



OXY

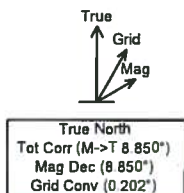
Rev 10

PATHFINDER
A Schlumberger Company

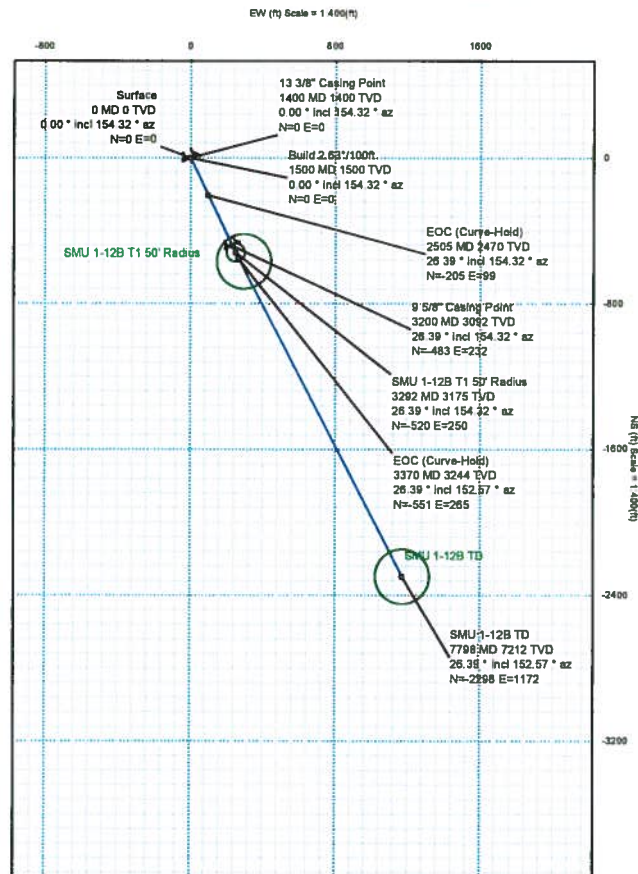
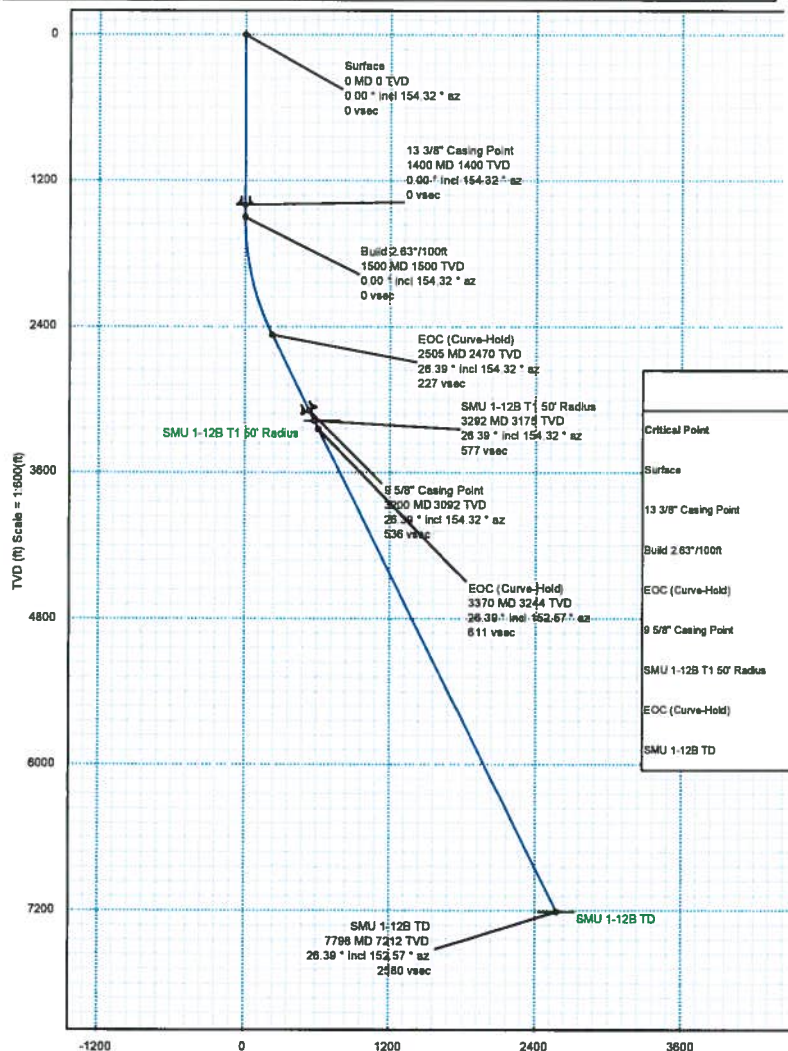
Borehole:	Well:	Field:	Structure:
Original Hole	SMU 1-12B	CO, Huerfano County	Sec 12-28S-70W

