



**Scientific
Drilling**

Survey Certification

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

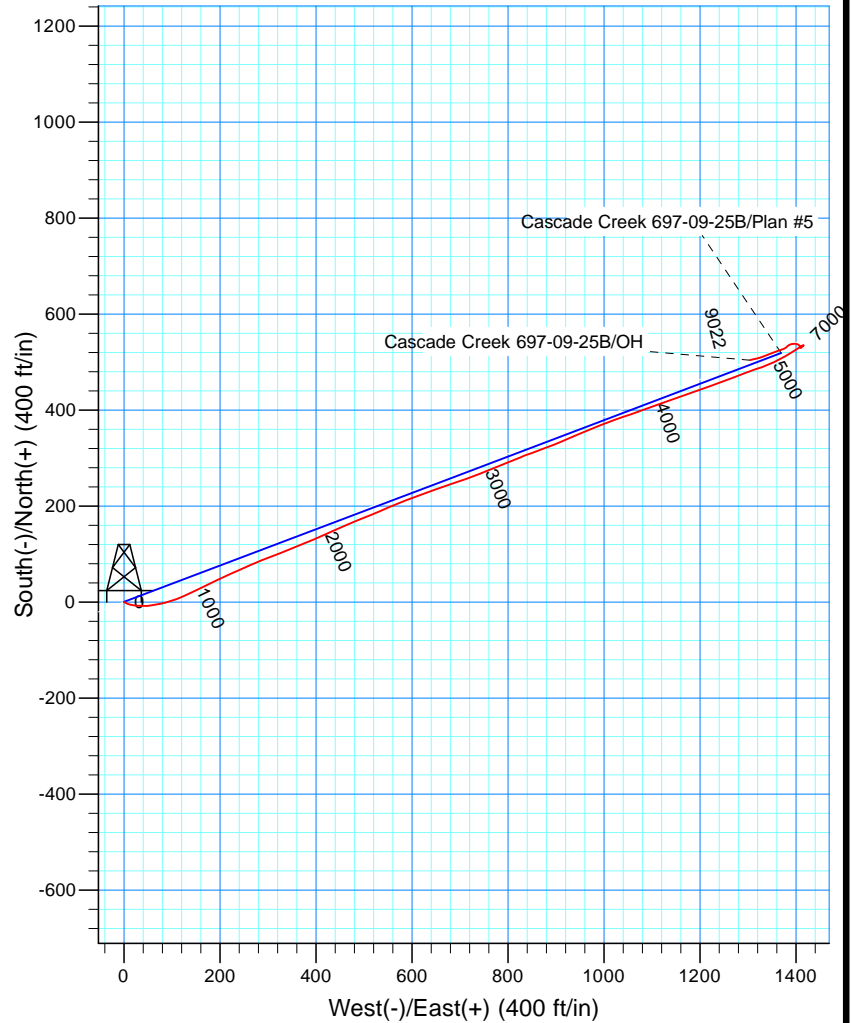
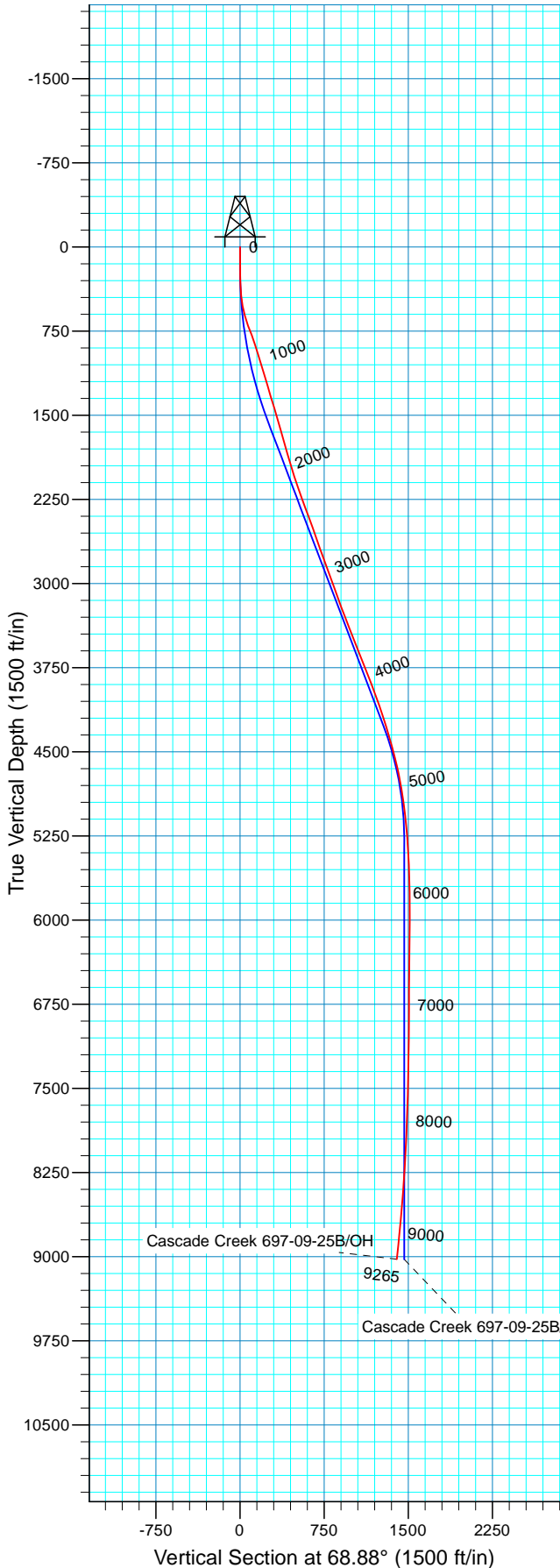
Operator	<u>OXY USA RMAT</u>
Well Name & No.	<u>Cascade Creek 697-09-25B</u>
County & State	<u>Garfield County, CO</u>
SDI Job No.	<u>42DEF1101035</u>
Rig	<u>H&P 330</u>
Survey Date	<u>07-Jan-11</u>

