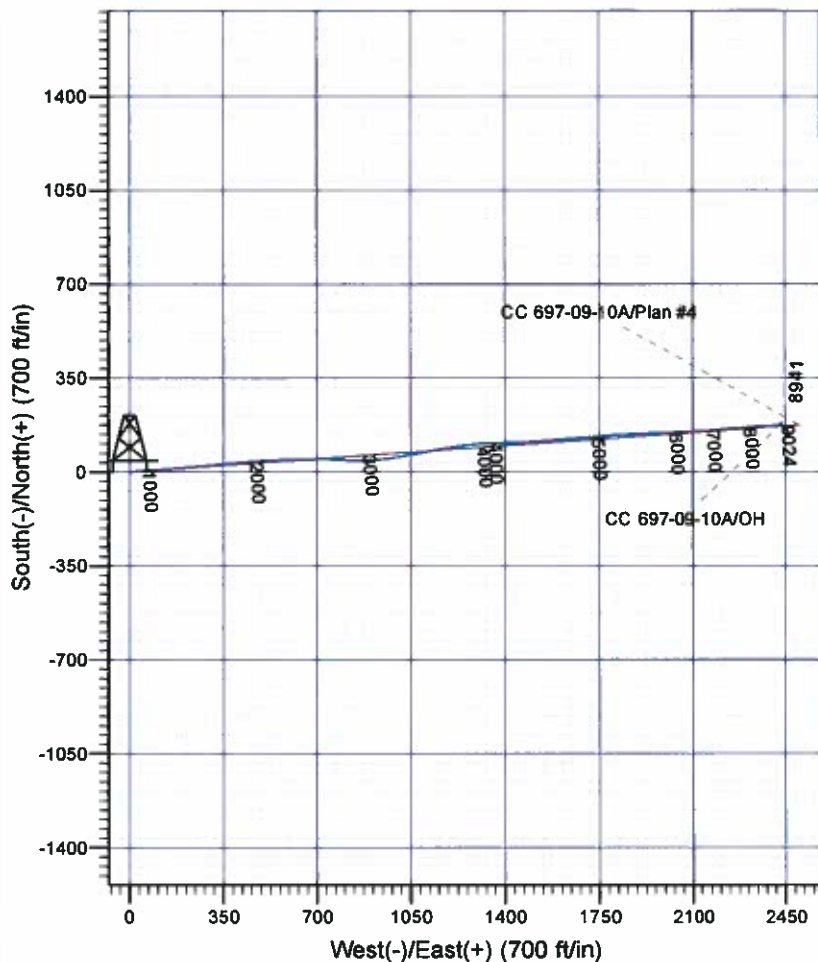
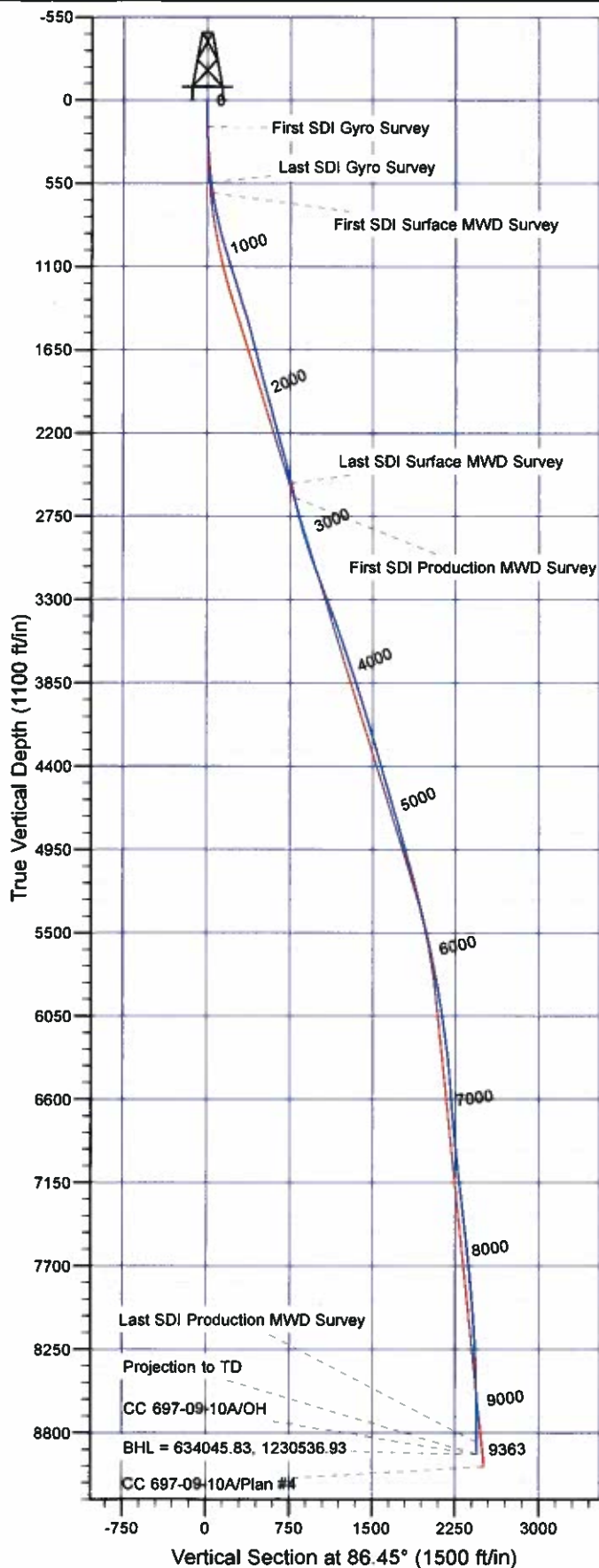




