



HARVARD PETROLEUM

RAMSLAND #1
LEA COUNTY, NM



Weatherford
Directional Services

SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	8038.00	1.46	6.98	8036.95	-13.06	16.25	0.00	0.00	-1.26	
2	8070.00	1.46	6.98	8068.94	-12.25	16.35	0.00	0.00	-1.93	
3	8079.00	0.87	269.01	8077.94	-12.13	16.29	20.00	208.59	-1.98	
4	8084.00	0.87	269.01	8082.94	-12.13	16.22	0.00	0.00	-1.92	
5	8471.52	90.00	269.01	8328.27	-16.45	-232.83	23.00	0.00	168.75	
6	9011.52	90.00	269.01	8328.27	-25.81	-772.75	0.00	0.00	538.77	
7	10583.30	89.16	180.83	8342.73	-1032.07	-1776.26	5.61	-90.84	1958.36	
8	11531.43	89.16	180.83	8356.59	-1980.00	-1790.00	0.00	0.00	2669.17	PBHL P9

WELL DETAILS						
Name+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
#1 0.00	0.00	692831.40	870106.80	32°53'55.887N	103°07'39.164W	N/A

TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
PBHL P9	8356.59	-1980.00	-1790.00	690851.40	868316.80	Point

FIELD DETAILS
Lea Co. NM
Geodetic System: US State Plane Coordinate System 1927
Ellipsoid: NAD27 (Clarke 1866)
Zone: New Mexico, Eastern Zone
Magnetic Model: IGRF2010
System Datum: Mean Sea Level
Local North: Grid North

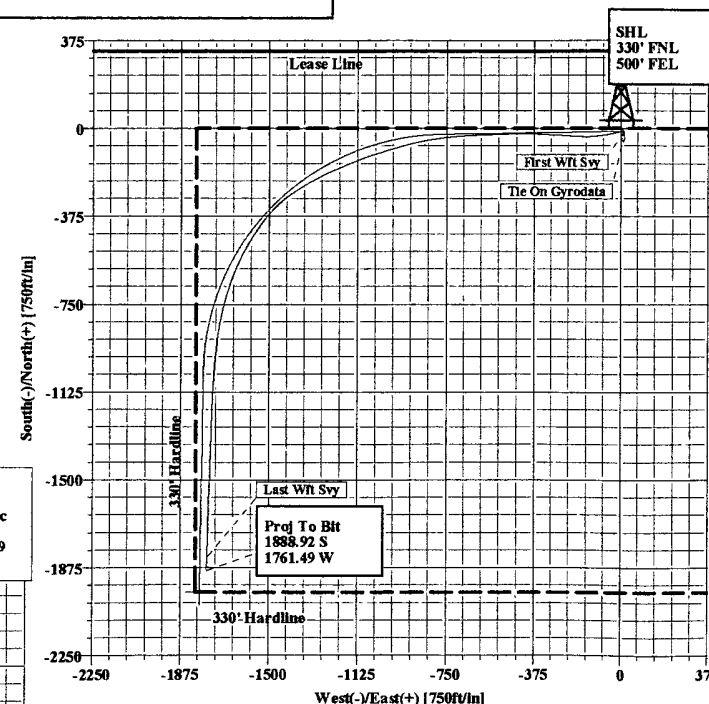
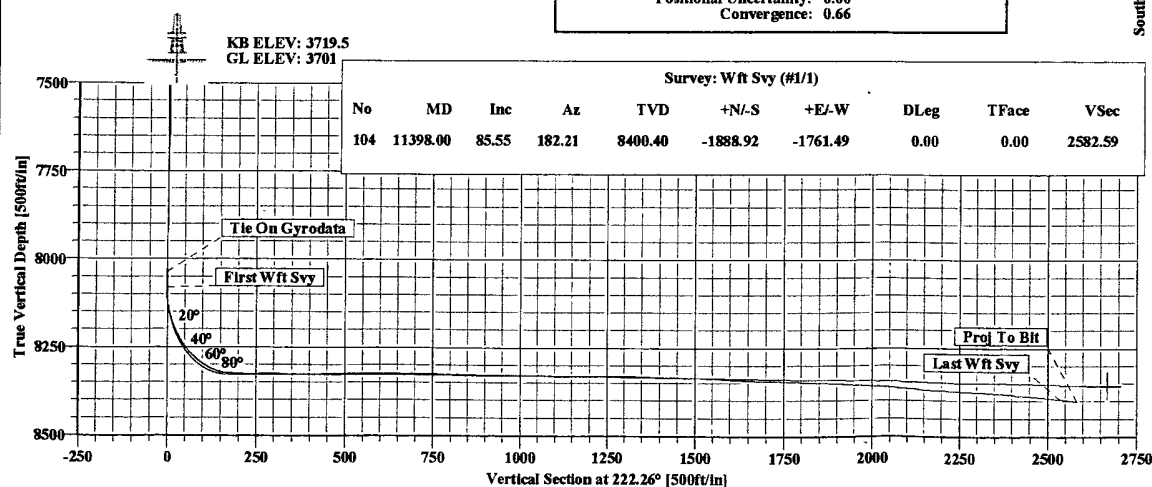
SITE DETAILS
Ramsland #1
330' FNL & 500' FEL
Site Centre Northing: 692831.40
Easting: 870106.80
Ground Level: 3701.00
Positional Uncertainty: 0.00
Convergence: 0.66



