

OXY USA RMAT

Garfield County, CO NAD27

Cascade Creek 697-15-01 Pad

CC 697-10-58 - Slot E

OH

Design: OH

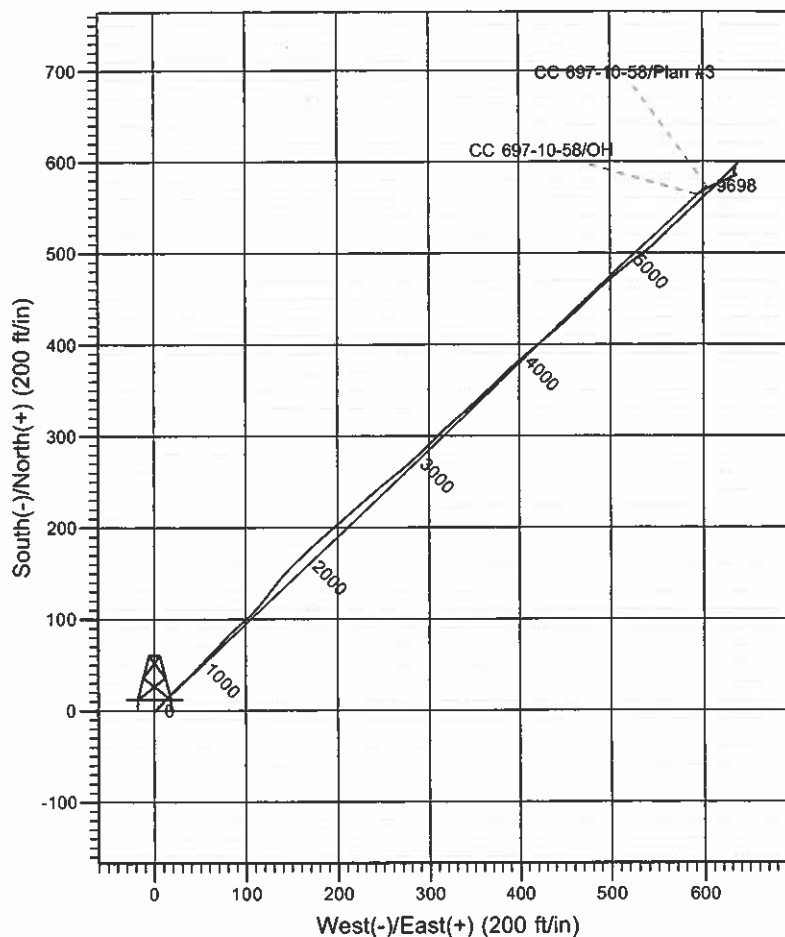
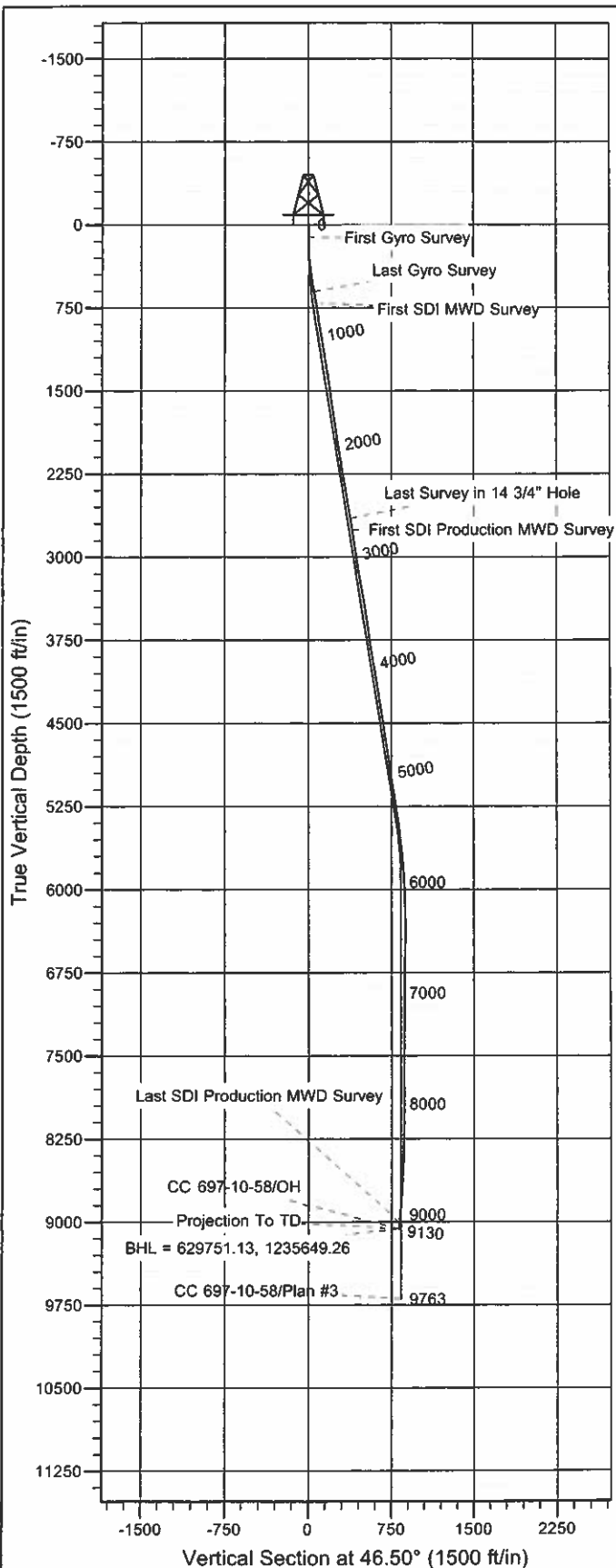
Standard Survey Report