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 9265 feet is true and correct as determined from all available records.

Julie Cruse
Signature

04-Feb-11
Date

Julie Cruse
Rockies Region Engineer
Scientific Drilling - Rocky Mountain District



WELL DETAILS: Cascade Creek 697-09-25B

Ground Level: GL 8479' & RKB 30' @ 8509.00ft (H&P)						
0.00	0.00	Northing	Easting	Latitude	Longitude	Q
		631792.14	1228174.13	39° 32' 10.202 N	108° 14' 12.953 W	

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Cascade Creek 697-09-25B - Slot Q, True North
 Vertical (TVD) Reference: GL 8479' & RKB 30' @ 8509.00ft (H&P)
 Section (VS) Reference: Slot - Q(0.00N, 0.00E)
 Measured Depth Reference: GL 8479' & RKB 30' @ 8509.00ft (H&P)
 Calculation Method: Minimum Curvature
 Local North: True
 Location: Sec 8 T6S R97W

PROJECT DETAILS: Garfield County, CO NAD27

Design: OH (Cascade Creek 697-09-25B/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: 2011-02-04



Scientific Drilling

OXY USA RMAT

Garfield County, CO NAD27

Cascade Creek 608-43-31 Pad

Cascade Creek 697-09-25B - Slot Q

OH

Design: OH

Standard Survey Report

04 February, 2011



Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well Cascade Creek 697-09-25B - Slot Q
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 697-09-25B	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 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 697-09-25B - Slot Q,		
Well Position	+N/-S	0.00 ft	Northing: 631,792.14 usft
	+E/-W	0.00 ft	Easting: 1,228,174.13 usft
Position Uncertainty	0.00 ft	Wellhead Elevation:	ft
		Latitude:	39° 32' 10.202 N
		Longitude:	108° 14' 12.953 W
		Ground Level:	8,479.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2005-10	2008-11-19	10.77	65.81	52,503

