



**Scientific
Drilling**

Survey Certification

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

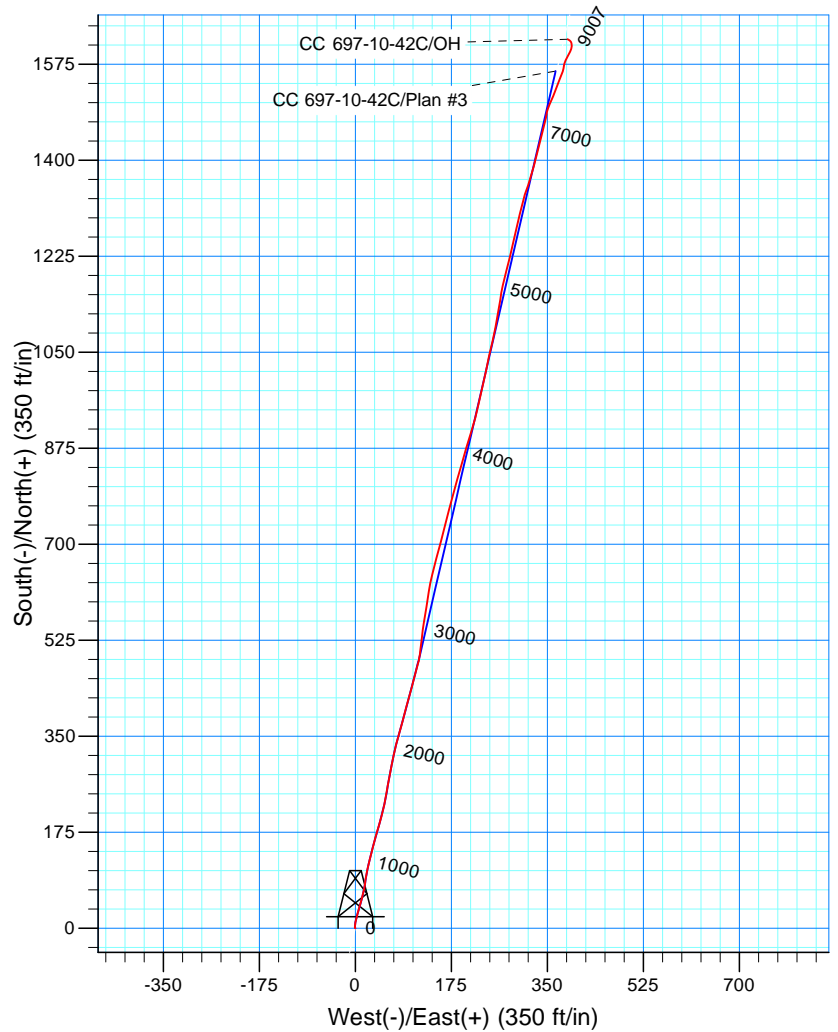
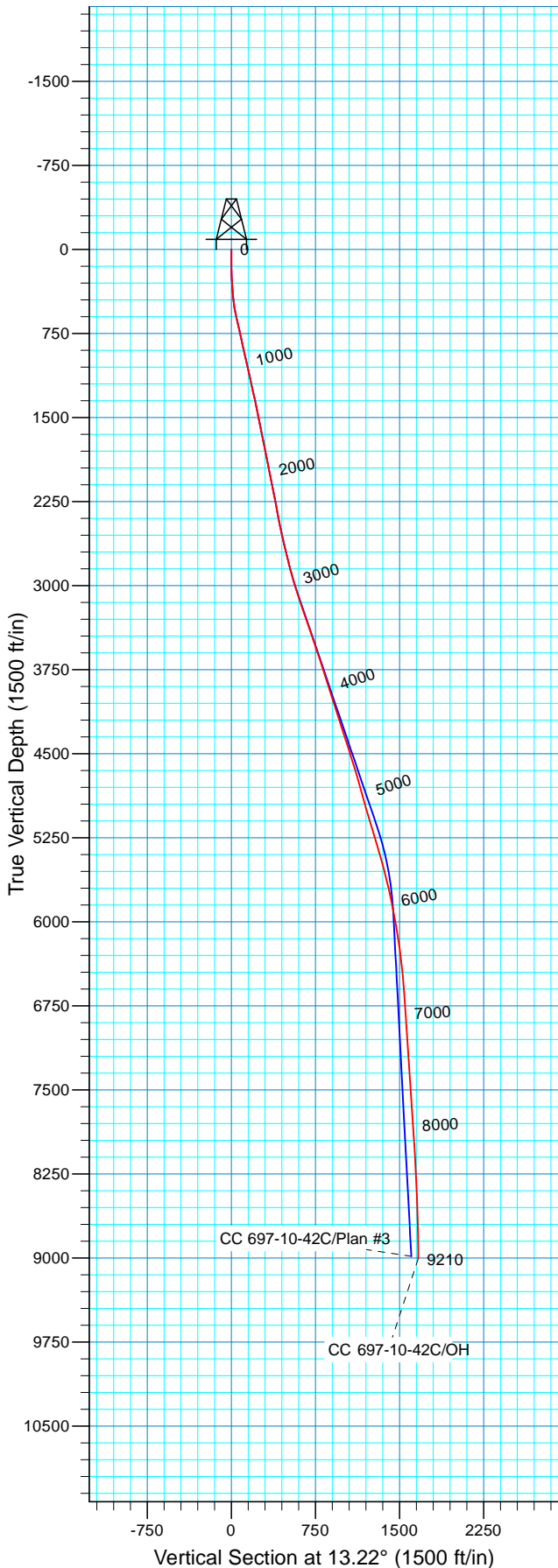
Operator	<u>OXY USA RMAT</u>
Well Name & No.	<u>Cascade Creek 697-10-42C</u>
County & State	<u>Garfield County, CO</u>
SDI Job No.	<u>42DEF1009984</u>
Rig	<u>H&P 353</u>
Survey Date	<u>22-Sep-10</u>