19 November, 2010



Scientific Drilling
Rocky Mountain Operations

Company: OXY USA RMAT
Project: Garfield County, CO NAD27
Site: Cascade Creek 697-15-01 Pad
Well: CC 697-10-58
Wellbore: OH
Design: OH



Well Details: CC 697-10-58

+N/-S	+E/-W	TVD Reference: GL 8348' & RKB 30' @ 8378.00ft		Sound Level: 8348.00		Slot
0.00	0.00	Northing	Easting	Latitude	Longitude	E
		629205.53	1235039.81	39° 31' 46.683 N	108° 12' 44.375 W	

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well CC 697-10-58 - Slot E, True North
Vertical (TVD) Reference: GL 8348' & RKB 30' @ 8378.00ft
Section (VS) Reference: Slot - E(0.00N, 0.00E)
Measured Depth Reference: GL 8348' & RKB 30' @ 8378.00ft
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

9:55, November 19 2010
Created By: Rex Hall

Scientific Drilling International

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-10-58 - Slot E
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8348' & RKB 30' @ 8378.00ft
Site:	Cascade Creek 697-15-01 Pad	MD Reference:	GL 8348' & RKB 30' @ 8378.00ft
Well:	CC 697-10-58	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies-R5000.1

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 697-15-01 Pad, Sec 15 T6S R97W		
Site Position:		Northing:	629,156.97 usft
From:	Map	Easting:	1,234,961.93 usft
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in
		Latitude:	39° 31' 46.180 N
		Longitude:	108° 12' 45.350 W
		Grid Convergence:	-1.71 °

Well	CC 697-10-58 - Slot E, 244' FNL 668' FWL		
Well Position	+N/-S	0.00 ft	Northing: 629,205.53 usft
	+E/-W	0.00 ft	Easting: 1,235,039.81 usft
Position Uncertainty	0.00 ft	Wellhead Elevation:	ft
		Latitude:	39° 31' 46.683 N
		Longitude:	108° 12' 44.375 W
		Ground Level:	8,348.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2005-10	9/17/2010	10.52	65.76	52,326

Design	OH				
Audit Notes:	0.00				
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	46.50	

Survey Program	Date	11/18/2010			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
112.00	606.00	Survey #1 - Surface Gyro (OH)	Standard Keeper 103	Standard Wireline Keeper ver 1.0.3	
712.00	2,681.00	Survey #2 - Surface MWD (OH)	MWD-SDI	MWD - Standard ISCWSA	
2,786.00	9,130.00	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	
112.00	0.61	158.04	112.00	-0.55	0.22	-0.22	0.54	0.54	0.00	
First Gyro Survey										
143.00	0.70	99.86	143.00	-0.74	0.47	-0.17	2.07	0.29	-187.68	
173.00	1.40	71.54	172.99	-0.65	1.00	0.27	2.84	2.33	-94.40	
204.00	1.83	57.64	203.98	-0.27	1.78	1.10	1.87	1.39	-44.84	
235.00	2.94	52.41	234.95	0.48	2.82	2.38	3.65	3.58	-16.87	
266.00	3.82	38.97	265.90	1.77	4.10	4.19	3.80	2.84	-43.35	
296.00	4.58	39.14	295.82	3.47	5.49	6.37	2.53	2.53	0.57	

