

Oilfield Services, Central U.S. Land
Schlumberger Drilling and Measurements
Drilling Group
Geo Market Area: South West Texas Basin
7220 W I-H 20
Midland, Texas 79706
Phone : (432) 742-5400 (Main)
Fax : (432) 742-5606 (Shared)

HOBBS OCD

JAN 03 2020

Schlumberger

RECEIVED

October 30, 2019

Oxy USA Inc
P.O. BOX 2289
Houston, TX 77252

Re:

30, 22S, 33E, Lea NM
N 32.36943 W -103.61519

CLIENT: Oxy USA Inc
WELL: Avogato 30-31 State Com 33H
FIELD: 3rd Bone Spring Sand

RIG: Pioneer 82
COUNTY: Lea
API NO: 30-025-45928
JOB NO: 19MLH0353

Enclosed, please find the original copy of the survey performed on the referenced well by Drilling & Measurements, a division of Schlumberger Technology Corporation (P-5 No. 754900).
Other information required by your office is as follows.

<u>Name & Title of Surveyor</u>	<u>Drainhole Number</u>	<u>Surveyed Depths</u>	<u>Dates Performed</u>	<u>Type of Survey</u>
Balqees Alabdullah FE	Avogato 30-31 State Com 33H Original Hole	1109.00 Ft to 22060.00 Ft	September 14, 2019 to October 14, 2019	TelePacer, SlimPulse 3rd Party Corrected

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Schlumberger

Well Reference:
30, 22S, 33E, Lea NM
N 32.36943 W -103.61519

I, Balqees Alabdullah certify that; I am employed by Drilling & Measurements, a division of Schlumberger Technology Corporation; that I did on the day(s) of September 14, 2019 through October 14, 2019, conduct or supervise the taking of the TelePacer, SlimPulse & 3rd Party Corrected surveys from a depth of 1109.00 feet to a depth of 22060.00 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 Avogato 30-31 State Com 33H Well (Original Hole) API No. 30-025-45928 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
Balqees Alabdullah
FE

Balqees

Subscribed and Sworn to before me this 30 day of October (month) 2019 (yr)

My Commission expires:

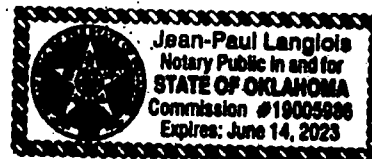
6/14/2023

Notary Public

Jean-Paul Langlois
Cowache, Oklahoma

(signature)

(County State)



Schlumberger

OXY



Borehole: Original Borehole Well: Oxy Avogato 30-31 State Cor 33H Field: NM Lea County (NAD 83) Structure: Oxy Avogato 30-31 State Cor 33H

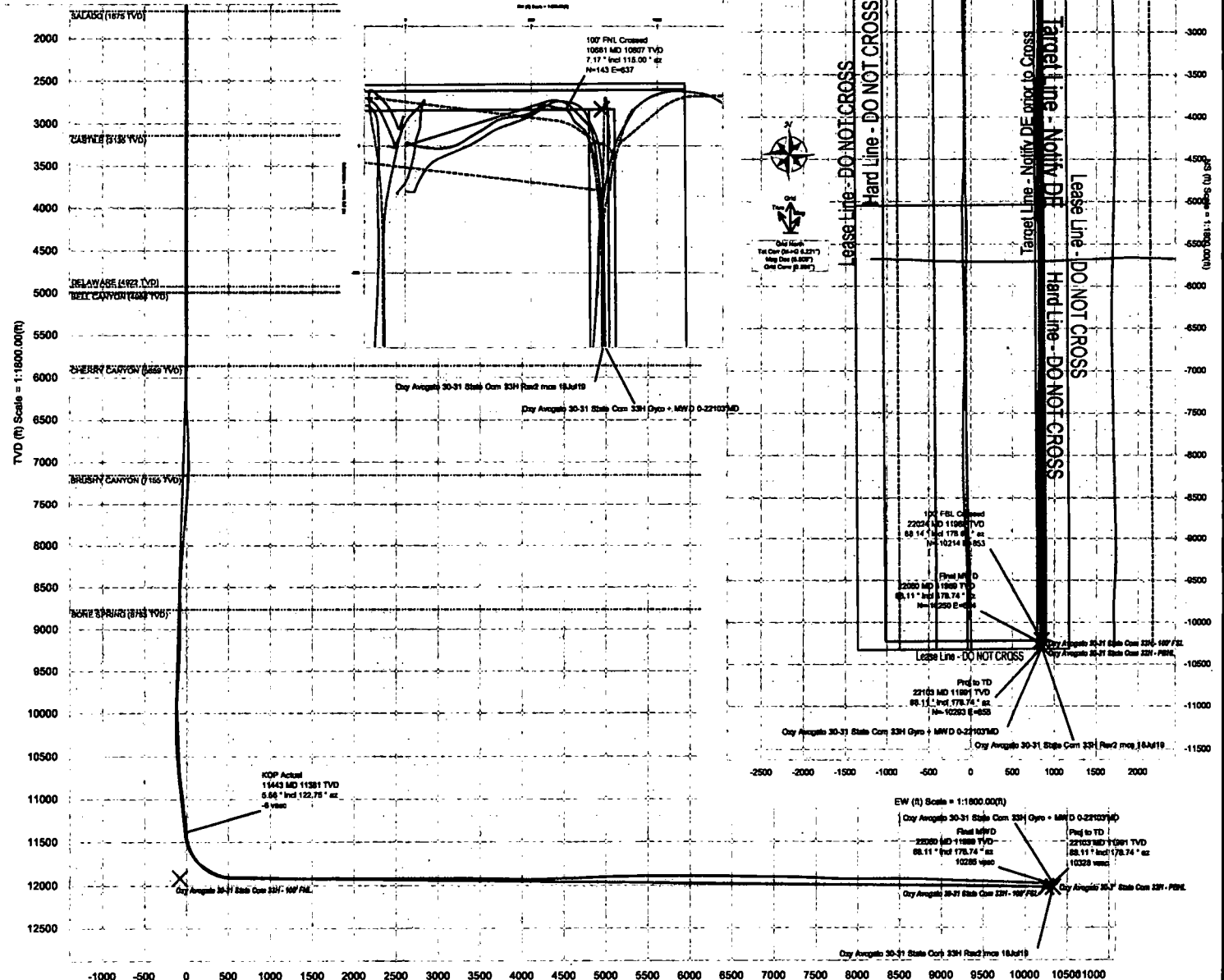
Gravity & Magnetic Parameters Surface Location NAD83 New Mexico State Plane, Eastern Zone, US Feet Miscellaneous

