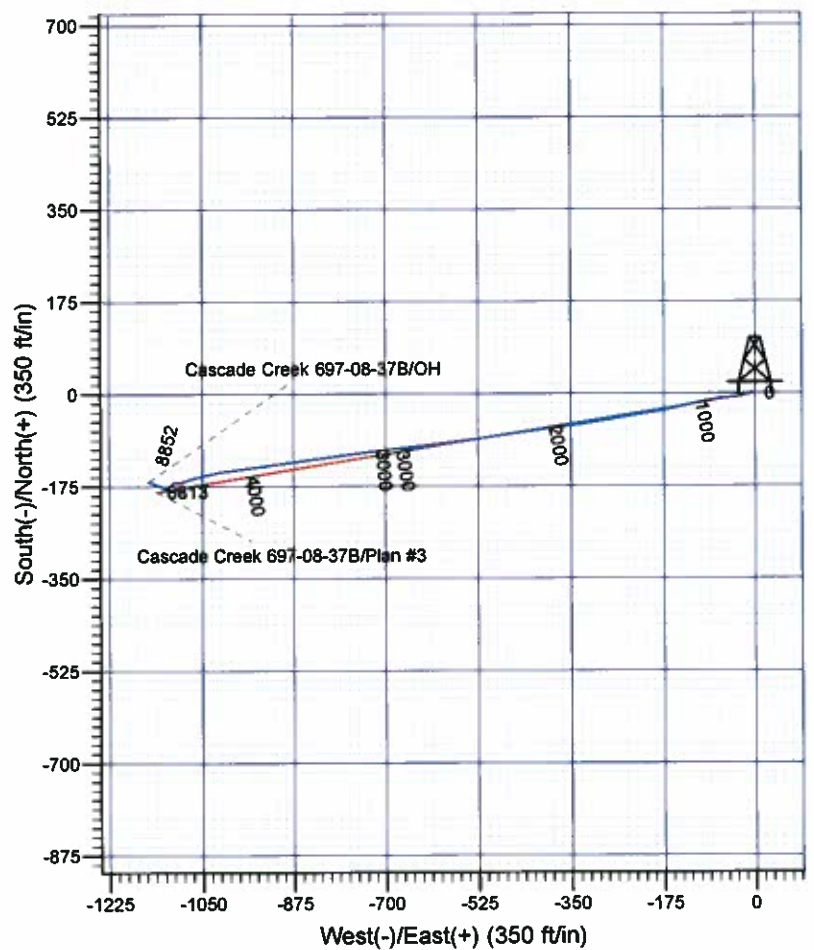
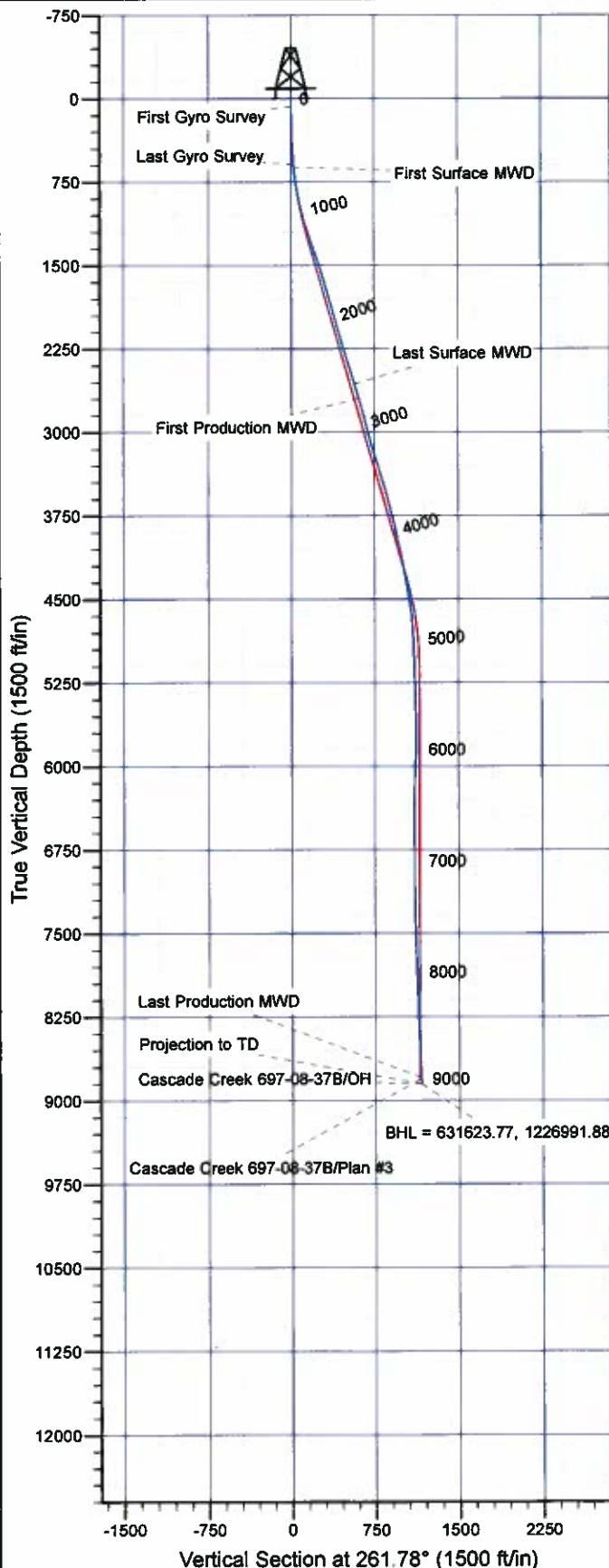