Gravity & Magnetic Parameters	Surface Location	Miscellaneous
Model: HDGM 2013 D/p: 64.3° Date: 13-May-2014	NAD83 Colorado State Plane, Southern Zone, US Feet	Slot: SMU 1-12B TVD Ref: RKB/8666.6ft above MSL)
MagDec: 8.85° FS: 51345.813nT Gravity FS: 998.985mg (9.80665 Based)	Lat: N 37 38 12.76 Northing: 1353439.343ft Grid Conv: 0.2016°	Plan: SMU 1-12B R10 oem 22May14
	Lon: W 105 10 18.65 Easting: 3095182.118ft Scale Fact: 0.9999513	

Proposal



Surface Location							
Northing	1353439.343	Easting	3095182.118	Latitude	N 37 38 12.76	Longitude	W 105 10 18.65
VSec Azimuth	152.97						
	3						
Target Description	Grid Coord				Local Coord		
Target Name	Latitude	Longitude	Northing	Easting	TVD	VSec	N(+)S(-)
SMU 1-12B T1	N 37 38 7.14	W 105 10 12.98	1352871.98	3095479.83	3174.60	640.67	-568.48
SMU 1-12B T1 50' Radius	N 37 38 7.82	W 105 10 13.54	1352920.25	3095433.93	3174.60	578.81	-520.00
SMU 1-12B TD	N 37 37 50.04	W 105 10 2.08	1351145.60	3096382.38	7211.76	2579.72	-2298.00



Critical Points								
Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)S(-)	E(+)W(-)	DLS
Surface	0.00	0.00	154.32	0.00	0.00	0.00	0.00	
13 3/8\" Casing Point	1400.00	0.00	154.32	1400.00	0.00	0.00	0.00	0.00
Build 2.63\"/100ft	1500.00	0.00	154.32	1500.00	0.00	0.00	0.00	0.00
EOC (Curve-Hold)	2505.29	26.39	154.32	2470.12	227.38	-204.98	98.55	2.82
9 5/8\" Casing Point	3200.00	26.39	154.32	3092.44	538.06	-483.26	232.34	0.00
SMU 1-12B T1 50' Radius	3281.71	26.39	154.32	3174.60	578.81	-520.00	250.00	0.00
EOC (Curve-Hold)	3389.88	26.39	152.57	3244.43	611.45	-550.99	265.49	1.00
SMU 1-12B TD	7798.43	26.39	152.57	7211.76	2579.72	-2298.00	1172.24	0.00

Vertical Section (ft) Azim = 152.973° Scale = 1:600(ft) Origin = 0N/-S, 0E/-W

SMU 1-12B R10 eem 22May14 Proposal Geodetic Report

(Def Plan)