Model: IFR1 Dip: 60.08P Date: 04-Oct-2019 Lat: N 32 22 6.86 Northing: 438574.8923 Grid Conv: 0.3943' Stat: Oxy Avogato 30-31 State Cor 33H TVD Ref: RKB(2726.78 above MSL)

MagDec: 8.80P FB: 4504mT Gravity FB: 986.448mg (9.80668 m/s²) Lon: W 123 38 54.79 Easting: 763057.1103 Scale Fact: 0.88986339 Plan: Oxy Avogato 30-31 State Cor 33H Gyro + MWD 0-221037MD

Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
RKB	0.00	0.00	145.21	0.00	0.00	0.00	0.00	
SHL	25.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00
Final Gyro	1022.00	1.20	355.53	1021.91	-9.85	10.08	2.40	0.52
100' FNL Crossed	10681.00	7.17	115.00	10608.70	-90.48	143.45	636.71	-2.66
KOP Actual	11443.00	5.56	122.75	11381.12	-6.44	65.05	708.29	2.78
100' FSL Crossed	22024.00	88.14	178.68	11988.16	10249.16	-10213.57	853.47	0.24
Final MWD	22060.00	88.11	178.74	11989.34	10285.08	-10249.54	854.29	0.24
Proj to TD	22103.00	88.11	178.74	11990.75	10327.97	-10292.50	855.23	0.00



Oxy Avogato 30-31 State Com 33H Gyro + MWD 0-22103'MD Survey

Geodetic Report

(Def Survey)



Report Date: October 14, 2019 - 11:57 AM
 Client: OXY
 Field: NM Lea County (NAD 83)
 Structure / Slot: Oxy Avogato 30-31 State Com 33H / Oxy Avogato 30-31 State Com 33H
 Well: Oxy Avogato 30-31 State Com 33H
 Borehole: Original Borehole
 UWI / API#: Unknown / 30-025-45928
 Survey Name: Oxy Avogato 30-31 State Com 33H Gyro + MWD 0-22103'MD
 Survey Date: August 28, 2019
 Tort / AMD / DOI / ERD Ratio: 265.470' / 11183.823 ft / 6.738 / 0.933
 Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
 Location Lat / Long: N 32° 22' 9.95170", W 103° 36' 54.70182"
 Location Grid N/E Y/X: N 488874.600 ftUS, E 783057.100 ftUS
 CRS Grid Convergence Angle: 0.3845°
 Grid Scale Factor: 0.99996539
 Version / Patch: 2.10.782.0

Survey / DLS Computation: Minimum Curvature / Lubinski
 Vertical Section Azimuth: 175.271° (Grid North)
 Vertical Section Origin: 0.000 ft, 0.000 ft
 TVD Reference Datum: RKB
 TVD Reference Elevation: 3726.700 ft above MSL
 Seabed / Ground Elevation: 3701.700 ft above MSL
 Magnetic Declination: 6.805°
 Total Gravity Field Strength: 986.448mgm (9.80665 Based)
 Gravity Model: GARM
 Total Magnetic Field Strength: 48048.000 nT
 Magnetic Dip Angle: 60.085°
 Declination Date: October 04, 2019
 Magnetic Declination Model: IFR1
 North Reference: Grid North
 Grid Convergence Used: 0.3845°
 Total Corr Mag North→Grid: 6.2205°
 North: Well Head
 Local Coord Referenced To: Well Head