Azimuths to Grid North
True North: -0.66°
Magnetic North: 6.93°

Magnetic Field
Strength: 49227nT
Dip Angle: 60.92°
Date: 3/8/2010
Model: IGRF2010

Total Correction To Grid North 6.93°



LEGEND
— #1,1,Plan #9
— #1,1,Gyro
— Wft Svy

Plan: Plan #2 (#1/1)
Created By: Russell W. Joyner Date: 12/9/2009
Checked: _____ Date: _____



Weatherford International Ltd.

WFT Survey Report



Weatherford

Company: Harvard Petroleum	Date: 3/22/2010	Time: 08:02:36	Page: 1
Field: Lea Co. NM	Co-ordinate(NE) Reference:	Well: #1, Grid North	
Site: Ramsland #1	Vertical (TVD) Reference:	SITE: 3719.5	
Well: #1	Section (VS) Reference:	Well (0.00N,0.00E,222.26Azi)	
Wellpath: 1	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Survey: Wft Svy	Start Date: 3/13/2010
Company: Weatherford International Ltd.	Engineer: Russell W Joyner
Tool:	Tied-to: From: Gyro

Field: Lea Co. NM	
Map System: US State Plane Coordinate System 1927	Map Zone: New Mexico, Eastern Zone
Geo Datum: NAD27 (Clarke 1866)	Coordinate System: Well Centre
Sys Datum: Mean Sea Level	Geomagnetic Model: IGRF2010

Site: Ramsland #1	
330' FNL & 500' FEL	
Site Position:	Northing: 692831.40 ft Latitude: 32 53 55.887 N
From: Map	Easting: 870106.80 ft Longitude: 103 7 39.164 W
Position Uncertainty: 0.00 ft	North Reference: Grid
Ground Level: 3701.00 ft	Grid Convergence: 0.66 deg

Well: #1	Slot Name:
Well Position: +N/-S 0.00 ft Northing: 692831.40 ft Latitude: 32 53 55.887 N	
+E/-W 0.00 ft Easting: 870106.80 ft Longitude: 103 7 39.164 W	
Position Uncertainty: 0.00 ft	

Wellpath: 1	Drilled From: Surface
	Tie-on Depth: 0.00 ft
Current Datum: SITE	Above System Datum: Mean Sea Level
Magnetic Data: 3/8/2010	Declination: 7.59 deg
Field Strength: 49227 nT	Mag Dip Angle: 60.92 deg
Vertical Section: Depth From (TVD)	+N/-S
ft	ft
0.00	0.00
	0.00
	222.26

