

30-025-39974



HOBBS OCD

JUN 06 2011

RECEIVED

Cimarex Energy Co.

Lea County (NAD 83)

Sec 18 - T17S - R32E

HT Federal #1

Wellbore #1

Survey: MWD Survey

Standard Survey Report

10 January, 2011



WELL DETAILS: HT Federal #1

+N/-S +E/-W
0.0 0.0Northing
665775.50Ground Level: 0.0
Easting 701281.80
Latitude 32° 49' 44.978 N
SHL: 630' FSL / 574' FWL
BHL: 330' FSL / 990' FWLLongitude
103° 48' 45.456 W

Azimuths to Grid North

Total Correction: 7.57°

Magnetic Field
Strength: 49110.2nT
Dip Angle: 60.75°
Date: 06/24/2010
Model: IGRF200510Project: Lea County (NAD 83)
Site: Sec 18 - T17S - R32E
Well: HT Federal #1
Wellbore: Wellbore #1
Design: Plan #4

WELLBORE TARGET DETAILS

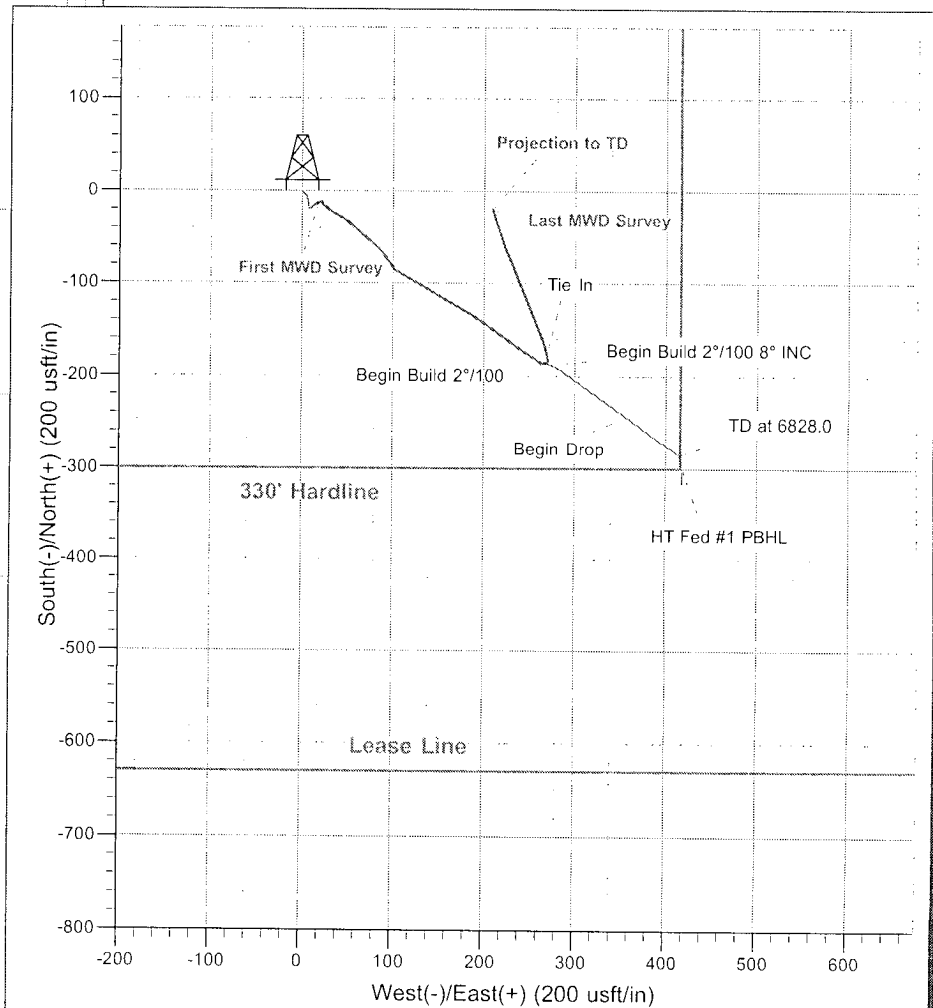
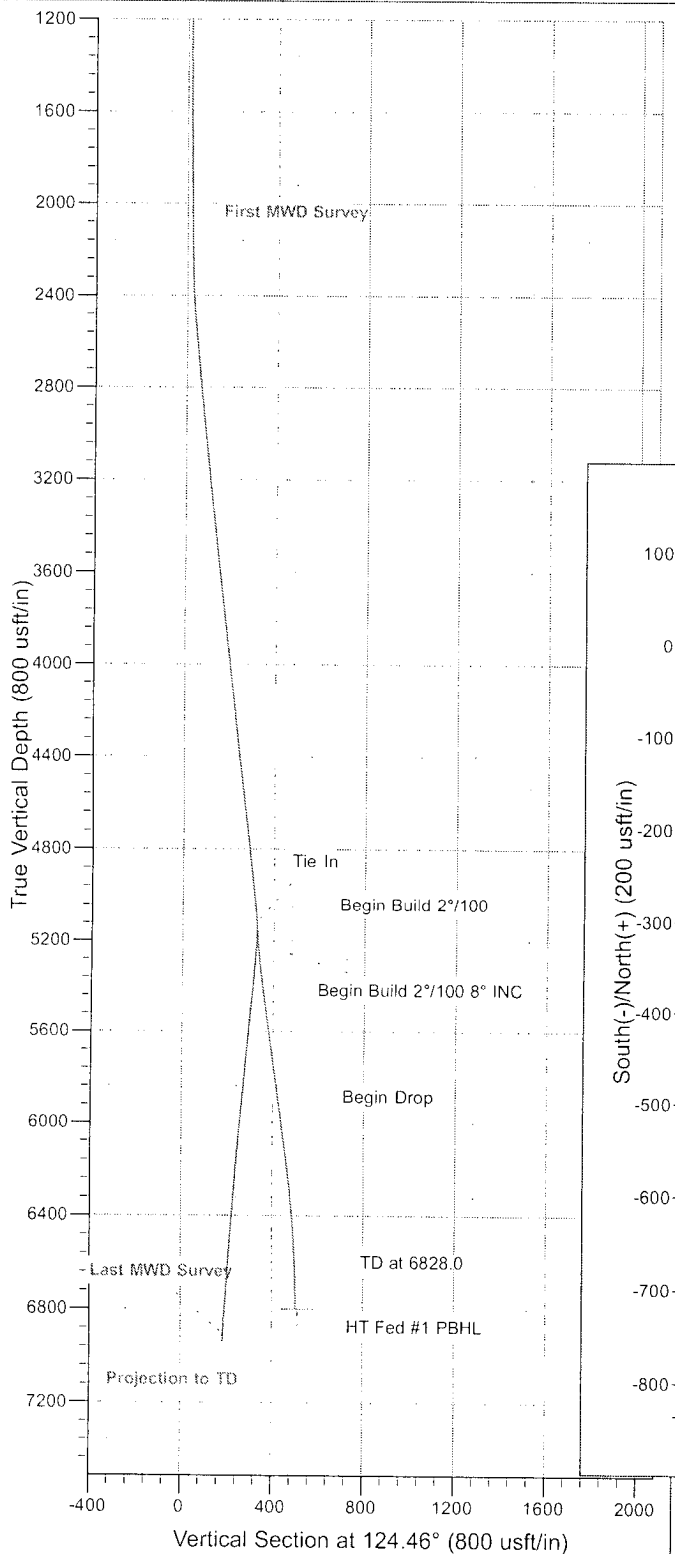
Name	TVD	+N/-S	+E/-W	Northing	Easting
HT Fed #1 PBHL	6800.0	-298.6	417.9	665476.89	701699.70 Point

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	5135.0	3.89	87.83	5118.0	-186.8	266.8	0.00	0.00	325.7	
2	5362.6	7.00	125.00	5344.6	-194.4	285.9	2.00	68.10	345.7	
3	5412.6	8.00	125.00	5394.1	-198.2	291.2	2.00	0.00	352.3	
4	6170.5	8.00	125.00	6144.7	-258.7	377.6	0.00	0.00	457.7	
5	6828.0	0.00	0.00	6800.0	-285.0	415.2	1.22	180.00	503.6	