I, Julie Cruse, 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 9210 feet is true and correct as determined from all available records.

Julie Cruse
Signature

09-Nov-10
Date

Julie Cruse
Rockies Region Engineer
Scientific Drilling - Rocky Mountain District



WELL DETAILS: CC 697-10-42C

Ground Level: GL 8348' & RKB 30' @ 8378.00ft					
	North	East	Lat	Long	
0.00	0.00	629195.72	1235019.52	39° 31' 46.580 N	108° 12' 44.630 W S

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well CC 697-10-42C - Slot S, True North
 Vertical (TVD) Reference: GL 8348' & RKB 30' @ 8378.00ft
 Section (VS) Reference: Slot - S(0.00N, 0.00E)
 Measured Depth Reference: GL 8348' & RKB 30' @ 8378.00ft
 Calculation Method: Minimum Curvature
 Local North: True
 Location: Sec 15 T6S R97W

PROJECT DETAILS: Garfield County, CO NAD27

Design: OH (CC 697-10-42C/OH)

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

Created By: Julie Cruse Date: 2010-11-09



OXY USA RMAT

**Garfield County, CO NAD27
Cascade Creek 697-15-01 Pad
CC 697-10-42C - Slot S**

OH

Design: OH

Standard Survey Report

09 November, 2010



Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-10-42C - Slot S
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 697-10-42C	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 697-10-42C - Slot S		
Well Position	+N/-S	0.00 ft	Northing: 629,195.72 usft
	+E/-W	0.00 ft	Easting: 1,235,019.52 usft
Position Uncertainty	0.00 ft	Wellhead Elevation:	ft
		Latitude:	39° 31' 46.580 N
		Longitude:	108° 12' 44.630 W
		Ground Level:	8,348.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2005-10	2009-12-31	10.62	65.78	52,396