Comments	MD (ft)	Incl (°)	Azimuth (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (ft/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
RKB	0.00	0.00	145.21	0.00	0.00	0.00	0.00	N/A	498874.80	783057.10	N 32 22 9.95 W 103 36 54.70	
SHL	25.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	498874.80	783057.10	N 32 22 9.95 W 103 36 54.70	
	98.00	0.25	303.65	98.00	-0.10	0.09	-0.13	0.34	498874.69	783056.97	N 32 22 9.95 W 103 36 54.70	
	129.00	0.25	318.10	129.00	-0.19	0.17	-0.24	0.17	498874.77	783056.86	N 32 22 9.95 W 103 36 54.70	
	160.00	0.14	337.12	160.00	-0.28	0.26	-0.30	0.42	498874.86	783056.80	N 32 22 9.95 W 103 36 54.71	
	215.40	0.20	47.19	215.40	-0.41	0.39	-0.25	0.36	498874.99	783056.85	N 32 22 9.96 W 103 36 54.70	
	242.80	0.24	79.88	242.80	-0.44	0.43	-0.16	0.47	498875.03	783056.94	N 32 22 9.96 W 103 36 54.70	
	274.30	0.21	87.77	274.30	-0.44	0.44	-0.04	0.14	498875.04	783057.06	N 32 22 9.96 W 103 36 54.70	
	305.80	0.25	73.22	305.80	-0.46	0.46	0.08	0.22	498875.06	783057.18	N 32 22 9.96 W 103 36 54.70	
	337.30	0.21	57.97	337.30	-0.50	0.52	0.20	0.23	498875.12	783057.30	N 32 22 9.96 W 103 36 54.70	
	368.80	0.23	52.84	368.80	-0.56	0.58	0.30	0.09	498875.18	783057.40	N 32 22 9.96 W 103 36 54.70	
	400.30	0.27	49.43	400.30	-0.64	0.67	0.41	0.13	498875.27	783057.51	N 32 22 9.96 W 103 36 54.70	
	431.90	0.38	45.48	431.90	-0.75	0.79	0.54	0.38	498875.39	783057.64	N 32 22 9.96 W 103 36 54.70	
	463.40	0.43	40.62	463.40	-0.90	0.96	0.69	0.19	498875.56	783057.79	N 32 22 9.96 W 103 36 54.69	
	495.00	0.50	38.41	495.00	-1.08	1.16	0.85	0.25	498875.78	783057.95	N 32 22 9.96 W 103 36 54.69	
	526.40	0.57	33.39	526.39	-1.31	1.40	1.01	0.24	498876.00	783058.11	N 32 22 9.97 W 103 36 54.69	
	558.00	0.87	27.33	557.99	-1.59	1.69	1.19	0.38	498876.29	783058.29	N 32 22 9.97 W 103 36 54.69	
	589.50	0.80	17.23	589.49	-1.95	2.07	1.34	0.58	498876.67	783058.44	N 32 22 9.97 W 103 36 54.69	
	621.00	0.82	20.84	620.99	-2.36	2.49	1.48	0.17	498877.09	783058.58	N 32 22 9.98 W 103 36 54.68	
	652.60	0.93	16.91	652.58	-2.80	2.94	1.64	0.40	498877.54	783058.74	N 32 22 9.98 W 103 36 54.68	
	684.10	1.00	9.90	684.08	-3.30	3.46	1.76	0.44	498878.06	783058.86	N 32 22 9.99 W 103 36 54.68	
	715.60	1.00	10.07	715.57	-3.83	4.00	1.85	0.01	498878.60	783058.95	N 32 22 9.99 W 103 36 54.68	
	747.10	1.01	9.64	747.07	-4.37	4.54	1.95	0.04	498879.14	783059.05	N 32 22 10.00 W 103 36 54.68	
	778.60	1.12	3.98	778.58	-4.94	5.13	2.02	0.48	498879.73	783059.12	N 32 22 10.00 W 103 36 54.68	
	810.10	1.19	6.71	810.06	-5.57	5.78	2.07	0.28	498880.36	783059.17	N 32 22 10.01 W 103 36 54.68	
	841.70	1.15	7.15	841.65	-6.20	6.40	2.15	0.13	498881.00	783059.25	N 32 22 10.01 W 103 36 54.68	
	873.20	1.20	5.48	873.14	-6.83	7.04	2.22	0.19	498881.64	783059.32	N 32 22 10.02 W 103 36 54.68	
	904.70	1.20	5.19	904.64	-7.48	7.70	2.28	0.02	498882.30	783059.38	N 32 22 10.03 W 103 36 54.67	
	936.20	1.16	5.03	936.13	-8.12	8.34	2.34	0.13	498882.94	783059.44	N 32 22 10.03 W 103 36 54.67	
	967.70	1.16	3.61	967.62	-8.75	8.88	2.39	0.09	498883.58	783059.49	N 32 22 10.04 W 103 36 54.67	
	999.30	1.15	0.75	999.22	-9.38	9.62	2.41	0.19	498884.21	783059.51	N 32 22 10.05 W 103 36 54.67	
Final Gyro	1022.00	1.20	355.53	1021.91	-9.85	10.08	2.40	0.52	498884.68	783059.50	N 32 22 10.05 W 103 36 54.67	
	1109.00	0.21	285.88	1108.91	-10.81	11.03	2.17	1.31	498885.63	783059.27	N 32 22 10.06 W 103 36 54.68	
	1201.00	0.09	273.73	1200.90	-10.88	11.08	1.94	0.13	498885.68	783059.04	N 32 22 10.06 W 103 36 54.68	
	1293.00	0.13	221.20	1292.90	-10.82	11.01	1.80	0.11	498885.81	783058.90	N 32 22 10.06 W 103 36 54.68	
	1385.00	0.01	23.08	1384.90	-10.78	10.94	1.73	0.15	498885.84	783058.83	N 32 22 10.06 W 103 36 54.68	
	1480.00	0.07	64.95	1479.90	-10.78	10.97	1.79	0.07	498885.57	783058.89	N 32 22 10.06 W 103 36 54.68	
	1575.00	0.18	210.30	1574.90	-10.68	10.87	1.77	0.25	498885.47	783058.87	N 32 22 10.06 W 103 36 54.68	