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Departure	Annotation
5118.0	5135.0	3.89	87.83	-186.8	266.8	325.7	0.0	Tie In
5161.2	5178.3	4.29	98.65	-186.9	269.9	328.3	3.2	Begin Build 2°/100
5211.0	5228.3	4.90	108.55	-187.9	273.7	332.0	7.4	Begin Build 2°/100 8° INC
5962.2	5986.3	8.00	125.00	-244.0	356.6	432.1	107.4	Begin Drop
6800.0	6828.0	0.00	0.00	-285.0	415.2	503.6	178.8	TD at 6828.0





Great White Directional Services

Survey Report

Company: Cimarex Energy Co.
Project: Lea County (NAD 83)
Site: Sec 18 - T17S - R32E
Well: HT Federal #1
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well HT Federal #1
TVD Reference: WELL @ 0.0usft (Original Well Elev)
MD Reference: WELL @ 0.0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Project Lea County (NAD 83)
Map System: US State Plane 1983
Geo Datum: North American Datum 1983
Map Zone: New Mexico Eastern Zone

System Datum: Mean Sea Level

Site Sec 18 - T17S - R32E

Site Position: Northing: 665,775.50 usft Latitude: 32° 49' 44.978 N
From: Map Easting: 701,281.80 usft Longitude: 103° 48' 45.456 W
Position Uncertainty: 0.0 usft Slot Radius: 13-3/16 " Grid Convergence: 0.28 °

Well HT Federal #1

Well Position +N/-S 0.0 usft Northing: 665,775.50 usft Latitude: 32° 49' 44.978 N
 +E/-W 0.0 usft Easting: 701,281.80 usft Longitude: 103° 48' 45.456 W
Position Uncertainty 0.0 usft Wellhead Elevation: usft Ground Level: 0.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	06/24/10	7.85	60.75	49,110

Design Wellbore #1

Audit Notes:

Version: 1.0 **Phase:** ACTUAL **Tie On Depth:** 0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	134.95

Survey Program Date 01/10/11

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	1,860.0	GYRO (Wellbore #1)	MWD	MWD - Standard
2,040.0	6,962.0	MWD Survey (Wellbore #1)	MWD	MWD - Standard

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,860.0	1.24	64.05	1,859.7	-14.6	14.6	20.7	0.00	0.00	0.00
Tie In Point									
2,040.0	1.30	63.70	2,039.7	-12.8	18.2	22.0	0.03	0.03	-0.19
First MWD Survey									
2,136.0	1.10	58.20	2,135.6	-11.9	20.0	22.5	0.24	-0.21	-5.73
2,263.0	1.50	139.00	2,262.6	-12.5	22.1	24.5	1.35	0.31	63.62
2,294.0	1.50	146.00	2,293.6	-13.1	22.6	25.3	0.59	0.00	22.58
2,357.0	1.50	148.00	2,356.6	-14.5	23.5	26.9	0.08	0.00	3.17
2,388.0	2.60	132.70	2,387.6	-15.3	24.2	28.0	3.93	3.55	-49.35