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	13.22	

Survey Program	Date	2010-11-09			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
158.00	2,663.00	Survey #1 - Surface (OH)	MWD-SDI	MWD - Standard ISCWSA	
2,788.00	9,210.00	Survey #2 - Production (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	
158.00	0.48	331.01	158.00	0.58	-0.32	0.49	0.30	0.30	0.00	
First SDI MWD Survey										
249.00	2.66	0.38	248.96	3.02	-0.49	2.83	2.48	2.40	32.27	
342.00	4.12	5.57	341.79	8.51	-0.15	8.25	1.60	1.57	5.58	
434.00	5.98	14.65	433.43	16.43	1.38	16.31	2.19	2.02	9.87	
526.00	9.32	16.06	524.60	28.23	4.65	28.55	3.64	3.63	1.53	
618.00	12.57	15.89	614.92	45.02	9.46	45.99	3.53	3.53	-0.18	
712.00	14.33	12.28	706.34	66.23	14.73	67.85	2.07	1.87	-3.84	
804.00	11.96	7.98	795.92	86.80	18.48	88.73	2.79	-2.58	-4.67	

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-10-42C - Slot S
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 697-10-42C	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)
899.00	12.05	11.58	888.85	106.26	21.83	108.44	0.79	0.09	3.79
993.00	12.57	14.30	980.69	125.79	26.33	128.48	0.83	0.55	2.89
1,088.00	13.37	13.86	1,073.26	146.47	31.52	149.79	0.85	0.84	-0.46
1,182.00	12.57	16.06	1,164.86	166.85	36.95	170.88	1.00	-0.85	2.34
1,277.00	12.13	17.03	1,257.66	186.33	42.73	191.16	0.51	-0.46	1.02
1,371.00	12.05	14.13	1,349.58	205.29	48.02	210.83	0.65	-0.09	-3.09
1,466.00	11.87	12.02	1,442.52	224.46	52.48	230.51	0.50	-0.19	-2.22
1,561.00	11.70	10.44	1,535.52	243.49	56.26	249.90	0.38	-0.18	-1.66
1,655.00	10.90	9.47	1,627.69	261.63	59.45	268.29	0.87	-0.85	-1.03
1,750.00	11.61	10.70	1,720.87	279.88	62.70	286.80	0.79	0.75	1.29
1,844.00	11.52	11.40	1,812.96	298.38	66.31	305.63	0.18	-0.10	0.74
1,939.00	11.08	13.25	1,906.12	316.56	70.28	324.24	0.60	-0.46	1.95
2,033.00	11.34	13.25	1,998.32	334.35	74.46	342.52	0.28	0.28	0.00
2,128.00	11.34	15.62	2,091.47	352.44	79.12	361.19	0.49	0.00	2.49
2,222.00	11.08	17.29	2,183.67	369.96	84.29	379.43	0.44	-0.28	1.78
2,315.00	10.38	12.72	2,275.05	386.67	88.79	396.73	1.18	-0.75	-4.91
2,410.00	11.08	14.74	2,368.39	403.84	93.00	414.41	0.84	0.74	2.13
2,506.00	11.61	15.80	2,462.51	422.06	97.98	433.28	0.59	0.55	1.10
2,600.00	12.75	14.92	2,554.40	441.18	103.22	453.10	1.23	1.21	-0.94
2,663.00	13.37	14.48	2,615.77	454.95	106.84	467.33	1.00	0.98	-0.70
Last Survey in 14 3/4" Hole									
2,788.00	12.84	15.61	2,737.51	482.32	114.19	495.66	0.47	-0.42	0.90
First Survey in 8 3/4" Hole									
2,883.00	15.74	6.47	2,829.57	505.30	118.48	519.01	3.86	3.05	-9.62
2,977.00	16.00	6.73	2,919.99	530.84	121.44	544.54	0.29	0.28	0.28
3,072.00	16.97	8.93	3,011.08	557.54	125.12	571.38	1.21	1.02	2.32
3,167.00	17.76	8.84	3,101.75	585.55	129.50	599.65	0.83	0.83	-0.09
3,261.00	18.64	9.11	3,191.05	614.55	134.08	628.93	0.94	0.94	0.29
3,355.00	19.17	13.24	3,279.98	644.41	140.00	659.35	1.53	0.56	4.39
3,450.00	19.35	15.70	3,369.67	674.74	147.83	690.67	0.87	0.19	2.59
3,544.00	19.17	14.64	3,458.41	704.67	155.94	721.65	0.42	-0.19	-1.13
3,639.00	18.47	14.56	3,548.33	734.32	163.67	752.29	0.74	-0.74	-0.08
3,733.00	17.94	14.38	3,637.62	762.76	171.01	781.65	0.57	-0.56	-0.19
3,828.00	17.67	14.73	3,728.07	790.87	178.31	810.69	0.31	-0.28	0.37
3,922.00	17.94	15.61	3,817.57	818.61	185.83	839.42	0.41	0.29	0.94
4,017.00	18.11	16.58	3,907.91	846.86	193.98	868.78	0.36	0.18	1.02
4,111.00	17.85	16.58	3,997.32	874.67	202.26	897.74	0.28	-0.28	0.00
4,206.00	17.59	16.93	4,087.81	902.35	210.59	926.60	0.30	-0.27	0.37
4,301.00	17.85	14.73	4,178.30	930.17	218.48	955.48	0.76	0.27	-2.32
4,395.00	17.06	12.80	4,267.97	957.55	225.20	983.67	1.04	-0.84	-2.05
4,490.00	18.29	12.80	4,358.49	985.67	231.59	1,012.51	1.29	1.29	0.00
4,584.00	18.03	11.74	4,447.81	1,014.30	237.81	1,041.81	0.45	-0.28	-1.13
4,679.00	17.50	11.74	4,538.28	1,042.68	243.71	1,070.78	0.56	-0.56	0.00