	1670.00	0.08	91.47	1669.90	-10.55	10.74	1.76	0.24	498885.33	783058.88	N 32 22 10.06 W 103 36 54.68	
	1765.00	0.07	21.87	1764.90	-10.60	10.79	1.85	0.09	498885.39	783058.95	N 32 22 10.06 W 103 36 54.68	
	1865.00	0.12	347.78	1864.90	-10.90	11.09	1.85	0.04	498885.69	783058.95	N 32 22 10.06 W 103 36 54.68	
	2051.00	0.14	37.45	2050.90	-11.09	11.28	1.90	0.12	498885.88	783059.00	N 32 22 10.06 W 103 36 54.68	
	2145.00	0.12	211.75	2144.90	-11.09	11.29	1.92	0.28	498885.89	783059.02	N 32 22 10.06 W 103 36 54.68	
	2241.00	0.09	84.47	2240.90	-11.01	11.21	1.94	0.20	498885.81	783059.04	N 32 22 10.06 W 103 36 54.68	
	2336.00	0.01	162.06	2335.90	-11.00	11.21	2.01	0.10	498885.81	783059.11	N 32 22 10.06 W 103 36 54.68	
	2430.00	0.01	64.32	2429.90	-11.00	11.20	2.02	0.02	498885.80	783059.12	N 32 22 10.06 W 103 36 54.68	
	2620.00	0.07	137.84	2619.90	-10.91	11.13	2.11	0.04	498885.72	783059.21	N 32 22 10.06 W 103 36 54.68	
	2715.00	0.14	48.99	2714.90	-10.94	11.16	2.24	0.16	498885.78	783059.34	N 32 22 10.06 W 103 36 54.67	
	2811.00	0.07	6.55	2810.90	-11.08	11.29	2.33	0.10	498885.89	783059.43	N 32 22 10.06 W 103 36 54.67	
	2905.00	0.12	351.25	2904.90	-11.22	11.45	2.32	0.06	498886.05	783059.42	N 32 22 10.06 W 103 36 54.67	
	3000.00	0.24	37.65	2999.90	-11.46	11.70	2.43	0.19	498886.30	783059.53	N 32 22 10.07 W 103 36 54.67	
	3096.00	0.11	13.05	3095.90	-11.70	11.95	2.57	0.15	498886.55	783059.67	N 32 22 10.07 W 103 36 54.67	
	3191.00	0.17	56.68	3190.90	-11.85	12.12	2.71	0.12	498886.72	783059.81	N 32 22 10.07 W 103 36 54.67	
	3286.00	0.08	20.21	3285.90	-11.98	12.26	2.85	0.12	498886.88	783059.95	N 32 22 10.07 W 103 36 54.67	
	3381.00	0.12	59.01	3380.90	-12.09	12.37	2.96	0.08	498886.97	783060.06	N 32 22 10.07 W 103 36 54.67	
	3477.00	0.19	216.19	3476.90	-12.01	12.30	2.95	0.32	498886.90	783060.05	N 32 22 10.07 W 103 36 54.67	
	3571.00	0.14	188.01	3570.90	-11.79	12.06	2.83	0.08	498886.66	783059.83	N 32 22 10.07 W 103 36 54.67	
	3761.00	0.24	103.59	3760.90	-11.45	11.75	3.14	0.15	498886.35	783060.24	N 32 22 10.07 W 103 36 54.68	
	3952.00	0.24	85.25	3951.90	-11.32	11.69	3.93	0.04	498886.29	783061.03	N 32 22 10.07 W 103 36 54.68	
	4141.00	0.41	79.79	4140.90	-11.39	11.84	4.99	0.09	498886.44	783062.09	N 32 22 10.07 W 103 36 54.64	
	4332.00	0.38	81.29	4331.89	-11.50	12.06	6.29	0.02	498886.65	783063.39	N 32 22 10.07 W 103 36 54.63	
	4427.00	0.21	80.50	4426.89	-11.53	12.13	6.77	0.18	498886.73	783063.87	N 32 22 10.07 W 103 36 54.62	
	4522.00	0.30	90.86	4521.89	-11.52	12.16	7.19	0.11	498886.76	783064.29	N 32 22 10.07 W 103 36 54.62	
	4618.00	0.12	51.41	4617.89	-11.55	12.22	7.52	0.23	498886.82	783064.62	N 32 22 10.07 W 103 36 54.61	
	4713.00	0.18	275.91	4712.89	-11.84	12.29	7.45	0.29	498886.89	783064.55	N 32 22 10.07 W 103 36 54.61	
	4808.00	0.27	291.50	4807.89	-11.78	12.39	7.09	0.11	498886.99	783064.19	N 32 22 10.07 W 103 36 54.62	
	4902.00	0.24	308.45	4901.89	-12.00	12.59	6.73	0.09	498887.19	783063.83	N 32 22 10.08 W 103 36 54.62	
	4996.00	0.12	228.75	4995.89	-12.07	12.65	6.51	0.28	498887.25	783063.60	N 32 22 10.08 W 103 36 54.63	
	5091.00	0.14	350.99	5090.89	-12.13	12.70	6.41	0.24	498887.30	783063.51	N 32 22 10.08 W 103 36 54.63	
	5186.00	0.08	168.29	5185.89	-12.20	12.77	6.41	0.21	498887.37	783063.37	N 32 22 10.08 W 103 36 54.63	
	5280.00	0.13	101.27	5279.89	-12.12	12.70	6.52	0.13	498887.30	783063.82	N 32 22 10.08 W 103 36 54.62	
	5375.00	0.18	78.96	5374.89	-12.11	12.71	6.77	0.09	498887.31	783063.87	N 32 22 10.08 W 103 36 54.62	
	5469.00	0.24	47.19	5468.88	-12.25	12.88	7.06	0.13	498887.48	783064.16	N 32 22 10.08 W 103 36 54.62	
	5565.00	0.24	39.97	5564.88	-12.52	13.17	7.34	0.03	498887.77	783064.44	N 32 22 10.08 W 103 36 54.62	
	5659.00	0.13	5.82	5658.88	-12.78	13.43	7.48	0.16	498888.03	783064.58	N 32 22 10.08 W 103 36 54.61	
	5754.00	0.18	33									