Great White Directional Services

Survey Report

Company: Cimarex Energy Co.
Project: Lea County (NAD 83)
Site: Sec 18 - T17S - R32E
Well: HT Federal #1
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well HT Federal #1
TVD Reference: WELL @ 0.0usft (Original Well Elev)
MD Reference: WELL @ 0.0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,420.0	3.90	130.90	2,419.5	-16.5	25.6	29.8	4.07	4.06	-5.63
2,451.0	4.10	131.10	2,450.4	-18.0	27.2	31.9	0.65	0.65	0.65
2,483.0	4.10	130.60	2,482.4	-19.5	28.9	34.2	0.11	0.00	-1.56
2,514.0	5.60	124.00	2,513.2	-21.0	31.0	36.8	5.15	4.84	-21.29
2,545.0	5.20	126.00	2,544.1	-22.7	33.4	39.7	1.43	-1.29	6.45
2,576.0	5.40	118.90	2,575.0	-24.2	35.8	42.5	2.21	0.65	-22.90
2,608.0	6.00	118.00	2,606.8	-25.7	38.6	45.5	1.90	1.88	-2.81
2,639.0	6.00	116.80	2,637.6	-27.2	41.5	48.6	0.40	0.00	-3.87
2,670.0	5.80	116.90	2,668.5	-28.7	44.3	51.6	0.65	-0.65	0.32
2,702.0	5.90	129.70	2,700.3	-30.4	47.1	54.8	4.08	0.31	40.00
2,797.0	4.90	124.80	2,794.9	-35.9	54.1	63.7	1.16	-1.05	-5.16
2,860.0	6.10	132.00	2,857.6	-39.7	58.8	69.7	2.19	1.90	11.43
2,923.0	5.80	132.50	2,920.3	-44.0	63.7	76.2	0.48	-0.48	0.79
2,986.0	6.20	131.20	2,982.9	-48.4	68.6	82.8	0.67	0.63	-2.06
3,048.0	6.10	129.30	3,044.6	-52.7	73.7	89.4	0.37	-0.16	-3.06
3,112.0	5.70	129.70	3,108.2	-56.9	78.7	95.9	0.63	-0.63	0.63
3,175.0	5.50	131.40	3,170.9	-60.9	83.4	102.1	0.41	-0.32	2.70
3,238.0	6.90	142.30	3,233.6	-65.9	88.0	108.8	2.89	2.22	17.30
3,302.0	7.00	143.10	3,297.1	-72.1	92.7	116.5	0.22	0.16	1.25
3,365.0	6.40	144.20	3,359.7	-78.0	97.0	123.8	0.97	-0.95	1.75
3,428.0	6.30	144.80	3,422.3	-83.7	101.1	130.6	0.19	-0.16	0.95
3,460.0	6.90	123.10	3,454.1	-86.1	103.7	134.2	7.96	1.88	-67.81
3,553.0	7.20	119.50	3,546.4	-92.1	113.5	145.3	0.57	0.32	-3.87
3,615.0	7.20	118.80	3,607.9	-95.8	120.2	152.8	0.14	0.00	-1.13
3,678.0	6.90	119.90	3,670.4	-99.6	127.0	160.3	0.52	-0.48	1.75
3,741.0	6.70	119.70	3,732.9	-103.3	133.5	167.5	0.32	-0.32	-0.32
3,805.0	6.70	120.30	3,796.5	-107.1	139.9	174.7	0.11	0.00	0.94
3,869.0	6.50	120.10	3,860.1	-110.8	146.3	181.8	0.31	-0.31	-0.31
3,932.0	6.50	119.80	3,922.7	-114.3	152.5	188.7	0.05	0.00	-0.48
3,995.0	6.70	119.20	3,985.3	-117.9	158.8	195.6	0.34	0.32	-0.95
4,058.0	6.90	118.70	4,047.8	-121.5	165.3	202.8	0.33	0.32	-0.79
4,121.0	6.70	120.30	4,110.4	-125.2	171.8	210.0	0.44	-0.32	2.54
4,184.0	6.40	121.40	4,173.0	-128.9	177.9	217.0	0.52	-0.48	1.75
4,247.0	6.40	121.10	4,235.6	-132.5	184.0	223.8	0.05	0.00	-0.48
4,310.0	6.30	121.70	4,298.2	-136.1	189.9	230.6	0.19	-0.16	0.95
4,373.0	6.50	123.70	4,360.8	-139.9	195.8	237.4	0.48	0.32	3.17
4,437.0	6.80	124.50	4,424.4	-144.1	201.9	244.7	0.49	0.47	1.25
4,500.0	6.90	125.90	4,486.9	-148.4	208.1	252.1	0.31	0.16	2.22
4,564.0	6.70	125.30	4,550.5	-152.8	214.2	259.6	0.33	-0.31	-0.94
4,627.0	6.80	126.00	4,613.0	-157.1	220.3	266.9	0.21	0.16	1.11
4,691.0	6.60	126.00	4,676.6	-161.5	226.3	274.3	0.31	-0.31	0.00
4,754.0	6.50	124.60	4,739.2	-165.7	232.2	281.4	0.30	-0.16	-2.22
4,817.0	6.50	123.80	4,801.8	-169.7	238.1	288.4	0.14	0.00	-1.27



