34	1.22	436728.34	645403.89	N 32 12 0.70	W 103 59 48.80
	4168.00	13.63	205.60	4157.57	-42.88	-111.67	-51.65	1.05	436709.10	645394.59	N 32 12 0.51	W 103 59 48.91
	4263.00	14.45	205.06	4249.73	-51.11	-132.51	-61.51	0.87	436688.27	645384.73	N 32 12 0.31	W 103 59 49.03
	4358.00	14.80	204.50	4341.65	-59.45	-154.29	-71.56	0.40	436666.50	645374.68	N 32 12 0.09	W 103 59 49.15
	4452.00	15.04	204.46	4432.48	-67.75	-176.31	-81.59	0.26	436644.47	645364.65	N 32 11 59.88	W 103 59 49.26
	4547.00	15.46	204.01	4524.14	-76.22	-199.10	-91.84	0.46	436621.69	645354.39	N 32 11 59.65	W 103 59 49.38
	4641.00	15.93	200.94	4614.64	-84.09	-222.59	-101.55	1.01	436598.20	645344.69	N 32 11 59.42	W 103 59 49.50
	4736.00	16.12	203.35	4705.94	-92.07	-246.88	-111.44	0.73	436573.91	645334.80	N 32 11 59.18	W 103 59 49.61
	4830.00	16.54	202.66	4796.15	-100.49	-271.20	-121.76	0.49	436549.59	645324.48	N 32 11 58.94	W 103 59 49.74
	4924.00	16.68	202.12	4886.23	-108.78	-296.05	-132.00	0.22	436524.75	645314.24	N 32 11 58.69	W 103 59 49.86
	5019.00	16.67	201.79	4977.24	-116.99	-321.33	-142.19	0.10	436499.47	645304.05	N 32 11 58.44	W 103 59 49.97
	5113.00	16.55	201.83	5067.31	-125.02	-346.28	-152.17	0.13	436474.52	645294.07	N 32 11 58.20	W 103 59 50.09
	5207.00	16.91	201.16	5157.33	-132.96	-371.46	-162.09	0.43	436449.34	645284.16	N 32 11 57.95	W 103 59 50.21
	5302.00	17.01	201.38	5248.20	-140.99	-397.28	-172.14	0.13	436423.52	645274.10	N 32 11 57.69	W 103 59 50.33
	5397.00	17.43	200.35	5338.94	-148.95	-423.56	-182.15	0.55	436397.25	645264.09	N 32 11 57.43	W 103 59 50.44
	5491.00	16.83	199.78	5428.77	-156.42	-449.56	-191.66	0.66	436371.24	645254.59	N 32 11 57.18	W 103 59 50.56
	5586.00	16.22	198.93	5519.85	-163.39	-475.06	-200.61	0.69	436345.75	645245.63	N 32 11 56.92	W 103 59 50.66
	5681.00	16.06	198.70	5611.10	-169.95	-500.05	-209.13	0.18	436320.76	645237.12	N 32 11 56.68	W 103 59 50.76
	5775.00	15.69	198.84	5701.52	-176.32	-524.40	-217.40	0.40	436296.41	645228.84	N 32 11 56.44	W 103 59 50.86
	5869.00	15.71	201.68	5792.01	-183.26	-548.25	-226.21	0.82	436272.56	645220.04	N 32 11 56.20	W 103 59 50.96
	5964.00	15.52	199.43	5883.51	-190.37	-572.19	-235.19	0.67	436248.62	645211.06	N 32 11 55.96	W 103 59 51.07
	6058.00	15.17	199.45	5974.16	-196.81	-595.65	-243.47	0.37	436225.17	645202.78	N 32 11 55.73	W 103 59 51.16
	6153.00	15.35	198.09	6065.81	-203.01	-619.32	-251.51	0.42	436201.50	645194.74	N 32 11 55.50	W 103 59 51.26
	6247.00	14.50	197.92	6156.64	-208.69	-642.35	-259.00	0.91	436178.48	645187.25	N 32 11 55.27	W 103 59 51.35
	6342.00	14.68	198.99	6248.57	-214.50	-665.04	-266.57	0.34	436155.78	645179.68	N 32 11 55.05	W 103 59 51.43
	6437.00	14.23	197.75	6340.57	-220.22	-687.55	-274.05	0.57	436133.28	645172.20	N 32 11 54.82	W 103 59 51.52
	6531.00	14.11	197.07	6431.71	-225.39	-709.50	-280.93	0.22	436111.32	645165.32	N 32 11 54.61	W 103 59 51.60