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Comment
8038.00	1.46	6.98	8036.95	-13.06	16.25	-1.26	0.00	0.00	0.00	Tie On Gyrodata
8081.00	1.79	300.57	8079.94	-12.17	15.73	-1.57	4.19	0.77	-154.44	First Wft Svy
8174.00	20.41	257.37	8170.84	-15.00	-1.50	12.11	20.58	20.02	-46.45	
8206.00	28.63	256.24	8199.93	-18.05	-14.41	23.05	25.73	25.69	-3.53	
8238.00	34.77	259.11	8227.14	-21.60	-30.84	36.73	19.75	19.19	8.97	
8269.00	42.94	258.96	8251.26	-25.30	-49.91	52.29	26.36	26.35	-0.48	
8301.00	51.24	261.60	8273.03	-29.22	-73.00	70.71	26.63	25.94	8.25	
8332.00	59.99	263.33	8290.53	-32.55	-98.33	90.22	28.60	28.23	5.58	
8364.00	67.71	267.26	8304.62	-34.87	-126.94	111.17	26.52	24.12	12.28	
8396.00	74.67	271.62	8314.94	-35.14	-157.20	131.72	25.28	21.75	13.62	
8424.00	81.62	272.62	8320.69	-34.13	-184.56	149.38	25.07	24.82	3.57	
8456.00	87.94	273.61	8323.60	-32.39	-216.37	169.48	19.99	19.75	3.09	
8488.00	88.36	273.36	8324.63	-30.45	-248.29	189.51	1.53	1.31	-0.78	
8519.00	88.22	273.62	8325.56	-28.56	-279.22	208.92	0.95	-0.45	0.84	
8551.00	89.89	273.47	8326.08	-26.59	-311.15	228.93	5.24	5.22	-0.47	
8582.00	90.53	272.93	8325.97	-24.86	-342.11	248.46	2.70	2.06	-1.74	
8614.00	90.73	271.13	8325.62	-23.72	-374.08	269.13	5.66	0.62	-5.62	
8646.00	90.73	270.95	8325.21	-23.14	-406.07	290.21	0.56	0.00	-0.56	
8677.00	88.43	268.95	8325.44	-23.17	-437.07	311.07	9.83	-7.42	-6.45	
8709.00	87.66	268.07	8326.53	-24.00	-469.04	333.19	3.65	-2.41	-2.75	
8740.00	89.27	268.12	8327.36	-25.03	-500.01	354.78	5.20	5.19	0.16	
8772.00	90.74	267.93	8327.36	-26.13	-531.99	377.10	4.63	4.59	-0.59	
8804.00	91.29	267.61	8326.79	-27.38	-563.96	399.52	1.99	1.72	-1.00	
8836.00	91.22	267.66	8326.09	-28.70	-595.93	422.00	0.27	-0.22	0.16	



Weatherford International Ltd.

WFT Survey Report



Weatherford

Company: Harvard Petroleum
Field: Lea Co. NM
Site: Ramsland #1
Well: #1
Wellpath: 1