Great White Directional Services

Survey Report

Company: Cimarex Energy Co.
Project: Lea County (NAD 83)
Site: Sec 18 - T17S - R32E
Well: HT Federal #1
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well HT Federal #1
TVD Reference: WELL @ 0.0usft (Original Well Elev)
MD Reference: WELL @ 0.0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,880.0	6.50	123.40	4,864.4	-173.6	244.0	295.4	0.07	0.00	-0.63
4,942.0	6.40	121.00	4,926.0	-177.4	249.9	302.2	0.46	-0.16	-3.87
5,005.0	6.30	122.90	4,988.6	-181.0	255.8	308.9	0.37	-0.16	3.02
5,068.0	6.20	124.00	5,051.2	-184.8	261.5	315.7	0.25	-0.16	1.75
5,169.0	3.80	58.60	5,151.9	-186.1	268.9	321.8	5.71	-2.38	-64.75
5,200.0	4.70	13.60	5,182.8	-184.4	270.1	321.4	10.82	2.90	-145.16
5,234.0	5.90	348.50	5,216.7	-181.3	270.1	319.2	7.59	3.53	-73.82
5,266.0	5.60	348.20	5,248.5	-178.2	269.4	316.5	0.94	-0.94	-0.94
5,297.0	6.20	347.00	5,279.3	-175.0	268.7	313.9	1.98	1.94	-3.87
5,328.0	6.00	344.40	5,310.2	-171.8	267.9	311.0	1.10	-0.65	-8.39
5,360.0	6.10	343.30	5,342.0	-168.6	267.0	308.1	0.48	0.31	-3.44
5,392.0	6.30	342.10	5,373.8	-165.3	266.0	305.0	0.74	0.63	-3.75
5,423.0	6.20	342.10	5,404.6	-162.1	264.9	302.0	0.32	-0.32	0.00
5,455.0	6.20	337.90	5,436.4	-158.9	263.7	298.9	1.42	0.00	-13.13
5,486.0	6.20	336.30	5,467.3	-155.8	262.4	295.8	0.56	0.00	-5.16
5,518.0	6.20	336.70	5,499.1	-152.6	261.1	292.6	0.13	0.00	1.25
5,549.0	6.30	338.10	5,529.9	-149.5	259.8	289.4	0.59	0.32	4.52
5,581.0	6.20	337.20	5,561.7	-146.3	258.4	286.2	0.44	-0.31	-2.81
5,611.0	6.30	338.20	5,591.5	-143.2	257.2	283.2	0.49	0.33	3.33
5,643.0	6.20	336.20	5,623.3	-140.0	255.8	280.0	0.75	-0.31	-6.25
5,674.0	6.10	338.80	5,654.1	-137.0	254.6	276.9	0.95	-0.32	8.39
5,706.0	6.20	339.30	5,686.0	-133.8	253.4	273.8	0.35	0.31	1.56
5,737.0	6.50	338.80	5,716.8	-130.6	252.1	270.7	0.98	0.97	-1.61
5,769.0	6.40	338.80	5,748.6	-127.2	250.8	267.4	0.31	-0.31	0.00
5,800.0	6.20	335.80	5,779.4	-124.1	249.5	264.2	1.24	-0.65	-9.68
5,832.0	6.10	337.10	5,811.2	-120.9	248.1	261.0	0.54	-0.31	4.06
5,863.0	6.20	337.60	5,842.0	-117.9	246.9	258.0	0.37	0.32	1.61
5,895.0	6.20	337.50	5,873.8	-114.7	245.5	254.8	0.03	0.00	-0.31
5,926.0	6.50	337.20	5,904.6	-111.5	244.2	251.6	0.97	0.97	-0.97
5,957.0	6.10	335.80	5,935.5	-108.4	242.9	248.5	1.38	-1.29	-4.52
5,988.0	6.20	339.40	5,966.3	-105.3	241.6	245.4	1.29	0.32	11.61
6,020.0	6.30	337.70	5,998.1	-102.1	240.3	242.2	0.66	0.31	-5.31
6,052.0	6.10	336.20	6,029.9	-98.9	239.0	239.0	0.80	-0.63	-4.69
6,083.0	6.10	339.20	6,060.7	-95.8	237.7	236.0	1.03	0.00	9.68
6,114.0	5.90	339.10	6,091.6	-92.8	236.6	233.0	0.65	-0.65	-0.32
6,146.0	5.80	336.20	6,123.4	-89.8	235.3	230.0	0.97	-0.31	-9.06
6,177.0	5.60	338.60	6,154.2	-87.0	234.2	227.1	1.00	-0.65	7.74
6,209.0	5.60	339.00	6,186.1	-84.1	233.0	224.3	0.12	0.00	1.25
6,240.0	5.50	339.70	6,216.9	-81.2	232.0	221.6	0.39	-0.32	2.26
6,271.0	5.40	335.50	6,247.8	-78.5	230.8	218.8	1.33	-0.32	-13.55
6,303.0	5.20	336.80	6,279.7	-75.8	229.7	216.1	0.73	-0.63	4.06
6,334.0	5.40	335.80	6,310.5	-73.2	228.5	213.4	0.71	0.65	-3.23
6,365.0	5.20	336.70	6,341.4	-70.6	227.3	210.8	0.70	-0.65	2.90
6,396.0	5.60	336.20	6,372.3	-67.9	226.2	208.0	1.30	1.29	-1.61



