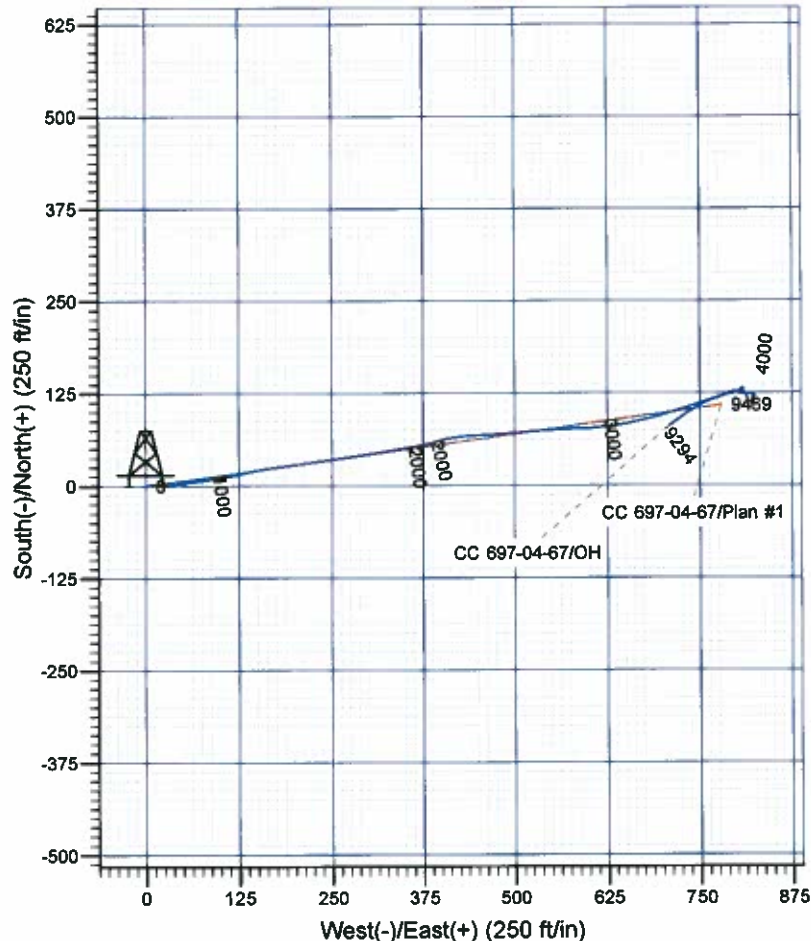
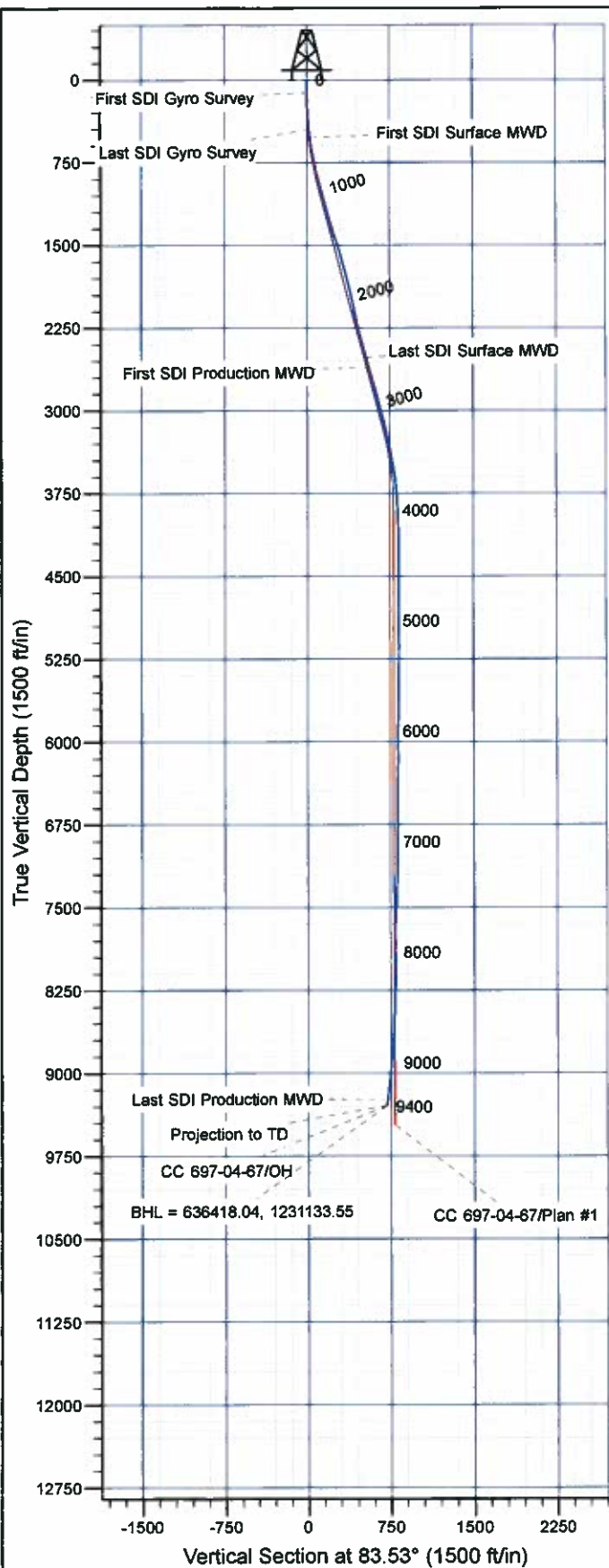