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (ft/100ft)	Northing (ft)	Easting (ft)	Latitude (N/S ° °')	Longitude (E/W ° °')
	6040.00	0.16	2.23	6039.88	-13.94	14.59	7.30	0.09	498889.19	763094.40	N 32 22 10.10	W 103 38 54.62
	6135.00	0.17	87.70	6134.88	-14.07	14.73	7.45	0.24	498889.33	763094.55	N 32 22 10.10	W 103 38 54.61
	6230.00	3.12	110.98	6229.83	-12.94	13.81	10.00	3.12	498888.41	763087.10	N 32 22 10.09	W 103 38 54.58
	6326.00	6.81	113.70	6325.46	-9.10	10.59	17.86	3.85	498885.19	763074.75	N 32 22 10.06	W 103 38 54.50
	6420.00	9.39	111.08	6418.51	-3.10	5.59	29.92	2.77	498880.19	763087.01	N 32 22 10.01	W 103 38 54.35
	6515.00	10.10	105.39	6512.14	3.14	0.59	45.18	1.26	498875.19	763102.28	N 32 22 9.95	W 103 38 54.18
	6610.00	10.74	100.80	6605.58	8.37	-3.28	61.91	1.10	498871.32	763119.00	N 32 22 9.92	W 103 38 53.88
	6706.00	11.03	97.55	6699.65	12.72	-6.16	79.80	0.71	498868.44	763136.89	N 32 22 9.89	W 103 38 53.77
	6801.00	11.86	94.17	6792.96	16.16	-8.07	98.54	1.12	498866.53	763155.64	N 32 22 9.87	W 103 38 53.55
	6897.00	11.44	90.77	6888.88	18.60	-8.91	117.90	0.84	498865.69	763175.00	N 32 22 9.86	W 103 38 53.33
	6992.00	11.40	90.46	6980.10	20.36	-9.12	136.71	0.07	498865.48	763193.80	N 32 22 9.85	W 103 38 53.11
	7088.00	10.98	82.99	7074.28	20.85	-8.08	155.27	1.57	498866.52	763212.37	N 32 22 9.86	W 103 38 52.89
	7134.00	10.93	81.38	7119.44	20.38	-6.89	163.93	0.87	498867.71	763221.03	N 32 22 9.87	W 103 38 52.79
	7183.00	11.00	77.48	7187.55	19.43	-5.18	173.09	1.52	498869.42	763230.18	N 32 22 9.89	W 103 38 52.68
	7278.00	11.24	71.28	7260.77	15.97	-0.25	190.71	1.28	498874.35	763247.80	N 32 22 9.94	W 103 38 52.48
	7374.00	11.37	65.31	7354.01	10.47	6.71	208.17	1.23	498881.31	763265.26	N 32 22 10.00	W 103 38 52.27
	7469.00	11.22	59.94	7448.07	3.32	15.25	224.67	1.12	498889.85	763281.78	N 32 22 10.09	W 103 38 52.08
	7564.00	11.01	56.48	7541.29	-5.00	24.89	240.24	0.74	498899.48	763297.33	N 32 22 10.18	W 103 38 51.90
	7660.00	10.91	57.78	7635.54	-13.81	34.80	255.56	0.28	498909.40	763312.65	N 32 22 10.28	W 103 38 51.72
	7755.00	10.69	59.69	7728.88	-21.56	44.04	270.78	0.44	498918.63	763327.87	N 32 22 10.37	W 103 38 51.54
	7851.00	10.90	60.98	7823.16	-29.14	52.93	286.40	0.33	498927.53	763343.49	N 32 22 10.46	W 103 38 51.38
	7946.00	10.56	60.20	7918.50	-36.53	61.62	301.81	0.39	498936.21	763358.90	N 32 22 10.54	W 103 38 51.18
	8041.00	9.58	57.22	8010.03	-43.93	70.22	316.01	1.17	498944.62	763373.10	N 32 22 10.63	W 103 38 51.01
	8140.00	8.96	56.45	8088.26	-48.48	75.42	323.97	1.07	498950.82	763381.05	N 32 22 10.78	W 103 38 50.82
	8202.00	8.51	55.32	8169.08	-56.05	84.10	336.79	0.47	498958.70	763393.88	N 32 22 10.76	W 103 38 50.77
	8297.00	8.22	56.40	8263.07	-62.84	91.88	348.23	0.35	498966.46	763405.32	N 32 22 10.84	W 103 38 50.83
	8393.00	8.42	62.48	8358.08	-68.88	98.91	360.18	0.94	498973.50	763417.27	N 32 22 10.91	W 103 38 50.49
	8488.00	8.27	67.85	8452.08	-73.62	104.70	372.68	0.84	498979.29	763429.78	N 32 22 10.96	W 103 38 50.35
	8583.00	8.30	76.30	8548.07	-78.73	108.90	385.67	1.28	498983.49	763442.75	N 32 22 11.00	W 103 38 50.20
	8678.00	8.08	81.84	8640.10	-78.20	111.47	396.94	0.86	498986.07	763456.02	N 32 22 11.03	W 103 38 50.04
	8774.00	8.43	83.69	8735.11	-78.80	113.20	412.61	0.46	498987.80	763469.69	N 32 22 11.04	W 103 38 49.88
	8869.00	7.97	84.91	8829.14	-79.03	114.55	426.09	0.52	498989.15	763483.18	N 32 22 11.06	W 103 38 49.73
	8964.00	8.15	83.67	8923.20	-78.26	115.88	439.34	0.26	498990.47	763496.43	N 32 22 11.07	W 103 38 49.57
	9060.00	7.87	83.50	9018.28	-78.66	117.37	452.64	0.29	498991.97	763509.72	N 32 22 11.08	W 103 38 49.42
	9155.00	7.90	76.88	9112.36	-80.81	119.59	465.46	0.96	498997.78	763522.54	N 32 22 11.10	W 103 38 49.27
	9250.00	8.49	72.65	9206.39	-83.29	123.16	478.51	0.89	498999.78	763535.59	N 32 22 11.14	W 103 38 49.11
	9345.00	8.23	70.93	9300.39	-86.51	127.48	491.83	0.38	499002.07	763548.71	N 32 22 11.18	W 103 38 48.96
	9440.00	7.57	62.24	9394.48	-90.68	132.85	505.67	1.39	499007.25	763560.75	N 32 22 11.23	W 103 38 48.82
	9535.00	6.81	50.18	9488.72	-96.39	139.21	513.60	1.83	499013.81	763570.68	N 32 22 11.30	W 103 38 48.70