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Survey Report

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Project:	Garfield County, CO NAD27	TVD Reference:	GL 8348' & RKB 30' @ 8378.00ft
Site:	Cascade Creek 697-15-01 Pad	MD Reference:	GL 8348' & RKB 30' @ 8378.00ft
Well:	CC 697-10-58	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies-R5000.1

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)
327.00	5.35	37.87	326.70	5.58	7.16	9.03	2.51	2.48	-4.10
358.00	6.06	40.01	357.55	7.97	9.10	12.08	2.39	2.29	6.90
389.00	6.47	39.32	388.36	10.57	11.26	15.44	1.34	1.32	-2.23
420.00	6.93	43.02	419.15	13.29	13.64	19.04	2.03	1.48	11.94
450.00	7.72	44.75	448.90	16.05	16.29	22.86	2.73	2.63	5.77
481.00	8.44	44.59	479.60	19.15	19.35	27.22	2.32	2.32	-0.52
543.00	9.51	46.55	540.84	25.91	26.27	36.89	1.79	1.73	3.16
606.00	9.87	47.33	602.94	33.15	34.02	47.49	0.61	0.57	1.24
Last Gyro Survey									
712.00	9.41	44.36	707.44	45.50	46.75	65.23	0.64	-0.43	-2.80
First SDI MWD Survey									
804.00	8.71	43.04	798.29	55.97	56.77	79.70	0.79	-0.76	-1.43
899.00	9.23	43.75	892.13	66.73	66.94	94.49	0.56	0.55	0.75
993.00	10.29	42.78	984.77	78.34	77.86	110.40	1.14	1.13	-1.03
1,088.00	9.06	48.23	1,078.42	89.55	89.20	126.35	1.61	-1.29	5.74
1,182.00	9.67	49.28	1,171.17	99.63	100.71	141.63	0.67	0.65	1.12
1,277.00	8.97	40.58	1,264.92	110.46	111.57	156.97	1.65	-0.74	-9.16
1,371.00	9.50	38.39	1,357.70	122.11	121.16	171.94	0.68	0.56	-2.33
1,466.00	8.44	36.89	1,451.53	133.83	130.21	186.57	1.14	-1.12	-1.58
1,560.00	8.53	39.09	1,544.51	144.76	138.75	200.29	0.36	0.10	2.34
1,655.00	8.53	43.92	1,638.46	155.30	148.08	214.31	0.75	0.00	5.08
1,750.00	8.44	46.65	1,732.42	165.16	158.03	228.32	0.43	-0.09	2.87
1,844.00	7.74	47.35	1,825.48	174.18	167.71	241.55	0.75	-0.74	0.74
1,939.00	8.79	46.73	1,919.49	183.49	177.70	255.20	1.11	1.11	-0.65
2,033.00	9.23	49.02	2,012.33	193.36	188.62	269.92	0.60	0.47	2.44
2,127.00	8.97	49.28	2,105.15	203.09	199.86	284.77	0.28	-0.28	0.28
2,222.00	9.32	47.00	2,198.94	213.16	211.10	299.86	0.53	0.37	-2.40
2,317.00	10.29	49.28	2,292.55	223.95	223.16	316.03	1.10	1.02	2.40
2,411.00	10.02	50.51	2,385.08	234.62	235.83	332.57	0.37	-0.29	1.31
2,506.00	9.76	48.40	2,478.67	245.22	248.23	348.86	0.47	-0.27	-2.22
2,600.00	9.50	52.45	2,571.35	255.24	260.34	364.54	0.77	-0.28	4.31
2,681.00	9.23	48.93	2,651.27	263.58	270.54	377.68	0.78	-0.33	-4.35
Last Survey in 14 3/4" Hole									
2,786.00	9.06	48.57	2,754.93	274.59	283.08	394.36	0.17	-0.16	-0.34
First SDI Production MWD Survey									
2,881.00	8.09	46.37	2,848.87	284.15	293.53	408.52	1.08	-1.02	-2.32
2,975.00	8.44	44.88	2,941.89	293.60	303.19	422.03	0.44	0.37	-1.59
3,070.00	8.71	45.85	3,035.83	303.55	313.27	436.19	0.32	0.28	1.02
3,164.00	10.82	49.01	3,128.46	314.30	325.04	452.12	2.32	2.24	3.36
3,259.00	10.29	49.27	3,221.86	325.68	338.20	469.50	0.56	-0.56	0.27
3,353.00	9.32	49.01	3,314.48	336.15	350.30	485.49	1.03	-1.03	-0.28
3,448.00	10.29	45.23	3,408.09	347.18	362.13	501.66	1.22	1.02	-3.98
3,542.00	8.79	46.99	3,500.79	357.99	373.35	517.24	1.63	-1.60	1.87
3,639.00	7.91	46.28	3,596.76	367.66	383.59	531.33	0.91	-0.91	-0.73