Report Date: May 23, 2014 - 01:07 PM
Client: OXY
Field: CO, Huerfano County (NAD 83 SZ)
Structure / Slot: OXY Sec 12-28S-70W (SMU 1-12B) / SMU 1-12B
Well: SMU 1-12B
Borehole: Original Hole
UWI / API#: Unknown / Unknown
Survey Name: SMU 1-12B R10 eem 22May14
Survey Date: November 11, 2013
Tort / AHD / DDI / ERD Ratio: 27.168° / 2579.931 ft / 4.880 / 0.358
Coordinate Reference System: NAD83 Colorado State Plane, Southern Zone, US Feet
Location Lat / Long: N 37° 38' 12.76000", W 105° 10' 16.65000"
Location Grid N/E Y/X: N 1353439 343 ftUS, E 3095182 118 ftUS
CRS Grid Convergence Angle: 0.2016°
Grid Scale Factor: 0.9999513
Version / Patch: 2.7.1043.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 152.973° (True North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 8666.600 ft above MSL
Seabed / Ground Elevation: 8636.600 ft above MSL
Magnetic Declination: 8.850°
Total Gravity Field Strength: 998.9851mgn (9.80665 Based)
Gravity Model: DOX
Total Magnetic Field Strength: 51345.813 nT
Magnetic Dip Angle: 64.300°
Declination Date: May 13, 2014
Magnetic Declination Mode: HDGM 2013
North Reference: True North
Grid Convergence Used: 0.0000°
Total Corr Mag North->True North: 8.8499°
Local Coord Referenced To: Well Head