**Scientific Drilling**  
Rocky Mountain Operations

Company: OXY USA RMAT  
Project: Garfield County, CO NAD27  
Site: Cascade Creek 697-04D Pad  
Well: CC 697-04-67  
Wellbore: OH  
Design: OH



#### Well Details: CC 697-04-67

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	636358.91	1230422.09	39° 32' 55.986 N	106° 13' 48.025 W	C

#### REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well CC 697-04-67 - Slot C, True North  
Vertical (TVD) Reference: GL 8629' & RKB 30' @ 8659.00ft (H&P)  
Section (VS) Reference: Slot - C(0.00N, 0.00E)  
Measured Depth Reference: GL 8629' & RKB 30' @ 8659.00ft (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

10:27, April 24 2012  
Created By: Janie Cooke

# **OXY USA RMAT**

**Garfield County, CO NAD27  
Cascade Creek 697-04D Pad  
CC 697-04-67 - Slot C**

**OH**

**Design: OH**

## **Standard Survey Report**

**24 April, 2012**



**Scientific Drilling International, Inc.**  
Survey Report



<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-04-67 - Slot C
<b>Project:</b>	Garfield County, CO NAD27	<b>TVD Reference:</b>	GL 8629' & RKB 30' @ 8659.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-04D Pad	<b>MD Reference:</b>	GL 8629' & RKB 30' @ 8659.00ft (H&P)
<b>Well:</b>	CC 697-04-67	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Rockies Compass Server

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

<b>Site</b>	Cascade Creek 697-04D Pad			
<b>Site Position:</b>		<b>Northing:</b>	635,530.62 usft	<b>Latitude:</b> 39° 32' 47.760 N
<b>From:</b>	Map	<b>Easting:</b>	1,230,276.10 usft	<b>Longitude:</b> 108° 13' 47.570 W
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b> -1.72 °

<b>Well</b>	CC 697-04-67 - Slot C			
<b>Well Position</b>	+N/-S	0.00 ft	<b>Northing:</b> 636,358.91 usft	<b>Latitude:</b> 39° 32' 55.986 N
	+E/-W	0.00 ft	<b>Easting:</b> 1,230,422.09 usft	<b>Longitude:</b> 108° 13' 46.025 W
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>	<b>Ground Level:</b> 8,629.00 ft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2005-10	03/23/2011	10.47	65.76	52,283

<b>Design</b>	OH				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00		83.53

<b>Survey Program</b>	<b>Date</b>	04/24/2012			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
117.00	447.00	Survey #1 - Gyro Survey (OH)	SDI Standard Keeper 103	SDI Standard Wireline Keeper ver 1.0.3	
522.00	2,583.00	Survey #2 - Surface MWD (OH)	MWD-SDI	MWD - Standard  SCWSA	
2,678.00	9,400.00	Survey #3 - Production MWD (OH)	MWD-SDI	MWD - Standard  SCWSA	

<b>Survey</b>									
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
117.00	0.62	80.42	117.00	0.11	0.62	0.63	0.53	0.53	0.00
<b>First SDI Gyro Survey</b>									
172.00	1.41	81.21	171.99	0.26	1.59	1.61	1.44	1.44	1.44
264.00	2.20	78.49	263.94	0.78	4.44	4.50	0.86	0.86	-2.96
356.00	3.34	91.41	355.83	1.07	8.85	8.91	1.41	1.24	14.04
447.00	5.45	89.91	446.56	1.01	15.82	15.83	2.32	2.32	-1.65
<b>Last SDI Gyro Survey</b>									