Scientific Drilling

Rocky Mountain Operations

Company: OXY USA RMA
 Project: Garfield County, CO NAD27
 Site: Cascade Creek 608-43-31 Pad
 Well: Cascade Creek 697-08-37B
 Wellbore: OH
 Design: OH





Scientific
Drilling

Directional Survey Certification

7327 West Barton Road
Casper, WY 82604
(307)-472-6621 Fax (307) 472-5439

Operator	OXY USA RMAT
Well Name & No.	Cascade Creek 697-08-37B
County & State	Garfield County, CO
SDI Job No.	42DEF1102208
Rig	H&P 330

I, Janie Cooke, having personal knowledge of all the facts, hereby
certify that the attached directional survey run from a measured depth of 0 feet to a
measured depth of 9000 feet is true and correct as determined from all available records.

Signature

21-Mar-11

Date

Janie Cooke
Grand Junction Well Planner
Scientific Drilling - Rocky Mountain District

OXY USA RMAT

Garfield County, CO NAD27

Cascade Creek 608-43-31 Pad

Cascade Creek 697-08-37B - Slot J

OH

Design: OH

Standard Survey Report

21 March, 2011

Scientific Drilling International, Inc.

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well Cascade Creek 697-08-37B - Slot J
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8479' & RKB 30' @ 8509.00ft (H&P)
Site:	Cascade Creek 608-43-31 Pad	MD Reference:	GL 8479' & RKB 30' @ 8509.00ft (H&P)
Well:	Cascade Creek 697-08-37B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	RockiesEDM-5000.1

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 608-43-31 Pad, Sec 8 T6S R97W		
Site Position:		Northing:	39.54 usft
From:	Map	Easting:	-108.24 usft
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in
		Latitude:	37° 37' 28.115 N
		Longitude:	112° 24' 37.715 W
		Grid Convergence:	-4.36 °

Well	Cascade Creek 697-08-37B - Slot J		
Well Position	+N/-S	0.00 ft	Northing: 631,755.43 usft
	+E/-W	0.00 ft	Easting: 1,228,148.05 usft
Position Uncertainty	0.00 ft	Wellhead Elevation:	ft
		Latitude:	39° 32' 9.831 N
		Longitude:	108° 14' 13.272 W
		Ground Level:	8,479.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2005-10	12/31/2009	10.63	65.78	52,395