Comments	MD (ft)	Incl (°)	Azim True (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (ft/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
Surface	0.00	0.00	154.32	0.00	0.00	0.00	0.00	N/A	1353439.34	3095182.12	N 37° 38' 12.76" W 105° 10' 16.65"	
	100.00	0.00	154.32	100.00	0.00	0.00	0.00	0.00	1353439.34	3095182.12	N 37° 38' 12.76" W 105° 10' 16.65"	
	200.00	0.00	154.32	200.00	0.00	0.00	0.00	0.00	1353439.34	3095182.12	N 37° 38' 12.76" W 105° 10' 16.65"	
	300.00	0.00	154.32	300.00	0.00	0.00	0.00	0.00	1353439.34	3095182.12	N 37° 38' 12.76" W 105° 10' 16.65"	
	400.00	0.00	154.32	400.00	0.00	0.00	0.00	0.00	1353439.34	3095182.12	N 37° 38' 12.76" W 105° 10' 16.65"	
	500.00	0.00	154.32	500.00	0.00	0.00	0.00	0.00	1353439.34	3095182.12	N 37° 38' 12.76" W 105° 10' 16.65"	
	600.00	0.00	154.32	600.00	0.00	0.00	0.00	0.00	1353439.34	3095182.12	N 37° 38' 12.76" W 105° 10' 16.65"	
	700.00	0.00	154.32	700.00	0.00	0.00	0.00	0.00	1353439.34	3095182.12	N 37° 38' 12.76" W 105° 10' 16.65"	
	800.00	0.00	154.32	800.00	0.00	0.00	0.00	0.00	1353439.34	3095182.12	N 37° 38' 12.76" W 105° 10' 16.65"	
	900.00	0.00	154.32	900.00	0.00	0.00	0.00	0.00	1353439.34	3095182.12	N 37° 38' 12.76" W 105° 10' 16.65"	
	1000.00	0.00	154.32	1000.00	0.00	0.00	0.00	0.00	1353439.34	3095182.12	N 37° 38' 12.76" W 105° 10' 16.65"	
	1100.00	0.00	154.32	1100.00	0.00	0.00	0.00	0.00	1353439.34	3095182.12	N 37° 38' 12.76" W 105° 10' 16.65"	
	1200.00	0.00	154.32	1200.00	0.00	0.00	0.00	0.00	1353439.34	3095182.12	N 37° 38' 12.76" W 105° 10' 16.65"	
	1300.00	0.00	154.32	1300.00	0.00	0.00	0.00	0.00	1353439.34	3095182.12	N 37° 38' 12.76" W 105° 10' 16.65"	
13 3/8" Casing Point	1400.00	0.00	154.32	1400.00	0.00	0.00	0.00	0.00	1353439.34	3095182.12	N 37° 38' 12.76" W 105° 10' 16.65"	
Build 2 63"/100ft	1500.00	0.00	154.32	1500.00	0.00	0.00	0.00	0.00	1353439.34	3095182.12	N 37° 38' 12.76" W 105° 10' 16.65"	
	1600.00	2.63	154.32	1599.97	2.29	-2.06	0.99	2.63	1353437.28	3095183.12	N 37° 38' 12.74" W 105° 10' 16.64"	
	1700.00	5.25	154.32	1699.72	9.15	-8.25	3.97	2.63	1353431.11	3095186.11	N 37° 38' 12.68" W 105° 10' 16.60"	
	1800.00	7.88	154.32	1799.06	20.58	-18.55	8.92	2.63	1353420.82	3095191.10	N 37° 38' 12.58" W 105° 10' 16.54"	
	1900.00	10.50	154.32	1897.76	36.54	-32.94	15.84	2.63	1353406.46	3095198.07	N 37° 38' 12.43" W 105° 10' 16.45"	
	2000.00	13.13	154.32	1995.64	57.00	-51.39	24.71	2.63	1353388.05	3095207.00	N 37° 38' 12.25" W 105° 10' 16.34"	
	2100.00	15.75	154.32	2092.47	81.93	-73.86	35.51	2.63	1353365.62	3095217.88	N 37° 38' 12.03" W 105° 10' 16.21"	
	2200.00	18.38	154.32	2188.06	111.26	-100.30	48.22	2.63	1353339.22	3095230.69	N 37° 38' 11.77" W 105° 10' 16.05"	
	2300.00	21.00	154.32	2282.21	144.93	-130.66	62.82	2.63	1353308.91	3095245.39	N 37° 38' 11.47" W 105° 10' 15.87"	
	2400.00	23.63	154.32	2374.71	182.89	-164.87	79.27	2.63	1353274.76	3095261.96	N 37° 38' 11.13" W 105° 10' 15.66"	
	2500.00	26.25	154.32	2465.38	225.03	-202.87	97.53	2.63	1353236.83	3095280.36	N 37° 38' 10.75" W 105° 10' 15.44"	
EOC (Curve-Hold)	2505.29	26.39	154.32	2470.12	227.38	-204.98	98.55	2.63	1353234.72	3095281.38	N 37° 38' 10.73" W 105° 10' 15.42"	
	2600.00	26.39	154.32	2554.96	269.46	-242.92	116.79	0.00	1353196.85	3095299.75	N 37° 38' 10.36" W 105° 10' 15.20"	
	2700.00	26.39	154.32	2644.54	313.89	-282.98	136.05	0.00	1353156.86	3095319.15	N 37° 38' 9.96" W 105° 10' 14.96"	
	2800.00	26.39	154.32	2734.12	358.33	-323.03	155.30	0.00	1353116.87	3095338.55	N 37° 38' 9.57" W 105° 10' 14.72"	
	2900.00	26.39	154.32	2823.70	402.76	-363.09	174.56	0.00	1353076.89	3095357.95	N 37° 38' 9.17" W 105° 10' 14.48"	
	3000.00	26.39	154.32	2913.28	447.20	-403.15	193.82	0.00	1353036.90	3095377.35	N 37° 38' 8.77" W 105° 10' 14.24"	
	3100.00	26.39	154.32	3002.86	491.63	-443.21	213.08	0.00	1352996.91	3095396.74	N 37° 38' 8.38" W 105° 10' 14.00"	