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Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-10-58 - Slot E
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8348' & RKB 30' @ 8378.00ft
Site:	Cascade Creek 697-15-01 Pad	MD Reference:	GL 8348' & RKB 30' @ 8378.00ft
Well:	CC 697-10-58	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies-R5000.1

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)
3,733.00	8.53	49.62	3,689.80	376.64	393.58	544.75	0.83	0.66	3.55
3,828.00	9.23	49.10	3,783.66	386.20	404.70	559.40	0.74	0.74	-0.55
3,923.00	8.53	50.06	3,877.52	395.71	415.86	574.04	0.75	-0.74	1.01
4,017.00	9.41	49.89	3,970.37	405.13	427.09	588.67	0.94	0.94	-0.18
4,112.00	9.23	50.68	4,064.11	414.97	438.92	604.02	0.23	-0.19	0.83
4,206.00	8.79	50.50	4,156.95	424.31	450.29	618.71	0.47	-0.47	-0.19
4,301.00	9.67	45.49	4,250.73	434.52	461.58	633.93	1.25	0.93	-5.27
4,395.00	9.23	45.23	4,343.45	445.37	472.57	649.36	0.47	-0.47	-0.28
4,490.00	8.88	45.49	4,437.27	455.87	483.20	664.31	0.37	-0.37	0.27
4,584.00	8.97	49.36	4,530.13	465.73	493.94	678.88	0.65	0.10	4.12
4,679.00	9.50	50.15	4,623.90	475.58	505.58	694.10	0.57	0.56	0.83
4,774.00	7.91	48.92	4,717.80	484.90	516.52	708.46	1.69	-1.67	-1.29
4,868.00	7.47	52.79	4,810.95	492.84	526.27	720.99	0.72	-0.47	4.12
4,962.00	8.71	52.17	4,904.02	500.90	536.76	734.15	1.32	1.32	-0.66
5,057.00	9.41	45.05	4,997.83	510.80	547.93	749.07	1.39	0.74	-7.49
5,151.00	9.94	46.02	5,090.50	521.87	559.21	764.87	0.59	0.56	1.03
5,246.00	9.23	46.20	5,184.17	532.83	570.61	780.68	0.75	-0.75	0.19
5,341.00	8.62	46.11	5,278.02	543.04	581.24	795.42	0.64	-0.64	-0.09
5,435.00	7.83	45.93	5,371.05	552.38	590.92	808.87	0.84	-0.84	-0.19
5,530.00	7.12	47.25	5,465.24	560.88	599.89	821.23	0.77	-0.75	1.39
5,624.00	6.51	46.64	5,558.58	568.49	608.04	832.38	0.65	-0.65	-0.65
5,718.00	6.07	47.51	5,652.01	575.51	615.58	842.68	0.48	-0.47	0.93
5,813.00	5.19	46.11	5,746.55	581.88	622.38	852.00	0.94	-0.93	-1.47
5,907.00	3.69	42.68	5,840.27	587.05	627.50	859.27	1.62	-1.60	-3.65
6,002.00	2.90	44.88	5,935.11	591.00	631.26	864.72	0.84	-0.83	2.32
6,097.00	2.64	52.52	6,030.00	594.03	634.70	869.30	0.47	-0.27	8.04
6,191.00	1.14	37.32	6,123.95	596.09	636.98	872.37	1.67	-1.60	-16.17
6,286.00	0.70	57.53	6,218.94	597.16	638.04	873.88	0.57	-0.46	21.27
6,380.00	0.44	346.87	6,312.93	597.82	638.45	874.62	0.74	-0.28	-75.17
6,475.00	0.00	175.04	6,407.93	598.17	638.36	874.81	0.46	-0.46	0.00
6,569.00	0.79	221.36	6,501.93	597.69	637.93	874.16	0.84	0.84	0.00
6,664.00	0.79	244.39	6,596.92	596.91	636.91	872.89	0.33	0.00	24.24
6,758.00	1.23	210.38	6,690.90	595.76	635.82	871.30	0.77	0.47	-36.18
6,853.00	0.62	178.47	6,785.89	594.37	635.32	869.98	0.82	-0.64	-33.59
6,947.00	0.88	202.55	6,879.88	593.19	635.05	868.98	0.43	0.28	25.62
7,042.00	0.62	163.00	6,974.88	592.03	634.92	868.08	0.59	-0.27	-41.63
7,136.00	0.88	174.78	7,068.87	590.82	635.14	867.41	0.32	0.28	12.53
7,231.00	1.14	208.79	7,163.85	589.27	634.75	866.05	0.67	0.27	35.80
7,325.00	1.23	189.63	7,257.84	587.45	634.13	864.36	0.43	0.10	-20.38
7,420.00	0.79	99.90	7,352.82	586.33	634.60	863.93	1.54	-0.46	-94.45
7,515.00	0.53	110.71	7,447.82	586.07	635.68	864.51	0.30	-0.27	11.38
7,609.00	0.62	153.51	7,541.81	585.46	636.29	864.55	0.46	0.10	45.53
7,704.00	0.79	200.27	7,636.81	584.38	636.30	863.82	0.61	0.18	49.22