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	261.78	

Survey Program	Date	3/21/2011			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
75.00	597.00	Survey #1 - Surface Gyro (OH)	Gyro		
619.00	2,648.00	Survey #2 - Surface MWD (OH)	MWD-SDI	MWD - Standard ISCWSA	
2,787.00	9,000.00	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	
75.00	0.34	15.76	75.00	0.21	0.06	-0.09	0.45	0.45	0.00	
First Gyro Survey										
106.00	0.29	270.05	106.00	0.30	0.01	-0.05	1.62	-0.16	-341.00	
136.00	0.80	287.00	136.00	0.36	-0.27	0.21	1.76	1.70	56.50	
167.00	1.00	295.22	166.99	0.54	-0.72	0.64	0.77	0.65	26.52	
198.00	1.74	287.59	197.98	0.80	-1.41	1.29	2.45	2.39	-24.61	
228.00	2.21	279.66	227.97	1.03	-2.42	2.25	1.81	1.57	-26.43	
259.00	2.51	272.57	258.94	1.17	-3.69	3.48	1.35	0.97	-22.87	

Scientific Drilling International, Inc.

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well Cascade Creek 697-08-37B - Slot J
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8479' & RKB 30' @ 8509.00ft (H&P)
Site:	Cascade Creek 608-43-31 Pad	MD Reference:	GL 8479' & RKB 30' @ 8509.00ft (H&P)
Well:	Cascade Creek 697-08-37B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	RockiesEDM-5000.1