9 5/8" Casing Point	3200.00	26.39	154.32	3092.44	536.06	-483.26	232.34	0.00	1352956.93	3095416.14	N 37° 38' 7.98" W 105° 10' 13.76"	
SMU 1-12B T1 50' Radius	3291.71	26.39	154.32	3174.60	576.81	-520.00	250.00	0.00	1352920.25	3095433.93	N 37° 38' 7.62" W 105° 10' 13.54"	
	3300.00	26.39	154.14	3182.02	580.50	-523.32	251.60	1.00	1352916.94	3095435.55	N 37° 38' 7.59" W 105° 10' 13.52"	
EOC (Curve-Hold)	3369.66	26.39	152.57	3244.43	611.45	-550.89	265.49	1.00	1352889.32	3095449.53	N 37° 38' 7.31" W 105° 10' 13.35"	
	3400.00	26.39	152.57	3271.61	624.94	-562.95	271.70	0.00	1352877.38	3095455.78	N 37° 38' 7.19" W 105° 10' 13.27"	
	3500.00	26.39	152.57	3361.19	669.38	-602.40	292.17	0.00	1352838.00	3095476.39	N 37° 38' 6.80" W 105° 10' 13.02"	
	3600.00	26.39	152.57	3450.77	713.82	-641.85	312.65	0.00	1352798.63	3095497.00	N 37° 38' 6.41" W 105° 10' 12.76"	
	3700.00	26.39	152.57	3540.35	758.27	-681.30	333.12	0.00	1352759.26	3095517.62	N 37° 38' 6.02" W 105° 10' 12.51"	
	3800.00	26.39	152.57	3629.93	802.71	-720.74	353.59	0.00	1352719.89	3095538.23	N 37° 38' 5.63" W 105° 10' 12.25"	
	3900.00	26.39	152.57	3719.51	847.15	-760.19	374.07	0.00	1352680.51	3095558.84	N 37° 38' 5.24" W 105° 10' 12.00"	
	4000.00	26.39	152.57	3809.09	891.59	-799.64	394.54	0.00	1352641.14	3095579.45	N 37° 38' 4.85" W 105° 10' 11.75"	
	4100.00	26.39	152.57	3898.67	936.04	-839.08	415.02	0.00	1352601.77	3095600.06	N 37° 38' 4.46" W 105° 10' 11.49"	
	4200.00	26.39	152.57	3988.25	980.48	-878.53	435.49	0.00	1352562.40	3095620.68	N 37° 38' 4.07" W 105° 10' 11.24"	
	4300.00	26.39	152.57	4077.83	1024.92	-917.98	455.96	0.00	1352523.02	3095641.29	N 37° 38' 3.68" W 105° 10' 10.98"	
	4400.00	26.39	152.57	4167.41	1069.36	-957.42	476.44	0.00	1352483.65	3095661.90	N 37° 38' 3.29" W 105° 10' 10.73"	
	4500.00	26.39	152.57	4257.00	1113.81	-996.87	496.91	0.00	1352444.28	3095682.51	N 37° 38' 2.90" W 105° 10' 10.47"	
	4600.00	26.39	152.57	4346.58	1158.25	-1036.32	517.39	0.00	1352404.91	3095703.12	N 37° 38' 2.51" W 105° 10' 10.22"	
	4700.00	26.39	152.57	4436.16	1202.69	-1075.76	537.86	0.00	1352365.53	3095723.73	N 37° 38' 2.12" W 105° 10' 9.96"	
	4800.00	26.39	152.57	4525.74	1247.14	-1115.21	558.34	0.00	1352326.16	3095744.35	N 37° 38' 1.73" W 105° 10' 9.71"	
	4900.00	26.39	152.57	4615.32	1291.58	-1154.66	578.81	0.00	1352286.79	3095764.96	N 37° 38' 1.34" W 105° 10' 9.45"	
	5000.00	26.39	152.57	4704.90	1336.02	-1194.11	599.28	0.00	1352247.41	3095785.57	N 37° 38' 0.95" W 105° 10' 9.20"	
	5100.00	26.39	152.57	4794.48	1380.46	-1233.55	619.76	0.00	1352208.04	3095806.18	N 37° 38' 0.56" W 105° 10' 8.95"	
	5200.00	26.39	152.57	4884.06	1424.91	-1273.00	640.23	0.00	1352168.67	3095826.79	N 37° 38' 0.17" W 105° 10' 8.69"	
	5300.00	26.39	152.57	4973.64	1469.35	-1312.45	660.71	0.00	1352129.30	3095847.41	N 37° 37' 59.78" W 105° 10' 8.44"	
	5400.00	26.39	152.57	5063.22	1513.79	-1351.89	681.18	0.00	1352089.92	3095868.02	N 37° 37' 59.39" W 105° 10' 8.18"	
	5500.00	26.39	152.57	5152.81	1558.23	-1391.34	701.66	0.00	1352050.55	3095888.63	N 37° 37' 59.00" W 105° 10' 7.93"	
	5600.00	26.39	152.57	5242.39	1602.68	-1430.79	722.13	0.00	1352011.18	3095909.24	N 37° 37' 58.61" W 105° 10' 7.67"	
	5700.00	26.39	152.57	5331.97	1647.12	-1470.23	742.60	0.00	1351971.81	3095929.85	N 37° 37' 58.22" W 105° 10' 7.42"	
	5800.00	26.39	152.57	5421.55	1691.56	-1509.68	763.08	0.00	1351932.43	3095950.46	N 37° 37' 57.83" W 105° 10' 7.16"	
	5900.00	26.39	152.57	5511.13	1736.01	-1549.13	783.55	0.00	1351893.06	3095971.08	N 37° 37' 57.44" W 105° 10' 6.91"	
	6000.00	26.39	152.57	5600.71	1780.45	-1588.57	804.03	0.00	1351853.69	3095991.69	N 37° 37' 57.05" W 105° 10' 6.66"	
	6100.00	26.39	152.57	5690.29	1824.89	-1628.02	824.50	0.00	1351814.32	3096012.30	N 37° 37' 56.66" W 105° 10' 6.40"	
	6200.00	26.39	152.57	5779.87	1869.33	-1667.47	844.97	0.00	1351774.94	3096032.91	N 37° 37' 56.27" W 105° 10' 6.15"	