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	68.88	

Survey Program	Date	2011-02-04			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
188.00	2,672.00	Survey #1 - Surface MWD (OH)	MWD-SDI	MWD - Standard ISCWSA	
2,791.00	9,265.00	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	
188.00	0.60	103.70	188.00	-0.23	0.96	0.81	0.32	0.32	0.00	
First SDI MWD Survey										
250.00	1.20	131.38	249.99	-0.74	1.76	1.37	1.17	0.97	44.65	
342.00	3.91	116.86	341.89	-2.79	5.28	3.92	3.01	2.95	-15.78	
434.00	6.81	104.11	433.48	-5.54	13.37	10.48	3.39	3.15	-13.86	
526.00	10.80	96.24	524.38	-7.81	27.24	22.59	4.52	4.34	-8.55	
619.00	16.44	86.72	614.74	-8.00	49.06	42.88	6.51	6.06	-10.24	
711.00	21.72	76.44	701.68	-3.26	78.63	72.17	6.78	5.74	-11.17	
803.00	19.61	68.35	787.77	6.43	109.54	104.49	3.85	-2.29	-8.79	

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well Cascade Creek 697-09-25B - Slot Q
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 697-09-25B	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)
897.00	18.11	64.75	876.73	18.48	137.42	134.84	2.02	-1.60	-3.83
992.00	17.50	65.10	967.18	30.79	163.73	163.82	0.65	-0.64	0.37
1,086.00	16.44	63.52	1,057.08	42.67	188.45	191.17	1.23	-1.13	-1.68
1,181.00	16.80	64.75	1,148.11	54.53	212.90	218.25	0.53	0.38	1.29
1,276.00	17.32	66.77	1,238.93	65.96	238.32	246.07	0.83	0.55	2.13
1,371.00	16.44	65.72	1,329.84	77.07	263.56	273.63	0.98	-0.93	-1.11
1,465.00	16.36	68.00	1,420.02	87.49	287.96	300.15	0.69	-0.09	2.43
1,560.00	16.27	70.29	1,511.19	96.99	312.90	326.83	0.68	-0.09	2.41
1,655.00	16.80	68.62	1,602.26	106.49	338.21	353.86	0.75	0.56	-1.76
1,750.00	16.27	67.65	1,693.34	116.55	363.30	380.89	0.63	-0.56	-1.02
1,844.00	15.12	65.98	1,783.83	126.55	386.68	406.30	1.31	-1.22	-1.78
1,939.00	15.92	65.45	1,875.36	137.01	409.85	431.68	0.86	0.84	-0.56
2,034.00	16.27	66.86	1,966.64	147.65	433.94	457.99	0.55	0.37	1.48
2,128.00	18.03	66.86	2,056.46	158.54	459.42	485.69	1.87	1.87	0.00
2,223.00	20.31	67.65	2,146.18	170.59	488.20	516.87	2.42	2.40	0.83
2,318.00	19.52	68.27	2,235.50	182.74	518.19	549.22	0.86	-0.83	0.65
2,413.00	20.93	66.07	2,324.64	195.50	548.44	582.05	1.69	1.48	-2.32
2,508.00	20.31	67.91	2,413.56	208.58	579.23	615.48	0.94	-0.65	1.94
2,602.00	19.70	69.76	2,501.89	220.20	609.21	647.63	0.94	-0.65	1.97
2,672.00	19.79	70.81	2,567.77	228.17	631.48	671.27	0.52	0.13	1.50
Last Survey in 14 3/4" Hole									
2,791.00	18.38	70.29	2,680.23	241.12	668.17	710.16	1.19	-1.18	-0.44
First Survey in 8 3/4" Hole									
2,885.00	19.61	71.87	2,769.11	251.03	697.11	740.73	1.42	1.31	1.68
2,980.00	19.61	68.53	2,858.60	261.83	727.10	772.60	1.18	0.00	-3.52
3,075.00	22.60	68.70	2,947.22	274.30	758.95	806.80	3.15	3.15	0.18
3,169.00	20.14	68.09	3,034.75	286.90	790.79	841.05	2.63	-2.62	-0.65
3,264.00	17.94	66.95	3,124.55	298.73	819.43	872.03	2.35	-2.32	-1.20
3,359.00	21.28	69.76	3,214.03	310.43	849.08	903.90	3.65	3.52	2.96
3,453.00	20.93	70.02	3,301.72	322.06	880.86	937.74	0.39	-0.37	0.28
3,548.00	21.54	66.77	3,390.27	334.74	912.84	972.13	1.40	0.64	-3.42
3,643.00	22.25	66.77	3,478.42	348.71	945.39	1,007.54	0.75	0.75	0.00
3,738.00	20.75	67.56	3,566.81	362.23	977.48	1,042.34	1.61	-1.58	0.83
3,833.00	20.49	69.41	3,655.72	374.50	1,008.60	1,075.79	0.74	-0.27	1.95
3,927.00	22.69	71.25	3,743.12	386.12	1,041.17	1,110.36	2.45	2.34	1.96
4,022.00	21.63	70.11	3,831.11	397.97	1,074.98	1,146.17	1.20	-1.12	-1.20
4,116.00	20.58	70.46	3,918.80	409.39	1,106.85	1,180.01	1.13	-1.12	0.37
4,211.00	20.05	70.81	4,007.89	420.32	1,137.96	1,212.97	0.57	-0.56	0.37
4,306.00	19.61	70.37	4,097.26	431.03	1,168.36	1,245.19	0.49	-0.46	-0.46
4,401.00	17.67	70.73	4,187.27	441.15	1,196.99	1,275.54	2.05	-2.04	0.38
4,496.00	16.97	69.58	4,277.96	450.74	1,223.59	1,303.81	0.82	-0.74	-1.21
4,590.00	16.09	70.46	4,368.08	459.88	1,248.72	1,330.55	0.97	-0.94	0.94
4,685.00	15.21	68.88	4,459.55	468.78	1,272.75	1,356.17	1.03	-0.93	-1.66