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)	
290.00	2.57	274.28	289.91	1.25	-5.06	4.83	0.31	0.19	5.52	
321.00	2.51	265.12	320.88	1.24	-6.43	6.18	1.32	-0.19	-29.55	
351.00	2.48	256.35	350.85	1.03	-7.71	7.48	1.28	-0.10	-29.23	
382.00	2.36	265.41	381.82	0.82	-9.00	8.79	1.29	-0.39	29.23	
413.00	2.44	276.89	412.80	0.85	-10.29	10.06	1.57	0.26	37.03	
444.00	2.28	280.32	443.77	1.04	-11.55	11.29	0.69	-0.52	11.06	
474.00	2.28	271.68	473.75	1.17	-12.74	12.44	1.14	0.00	-28.80	
505.00	2.80	247.52	504.72	0.89	-14.05	13.78	3.80	1.68	-77.94	
536.00	4.15	234.62	535.66	-0.04	-15.67	15.51	5.01	4.35	-41.61	
567.00	5.37	237.01	566.55	-1.48	-17.80	17.83	3.99	3.94	7.71	
597.00	6.30	241.59	596.40	-3.03	-20.42	20.65	3.46	3.10	15.27	
Last Gyro Survey										
619.00	7.00	250.41	618.25	-4.06	-22.75	23.09	5.62	3.18	40.09	
First Surface MWD										
711.00	7.83	263.72	709.49	-6.62	-34.26	34.85	2.07	0.90	14.47	
803.00	8.27	268.21	800.58	-7.51	-47.10	47.69	0.83	0.48	4.88	
897.00	11.17	263.64	893.22	-8.73	-62.91	63.51	3.19	3.09	-4.86	
989.00	13.54	259.68	983.09	-11.65	-82.37	83.19	2.73	2.58	-4.30	
1,083.00	15.74	258.27	1,074.03	-16.21	-105.68	106.91	2.37	2.34	-1.50	
1,177.00	18.47	256.96	1,163.86	-22.17	-132.67	134.48	2.93	2.90	-1.39	
1,272.00	19.17	257.39	1,253.78	-28.97	-162.56	165.03	0.75	0.74	0.45	
1,367.00	18.47	260.21	1,343.71	-34.93	-192.61	195.62	1.21	-0.74	2.97	
1,462.00	19.26	260.12	1,433.60	-40.18	-222.87	226.33	0.83	0.83	-0.09	
1,557.00	19.17	260.38	1,523.31	-45.47	-253.69	257.58	0.13	-0.09	0.27	
1,651.00	16.09	261.09	1,612.88	-50.07	-281.78	286.04	3.28	-3.28	0.76	
1,746.00	16.80	259.06	1,704.00	-54.72	-308.27	312.92	0.96	0.75	-2.14	
1,841.00	15.48	262.40	1,795.25	-59.00	-334.31	339.31	1.70	-1.39	3.52	
1,935.00	15.83	263.90	1,885.77	-62.02	-359.50	364.67	0.57	0.37	1.60	
2,030.00	15.65	262.05	1,977.21	-65.17	-385.07	390.43	0.56	-0.19	-1.95	
2,125.00	15.83	261.53	2,068.64	-68.85	-410.58	416.20	0.24	0.19	-0.55	
2,220.00	16.44	262.49	2,159.90	-72.52	-436.72	442.60	0.70	0.64	1.01	
2,314.00	16.88	261.97	2,249.96	-76.16	-463.42	469.55	0.49	0.47	-0.55	
2,409.00	17.76	260.65	2,340.65	-80.44	-491.38	497.83	1.01	0.93	-1.39	
2,504.00	18.99	261.61	2,430.80	-85.05	-520.96	527.77	1.33	1.29	1.01	
2,599.00	17.67	263.99	2,520.98	-88.82	-550.60	557.64	1.60	-1.39	2.51	
2,648.00	16.71	263.46	2,567.79	-90.40	-564.99	572.11	1.99	-1.96	-1.08	
Last Surface MWD										
2,787.00	16.27	263.10	2,701.07	-95.01	-604.17	611.55	0.32	-0.32	-0.26	
First Production MWD										
2,882.00	16.09	262.48	2,792.31	-98.33	-630.44	638.02	0.26	-0.19	-0.65	
2,977.00	14.51	261.43	2,883.94	-101.83	-655.26	663.09	1.69	-1.66	-1.11	
3,071.00	14.42	265.21	2,974.96	-104.56	-678.57	686.55	1.01	-0.10	4.02	
3,166.00	14.86	264.42	3,066.88	-106.73	-702.48	710.52	0.51	0.46	-0.83	
3,261.00	16.36	263.27	3,158.37	-109.49	-727.89	736.07	1.61	1.58	-1.21	

Scientific Drilling International, Inc.

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well Cascade Creek 697-08-37B - Slot J
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8479' & RKB 30' @ 8509.00ft (H&P)
Site:	Cascade Creek 608-43-31 Pad	MD Reference:	GL 8479' & RKB 30' @ 8509.00ft (H&P)
Well:	Cascade Creek 697-08-37B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	RockiesEDM-5000.1