Great White Directional Services

Survey Report

Company: Cimarex Energy Co.
Project: Lea County (NAD 83)
Site: Sec 18 - T17S - R32E
Well: HT Federal #1
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well HT Federal #1
TVD Reference: WELL @ 0.0usft (Original Well Elev)
MD Reference: WELL @ 0.0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,428.0	5.40	334.90	6,404.1	-65.1	224.9	205.2	0.74	-0.63	-4.06
6,460.0	5.50	340.10	6,436.0	-62.3	223.7	202.4	1.57	0.31	16.25
6,491.0	5.40	339.70	6,466.8	-59.5	222.7	199.7	0.35	-0.32	-1.29
6,523.0	5.10	336.90	6,498.7	-56.8	221.7	197.0	1.23	-0.94	-8.75
6,555.0	5.10	341.90	6,530.6	-54.2	220.7	194.4	1.39	0.00	15.63
6,586.0	5.30	342.20	6,561.4	-51.5	219.8	191.9	0.65	0.65	0.97
6,617.0	5.40	341.00	6,592.3	-48.7	218.9	189.3	0.48	0.32	-3.87
6,680.0	5.30	343.60	6,655.0	-43.2	217.1	184.1	0.42	-0.16	4.13
6,711.0	5.20	339.30	6,685.9	-40.5	216.2	181.6	1.31	-0.32	-13.87
6,743.0	5.50	341.90	6,717.8	-37.6	215.2	178.9	1.21	0.94	8.13
6,774.0	5.30	340.30	6,748.6	-34.9	214.3	176.3	0.81	-0.65	-5.16
6,796.3	5.30	343.64	6,770.8	-32.9	213.6	174.4	1.39	-0.01	15.00
HT Fed #1 PBHL									
6,802.0	5.30	344.50	6,776.5	-32.4	213.5	174.0	1.39	0.04	14.99
6,838.0	5.30	339.40	6,812.3	-29.3	212.4	171.0	1.31	0.00	-14.17
6,869.0	4.80	343.40	6,843.2	-26.7	211.6	168.6	1.97	-1.61	12.90
6,900.0	4.60	343.10	6,874.1	-24.3	210.8	166.3	0.65	-0.65	-0.97
6,931.0	4.80	343.90	6,905.0	-21.8	210.1	164.1	0.68	0.65	2.58
Last MWD Survey									
6,962.0	4.40	343.80	6,935.9	-19.4	209.4	161.9	1.29	-1.29	-0.32
Projection to TD									

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,860.0	1,859.7	-14.6	14.6	Tie In Point
2,040.0	2,039.7	-12.8	18.2	First MWD Survey
6,931.0	6,905.0	-21.8	210.1	Last MWD Survey
6,962.0	6,935.9	-19.4	209.4	Projection to TD

Checked By: _____	Approved By: _____	Date: _____
-------------------	--------------------	-------------