# Scientific Drilling International, Inc.

## Survey Report



<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-04-67 - Slot C
<b>Project:</b>	Garfield County, CO NAD27	<b>TVD Reference:</b>	GL 8629' & RKB 30' @ 8659.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-04D Pad	<b>MD Reference:</b>	GL 8629' & RKB 30' @ 8659.00ft (H&P)
<b>Well:</b>	CC 697-04-67	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	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)
522.00	7.83	91.93	521.05	0.85	24.49	24.43	3.19	3.17	2.69
<b>First SDI Surface MWD</b>									
613.00	10.11	84.20	610.94	1.44	38.63	38.55	2.83	2.51	-8.49
703.00	11.34	81.39	699.36	3.57	55.24	55.29	1.48	1.37	-3.12
792.00	12.66	81.65	786.42	6.29	73.54	73.78	1.48	1.48	0.29
883.00	15.04	81.47	874.77	9.49	95.09	95.55	2.62	2.62	-0.20
973.00	15.56	78.75	961.58	13.58	118.47	119.25	0.98	0.58	-3.02
1,067.00	15.30	76.02	1,052.19	19.04	142.87	144.11	0.82	-0.28	-2.90
1,162.00	14.51	82.18	1,144.00	23.68	166.83	166.43	1.86	-0.83	6.48
1,257.00	16.80	82.26	1,235.47	27.15	192.23	194.06	2.41	2.41	0.08
1,352.00	16.88	82.09	1,326.39	30.90	219.49	221.58	0.10	0.08	-0.18
1,446.00	17.15	81.74	1,416.28	34.77	246.72	249.07	0.31	0.29	-0.37
1,541.00	18.99	82.00	1,506.59	38.93	275.89	278.52	1.94	1.94	0.27
1,636.00	15.65	81.91	1,597.27	42.89	303.89	306.79	3.52	-3.52	-0.09
1,730.00	14.77	80.33	1,687.98	46.68	328.26	331.43	1.03	-0.94	-1.68
1,825.00	16.00	80.68	1,779.57	50.84	353.12	356.60	1.30	1.29	0.37
1,920.00	13.72	78.13	1,871.39	55.28	377.07	380.89	2.50	-2.40	-2.68
2,015.00	12.75	74.53	1,963.87	60.39	398.20	402.47	1.34	-1.02	-3.79
2,109.00	11.61	81.03	2,055.75	64.63	417.54	422.16	1.90	-1.21	6.91
2,204.00	11.70	85.96	2,148.80	66.80	436.59	441.34	1.05	0.09	5.19
2,299.00	13.19	87.27	2,241.56	68.00	457.02	461.78	1.60	1.57	1.38
2,393.00	15.65	85.43	2,332.59	69.52	480.38	485.15	2.66	2.62	-1.96
2,488.00	15.56	86.22	2,424.09	71.38	505.87	510.69	0.24	-0.09	0.83
2,583.00	15.65	85.60	2,515.59	73.20	531.36	536.22	0.20	0.09	-0.65
<b>Last SDI Surface MWD</b>									
2,678.00	15.65	85.78	2,607.07	75.13	556.91	561.83	0.05	0.00	0.19
<b>First SDI Production MWD</b>									
2,714.00	15.39	86.75	2,641.76	75.76	566.52	571.45	1.02	-0.72	2.69
2,776.00	15.65	88.99	2,701.50	76.37	583.10	587.99	1.05	0.42	3.61
2,871.00	16.00	85.56	2,792.90	77.61	608.96	613.83	1.05	0.37	-3.61
2,966.00	16.18	81.96	2,884.18	80.47	635.12	640.15	1.07	0.19	-3.79
3,060.00	15.83	77.83	2,974.54	85.01	660.63	666.00	1.27	-0.37	-4.39
3,155.00	14.51	75.72	3,066.22	90.88	684.83	690.68	1.51	-1.39	-2.22
3,250.00	12.72	72.21	3,158.55	96.81	706.32	712.73	2.07	-1.88	-3.69
3,344.00	12.22	73.61	3,250.34	102.78	725.72	732.68	0.62	-0.53	1.49
3,439.00	10.90	71.06	3,343.41	108.53	743.86	751.35	1.49	-1.39	-2.68
3,534.00	10.99	71.59	3,436.68	114.31	760.95	768.98	0.14	0.09	0.56
3,628.00	9.15	71.77	3,529.23	119.47	776.55	785.07	1.96	-1.96	0.19
3,723.00	7.21	77.74	3,623.26	123.10	789.55	798.40	2.23	-2.04	6.28
3,818.00	5.54	89.70	3,717.67	124.39	799.96	808.89	2.24	-1.76	12.59
3,912.00	3.34	99.28	3,811.38	123.98	807.20	816.03	2.46	-2.34	10.19
4,007.00	2.90	94.00	3,906.24	123.36	812.33	821.06	0.55	-0.46	-5.56
4,102.00	2.73	96.20	4,001.13	122.95	816.98	825.63	0.21	-0.18	2.32
4,197.00	1.58	92.07	4,096.06	122.66	820.54	829.13	1.22	-1.21	-4.35