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)	
3,356.00	17.94	262.92	3,249.15	-112.86	-755.70	764.07	1.67	1.66	-0.37	
3,450.00	17.50	261.60	3,338.69	-116.71	-784.05	792.68	0.63	-0.47	-1.40	
3,545.00	16.88	262.57	3,429.44	-120.58	-811.86	820.75	0.72	-0.65	1.02	
3,640.00	16.36	261.60	3,520.47	-124.32	-838.77	847.93	0.62	-0.55	-1.02	
3,734.00	15.48	262.22	3,610.87	-127.95	-864.29	873.71	0.95	-0.94	0.66	
3,829.00	14.51	262.48	3,702.63	-131.22	-888.65	898.29	1.02	-1.02	0.27	
3,924.00	13.54	262.66	3,794.80	-134.20	-911.48	921.31	1.02	-1.02	0.19	
4,019.00	12.66	262.83	3,887.33	-136.92	-932.84	942.84	0.93	-0.93	0.18	
4,113.00	12.40	262.57	3,979.09	-139.51	-953.07	963.23	0.28	-0.28	-0.28	
4,208.00	11.87	261.96	4,071.96	-142.20	-972.86	983.20	0.57	-0.56	-0.64	
4,303.00	11.34	262.39	4,165.02	-144.80	-991.79	1,002.31	0.57	-0.56	0.45	
4,397.00	10.55	262.75	4,257.31	-147.11	-1,009.49	1,020.15	0.84	-0.84	0.38	
4,492.00	10.02	257.91	4,350.79	-149.94	-1,026.20	1,037.09	1.07	-0.56	-5.09	
4,587.00	9.15	257.30	4,444.46	-153.33	-1,041.65	1,052.87	0.92	-0.92	-0.64	
4,682.00	8.71	256.24	4,538.31	-156.70	-1,056.00	1,067.56	0.49	-0.46	-1.12	
4,777.00	7.12	253.43	4,632.40	-160.09	-1,068.63	1,080.55	1.72	-1.67	-2.96	
4,871.00	4.92	251.76	4,725.87	-163.02	-1,078.05	1,090.28	2.35	-2.34	-1.78	
4,966.00	2.81	247.10	4,820.65	-165.20	-1,084.06	1,096.54	2.24	-2.22	-4.91	
5,060.00	1.67	259.14	4,914.58	-166.35	-1,087.53	1,100.14	1.31	-1.21	12.81	
5,155.00	1.76	266.88	5,009.54	-166.69	-1,090.35	1,102.98	0.26	0.09	8.15	
5,249.00	1.93	268.20	5,103.49	-166.82	-1,093.37	1,105.99	0.19	0.18	1.40	
5,344.00	1.67	273.03	5,198.44	-166.80	-1,096.35	1,108.94	0.32	-0.27	5.08	
5,439.00	1.85	269.16	5,293.40	-166.75	-1,099.27	1,111.81	0.23	0.19	-4.07	
5,533.00	1.93	268.02	5,387.35	-166.82	-1,102.37	1,114.89	0.09	0.09	-1.21	
5,628.00	1.32	217.22	5,482.31	-167.75	-1,104.63	1,117.26	1.58	-0.64	-53.47	
5,723.00	1.23	208.87	5,577.29	-169.51	-1,105.78	1,118.66	0.22	-0.09	-8.79	
5,817.00	1.32	222.14	5,671.27	-171.20	-1,106.99	1,120.10	0.33	0.10	14.12	
5,912.00	1.14	160.79	5,766.25	-172.90	-1,107.42	1,120.76	1.33	-0.19	-64.58	
6,007.00	3.17	112.54	5,861.18	-174.80	-1,104.68	1,118.32	2.69	2.14	-50.79	
6,102.00	2.99	110.17	5,956.04	-176.67	-1,099.93	1,113.89	0.23	-0.19	-2.49	
6,197.00	2.64	119.48	6,050.93	-178.60	-1,095.70	1,109.98	0.60	-0.37	9.80	
6,291.00	2.37	119.04	6,144.84	-180.61	-1,092.11	1,106.72	0.29	-0.29	-0.47	
6,386.00	2.29	128.36	6,239.76	-182.74	-1,088.91	1,103.85	0.41	-0.08	9.81	
6,481.00	1.58	172.48	6,334.71	-185.21	-1,087.25	1,102.56	1.68	-0.75	46.44	
6,575.00	0.09	240.86	6,428.70	-186.53	-1,087.14	1,102.65	1.65	-1.59	72.74	
6,670.00	0.18	270.57	6,523.70	-186.57	-1,087.36	1,102.86	0.12	0.09	31.27	
6,764.00	0.26	318.12	6,617.70	-186.41	-1,087.65	1,103.13	0.20	0.09	50.59	
6,859.00	0.26	291.49	6,712.70	-186.17	-1,087.99	1,103.43	0.13	0.00	-28.03	
6,954.00	0.53	258.62	6,807.70	-186.18	-1,088.62	1,104.06	0.36	0.28	-34.60	
7,049.00	0.53	309.68	6,902.69	-185.98	-1,089.39	1,104.79	0.48	0.00	53.75	
7,143.00	0.62	309.42	6,996.69	-185.38	-1,090.12	1,105.43	0.10	0.10	-0.28	
7,238.00	0.79	315.74	7,091.68	-184.59	-1,090.97	1,106.16	0.20	0.18	6.65	
7,332.00	0.97	298.34	7,185.67	-183.75	-1,092.13	1,107.18	0.34	0.19	-18.51	

Scientific Drilling International, Inc.