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-10-42C - Slot S
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 697-10-42C	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)
4,773.00	17.32	13.68	4,627.97	1,070.11	249.90	1,098.90	0.65	-0.19	2.06
4,868.00	16.00	11.22	4,718.98	1,096.70	255.79	1,126.13	1.58	-1.39	-2.59
4,962.00	15.30	9.46	4,809.50	1,121.64	260.35	1,151.45	0.90	-0.74	-1.87
5,057.00	15.48	8.32	4,901.09	1,146.55	264.24	1,176.59	0.37	0.19	-1.20
5,151.00	16.36	12.10	4,991.49	1,171.90	268.83	1,202.33	1.45	0.94	4.02
5,246.00	16.53	15.08	5,082.60	1,198.04	275.15	1,229.21	0.91	0.18	3.14
5,340.00	16.97	13.76	5,172.61	1,224.27	281.89	1,256.30	0.62	0.47	-1.40
5,435.00	16.71	12.89	5,263.54	1,251.05	288.24	1,283.82	0.38	-0.27	-0.92
5,530.00	16.44	12.62	5,354.59	1,277.48	294.22	1,310.92	0.30	-0.28	-0.28
5,624.00	15.48	13.50	5,444.97	1,302.66	300.06	1,336.76	1.05	-1.02	0.94
5,718.00	14.77	14.82	5,535.71	1,326.44	306.05	1,361.28	0.84	-0.76	1.40
5,813.00	13.81	19.39	5,627.77	1,348.85	312.91	1,384.66	1.56	-1.01	4.81
5,907.00	12.93	16.23	5,719.23	1,369.53	319.58	1,406.32	1.22	-0.94	-3.36
6,002.00	11.70	15.96	5,812.04	1,389.00	325.20	1,426.56	1.30	-1.29	-0.28
6,096.00	10.55	14.47	5,904.27	1,406.49	329.97	1,444.68	1.26	-1.22	-1.59
6,191.00	10.20	13.24	5,997.72	1,423.10	334.07	1,461.79	0.44	-0.37	-1.29
6,286.00	8.97	14.03	6,091.39	1,438.47	337.79	1,477.60	1.30	-1.29	0.83
6,380.00	8.53	13.68	6,184.30	1,452.36	341.22	1,491.90	0.47	-0.47	-0.37
6,475.00	8.00	16.40	6,278.31	1,465.55	344.75	1,505.55	0.69	-0.56	2.86
6,569.00	7.12	9.90	6,371.49	1,477.56	347.60	1,517.90	1.30	-0.94	-6.91
6,664.00	5.54	10.34	6,465.91	1,487.87	349.43	1,528.35	1.66	-1.66	0.46
6,758.00	4.48	20.97	6,559.55	1,495.76	351.56	1,536.52	1.49	-1.13	11.31
6,853.00	3.96	23.26	6,654.29	1,502.24	354.18	1,543.43	0.58	-0.55	2.41
6,947.00	3.78	26.51	6,748.08	1,508.00	356.85	1,549.64	0.30	-0.19	3.46
7,042.00	3.34	21.59	6,842.90	1,513.37	359.26	1,555.43	0.56	-0.46	-5.18
7,137.00	3.78	23.35	6,937.71	1,518.82	361.52	1,561.25	0.48	0.46	1.85
7,231.00	3.17	17.81	7,031.54	1,524.14	363.55	1,566.89	0.74	-0.65	-5.89
7,326.00	4.48	22.91	7,126.33	1,530.06	365.79	1,573.16	1.42	1.38	5.37
7,420.00	3.96	18.16	7,220.07	1,536.52	368.24	1,580.02	0.67	-0.55	-5.05
7,515.00	4.48	23.43	7,314.81	1,543.05	370.73	1,586.94	0.68	0.55	5.55
7,609.00	3.96	18.95	7,408.56	1,549.48	373.25	1,593.78	0.65	-0.55	-4.77
7,704.00	4.40	22.99	7,503.31	1,555.94	375.74	1,600.63	0.56	0.46	4.25
7,798.00	3.52	17.90	7,597.08	1,562.01	378.03	1,607.06	1.01	-0.94	-5.41
7,893.00	3.61	9.55	7,691.90	1,567.73	379.42	1,612.96	0.55	0.09	-8.79
7,988.00	3.25	12.80	7,786.73	1,573.31	380.52	1,618.63	0.43	-0.38	3.42
8,082.00	4.57	22.73	7,880.51	1,579.36	382.55	1,624.99	1.57	1.40	10.56
8,177.00	4.13	21.94	7,975.23	1,586.02	385.29	1,632.11	0.47	-0.46	-0.83
8,271.00	3.34	32.13	8,069.03	1,591.48	388.02	1,638.04	1.09	-0.84	10.84
8,366.00	2.90	30.46	8,163.89	1,595.90	390.71	1,642.95	0.47	-0.46	-1.76
8,460.00	2.20	18.25	8,257.80	1,599.66	392.48	1,647.02	0.94	-0.74	-12.99
8,555.00	2.11	14.47	8,352.73	1,603.09	393.48	1,650.59	0.18	-0.09	-3.98
8,649.00	2.29	9.46	8,446.66	1,606.61	394.23	1,654.19	0.28	0.19	-5.33
8,744.00	1.93	359.79	8,541.60	1,610.09	394.53	1,657.64	0.53	-0.38	-10.18
8,839.00	1.93	350.83	8,636.55	1,613.26	394.27	1,660.68	0.32	0.00	-9.43