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well Cascade Creek 697-09-25B - Slot Q
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 697-09-25B	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)	
4,780.00	14.25	69.14	4,551.43	477.43	1,295.30	1,380.32	1.01	-1.01	0.27	
4,874.00	13.19	70.20	4,642.75	485.19	1,316.21	1,402.62	1.16	-1.13	1.13	
4,969.00	10.55	72.75	4,735.71	491.44	1,334.71	1,422.13	2.83	-2.78	2.68	
5,063.00	10.55	62.73	4,828.13	497.93	1,350.58	1,439.27	1.95	0.00	-10.66	
5,158.00	7.74	62.55	4,921.91	504.87	1,363.99	1,454.28	2.96	-2.96	-0.19	
5,253.00	6.60	60.97	5,016.16	510.47	1,374.44	1,466.05	1.22	-1.20	-1.66	
5,347.00	5.98	62.55	5,109.60	515.34	1,383.51	1,476.27	0.68	-0.66	1.68	
5,442.00	5.54	58.33	5,204.12	520.03	1,391.81	1,485.69	0.64	-0.46	-4.44	
5,537.00	4.13	51.56	5,298.78	524.57	1,398.39	1,493.47	1.60	-1.48	-7.13	
5,631.00	2.55	55.96	5,392.62	527.84	1,402.77	1,498.74	1.70	-1.68	4.68	
5,726.00	2.81	57.37	5,487.51	530.28	1,406.48	1,503.08	0.28	0.27	1.48	
5,821.00	1.85	56.14	5,582.43	532.39	1,409.72	1,506.86	1.01	-1.01	-1.29	
5,915.00	0.97	60.35	5,676.40	533.63	1,411.67	1,509.12	0.94	-0.94	4.48	
6,011.00	0.70	71.78	5,772.39	534.22	1,412.93	1,510.51	0.33	-0.28	11.91	
6,105.00	1.06	74.50	5,866.38	534.63	1,414.32	1,511.95	0.39	0.38	2.89	
6,200.00	0.35	47.08	5,961.37	535.06	1,415.38	1,513.10	0.81	-0.75	-28.86	
6,294.00	0.44	171.89	6,055.37	534.90	1,415.64	1,513.28	0.75	0.10	132.78	
6,389.00	0.70	205.64	6,150.37	534.01	1,415.44	1,512.78	0.44	0.27	35.53	
6,484.00	1.06	237.28	6,245.36	533.02	1,414.45	1,511.49	0.62	0.38	33.31	
6,579.00	1.41	228.14	6,340.34	531.76	1,412.84	1,509.54	0.42	0.37	-9.62	
6,673.00	0.62	218.91	6,434.32	530.59	1,411.66	1,508.02	0.86	-0.84	-9.82	
6,768.00	0.62	221.55	6,529.32	529.81	1,410.99	1,507.12	0.03	0.00	2.78	
6,862.00	0.79	211.09	6,623.31	528.87	1,410.32	1,506.15	0.23	0.18	-11.13	
6,957.00	1.06	334.13	6,718.30	529.10	1,409.60	1,505.56	1.72	0.28	129.52	
7,052.00	0.97	337.91	6,813.29	530.64	1,408.91	1,505.47	0.12	-0.09	3.98	
7,147.00	1.32	341.87	6,908.27	532.42	1,408.27	1,505.52	0.38	0.37	4.17	
7,241.00	1.41	315.41	7,002.24	534.28	1,407.12	1,505.11	0.67	0.10	-28.15	
7,336.00	1.58	308.03	7,097.21	535.92	1,405.27	1,503.98	0.27	0.18	-7.77	
7,430.00	1.06	288.61	7,191.19	536.99	1,403.43	1,502.64	0.72	-0.55	-20.66	
7,525.00	1.49	282.19	7,286.16	537.53	1,401.39	1,500.94	0.48	0.45	-6.76	
7,620.00	1.58	264.52	7,381.13	537.67	1,398.87	1,498.64	0.51	0.09	-18.60	
7,714.00	0.44	306.27	7,475.11	537.76	1,397.29	1,497.20	1.37	-1.21	44.41	
7,809.00	0.97	280.96	7,570.11	538.13	1,396.21	1,496.32	0.63	0.56	-26.64	
7,904.00	2.46	257.05	7,665.06	537.82	1,393.43	1,493.62	1.71	1.57	-25.17	
7,998.00	2.55	256.35	7,758.97	536.88	1,389.44	1,489.55	0.10	0.10	-0.74	
8,093.00	2.90	242.02	7,853.86	535.25	1,385.26	1,485.07	0.80	0.37	-15.08	
8,188.00	2.37	217.77	7,948.77	532.57	1,381.93	1,481.00	1.29	-0.56	-25.53	
8,283.00	2.64	232.53	8,043.68	529.69	1,378.99	1,477.22	0.73	0.28	15.54	
8,377.00	2.99	248.35	8,137.56	527.47	1,375.00	1,472.69	0.90	0.37	16.83	
8,472.00	3.52	253.63	8,232.41	525.73	1,369.90	1,467.31	0.64	0.56	5.56	
8,567.00	4.22	250.20	8,327.19	523.72	1,363.81	1,460.91	0.78	0.74	-3.61	
8,662.00	5.01	249.14	8,421.89	521.06	1,356.64	1,453.27	0.84	0.83	-1.12	
8,756.00	5.01	249.93	8,515.53	518.19	1,348.95	1,445.06	0.07	0.00	0.84	
8,851.00	4.92	247.39	8,610.17	515.20	1,341.30	1,436.84	0.25	-0.09	-2.67	