Date: 3/22/2010 Time: 08:02:36 Page: 2
Co-ordinate(NE) Reference: Well: #1, Grid North
Vertical (TVD) Reference: SITE 3719.5
Section (VS) Reference: Well (0.00N,0.00E,222.26Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Comment
8867.00	91.15	267.52	8325.45	-30.00	-626.89	443.79	0.50	-0.23	-0.45	
8899.00	90.38	266.45	8325.02	-31.68	-658.84	466.52	4.12	-2.41	-3.34	
8931.00	90.10	265.44	8324.89	-33.95	-690.76	489.66	3.28	-0.87	-3.16	
8963.00	89.97	264.67	8324.87	-36.71	-722.64	513.14	2.44	-0.41	-2.41	
8994.00	90.53	263.11	8324.73	-40.00	-753.47	536.31	5.35	1.81	-5.03	
9026.00	90.10	261.84	8324.56	-44.20	-785.19	560.75	4.19	-1.34	-3.97	
9058.00	89.90	260.58	8324.56	-49.09	-816.81	585.63	3.99	-0.62	-3.94	
9089.00	89.48	258.93	8324.72	-54.60	-847.32	610.23	5.49	-1.35	-5.32	
9121.00	89.90	256.40	8324.90	-61.43	-878.58	636.31	8.01	1.31	-7.91	
9153.00	90.31	255.23	8324.84	-69.28	-909.60	662.97	3.87	1.28	-3.66	
9184.00	89.90	254.25	8324.78	-77.43	-939.51	689.12	3.43	-1.32	-3.16	
9216.00	89.55	253.51	8324.93	-86.32	-970.25	716.37	2.56	-1.09	-2.31	
9248.00	88.98	252.84	8325.35	-95.58	-1000.87	743.82	2.75	-1.78	-2.09	
9280.00	88.85	252.83	8325.95	-105.02	-1031.44	771.37	0.41	-0.41	-0.03	
9312.00	89.06	251.87	8326.54	-114.72	-1061.93	799.05	3.07	0.66	-3.00	
9343.00	89.20	249.84	8327.01	-124.89	-1091.21	826.27	6.56	0.45	-6.55	
9375.00	89.62	247.58	8327.34	-136.51	-1121.03	854.91	7.18	1.31	-7.06	
9407.00	89.48	246.93	8327.59	-148.88	-1150.54	883.92	2.08	-0.44	-2.03	
9439.00	89.69	247.45	8327.82	-161.28	-1180.03	912.93	1.75	0.66	1.62	
9471.00	89.83	247.67	8327.95	-173.50	-1209.61	941.86	0.81	0.44	0.69	
9502.00	89.90	246.20	8328.03	-185.64	-1238.13	970.03	4.75	0.23	-4.74	
9534.00	89.34	242.83	8328.24	-199.41	-1267.01	999.64	10.68	-1.75	-10.53	
9566.00	88.92	241.57	8328.72	-214.33	-1295.31	1029.72	4.15	-1.31	-3.94	
9598.00	89.69	239.97	8329.11	-229.96	-1323.24	1060.06	5.55	2.41	-5.00	
9629.00	90.03	239.25	8329.19	-245.64	-1349.98	1089.65	2.57	1.10	-2.32	
9661.00	89.83	236.98	8329.23	-262.54	-1377.15	1120.43	7.12	-0.62	-7.09	
9693.00	89.62	234.83	8329.38	-280.48	-1403.64	1151.53	6.75	-0.66	-6.72	
9724.00	89.54	231.71	8329.61	-299.01	-1428.49	1181.95	10.07	-0.26	-10.06	
9756.00	89.62	228.08	8329.84	-319.62	-1452.96	1213.66	11.35	0.25	-11.34	
9788.00	89.34	224.15	8330.13	-341.80	-1476.01	1245.58	12.31	-0.87	-12.28	
9820.00	89.97	221.08	8330.33	-365.35	-1497.68	1277.58	9.79	1.97	-9.59	
9851.00	88.99	217.47	8330.61	-389.34	-1517.30	1308.53	12.07	-3.16	-11.65	
9883.00	87.80	215.25	8331.50	-415.10	-1536.26	1340.34	7.87	-3.72	-6.94	
9914.00	87.66	212.56	8332.73	-440.80	-1553.54	1370.99	8.68	-0.45	-8.68	
9946.00	88.43	211.65	8333.82	-467.89	-1570.53	1402.47	3.72	2.41	-2.84	
9977.00	89.55	210.06	8334.37	-494.50	-1586.43	1432.85	6.27	3.61	-5.13	
10009.00	89.34	208.26	8334.68	-522.44	-1602.02	1464.01	5.66	-0.66	-5.62	
10040.00	88.91	206.23	8335.15	-550.00	-1616.21	1493.95	6.69	-1.39	-6.55	
10072.00	88.01	204.28	8336.01	-578.93	-1629.86	1524.54	6.71	-2.81	-6.09	
10104.00	87.09	202.51	8337.38	-608.27	-1642.55	1554.79	6.23	-2.87	-5.53	
10135.00	87.17	200.89	8338.93	-637.03	-1654.00	1583.78	5.23	0.26	-5.23	
10167.00	87.10	198.51	8340.53	-667.12	-1664.77	1613.29	7.43	-0.22	-7.44	
10199.00	87.24	197.05	8342.11	-697.56	-1674.53	1642.38	4.58	0.44	-4.56	
10230.00	88.01	195.46	8343.40	-727.29	-1683.20	1670.21	5.69	2.48	-5.13	
10262.00	88.64	193.84	8344.33	-758.23	-1691.29	1698.56	5.43	1.97	-5.06	
10294.00	88.99	192.22	8345.00	-789.40	-1698.50	1726.47	5.18	1.09	-5.06	
10325.00	88.56	191.36	8345.66	-819.74	-1704.83	1753.19	3.10	-1.39	-2.77	
10357.00	88.36	190.02	8346.52	-851.17	-1710.77	1780.44	4.23	-0.62	-4.19	
10389.00	88.22	188.12	8347.47	-882.76	-1715.81	1807.21	5.95	-0.44	-5.94	
10420.00	88.15	185.63	8348.45	-913.52	-1719.52	1832.46	8.03	-0.23	-8.03	
10452.00	87.66	185.67	8349.62	-945.34	-1722.67	1858.13	1.54	-1.53	0.12	
10484.00	87.80	185.66	8350.89	-977.16	-1725.82	1883.81	0.44	0.44	-0.03	