	6626.00	14.27	200.45	6523.81	-231.16	-731.54	-288.42	0.89	436089.28	645157.83	N 32 11 54.39	W 103 59 51.69
	6720.00	14.09	201.59	6614.94	-237.73	-753.04	-296.68	0.35	436067.79	645149.57	N 32 11 54.18	W 103 59 51.79
	6814.00	12.52	200.17	6706.42	-243.88	-773.24	-304.41	1.71	436047.59	645141.85	N 32 11 53.98	W 103 59 51.88
	6909.00	10.28	192.81	6799.54	-247.91	-791.18	-309.84	2.81	436029.66	645136.42	N 32 11 53.80	W 103 59 51.94
	7004.00	8.67	184.59	6893.25	-249.17	-806.58	-312.29	2.21	436014.25	645133.96	N 32 11 53.65	W 103 59 51.97
	7098.00	6.38	179.87	6986.43	-248.77	-818.87	-312.85	2.52	436001.97	645133.41	N 32 11 53.53	W 103 59 51.98
	7193.00	4.08	174.70	7081.03	-247.78	-827.51	-312.52	2.47	435993.32	645133.73	N 32 11 53.44	W 103 59 51.98

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 ° ' ")
	7382.00	0.30	187.69	7269.86	-246.67	-834.70	-311.97	2.00	435986.14	645134.29	N 32 11 53.37	W 103 59 51.97
	7476.00	0.08	66.10	7363.86	-246.63	-834.92	-311.94	0.37	435985.92	645134.32	N 32 11 53.37	W 103 59 51.97
	7570.00	0.11	353.38	7457.86	-246.59	-834.80	-311.89	0.12	435986.03	645134.37	N 32 11 53.37	W 103 59 51.97
	7665.00	0.06	200.78	7552.86	-246.62	-834.76	-311.92	0.17	435986.08	645134.34	N 32 11 53.37	W 103 59 51.97
	7760.00	0.06	148.80	7647.86	-246.61	-834.85	-311.91	0.06	435985.99	645134.35	N 32 11 53.37	W 103 59 51.97
	7854.00	0.13	281.05	7741.86	-246.68	-834.87	-311.99	0.19	435985.97	645134.27	N 32 11 53.37	W 103 59 51.97
	7949.00	0.38	269.26	7836.86	-247.11	-834.85	-312.41	0.27	435985.98	645133.85	N 32 11 53.37	W 103 59 51.97
	8044.00	0.25	223.18	7931.86	-247.55	-835.01	-312.87	0.29	435985.83	645133.39	N 32 11 53.37	W 103 59 51.98
	8138.00	0.06	171.44	8025.86	-247.67	-835.21	-313.00	0.23	435985.63	645133.26	N 32 11 53.36	W 103 59 51.98
	8233.00	0.13	238.87	8120.86	-247.74	-835.31	-313.08	0.13	435985.53	645133.17	N 32 11 53.36	W 103 59 51.98
	8327.00	0.00	115.12	8214.86	-247.83	-835.37	-313.18	0.14	435985.47	645133.08	N 32 11 53.36	W 103 59 51.98
	8421.00	0.18	168.69	8308.86	-247.79	-835.51	-313.15	0.19	435985.33	645133.11	N 32 11 53.36	W 103 59 51.98
	8516.00	0.06	198.06	8403.86	-247.76	-835.70	-313.13	0.14	435985.13	645133.12	N 32 11 53.36	W 103 59 51.98
	8610.00	0.00	275.85	8497.86	-247.77	-835.75	-313.15	0.06	435985.09	645133.11	N 32 11 53.36	W 103 59 51.98
	8705.00	0.13	166.77	8592.86	-247.74	-835.86	-313.12	0.14	435984.98	645133.13	N 32 11 53.36	W 103 59 51.98
	8799.00	0.06	343.03	8686.86	-247.72	-835.91	-313.11	0.20	435984.92	645133.14	N 32 11 53.36	W 103 59 51.98
	8894.00	0.06	79.24	8781.86	-247.70	-835.86	-313.08	0.09	435984.98	645133.18	N 32 11 53.36	W 103 59 51.98
	8988.00	0.06	324.79	8875.86	-247.68	-835.81	-313.06	0.11	435985.03	645133.20	N 32 11 53.36	W 103 59 51.98
	9082.00	0.35	200.86	8969.86	-247.79	-836.04	-313.19	0.41	435984.80	645133.07	N 32 11 53.36	W 103 59 51.98