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well Cascade Creek 697-09-25B - Slot Q
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 697-09-25B	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)	
8,946.00	4.92	249.49	8,704.82	512.21	1,333.72	1,428.69	0.19	0.00	2.21	
9,040.00	5.01	251.87	8,798.47	509.52	1,326.04	1,420.56	0.24	0.10	2.53	
9,135.00	5.72	256.70	8,893.05	507.14	1,317.49	1,411.73	0.89	0.75	5.08	
9,206.00	6.51	255.65	8,963.65	505.33	1,310.15	1,404.23	1.12	1.11	-1.48	
Last SDI MWD Survey										
9,265.00	6.51	255.65	9,022.27	503.67	1,303.67	1,397.58	0.00	0.00	0.00	
Projection to TD - BHL = 632256.31 ft N, 1229492.38 ft E										

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
188.00	188.00	-0.23	0.96	First SDI MWD Survey	
2,672.00	2,567.77	228.17	631.48	Last Survey in 14 3/4" Hole	
2,791.00	2,680.23	241.12	668.17	First Survey in 8 3/4" Hole	
9,206.00	8,963.65	505.33	1,310.15	Last SDI MWD Survey	
9,265.00	9,022.27	503.67	1,303.67	Projection to TD	
9,265.00	9,022.27	503.67	1,303.67	BHL = 632256.31 ft N, 1229492.38 ft E	

Checked By: _____ Approved By: _____ Date: _____