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well Cascade Creek 697-08-37B - Slot J
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8479' & RKB 30' @ 8509.00ft (H&P)
Site:	Cascade Creek 608-43-31 Pad	MD Reference:	GL 8479' & RKB 30' @ 8509.00ft (H&P)
Well:	Cascade Creek 697-08-37B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	RockiesEDM-5000.1

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)	
7,427.00	1.06	284.19	7,280.65	-183.15	-1,093.69	1,108.64	0.28	0.09	-14.89	
7,522.00	1.58	280.06	7,375.63	-182.70	-1,095.83	1,110.69	0.56	0.55	-4.35	
7,617.00	1.58	288.41	7,470.59	-182.06	-1,098.36	1,113.11	0.24	0.00	8.79	
7,711.00	1.41	273.82	7,564.56	-181.58	-1,100.74	1,115.40	0.44	-0.18	-15.52	
7,806.00	1.67	266.70	7,659.53	-181.58	-1,103.29	1,117.92	0.34	0.27	-7.49	
7,900.00	2.02	265.38	7,753.48	-181.79	-1,106.31	1,120.94	0.38	0.37	-1.40	
7,995.00	1.93	270.39	7,848.42	-181.91	-1,109.58	1,124.19	0.20	-0.09	5.27	
8,090.00	1.85	281.03	7,943.37	-181.61	-1,112.68	1,127.22	0.38	-0.08	11.20	
8,185.00	1.85	298.43	8,038.32	-180.59	-1,115.54	1,129.90	0.59	0.00	18.32	
8,279.00	2.20	305.29	8,132.26	-178.82	-1,118.35	1,132.42	0.45	0.37	7.30	
8,374.00	2.20	291.57	8,227.19	-177.10	-1,121.53	1,135.33	0.55	0.00	-14.44	
8,469.00	2.90	289.99	8,322.10	-175.61	-1,125.48	1,139.03	0.74	0.74	-1.66	
8,564.00	2.55	290.96	8,416.99	-174.03	-1,129.72	1,142.99	0.37	-0.37	1.02	
8,658.00	2.81	291.49	8,510.89	-172.44	-1,133.81	1,146.82	0.28	0.28	0.56	
8,753.00	3.14	291.22	8,605.76	-170.64	-1,138.40	1,151.11	0.35	0.35	-0.28	
8,848.00	3.32	289.36	8,700.61	-168.79	-1,143.42	1,155.81	0.22	0.19	-1.96	
8,943.00	3.21	284.31	8,795.46	-167.22	-1,148.60	1,160.71	0.32	-0.12	-5.32	
Last Production MWD										
9,000.00	3.21	284.31	8,852.37	-166.43	-1,151.69	1,163.65	0.00	0.00	0.00	
Projection to TD - BHL = 631623.77, 1226991.88										

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
75.00	75.00	0.21	0.06	First Gyro Survey	
597.00	596.40	-3.03	-20.42	Last Gyro Survey	
619.00	618.25	-4.06	-22.75	First Surface MWD	
2,648.00	2,567.79	-90.40	-564.99	Last Surface MWD	
2,787.00	2,701.07	-95.01	-604.17	First Production MWD	
8,943.00	8,795.46	-167.22	-1,148.60	Last Production MWD	
9,000.00	8,852.37	-166.43	-1,151.69	Projection to TD	
9,000.00	8,852.37	-166.43	-1,151.69	BHL = 631623.77, 1226991.88	

Checked By: _____ Approved By: _____ Date: _____