	9143.00	0.16	179.79	9030.86	-247.84	-836.29	-313.26	0.34	435984.54	645133.00	N 32 11 53.35	W 103 59 51.98
	9342.00	2.18	94.94	9229.81	-244.03	-836.90	-309.48	1.09	435983.94	645136.77	N 32 11 53.35	W 103 59 51.94
	9440.00	13.92	93.16	9326.67	-230.33	-837.71	-295.81	11.98	435983.13	645150.45	N 32 11 53.34	W 103 59 51.78
	9534.00	18.62	86.79	9416.89	-204.14	-837.49	-269.52	5.34	435983.34	645176.73	N 32 11 53.34	W 103 59 51.48
	9627.00	27.96	82.85	9502.22	-167.98	-833.94	-232.98	10.18	435986.90	645213.27	N 32 11 53.37	W 103 59 51.05
	9722.00	40.87	90.93	9580.47	-114.89	-831.66	-179.55	14.39	435989.17	645266.69	N 32 11 53.39	W 103 59 50.43
	9816.00	53.46	86.23	9644.27	-46.52	-829.67	-110.82	13.88	435991.17	645335.41	N 32 11 53.41	W 103 59 49.63
	9910.00	61.01	86.45	9695.10	31.68	-824.63	-32.00	8.03	435996.20	645414.23	N 32 11 53.46	W 103 59 48.71
	10005.00	74.69	88.70	9730.84	118.84	-821.01	55.70	14.56	435999.83	645501.93	N 32 11 53.49	W 103 59 47.69
	10099.00	76.65	89.03	9754.10	209.48	-819.20	146.75	2.11	436001.63	645592.97	N 32 11 53.51	W 103 59 46.63
	10197.00	79.45	91.30	9774.40	305.08	-819.49	242.61	3.65	436001.35	645688.82	N 32 11 53.50	W 103 59 45.51
	10291.00	86.87	90.20	9785.58	398.15	-820.70	335.87	7.98	436000.13	645782.07	N 32 11 53.49	W 103 59 44.43
	10385.00	89.00	89.37	9788.97	491.78	-820.35	429.80	2.43	436000.49	645876.00	N 32 11 53.49	W 103 59 43.34
	10479.00	87.97	89.31	9791.46	585.37	-819.27	523.76	1.10	436001.57	645969.95	N 32 11 53.50	W 103 59 42.24
	10668.00	87.01	89.73	9799.73	773.50	-817.68	712.57	0.55	436003.15	646158.74	N 32 11 53.50	W 103 59 40.05
	10762.00	87.08	89.72	9804.58	867.06	-817.23	806.44	0.08	436003.60	646252.61	N 32 11 53.51	W 103 59 38.95
	10857.00	86.84	89.07	9809.62	961.56	-816.23	901.30	0.73	436004.60	646347.46	N 32 11 53.51	W 103 59 37.85
	10951.00	87.42	89.55	9814.32	1055.07	-815.10	995.18	0.80	436005.73	646441.33	N 32 11 53.52	W 103 59 36.76
	11045.00	88.11	89.30	9817.99	1148.64	-814.16	1089.10	0.78	436006.68	646535.24	N 32 11 53.53	W 103 59 35.66
	11140.00	88.08	89.26	9821.15	1243.20	-812.97	1184.04	0.05	436007.87	646630.18	N 32 11 53.54	W 103 59 34.56
	11234.00	88.38	89.07	9824.05	1336.76	-811.60	1277.99	0.38	436009.24	646724.11	N 32 11 53.55	W 103 59 33.47
	11424.00	87.15	89.46	9831.46	1525.85	-809.16	1467.82	0.68	436011.67	646913.93	N 32 11 53.57	W 103 59 31.26
	11518.00	87.18	89.60	9836.11	1619.39	-808.39	1561.70	0.15	436012.44	647007.81	N 32 11 53.57	W 103 59 30.16
	11613.00	87.11	89.30	9840.84	1713.91	-807.48	1656.58	0.32	436013.35	647102.68	N 32 11 53.58	W 103 59 29.06
	11707.00	88.25	89.24	9844.65	1807.46	-806.28	1750.50	1.21	436014.55	647196.58	N 32 11 53.59	W 103 59 27.97
	11803.00	88.45	89.20	9847.41	1903.02	-804.98	1846.45	0.21	436015.86	647292.53	N 32 11 53.60	W 103 59 26.85
	11899.00	88.56	89.08	9849.92	1998.58	-803.54	1942.40	0.17	436017.30	647388.48	N 32 11 53.61	W 103 59 25.73