Weatherford International Ltd.

WFT Survey Report

**Weatherford**

Company: Harvard Petroleum
Field: Lea Co. NM
Site: Ramsland #1
Well: #1
Wellpath: 1

Date: 3/22/2010 Time: 08:02:36 Page: 3
Co-ordinate(NE) Reference: Well: #1, Grid North
Vertical (TVD) Reference: SITE 3719.5
Section (VS) Reference: Well (0.00N,0.00E,222.26Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Comment
10515.00	87.80	184.70	8352.08	-1008.01	-1728.62	1908.52	3.09	0.00	-3.10	
10547.00	87.38	183.61	8353.43	-1039.90	-1730.94	1933.68	3.65	-1.31	-3.41	
10578.00	86.96	183.72	8354.96	-1070.80	-1732.92	1957.88	1.40	-1.35	0.35	
10610.00	86.75	183.55	8356.71	-1102.68	-1734.94	1982.84	0.84	-0.66	-0.53	
10642.00	87.02	182.72	8358.45	-1134.59	-1736.69	2007.63	2.72	0.84	-2.59	
10673.00	87.23	182.21	8360.01	-1165.52	-1738.02	2031.41	1.78	0.68	-1.65	
10705.00	86.88	182.00	8361.65	-1197.46	-1739.19	2055.84	1.28	-1.09	-0.66	
10736.00	86.81	181.90	8363.36	-1228.39	-1740.25	2079.44	0.39	-0.23	-0.32	
10768.00	86.68	182.17	8365.17	-1260.32	-1741.38	2103.84	0.94	-0.41	0.84	
10800.00	86.39	181.92	8367.11	-1292.24	-1742.52	2128.23	1.20	-0.91	-0.78	
10831.00	86.82	182.19	8368.94	-1323.17	-1743.63	2151.86	1.64	1.39	0.87	
10863.00	87.87	181.79	8370.43	-1355.11	-1744.74	2176.25	3.51	3.28	-1.25	
10895.00	88.15	182.03	8371.54	-1387.07	-1745.81	2200.62	1.15	0.87	0.75	
10926.00	88.21	181.60	8372.52	-1418.04	-1746.79	2224.20	1.40	0.19	-1.39	
10958.00	88.15	181.79	8373.54	-1450.01	-1747.74	2248.50	0.62	-0.19	0.59	
10990.00	87.87	181.84	8374.65	-1481.98	-1748.75	2272.84	0.89	-0.87	0.16	
11021.00	87.94	181.90	8375.78	-1512.94	-1749.76	2296.43	0.30	0.23	0.19	
11053.00	87.44	181.80	8377.07	-1544.90	-1750.79	2320.78	1.59	-1.56	-0.31	
11085.00	87.02	181.90	8378.62	-1576.84	-1751.82	2345.12	1.35	-1.31	0.31	
11116.00	86.54	181.92	8380.36	-1607.78	-1752.85	2368.71	1.55	-1.55	0.06	
11148.00	86.25	181.57	8382.37	-1639.70	-1753.83	2392.98	1.42	-0.91	-1.09	
11180.00	86.33	181.52	8384.44	-1671.62	-1754.69	2417.19	0.29	0.25	-0.16	
11211.00	86.05	181.38	8386.50	-1702.54	-1755.47	2440.60	1.01	-0.90	-0.45	
11243.00	86.04	181.43	8388.71	-1734.46	-1756.25	2464.75	0.16	-0.03	0.16	
11275.00	85.91	181.71	8390.96	-1766.37	-1757.13	2488.95	0.96	-0.41	0.87	
11306.00	85.55	181.78	8393.27	-1797.26	-1758.07	2512.45	1.18	-1.16	0.23	
11338.00	85.55	182.21	8395.75	-1829.15	-1759.18	2536.80	1.34	0.00	1.34	Last Wft Svy
11398.00	85.55	182.21	8400.40	-1888.92	-1761.49	2582.59	0.00	0.00	0.00	Proj To Bit