# Scientific Drilling International, Inc.

## Survey Report



<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-04-67 - Slot C
<b>Project:</b>	Garfield County, CO NAD27	<b>TVD Reference:</b>	GL 8629' & RKB 30' @ 8659.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-04D Pad	<b>MD Reference:</b>	GL 8629' & RKB 30' @ 8659.00ft (H&P)
<b>Well:</b>	CC 697-04-67	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	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)
4,291.00	1.58	106.31	4,190.02	122.25	823.08	831.61	0.42	0.00	15.15
4,386.00	0.88	198.68	4,285.01	121.19	824.10	832.51	1.94	-0.74	97.23
4,481.00	0.62	187.08	4,380.00	119.99	823.80	832.08	0.32	-0.27	-12.21
4,575.00	0.70	217.22	4,474.00	119.02	823.39	831.56	0.37	0.09	32.06
4,670.00	0.62	219.86	4,568.99	118.17	822.71	830.79	0.09	-0.08	2.78
4,765.00	0.79	204.83	4,663.98	117.18	822.11	830.08	0.26	0.18	-15.82
4,859.00	0.26	154.82	4,757.98	116.40	821.93	829.81	0.70	-0.56	-53.20
4,954.00	0.35	197.54	4,852.98	115.93	821.93	829.76	0.25	0.09	44.97
5,049.00	0.44	262.22	4,947.97	115.60	821.48	829.28	0.45	0.09	68.08
5,144.00	2.81	33.27	5,042.94	117.50	822.40	830.40	3.28	2.49	137.95
5,238.00	0.88	202.81	5,136.91	118.76	823.38	831.52	3.91	-2.05	180.36
5,333.00	1.76	194.11	5,231.88	116.67	822.74	830.65	0.95	0.93	-9.16
5,428.00	1.06	212.30	5,326.85	114.51	821.92	829.59	0.87	-0.74	19.15
5,522.00	1.32	239.99	5,420.84	113.24	820.52	828.05	0.66	0.28	29.46
5,617.00	1.49	240.87	5,515.81	112.09	818.49	825.91	0.18	0.18	0.93
5,712.00	1.06	316.80	5,610.79	112.13	816.81	824.24	1.69	-0.45	79.93
5,806.00	1.32	337.63	5,704.77	113.76	815.80	823.43	0.53	0.28	22.16
5,901.00	1.41	332.62	5,799.74	115.81	814.85	822.71	0.16	0.09	-5.27
5,995.00	1.58	339.74	5,893.71	118.06	813.87	821.99	0.27	0.18	7.57
6,090.00	1.67	332.62	5,988.67	120.51	812.78	821.18	0.23	0.09	-7.49
6,185.00	1.41	319.53	6,083.64	122.63	811.38	820.03	0.46	-0.27	-13.78
6,279.00	1.14	336.67	6,177.61	124.37	810.26	819.12	0.49	-0.29	18.23
6,374.00	0.79	333.06	6,272.60	125.82	809.59	818.61	0.37	-0.37	-3.80
6,468.00	1.14	319.44	6,366.59	127.11	808.69	817.86	0.44	0.37	-14.49
6,563.00	1.06	355.12	6,461.57	128.70	808.00	817.36	0.71	-0.08	37.56
6,657.00	0.79	19.12	6,555.56	130.18	808.14	817.66	0.50	-0.29	25.53
6,752.00	0.35	7.25	6,650.55	131.09	808.39	818.01	0.48	-0.46	-12.49
6,846.00	0.26	250.62	6,744.55	131.30	808.22	817.87	0.55	-0.10	-124.07
6,941.00	0.62	240.16	6,839.55	130.98	807.58	817.19	0.39	0.38	-11.01
7,035.00	1.67	224.78	6,933.53	129.75	806.17	815.66	1.15	1.12	-16.36
7,130.00	0.97	220.83	7,028.50	128.16	804.67	813.99	0.74	-0.74	-4.16
7,224.00	0.62	262.22	7,122.50	127.49	803.64	812.89	0.69	-0.37	44.03
7,319.00	1.06	259.24	7,217.49	127.26	802.27	811.50	0.47	0.46	-3.14
7,413.00	1.67	261.17	7,311.46	126.88	800.06	809.27	0.65	0.65	2.05
7,508.00	2.37	262.49	7,406.40	126.41	798.75	805.92	0.74	0.74	1.39
7,602.00	3.34	261.17	7,500.28	125.74	792.12	801.24	1.03	1.03	-1.40
7,697.00	3.17	245.96	7,595.13	124.24	786.98	795.97	0.92	-0.18	-16.01
7,791.00	2.11	235.33	7,689.03	122.20	783.19	791.97	1.24	-1.13	-11.31
7,886.00	0.26	36.35	7,784.01	121.38	781.87	790.57	2.48	-1.95	169.49
7,981.00	1.41	63.86	7,879.00	122.07	783.05	791.82	1.25	1.21	28.96
8,075.00	1.32	74.14	7,972.97	122.87	785.13	793.98	0.28	-0.10	10.94
8,170.00	0.35	73.87	8,067.96	123.25	786.46	795.34	1.02	-1.02	-0.28
8,265.00	1.41	242.89	8,162.95	122.80	785.70	794.54	1.85	1.12	177.92