	11993.00	88.49	88.92	9852.34	2092.13	-801.90	2036.36	0.19	436018.94	647482.42	N 32 11 53.62	W 103 59 24.64
	12088.00	88.49	88.91	9854.84	2186.66	-800.10	2131.31	0.01	436020.74	647577.37	N 32 11 53.63	W 103 59 23.53
	12182.00	88.31	89.10	9857.46	2280.20	-798.47	2225.26	0.28	436022.37	647671.31	N 32 11 53.65	W 103 59 22.44
	12277.00	88.56	89.24	9860.06	2374.77	-797.09	2320.21	0.30	436023.74	647766.25	N 32 11 53.66	W 103 59 21.34
	12372.00	88.56	88.92	9862.45	2469.32	-795.57	2415.17	0.34	436025.27	647861.20	N 32 11 53.67	W 103 59 20.23
	12561.00	89.00	89.24	9866.47	2657.46	-792.53	2604.10	0.29	436028.30	648050.12	N 32 11 53.69	W 103 59 18.03
	12656.00	89.07	89.04	9868.07	2752.04	-791.11	2699.08	0.22	436029.73	648145.09	N 32 11 53.71	W 103 59 16.93
	12749.00	89.35	89.52	9869.35	2844.66	-789.94	2792.06	0.60	436030.90	648238.07	N 32 11 53.71	W 103 59 15.85
	12941.00	89.79	89.30	9870.79	3035.92	-787.96	2984.04	0.26	436032.87	648430.03	N 32 11 53.73	W 103 59 13.61
	13036.00	90.21	89.15	9870.79	3130.53	-786.68	3079.04	0.47	436034.16	648525.02	N 32 11 53.74	W 103 59 12.51
	13130.00	90.24	89.44	9870.42	3224.15	-785.52	3173.03	0.31	436035.31	648619.00	N 32 11 53.75	W 103 59 11.41
	13225.00	89.97	89.00	9870.25	3318.76	-784.23	3268.02	0.54	436036.61	648713.99	N 32 11 53.76	W 103 59 10.31
	13320.00	90.17	89.23	9870.13	3413.35	-782.76	3363.01	0.32	436038.07	648808.97	N 32 11 53.77	W 103 59 9.20
	13415.00	89.83	91.09	9870.13	3508.08	-783.02	3458.00	1.99	436037.81	648903.95	N 32 11 53.76	W 103 59 8.09
	13509.00	89.97	90.89	9870.30	3601.92	-784.65	3551.99	0.26	436036.18	648997.93	N 32 11 53.74	W 103 59 7.00
	13698.00	90.24	90.95	9869.95	3790.56	-787.68	3740.96	0.15	436033.15	649186.89	N 32 11 53.71	W 103 59 4.80
	13793.00	90.07	91.13	9869.69	3885.40	-789.41	3835.95	0.26	436031.43	649281.87	N 32 11 53.69	W 103 59 3.70
	13887.00	90.17	91.05	9869.50	3979.24	-791.20	3929.93	0.14	436029.64	649375.84	N 32 11 53.67	W 103 59 2.60
	13982.00	89.97	91.18	9869.38	4074.08	-793.04	4024.91	0.25	436027.79	649470.82	N 32 11 53.64	W 103 59 1.50
	14077.00	89.97	91.07	9869.43	4168.92	-794.91	4119.89	0.12	436025.92	649565.79	N 32 11 53.62	W 103 59 0.39
	14266.00	90.14	91.36	9869.25	4357.62	-798.92	4308.85	0.18	436021.92	649754.73	N 32 11 53.58	W 103 58 58.19
	14361.00	90.07	91.14	9869.08	4452.48	-800.99	4403.83	0.24	436019.84	649849.70	N 32 11 53.55	W 103 58 57.09
	14456.00	90.03	90.85	9868.99	4547.31	-802.64	4498.81	0.31	436018.20	649944.68	N 32 11 53.53	W 103 58 55.98
	14551.00	90.10	90.85	9868.88	4642.12	-804.05	4593.80	0.07	436016.79	650039.66	N 32 11 53.52	W 103 58 54.88
	14645.00	89.86	90.80	9868.92	4735.94	-805.40	4687.79	0.26	436015.43	650133.65	N 32 11 53.50	W 103 58 53.78
	14741.00	88.76	90.44	9870.07	4831.72	-806.44	4783.78	1.21	436014.39	650229.62	N 32 11 53.49	W 103 58 52.67