	9630.00	6.89	52.42	9583.04	-102.72	146.29	522.45	0.29	499020.89	763579.53	N 32 22 11.36	W 103 38 48.60
	9726.00	6.15	52.49	9678.42	-108.63	152.94	531.09	0.77	499027.53	763588.17	N 32 22 11.43	W 103 38 48.50
	9821.00	4.84	57.96	9772.98	-113.22	158.16	538.52	1.48	499032.75	763595.60	N 32 22 11.48	W 103 38 48.41
	9916.00	4.69	74.78	9867.66	-115.77	161.31	545.67	1.47	499035.90	763602.75	N 32 22 11.51	W 103 38 48.33
	10011.00	6.04	97.04	9962.25	-115.46	161.71	554.38	2.59	499038.31	763611.46	N 32 22 11.51	W 103 38 48.23
	10106.00	7.21	106.94	10056.82	-112.24	159.36	565.04	1.72	499033.96	763622.12	N 32 22 11.49	W 103 38 48.10
	10201.00	7.49	105.90	10150.84	-107.88	155.93	576.70	0.33	499030.52	763633.78	N 32 22 11.46	W 103 38 47.97
	10297.00	6.98	106.05	10246.07	-103.58	152.60	588.32	0.53	499027.20	763645.40	N 32 22 11.42	W 103 38 47.83
	10392.00	6.54	99.88	10340.20	-99.78	149.80	600.82	1.86	499024.39	763657.90	N 32 22 11.39	W 103 38 47.69
	10487.00	7.64	94.09	10434.26	-97.01	148.14	614.07	1.27	499022.74	763671.15	N 32 22 11.38	W 103 38 47.53
	10583.00	7.97	100.42	10529.37	-94.29	146.48	626.88	0.96	499021.06	763684.06	N 32 22 11.38	W 103 38 47.38
100' FNL Crossed	10681.00	7.17	115.00	10606.70	-90.48	143.45	636.71	2.66	499018.04	763693.79	N 32 22 11.33	W 103 38 47.27
	10678.00	7.07	118.55	10623.57	-89.36	142.50	638.60	2.66	499017.09	763695.67	N 32 22 11.32	W 103 38 47.25
	10773.00	6.40	135.88	10717.82	-82.08	135.80	647.42	2.24	499010.50	763704.49	N 32 22 11.25	W 103 38 47.14
	10868.00	6.77	147.47	10812.09	-71.58	125.99	655.00	2.96	499000.59	763712.08	N 32 22 11.15	W 103 38 47.06
	10964.00	6.78	155.00	10906.97	-58.22	113.16	662.03	1.20	498997.78	763719.11	N 32 22 11.03	W 103 38 46.97
	11059.00	6.50	148.62	11000.89	-45.14	100.62	668.75	1.05	498975.21	763725.83	N 32 22 10.90	W 103 38 46.90
	11154.00	8.38	125.97	11094.89	-34.35	90.55	678.01	3.48	498965.15	763735.09	N 32 22 10.80	W 103 38 46.79
	11249.00	8.31	130.75	11188.88	-24.94	82.00	688.82	0.73	498956.60	763745.89	N 32 22 10.72	W 103 38 46.66
	11312.00	8.90	134.63	11251.17	-17.99	75.61	695.73	1.31	498950.21	763752.81	N 32 22 10.65	W 103 38 46.58
	11443.00	5.56	122.75	11361.12	-6.44	65.05	708.29	2.78	498939.65	763765.36	N 32 22 10.55	W 103 38 46.44
	11537.00	12.59	152.87	11473.93	5.82	53.45	716.80	8.79	498928.05	763773.88	N 32 22 10.43	W 103 38 46.34
	11631.00	23.26	160.41	11563.25	33.32	26.77	727.73	11.59	498901.37	763784.80	N 32 22 10.17	W 103 38 46.22
	11726.00	30.79	161.32	11647.82	75.11	-14.00	741.83	7.94	498880.60	763798.90	N 32 22 9.76	W 103 38 46.05
	11820.00	42.81	167.78	11722.98	130.35	-68.22	756.35	13.42	498860.38	763813.43	N 32 22 9.23	W 103 38 45.89
	11914.00	56.23	170.01	11783.88	201.25	-138.24	769.95	14.39	498738.36	763827.03	N 32 22 8.53	W 103 38 45.74
	12009.00	60.77	174.72	11833.51	282.09	-128.48	780.63	6.38	498656.13	763837.70	N 32 22 7.74	W 103 38 45.62
	12103.00	68.31	177.16	11873.89	368.89	-303.07	788.58	8.36	498571.54	763843.65	N 32 22 6.90	W 103 38 45.56
	12198.00	81.88	180.13	11898.29	458.30	-394.62	788.67	14.58	498479.99	763845.74	N 32 22 5.99	W 103 38 45.54
	12292.00	89.73	179.39	11905.18	551.68	-488.29	789.06	8.41	498386.32	763848.13	N 32 22 5.07	W 103 38 45.54
	12309.00	89.62	179.59	11905.28	568.64	-505.29	789.21	1.34	498369.32	763848.28	N 32 22 4.90	W 103 38 45.54
	12419.00	89.90	178.62	11905.74	678.39	-615.28	790.93	0.92	498259.34	763848.00	N 32 22 3.81	W 103 38 45.53
	12520.00	88.24	178.91	11907.38	779.19	-718.24	793.11	1.67	498158.39	763850.18	N 32 22 2.81	W 103 38 45.51
	12615.00	88.28	179.10	11910.28	873.94	-811.18	794.78	0.20	498063.45	763851.83	N 32 22 1.87	W 103 38 45.50
	12710.00	88.42	179.67	11913.00	968.66	-906.13	795.78	0.82	497968.50	763852.85	N 32 22 0.93	W 103 38 45.50
	12804.00	88.18	180.70	11915.79	1062.27	-1000.09	795.47	1.12	497874.65	763852.64	N 32 22 0.00	W 103 38 45.81
	12899.00	88.90	180.93	11918.21	1156.79	-1095.05	794.12	0.80	497779.59	763851.19	N 32 21 59.08	W 103 38 45.53
	12993.00	88.62	180.85	11920.24	1250.33	-1189.02	792.83	0.42	497685.63	763849.90	N 32 21 58.13	W 103 38 45.55
	13088.00	89.52										