Comments	MD (ft)	Incl (°)	Azim True (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Eastng (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	6300.00	26.39	152.57	5869.45	1913.78	-1706.92	865.45	0.00	1351735.57	3096053.52	N 37 37 55.88 W 105 10 5.89	
	6400.00	26.39	152.57	5959.03	1958.22	-1746.36	885.92	0.00	1351696.20	3096074.14	N 37 37 55.49 W 105 10 5.64	
	6500.00	26.39	152.57	6048.61	2002.66	-1785.81	906.40	0.00	1351656.83	3096094.75	N 37 37 55.10 W 105 10 5.38	
	6600.00	26.39	152.57	6138.20	2047.10	-1825.26	926.87	0.00	1351617.45	3096115.36	N 37 37 54.71 W 105 10 5.13	
	6700.00	26.39	152.57	6227.78	2091.55	-1864.70	947.35	0.00	1351578.08	3096135.97	N 37 37 54.32 W 105 10 4.87	
	6800.00	26.39	152.57	6317.36	2135.99	-1904.15	967.82	0.00	1351538.71	3096156.58	N 37 37 53.93 W 105 10 4.62	
	6900.00	26.39	152.57	6406.94	2180.43	-1943.60	988.29	0.00	1351499.33	3096177.19	N 37 37 53.54 W 105 10 4.36	
	7000.00	26.39	152.57	6496.52	2224.88	-1983.04	1008.77	0.00	1351459.96	3096197.81	N 37 37 53.15 W 105 10 4.11	
	7100.00	26.39	152.57	6586.10	2269.32	-2022.49	1029.24	0.00	1351420.59	3096218.42	N 37 37 52.76 W 105 10 3.86	
	7200.00	26.39	152.57	6675.68	2313.76	-2061.94	1049.72	0.00	1351381.22	3096239.03	N 37 37 52.37 W 105 10 3.60	
	7300.00	26.39	152.57	6765.26	2358.20	-2101.38	1070.19	0.00	1351341.84	3096259.64	N 37 37 51.98 W 105 10 3.35	
	7400.00	26.39	152.57	6854.84	2402.65	-2140.83	1090.66	0.00	1351302.47	3096280.25	N 37 37 51.59 W 105 10 3.09	
	7500.00	26.39	152.57	6944.42	2447.09	-2180.28	1111.14	0.00	1351263.10	3096300.87	N 37 37 51.20 W 105 10 2.84	
	7600.00	26.39	152.57	7034.01	2491.53	-2219.73	1131.61	0.00	1351223.73	3096321.48	N 37 37 50.81 W 105 10 2.58	
	7700.00	26.39	152.57	7123.59	2535.97	-2259.17	1152.09	0.00	1351184.35	3096342.09	N 37 37 50.42 W 105 10 2.33	
SMU 1-12B TD	7798.43	26.39	152.57	7211.76	2579.72	-2298.00	1172.24	0.00	1351145.60	3096362.38	N 37 37 50.04 W 105 10 2.08	

Survey Type: Def Plan

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	30.000	1/100.000	30.000	30.000	SLB_MWD-STD-Depth Only	Original Hole / SMU 1-12B R10 eem 22May14
	1	30.000	7798.429	1/100.000	30.000	30.000	SLB_MWD-STD	Original Hole / SMU 1-12B R10 eem 22May14