Scientific Drilling

Rocky Mountain Operations

Company: OXY USA RMAT
 Project: Garfield County, CO NAD27
 Site: Cascade Creek 608-41 Pad
 Well: CC 697-09-10A
 Wellbore: OH
 Design: OH



Well Details: CC 697-09-10A

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	633938.98	1228093.13	39° 32' 31.387 N	108° 14' 14.812 W	T

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well CC 697-09-10A - Slot T, True North
 Vertical (TVD) Reference: GL 8407' & RKB 30' @ 8437.00ft (H&P)
 Section (VS) Reference: Slot - T(0.00N, 0.00E)
 Measured Depth Reference: GL 8407' & RKB 30' @ 8437.00ft (H&P)
 Calculation Method: Minimum Curvature

PROJECT DETAILS: Garfield County, CO NAD27

Geodetic System: US State Plane 1927 (Exact solution)
 Datum: NAD 1927 (NADCON CONUS)
 Ellipsoid: Clarke 1866
 Zone: Colorado Central 502

System Datum: Mean Sea Level

Plan: OH

16:36, July 18 2011
 Created By: Janie Cooke

OXY USA RMAT

Garfield County, CO NAD27

Cascade Creek 608-41 Pad

CC 697-09-10A - Slot T

OH

Design: OH

Standard Survey Report

18 July, 2011





Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-09-10A - Slot T
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8407' & RKB 30' @ 8437.00ft (H&P)
Site:	Cascade Creek 608-41 Pad	MD Reference:	GL 8407' & RKB 30' @ 8437.00ft (H&P)
Well:	CC 697-09-10A	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies Compass Server

Project	Garfield County, CO NAD27		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Colorado Central 502		

Site	Cascade Creek 608-41 Pad, SECTION 8 T6S R97W				
Site Position:		Northing:	633,966.95 usft	Latitude:	39° 32' 31.685 N
From:	Map	Easting:	1,228,168.67 usft	Longitude:	108° 14' 13.859 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.73 °

Well	CC 697-09-10A - Slot T					
Well Position	+N/-S	0.00 ft	Northing:	633,938.98 usft	Latitude:	39° 32' 31.387 N
	+E/-W	0.00 ft	Easting:	1,228,093.13 usft	Longitude:	108° 14' 14.812 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	8,407.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2005-10	12/31/2009	10.63	65.78	52,399

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	86.45	

Survey Program	Date 7/18/2011				
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
177.00	544.00	Survey #1 - Gyro MWD (OH)	Gyro		
616.00	2,666.00	Survey #2 - Surface MWD (OH)	MWD-SDI	MWD - Standard ISCWSA	
2,763.00	9,363.00	Survey #3 - Production MWD (OH)	MWD-SDI	MWD - Standard ISCWSA	

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
177.00	1.23	88.42	176.99	0.05	1.90	1.90	0.69	0.69	0.00
First SDI Gyro Survey									
269.00	3.17	88.15	268.91	0.16	5.43	5.43	2.11	2.11	-0.29
361.00	4.93	85.96	360.68	0.52	11.92	11.92	1.92	1.91	-2.38
452.00	8.18	81.39	451.07	1.77	22.22	22.29	3.61	3.57	-5.02
544.00	9.24	80.07	542.01	4.02	35.97	36.15	1.17	1.15	-1.43
Last SDI Gyro Survey									



Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-09-10A - Slot T
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8407' & RKB 30' @ 8437.00ft (H&P)
Site:	Cascade Creek 608-41 Pad	MD Reference:	GL 8407' & RKB 30' @ 8437.00ft (H&P)
Well:	CC 697-09-10A	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies Compass Server

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
616.00	11.43	87.56	612.84	5.32	48.79	49.03	3.56	3.04	10.40
First SDI Surface MWD Survey									
708.00	14.49	86.71	702.49	6.37	69.39	69.66	3.33	3.33	-0.92
800.00	17.59	87.47	790.90	7.65	94.78	95.07	3.38	3.37	0.83
892.00	20.05	86.24	877.97	9.29	124.41	124.74	2.71	2.67	-1.34
984.00	22.69	84.74	963.64	11.95	157.82	158.26	2.93	2.87	-1.63
1,079.00	22.16	85.10	1,051.46	15.16	193.92	194.48	0.58	-0.56	0.38
1,173.00	23.54	84.83	1,138.08	18.37	230.28	230.97	1.47	1.47	-0.29
1,268.00	21.90	85.62	1,225.70	21.43	266.84	267.65	1.76	-1.73	0.83
1,363.00	22.86	85.10	1,313.55	24.36	302.89	303.82	1.03	1.01	-0.55
1,457.00	23.48	82.90	1,399.96	28.24	339.67	340.76	1.13	0.66	-2.34
1,552.00	20.66	85.80	1,488.00	31.80	375.17	376.42	3.18	-2.97	3.05
1,646.00	19.52	85.10	1,576.28	34.36	407.35	408.70	1.24	-1.21	-0.74
1,741.00	19.26	85.18	1,665.89	37.03	438.78	440.23	0.28	-0.27	0.08
1,836.00	21.10	86.68	1,755.05	39.34	471.47	473.00	2.01	1.94	1.58
1,930.00	19.17	85.36	1,843.30	41.57	503.75	505.35	2.11	-2.05	-1.40
2,025.00	20.66	86.50	1,932.62	43.85	536.02	537.71	1.62	1.57	1.20
2,119.00	21.72	89.31	2,020.27	45.08	569.97	571.66	1.56	1.13	2.99
2,214.00	19.08	89.84	2,109.30	45.33	603.08	604.73	2.79	-2.78	0.56
2,308.00	20.22	87.64	2,197.83	46.04	634.67	636.31	1.45	1.21	-2.34
2,403.00	21.37	89.31	2,286.64	46.93	668.39	670.01	1.36	1.21	1.76
2,497.00	20.49	88.96	2,374.43	47.43	701.96	703.55	0.95	-0.94	-0.37
2,592.00	19.43	90.37	2,463.73	47.63	734.39	735.93	1.23	-1.12	1.48
2,666.00	18.20	92.48	2,533.77	47.05	758.24	759.70	1.90	-1.66	2.85
Last SDI Surface MWD Survey									
2,763.00	16.34	95.07	2,626.40	45.19	786.97	788.26	2.07	-1.92	2.67
First SDI Production MWD Survey									
2,858.00	18.09	92.23	2,717.14	43.44	815.02	816.15	2.04	1.84	-2.99
2,952.00	22.16	91.52	2,805.38	42.40	847.34	848.34	4.34	4.33	-0.76
3,047.00	22.86	88.52	2,893.15	42.40	883.70	884.63	1.42	0.74	-3.16
3,141.00	24.89	84.74	2,979.10	44.68	921.66	922.65	2.70	2.16	-4.02
3,236.00	25.94	82.72	3,064.91	49.15	962.18	963.37	1.43	1.11	-2.13
3,331.00	27.52	80.96	3,149.76	55.23	1,004.46	1,005.96	1.86	1.66	-1.85
3,425.00	28.05	79.12	3,232.92	62.82	1,047.62	1,049.50	1.07	0.56	-1.96
3,520.00	27.44	78.77	3,317.00	71.29	1,091.02	1,093.34	0.66	-0.64	-0.37
3,614.00	27.17	78.68	3,400.52	79.73	1,133.31	1,136.07	0.29	-0.29	-0.10
3,709.00	27.26	81.84	3,485.01	87.07	1,176.12	1,179.25	1.52	0.09	3.33
3,803.00	25.32	80.96	3,569.28	93.29	1,217.28	1,220.72	2.11	-2.06	-0.94
3,897.00	25.59	83.34	3,654.16	98.80	1,257.30	1,261.00	1.13	0.29	2.53
3,992.00	24.36	82.81	3,740.28	103.63	1,297.11	1,301.04	1.32	-1.29	-0.56
4,087.00	24.09	88.61	3,826.92	106.55	1,335.94	1,339.98	2.52	-0.28	6.11
4,181.00	23.74	89.31	3,912.85	107.25	1,374.04	1,378.04	0.48	-0.37	0.74
4,276.00	22.60	88.26	4,000.19	108.03	1,411.41	1,415.39	1.28	-1.20	-1.11
4,370.00	21.72	87.91	4,087.24	109.21	1,446.84	1,450.83	0.95	-0.94	-0.37



Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-09-10A - Slot T
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8407' & RKB 30' @ 8437.00ft (H&P)
Site:	Cascade Creek 608-41 Pad	MD Reference:	GL 8407' & RKB 30' @ 8437.00ft (H&P)
Well:	CC 697-09-10A	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies Compass Server

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,465.00	22.25	86.59	4,175.34	110.92	1,482.37	1,486.39	0.76	0.56	-1.39
4,559.00	21.37	85.89	4,262.61	113.21	1,517.21	1,521.31	0.98	-0.94	-0.74
4,654.00	22.69	85.36	4,350.67	115.93	1,552.74	1,556.94	1.41	1.39	-0.56
4,749.00	21.54	83.16	4,438.68	119.49	1,588.32	1,592.67	1.49	-1.21	-2.32
4,843.00	21.19	85.45	4,526.22	122.90	1,622.39	1,626.89	0.96	-0.37	2.44
4,937.00	22.42	86.94	4,613.50	125.20	1,657.23	1,661.80	1.43	1.31	1.59
5,032.00	21.46	86.33	4,701.61	127.28	1,692.66	1,697.29	1.04	-1.01	-0.64
5,126.00	21.90	85.53	4,788.96	129.75	1,727.30	1,732.02	0.56	0.47	-0.85
5,221.00	21.37	84.30	4,877.27	132.85	1,762.18	1,767.03	0.73	-0.56	-1.29
5,315.00	20.75	84.22	4,964.99	136.22	1,795.79	1,800.78	0.66	-0.66	-0.09
5,410.00	20.93	87.91	5,053.78	138.54	1,829.50	1,834.56	1.39	0.19	3.88
5,504.00	20.22	87.91	5,141.79	139.74	1,862.51	1,867.59	0.76	-0.76	0.00
5,599.00	19.43	87.29	5,231.15	141.09	1,894.70	1,899.80	0.86	-0.83	-0.65
5,694.00	18.55	86.68	5,320.98	142.71	1,925.57	1,930.71	0.95	-0.93	-0.64
5,788.00	18.20	86.50	5,410.19	144.47	1,955.15	1,960.34	0.38	-0.37	-0.19
5,883.00	16.97	89.05	5,500.75	145.61	1,983.82	1,989.03	1.53	-1.29	2.68
5,977.00	16.27	89.49	5,590.82	145.95	2,010.70	2,015.88	0.76	-0.74	0.47
6,072.00	15.39	87.20	5,682.22	146.69	2,036.60	2,041.78	1.14	-0.93	-2.41
6,166.00	14.51	86.41	5,773.04	148.03	2,060.81	2,066.03	0.96	-0.94	-0.84
6,261.00	13.81	86.50	5,865.15	149.47	2,084.01	2,089.27	0.74	-0.74	0.09
6,355.00	12.75	85.80	5,956.64	150.92	2,105.55	2,110.86	1.14	-1.13	-0.74
6,450.00	11.34	86.24	6,049.54	152.30	2,125.33	2,130.68	1.49	-1.48	0.46
6,544.00	10.99	86.68	6,141.76	153.42	2,143.49	2,148.88	0.38	-0.37	0.47
6,639.00	10.29	88.87	6,235.13	154.11	2,161.02	2,166.41	0.85	-0.74	2.31
6,733.00	8.97	86.50	6,327.80	154.73	2,176.73	2,182.13	1.47	-1.40	-2.52
6,828.00	6.60	81.58	6,421.92	155.98	2,189.52	2,194.98	2.59	-2.49	-5.18
6,922.00	5.72	82.11	6,515.38	157.41	2,199.51	2,205.03	0.94	-0.94	0.56
7,017.00	4.84	83.07	6,609.97	158.55	2,208.17	2,213.75	0.93	-0.93	1.01
7,111.00	6.60	86.94	6,703.50	159.31	2,217.51	2,223.12	1.92	1.87	4.12
7,206.00	7.39	83.69	6,797.80	160.28	2,229.03	2,234.68	0.93	0.83	-3.42
7,300.00	8.53	85.36	6,890.89	161.50	2,241.99	2,247.69	1.24	1.21	1.78
7,395.00	8.00	87.03	6,984.90	162.42	2,255.61	2,261.34	0.61	-0.56	1.76
7,489.00	8.88	89.23	7,077.88	162.85	2,269.40	2,275.13	1.00	0.94	2.34
7,584.00	9.15	85.89	7,171.71	163.49	2,284.27	2,290.01	0.62	0.28	-3.52
7,678.00	9.15	85.45	7,264.51	164.62	2,299.17	2,304.95	0.07	0.00	-0.47
7,773.00	8.27	85.36	7,358.42	165.77	2,313.51	2,319.34	0.93	-0.93	-0.09
7,867.00	8.27	83.16	7,451.44	167.13	2,326.96	2,332.84	0.34	0.00	-2.34
7,962.00	8.88	83.25	7,545.38	168.80	2,341.03	2,346.99	0.64	0.64	0.09
8,057.00	8.71	86.41	7,639.26	170.11	2,355.49	2,361.50	0.54	-0.18	3.33
8,151.00	7.74	89.93	7,732.29	170.57	2,368.92	2,374.94	1.16	-1.03	3.74
8,245.00	6.24	89.75	7,825.59	170.60	2,380.36	2,386.36	1.60	-1.60	-0.19
8,340.00	6.86	86.15	7,919.97	171.00	2,391.18	2,397.18	0.78	0.65	-3.79
8,434.00	6.24	87.56	8,013.36	171.59	2,401.89	2,407.91	0.68	-0.66	1.50



Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-09-10A - Slot T
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8407' & RKB 30' @ 8437.00ft (H&P)
Site:	Cascade Creek 608-41 Pad	MD Reference:	GL 8407' & RKB 30' @ 8437.00ft (H&P)
Well:	CC 697-09-10A	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies Compass Server

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,528.00	4.66	85.18	8,106.93	172.13	2,410.80	2,416.83	1.70	-1.68	-2.53
8,623.00	3.69	88.79	8,201.68	172.52	2,417.70	2,423.74	1.06	-1.02	3.80
8,717.00	3.17	83.86	8,295.51	172.86	2,423.31	2,429.36	0.64	-0.55	-5.24
8,811.00	2.29	67.52	8,389.40	173.86	2,427.63	2,433.74	1.24	-0.94	-17.38
8,906.00	1.85	46.42	8,484.34	175.64	2,430.49	2,436.71	0.92	-0.46	-22.21
9,001.00	1.67	43.43	8,579.30	177.71	2,432.56	2,438.89	0.21	-0.19	-3.15
9,095.00	1.58	54.51	8,673.26	179.45	2,434.55	2,440.99	0.35	-0.10	11.79
9,190.00	1.06	80.70	8,768.23	180.35	2,436.49	2,442.98	0.82	-0.55	27.57
9,284.00	0.97	91.69	8,862.22	180.47	2,438.14	2,444.64	0.23	-0.10	11.69
Last SDI Production MWD Survey									
9,363.00	0.97	91.69	8,941.21	180.43	2,439.48	2,445.97	0.00	0.00	0.00
Projection to TD - BHL = 634045.83, 1230536.93									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
177.00	176.99	0.05	1.90	First SDI Gyro Survey
544.00	542.01	4.02	35.97	Last SDI Gyro Survey
616.00	612.84	5.32	48.79	First SDI Surface MWD Survey
2,666.00	2,533.77	47.05	758.24	Last SDI Surface MWD Survey
2,763.00	2,626.40	45.19	786.97	First SDI Production MWD Survey
9,284.00	8,862.22	180.47	2,438.14	Last SDI Production MWD Survey
9,363.00	8,941.21	180.43	2,439.48	Projection to TD
9,363.00	8,941.21	180.43	2,439.48	BHL = 634045.83, 1230536.93

Checked By: _____ Approved By: _____ Date: _____