Annotation

MD ft	TVD ft	
8038.00	8036.95	Tie On Gyrodata
8081.00	8079.94	First Wft Svy
11338.00	8395.75	Last Wft Svy
11398.00	8400.40	Proj To Bit



Company Representative Jeff Harvard	Company Name Harvard Petroleum
Well Number Ramsland #1	Completion Type Sand Fracture

8,079.00' Bottom of Window

Note: All measurements are estimated

ID (in.)	OD (in.)	Description	TMD (ft)
	4.50"	Latched Seal Assemblyw/ 1' Seals	8,120.00
4.00"	4.50"	Polished Bore Receptacle	8,121.42
4.00"	5.75"	5.75" x 4 1/2" Swellable Packer	8,122.00
4.00"	5.75"	5.75" x 4 1/2" Swellable Packer	8,564.00
3.60"	4.50"	DirectStim Mechanical Frac Port for 3.75" Ball	8,785.00
4.00"	5.75"	5.75" x 4 1/2" Swellable Packer	8,967.00
3.25"	4.50"	DirectStim Mechanical Frac Port for 3.50" Ball	9,190.00
4.00"	5.75"	5.75" x 4 1/2" Swellable Packer	9,327.00
3.00"	4.50"	DirectStim Mechanical Frac Port for 3.25" Ball	9,505.00
4.00"	5.75"	5.75" x 4 1/2" Swellable Packer	9,688.00
2.75"	4.50"	DirectStim Mechanical Frac Port for 3.00" Ball	9,956.00
4.00"	5.75"	5.75" x 4 1/2" Swellable Packer	10,094.00
2.50"	4.50"	DirectStim Mechanical Frac Port for 2.75" Ball	10,317.00
4.00"	5.75"	5.75" x 4 1/2" Swellable Packer	10,501.00
2.25"	4.50"	DirectStim Mechanical Frac Port for 2.50" Ball	10,724.00
4.00"	5.75"	5.75" x 4 1/2" Swellable Packer	10,906.00
	4.50"	DirectStim Hydroport Hydraulic Frac Port	11,172.00
1.00"	4.50"	StaSeal Circulation Sub for 1.25" Actuating Ball	11,179.00
	4.50"	Float Shoe	11,180.00
		TD MD	11,352.00