Comments	MD (ft)	Incl (°)	Azimuth (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (ft/100ft)	Northing (ft)	Easting (ft)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	16111.00	91.94	183.01	11928.18	4357.34	-4305.64	804.94	0.79	494569.12	763882.01	N 32 21 27.30 W	103 38 45.68
	16206.00	91.56	182.37	11925.26	4451.50	-4400.49	800.48	0.78	494474.27	763857.55	N 32 21 26.36 W	103 38 45.71
	16300.00	92.01	181.82	11922.33	4544.79	-4494.38	797.04	0.78	494380.38	763834.12	N 32 21 25.43 W	103 38 45.76
	16395.00	92.21	181.75	11918.83	4639.11	-4589.27	794.09	0.22	494285.50	763851.16	N 32 21 24.49 W	103 38 45.80
	16489.00	92.04	180.95	11915.35	4732.52	-4683.18	791.87	0.87	494191.59	763848.95	N 32 21 23.56 W	103 38 45.84
	16584.00	92.01	180.66	11911.99	4827.02	-4778.11	790.54	0.31	494096.87	763847.81	N 32 21 22.62 W	103 38 45.88
	16678.00	92.35	180.66	11908.42	4920.53	-4872.03	789.46	0.36	494002.74	763846.53	N 32 21 21.69 W	103 38 45.88
	16773.00	92.32	179.75	11904.54	5015.10	-4966.95	789.12	0.96	493907.83	763846.19	N 32 21 20.75 W	103 38 45.89
	16867.00	90.70	178.38	11902.07	5108.88	-5060.90	790.65	2.26	493813.88	763847.72	N 32 21 19.82 W	103 38 45.88
	16962.00	90.98	177.89	11900.67	5203.73	-5155.84	793.74	0.59	493718.95	763850.81	N 32 21 18.88 W	103 38 45.85
	17070.00	91.91	176.64	11897.95	5311.63	-5263.68	798.90	1.44	493611.11	763855.97	N 32 21 17.82 W	103 38 45.80
	17245.00	90.32	175.05	11894.55	5488.57	-5438.18	811.57	1.28	493436.82	763868.84	N 32 21 16.09 W	103 38 45.67
	17340.00	89.70	175.20	11894.53	5581.57	-5532.83	819.65	0.67	493341.97	763876.72	N 32 21 15.15 W	103 38 45.58
	17434.00	89.84	176.73	11894.91	5675.56	-5626.60	826.26	1.63	493248.21	763883.33	N 32 21 14.22 W	103 38 45.51
	17529.00	89.81	177.97	11895.20	5770.50	-5721.49	830.65	1.31	493153.32	763887.72	N 32 21 13.28 W	103 38 45.47
	17623.00	89.74	178.72	11895.57	5864.36	-5815.45	833.37	0.80	493059.36	763890.44	N 32 21 12.35 W	103 38 45.44
	17718.00	90.22	180.30	11895.60	5959.10	-5910.45	834.18	1.74	492964.37	763891.25	N 32 21 11.41 W	103 38 45.44
	17813.00	90.18	180.94	11895.27	6053.68	-6005.44	833.15	0.67	492869.38	763890.22	N 32 21 10.47 W	103 38 45.46
	17908.00	90.15	181.46	11894.99	6148.17	-6100.42	831.16	0.55	492774.41	763888.23	N 32 21 9.53 W	103 38 45.49
	18002.00	89.57	181.17	11895.22	6241.85	-6194.39	829.00	0.69	492680.43	763886.07	N 32 21 8.60 W	103 38 45.52
	18097.00	89.02	179.38	11896.39	6336.28	-6289.38	828.55	1.97	492585.45	763885.62	N 32 21 7.67 W	103 38 45.54
	18191.00	88.91	180.80	11898.09	6429.93	-6383.36	828.40	1.51	492491.47	763885.47	N 32 21 6.74 W	103 38 45.54
	18287.00	88.36	180.83	11900.38	6525.45	-6478.32	827.04	0.57	492395.51	763884.11	N 32 21 5.79 W	103 38 45.57
	18381.00	88.26	181.53	11903.15	6618.91	-6573.28	825.10	0.75	492301.58	763882.17	N 32 21 4.88 W	103 38 45.60
	18475.00	89.77	181.43	11904.77	6712.34	-6667.21	822.67	1.81	492207.63	763879.74	N 32 21 3.93 W	103 38 45.63
	18570.00	89.08	180.97	11905.72	6806.83	-6762.19	820.88	0.87	492112.86	763877.75	N 32 21 2.99 W	103 38 45.66
	18664.00	89.80	181.54	11906.80	6900.31	-6856.16	818.83	0.82	492018.69	763875.70	N 32 21 2.06 W	103 38 45.70
	18760.00	90.43	180.92	11906.78	6995.79	-6952.14	816.56	1.08	491922.72	763873.63	N 32 21 1.11 W	103 38 45.73
	18854.00	88.95	180.86	11907.29	7089.33	-7046.12	815.10	1.58	491828.74	763872.17	N 32 21 0.18 W	103 38 45.75
	18949.00	88.98	181.69	11909.00	7183.60	-7141.08	812.99	0.87	491733.78	763870.06	N 32 20 59.24 W	103 38 45.78
	19043.00	88.57	181.87	11911.01	7277.17	-7235.01	810.07	0.48	491639.85	763867.14	N 32 20 58.31 W	103 38 45.83
	19138.00	88.09	182.23	11913.78	7371.48	-7329.91	806.68	0.83	491544.98	763863.75	N 32 20 57.37 W	103 38 45.87
	19232.00	88.22	181.73	11916.81	7464.77	-7423.81	803.43	0.55	491451.07	763860.50	N 32 20 56.44 W	103 38 45.92
	19327.00	86.36	180.68	11921.30	7559.15	-7518.67	801.43	2.25	491356.20	763856.50	N 32 20 55.50 W	103 38 45.96
	19421.00	86.19	179.73	11925.77	7652.69	-7612.56	801.10	2.19	491262.32	763852.17	N 32 20 54.57 W	103 38 45.98
	19515.00	87.54	178.92	11929.27	7746.39	-7706.49	802.20	1.10	491168.39	763849.27	N 32 20 53.64 W	103 38 45.95
	19610.00	88.66	178.65	11932.42	7841.24	-7801.36	805.87	2.66	491073.53	763845.94	N 32 20 52.71 W	103 38 45.92
	19704.00	90.31	177.72	11933.26	7935.18	-7895.24	810.49	2.09	490979.65	763842.56	N 32 20 51.78 W	103 38 45.87
	19799.00	90.14	179.96	11933.89	8029.99	-7990.21	812.41	2.38	490884.68	763839.48	N 32 20 50.84 W	103 38 45.86
	19893.00	90.11	180.71	11933.68	8123.62	-8084.21	811.88	0.80	490790.69	763836.93	N 32 20 49.81 W	103 38 45.87
	19987.00	90.79	180.41	11931.95	8217.22	-8178.20	810.94	0.79	490696.70	763834.01	N 32 20 48.88 W	103 38 45.89
	20077.00	90.04	180.33	11930.57	8306.46	-8268.19	809.72	0.40	490602.72	763831.79	N 32 20 47.10 W	103 38 45.92
	20171.00	90.04	180.28	11930.50	8390.09	-8358.19	809.22	0.05	490508.74	763829.29	N 32 20 46.17 W	103 38 45.93
	20266.00	88.39	179.35	11931.81	8474.78	-8457.17	808.52	1.99	490413.74	763826.59	N 32 20 45.23 W	103 38 45.94
	20360.00	88.90	179.35	11934.03	8559.52	-8546.14	810.59	0.54	490319.78	763823.78	N 32 20 44.30 W	103 38 45.93
	20455.00	87.87	178.10	11936.71	8644.30	-8635.13	812.70	1.70	490225.82	763820.97	N 32 20 43.38 W	103 38 45.91
	20550.00	87.25	178.10	11940.75	8729.10	-8724.09	815.85	0.65	490131.86	763818.16	N 32 20 42.42 W	103 38 45.88
	20644.00	87.49	178.34	11945.06	8813.88	-8813.79	818.77	0.38	490037.90	763815.35	N 32 20 41.49 W	103 38 45.86
	20739.00	88.32	178.68	11948.54	8908.66	-8908.60	821.23	0.94	489944.13	763812.54	N 32 20 40.55 W	103 38 45.84
	20833.00	86.87	178.09	11952.48	9003.44	-9003.35	823.88	1.67	489850.27	763809.73	N 32 20 39.62 W	103 38 45.81
	20927.00	87.70	178.64	11956.93	9098.22	-9098.13	826.56	1.06	489756.41	763806.92	N 32 20 38.69 W	103 38 45.79
	21022.00	88.32	178.10	11960.23	9193.00	-9192.91	829.26	0.87	489662.55	763804.11	N 32 20 37.75 W	103 38 45.76
	21117.00	88.42	178.53	11963.94	9287.78	-9287.69	831.95	0.46	489568.69	763801.30	N 32 20 36.81 W	103 38 45.74
	21211.00	88.59	178.09	11968.39	9382.56	-9382.47	834.62	0.50	489474.83	763798.49	N 32 20 35.88 W	103 38 45.71
	21305.00	88.04	178.63	11972.84	9477.34	-9477.25	837.31	0.82	489380.97	763795.68	N 32 20 34.95 W	103 38 45.69
	21400.00	88.21	178.94	11977.29	9572.12	-9572.03	839.51	0.38	489287.11	763792.87	N 32 20 34.03 W	103 38 45.67
	21495.00	87.94	178.23	11981.74	9666.90	-9666.81	841.83	0.81	489193.25	763790.06	N 32 20 33.10 W	103 38 45.65
	21590.00	88.18	178.54	11986.19	9761.68	-9761.59	844.50	0.41	489099.39	763787.25	N 32 20 32.18 W	103 38 45.63
	21685.00	88.15	178.45	11990.64	9856.46	-9856.37	847.00	0.10	489005.53	763784.44	N 32 20 31.25 W	103 38 45.61
	21780.00	88.28	178.34	11995.09	9951.24	-9951.15	849.63	0.18	488911.67	763781.63	N 32 20 30.32 W	103 38 45.59
100' FSL												
Crossed	22024.00	88.14	178.66	11998.16	10249.18	-10249.09	853.47	0.24	488817.81	763778.82	N 32 20 29.39 W	103 38 45.55
Final MWD	22060.00	88.11	178.74	11999.34	10285.08	-10284.99	854.29	0.24	488723.95	763776.01	N 32 20 28.46 W	103 38 45.55
Proj to TD	22103.00	88.11	178.74	11999.75	10320.97	-10320.88	855.23	0.00	488630.09	763773.20	N 32 20 27.53 W	103 38 45.54