# Scientific Drilling International, Inc.

## Survey Report



<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-04-67 - Slot C
<b>Project:</b>	Garfield County, CO NAD27	<b>TVD Reference:</b>	GL 8629' & RKB 30' @ 8659.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-04D Pad	<b>MD Reference:</b>	GL 8629' & RKB 30' @ 8659.00ft (H&P)
<b>Well:</b>	CC 697-04-67	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	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)
8,360.00	2.55	244.21	8,257.89	121.35	782.76	791.45	1.20	1.20	1.39
8,454.00	2.64	248.78	8,351.80	119.66	778.86	787.38	0.24	0.10	4.86
8,541.30	1.58	250.45	8,439.04	118.53	775.85	784.26	1.21	-1.21	1.91
<b>CC 697-04-67 Target</b>									
8,549.00	1.49	250.71	8,446.74	118.46	775.65	784.06	1.21	-1.21	3.39
8,644.00	2.64	251.85	8,541.67	117.37	772.41	780.71	1.21	1.21	1.20
8,739.00	4.22	251.85	8,636.50	115.60	767.01	775.15	1.66	1.66	0.00
8,833.00	3.69	247.20	8,730.27	113.35	760.93	768.86	0.66	-0.56	-4.95
8,928.00	3.96	242.80	8,825.06	110.66	755.19	762.86	0.42	0.28	-4.63
9,023.00	5.54	239.29	8,919.73	106.82	748.33	755.61	1.69	1.66	-3.69
9,117.00	6.77	238.32	9,013.19	101.59	739.72	746.46	1.31	1.31	-1.03
9,212.00	7.21	236.47	9,107.48	95.36	729.98	736.08	0.52	0.46	-1.95
9,307.00	7.83	233.66	9,201.67	88.23	719.80	725.16	0.76	0.65	-2.96
9,344.00	8.09	233.31	9,238.31	85.18	715.68	720.72	0.71	0.70	-0.95
<b>Last SDI Production MWD</b>									
9,400.00	8.09	233.31	9,293.75	80.47	709.36	713.91	0.00	0.00	0.00
<b>Projection to TD - BHL = 636418.04, 1231133.56</b>									

### Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
117.00	117.00	0.11	0.62	First SDI Gyro Survey
447.00	446.56	1.01	15.82	Last SDI Gyro Survey
522.00	521.05	0.85	24.49	First SDI Surface MWD
2,583.00	2,515.59	73.20	531.36	Last SDI Surface MWD
2,678.00	2,607.07	75.13	556.91	First SDI Production MWD
9,344.00	9,238.31	85.18	715.68	Last SDI Production MWD
9,400.00	9,293.75	80.47	709.36	Projection to TD
9,400.00	9,293.75	80.47	709.36	BHL = 636418.04, 1231133.55

Checked By: _____	Approved By: _____	Date: _____
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