	14836.00	89.38	89.33	9871.62	4926.41	-806.25	4878.76	1.34	436014.58	650324.60	N 32 11 53.49	W 103 58 51.56
	14930.00	89.11	89.11	9872.85	5020.01	-804.97	4972.75	0.37	436015.86	650418.58	N 32 11 53.50	W 103 58 50.47
	15025.00	89.07	89.17	9874.36	5114.60	-803.54	5067.72	0.08	436017.29	650513.55	N 32 11 53.51	W 103 58 49.36
	15120.00	89.00	89.18	9875.96	5209.18	-802.18	5162.70	0.07	436018.66	650608.52	N 32 11 53.52	W 103 58 48.26
	15310.00	89.00	89.05	9879.28	5398.34	-799.24	5352.65	0.07	436021.59	650798.45	N 32 11 53.54	W 103 58 46.05
	15404.00	89.00	88.94	9880.92	5491.91	-797.59	5446.62	0.12	436023.24	650892.41	N 32 11 53.55	W 103 58 44.95
	15499.00	89.04	89.00	9882.54	5586.46	-795.89	5541.59	0.08	436024.95	650987.38	N 32 11 53.57	W 103 58 43.85
	15594.00	88.93	88.95	9884.23	5681.02	-794.19	5636.56	0.13	436026.65	651082.34	N 32 11 53.58	W 103 58 42.74
	15689.00	89.07	89.25	9885.89	5775.59	-792.70	5731.53	0.35	436028.14	651177.30	N 32 11 53.59	W 103 58 41.64
	15784.00	89.45	89.20	9887.11	5870.20	-791.41	5826.52	0.40	436029.42	651272.28	N 32 11 53.60	W 103 58 40.53
	15878.00	89.35	89.38	9888.10	5963.81	-790.25	5920.51	0.22	436030.59	651366.26	N 32 11 53.61	W 103 58 39.44
	15974.00	89.00	89.20	9889.48	6059.42	-789.06	6016.49	0.41	436031.78	651462.23	N 32 11 53.62	W 103 58 38.32
	16070.00	89.14	88.92	9891.04	6154.99	-787.48	6112.46	0.33	436033.35	651558.20	N 32 11 53.63	W 103 58 37.20
	16165.00	89.00	88.94	9892.58	6249.54	-785.71	6207.43	0.15	436035.12	651653.16	N 32 11 53.65	W 103 58 36.10
	16259.00	88.56	88.34	9894.58	6343.04	-783.48	6301.38	0.79	436037.36	651747.11	N 32 11 53.66	W 103 58 35.01
	16353.00	89.11	88.99	9896.49	6436.54	-781.29	6395.34	0.91	436039.54	651841.05	N 32 11 53.68	W 103 58 33.91
	16449.00	88.97	89.09	9898.10	6532.11	-779.68	6491.31	0.18	436041.15	651937.02	N 32 11 53.70	W 103 58 32.80
	16543.00	88.52	89.09	9900.16	6625.68	-778.19	6585.28	0.48	436042.64	652030.98	N 32 11 53.71	W 103 58 31.70
	16638.00	88.69	88.89	9902.47	6720.22	-776.51	6680.23	0.28	436044.32	652125.93	N 32 11 53.72	W 103 58 30.60
	16733.00	88.69	89.13	9904.64	6814.77	-774.87	6775.20	0.25	436045.96	652220.88	N 32 11 53.73	W 103 58 29.49
	16828.00	88.63	88.92	9906.86	6909.33	-773.26	6870.16	0.23	436047.58	652315.83	N 32 11 53.75	W 103 58 28.39
	17018.00	88.59	91.04	9911.47	7098.69	-773.19	7060.09	1.12	436047.64	652505.75	N 32 11 53.74	W 103 58 26.18
	17114.00	88.52	91.40	9913.90	7194.51	-775.23	7156.04	0.38	436045.60	652601.69	N 32 11 53.72	W 103 58 25.06
	17208.00	88.66	91.16	9916.21	7288.34	-777.33	7249.98	0.30	436043.50	652695.63	N 32 11 53.69	W 103 58 23.97
	17304.00	88.83	91.07	9918.31	7384.15	-779.20	7345.94	0.20	436041.63	652791.58	N 32 11 53.67	W 103 58 22.85
	17399.00	89.04	91.19	9920.08	7478.98	-781.07	7440.91	0.25	436039.76	652886.54	N 32 11 53.65	W 103 58 21.74
	17494.00	88.04	91.19	9922.50	7573.80	-783.05	7535.86	1.05	436037.79	652981.48	N 32 11 53.63	W 103 58 20.64