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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)
8,933.00	1.85	334.39	8,730.50	1,616.20	393.36	1,663.32	0.58	-0.09	-17.49
9,027.00	1.58	302.13	8,824.46	1,618.25	391.61	1,664.92	1.05	-0.29	-34.32
9,122.00	1.67	297.21	8,919.42	1,619.58	389.27	1,665.68	0.17	0.09	-5.18
9,153.00	1.58	298.71	8,950.41	1,619.99	388.49	1,665.91	0.32	-0.29	4.84
Last SDI MWD Survey									
9,210.00	1.58	298.71	9,007.38	1,620.75	387.11	1,666.33	0.00	0.00	0.00
Projection to TD - BHL = 630804.19 ft N, 1235454.84 ft E									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
158.00	158.00	0.58	-0.32	First SDI MWD Survey
2,663.00	2,615.77	454.95	106.84	Last Survey in 14 3/4" Hole
2,788.00	2,737.51	482.32	114.19	First Survey in 8 3/4" Hole
9,153.00	8,950.41	1,619.99	388.49	Last SDI MWD Survey
9,210.00	9,007.38	1,620.75	387.11	Projection to TD
9,210.00	9,007.38	1,620.75	387.11	BHL = 630804.19 ft N, 1235454.84 ft E

Checked By: _____ Approved By: _____ Date: _____