Survey Type: Def Survey

Survey Error Model: ISCWSA Rev 3 *** 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	25.000	1/88.425	30.000	30.000	GYD_GC+DROP+OH-Depth Only	Original Borehole / Oxy Avogato 30-31 State Com 33H Gyro + MWD 0-22103MD
	1	25.000	25.000	Act Stns	30.000	30.000	GYD_GC+DROP+OH-Depth Only	Original Borehole / Oxy Avogato 30-31 State Com 33H Gyro + MWD 0-22103MD
	1	25.000	1022.000	Act Stns	30.000	30.000	GYD_GC+DROP+OH	Original Borehole / Oxy Avogato 30-31 State Com 33H Gyro + MWD 0-22103MD
	1	1022.000	5091.000	Act Stns	30.000	30.000	A010Mb_MWD+IFR1+SAG+MS	Original Borehole / Oxy Avogato 30-31 State Com 33H Gyro + MWD 0-22103MD
	1	5091.000	5944.000	Act Stns	30.000	30.000	B001Mb_MWD+HRGM	Original Borehole / Oxy Avogato 30-31 State Com 33H Gyro + MWD 0-22103MD
	1	5944.000	10297.000	Act Stns	30.000	30.000	A010Mb_MWD+IFR1+SAG+MS	Original Borehole / Oxy Avogato 30-31 State Com 33H Gyro + MWD 0-22103MD
	1	10297.000	11312.000	Act Stns	30.000	30.000	B001Mb_MWD+HRGM	Original Borehole / Oxy Avogato 30-31 State Com 33H Gyro + MWD 0-22103MD
	1	11312.000	22103.000	Act Stns	30.000	30.000	A010Mb_MWD+IFR1+SAG+MS	Original Borehole / Oxy Avogato 30-31 State Com 33H Gyro + MWD 0-22103MD

...Original Borehole/Oxy Avogato 30-31 State Com 33H Gyro + MWD 0-22103MD