Scientific Drilling International

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-10-58 - Slot E
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8348' & RKB 30' @ 8378.00ft
Site:	Cascade Creek 697-15-01 Pad	MD Reference:	GL 8348' & RKB 30' @ 8378.00ft
Well:	CC 697-10-58	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies-R5000.1

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)
7,798.00	0.53	11.13	7,730.81	584.20	636.15	863.59	1.40	-0.28	181.77
7,893.00	0.62	36.18	7,825.80	585.05	636.54	864.45	0.28	0.09	26.37
7,987.00	0.18	33.01	7,919.80	585.58	636.92	865.10	0.47	-0.47	-3.37
8,082.00	0.44	260.30	8,014.80	585.65	636.65	864.94	0.61	0.27	-139.69
8,177.00	0.44	226.55	8,109.79	585.33	636.02	864.27	0.27	0.00	-35.53
8,271.00	0.79	250.01	8,203.79	584.86	635.15	863.32	0.45	0.37	24.96
8,365.00	1.41	234.19	8,297.77	583.97	633.60	861.58	0.73	0.66	-16.83
8,460.00	1.93	243.86	8,392.73	582.58	631.22	858.89	0.62	0.55	10.18
8,555.00	2.55	243.16	8,487.66	580.92	627.90	855.34	0.65	0.65	-0.74
8,649.00	3.08	241.49	8,581.54	578.77	623.81	850.90	0.57	0.56	-1.78
8,744.00	3.69	248.87	8,676.38	576.45	618.72	845.60	0.79	0.64	7.77
8,838.00	4.13	252.12	8,770.16	574.32	612.68	839.75	0.52	0.47	3.46
8,933.00	4.22	240.43	8,864.91	571.54	606.38	833.28	0.90	0.09	-12.31
9,027.00	4.48	238.76	8,958.64	567.93	600.23	826.33	0.31	0.28	-1.78
9,073.00	4.84	239.29	9,004.49	566.01	597.03	822.68	0.79	0.78	1.15
Last SDI Production MWD Survey									
9,130.00	4.84	239.29	9,061.28	563.55	592.89	817.99	0.00	0.00	0.00
BHL = 629751.13, 1235649.26 - Projection To TD									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
112.00	112.00	-0.55	0.22	First Gyro Survey
606.00	602.94	33.15	34.02	Last Gyro Survey
712.00	707.44	45.50	46.75	First SDI MWD Survey
2,681.00	2,651.27	263.58	270.54	Last Survey in 14 3/4" Hole
2,786.00	2,754.93	274.59	283.08	First SDI Production MWD Survey
9,073.00	9,004.49	566.01	597.03	Last SDI Production MWD Survey
9,130.00	9,061.28	563.55	592.89	BHL = 629751.13, 1235649.26
9,130.00	9,061.28	563.55	592.89	Projection To TD

Checked By: _____	Approved By: _____	Date: _____
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