	17589.00	88.07	91.35	9925.72	7668.60	-785.15	7630.78	0.17	436035.68	653076.39	N 32 11 53.60	W 103 58 19.54
	17779.00	88.04	91.29	9932.17	7858.21	-789.52	7820.62	0.04	436031.31	653266.22	N 32 11 53.55	W 103 58 17.33
	17876.00	88.35	91.47	9935.23	7955.03	-791.86	7917.54	0.37	436028.97	653363.13	N 32 11 53.53	W 103 58 16.20
	17972.00	88.49	89.71	9937.87	8050.77	-792.85	8013.50	1.84	436027.99	653459.08	N 32 11 53.52	W 103 58 15.08
	18067.00	87.93	88.70	9940.84	8145.33	-791.53	8108.44	1.22	436029.30	653554.02	N 32 11 53.53	W 103 58 13.98
	18256.00	88.63	89.13	9946.51	8333.37	-787.95	8297.32	0.43	436032.88	653742.88	N 32 11 53.55	W 103 58 11.78
	18351.00	87.97	89.13	9949.33	8427.93	-786.51	8392.26	0.69	436034.32	653837.82	N 32 11 53.57	W 103 58 10.67
	18447.00	88.28	89.37	9952.47	8523.48	-785.26	8488.20	0.41	436035.58	653933.75	N 32 11 53.57	W 103 58 9.56
	18637.00	87.94	88.83	9958.74	8712.56	-782.27	8678.08	0.34	436038.56	654123.61	N 32 11 53.60	W 103 58 7.35
	18731.00	87.94	89.17	9962.12	8806.08	-780.63	8772.00	0.36	436040.20	654217.53	N 32 11 53.61	W 103 58 6.25

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	18826.00	88.04	88.99	9965.45	8900.61	-779.11	8866.93	0.22	436041.72	654312.45	N 32 11 53.62	W 103 58 5.15
	18921.00	88.04	89.33	9968.70	8995.15	-777.72	8961.87	0.36	436043.12	654407.37	N 32 11 53.63	W 103 58 4.04
	19110.00	88.52	88.84	9974.37	9183.25	-774.70	9150.75	0.36	436046.13	654596.25	N 32 11 53.66	W 103 58 1.85
	19299.00	88.59	89.08	9979.14	9371.33	-771.27	9339.66	0.13	436049.56	654785.14	N 32 11 53.68	W 103 57 59.65
	19395.00	88.21	88.92	9981.82	9466.86	-769.60	9435.61	0.43	436051.24	654881.08	N 32 11 53.70	W 103 57 58.53
	19489.00	88.59	88.96	9984.44	9560.39	-767.86	9529.56	0.41	436052.97	654975.02	N 32 11 53.71	W 103 57 57.44
	19584.00	88.56	88.67	9986.81	9654.91	-765.89	9624.51	0.31	436054.94	655069.96	N 32 11 53.73	W 103 57 56.33
	19678.00	88.56	88.65	9989.17	9748.41	-763.70	9718.45	0.02	436057.14	655163.90	N 32 11 53.75	W 103 57 55.24
	19772.00	88.62	89.12	9991.48	9841.94	-761.87	9812.41	0.50	436058.96	655257.85	N 32 11 53.76	W 103 57 54.15
	19866.00	88.63	88.90	9993.74	9935.49	-760.24	9906.37	0.23	436060.59	655351.80	N 32 11 53.77	W 103 57 53.05
Final MWD survey	19941.00	88.35	88.88	9995.71	10010.12	-758.79	9981.33	0.37	436062.04	655426.75	N 32 11 53.79	W 103 57 52.18
Proj. to bit	19980.00	88.35	88.88	9996.84	10048.92	-758.03	10020.30	0.00	436062.80	655465.73	N 32 11 53.79	W 103 57 51.73

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_MWD_PLUS_0.5_DEG-Depth Only	Original Borehole / Oxy Cedar Canyon 21-22 Federal Com 34H MWD 0-19980 ftMD
	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 34H MWD 0-19980 ftMD
	1	26.500	19980.000	Act Stns	30.000	30.000	NAL_MWD_PLUS_0.5_DEG	Original Borehole / Oxy Cedar Canyon 21-22 Federal Com 34H