

OXY USA RMAT

Garfield County, CO NAD27

Cascade Creek 697-08-53 Pad

CC 697-08-58B - Slot T

OH

Design: OH

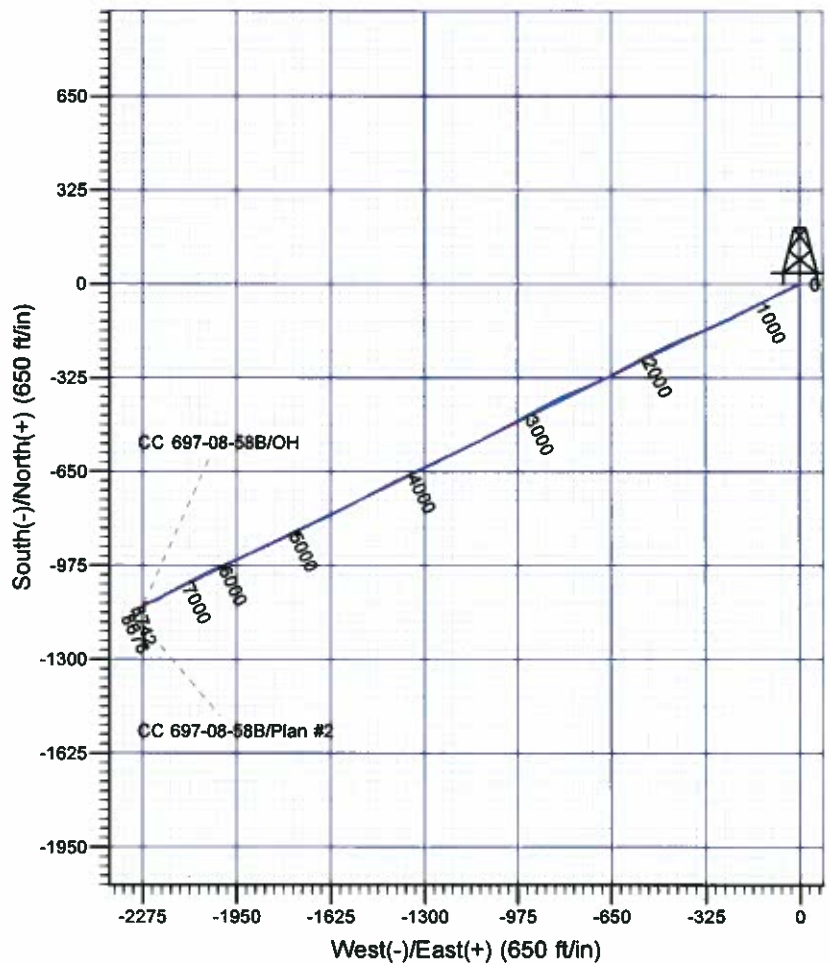
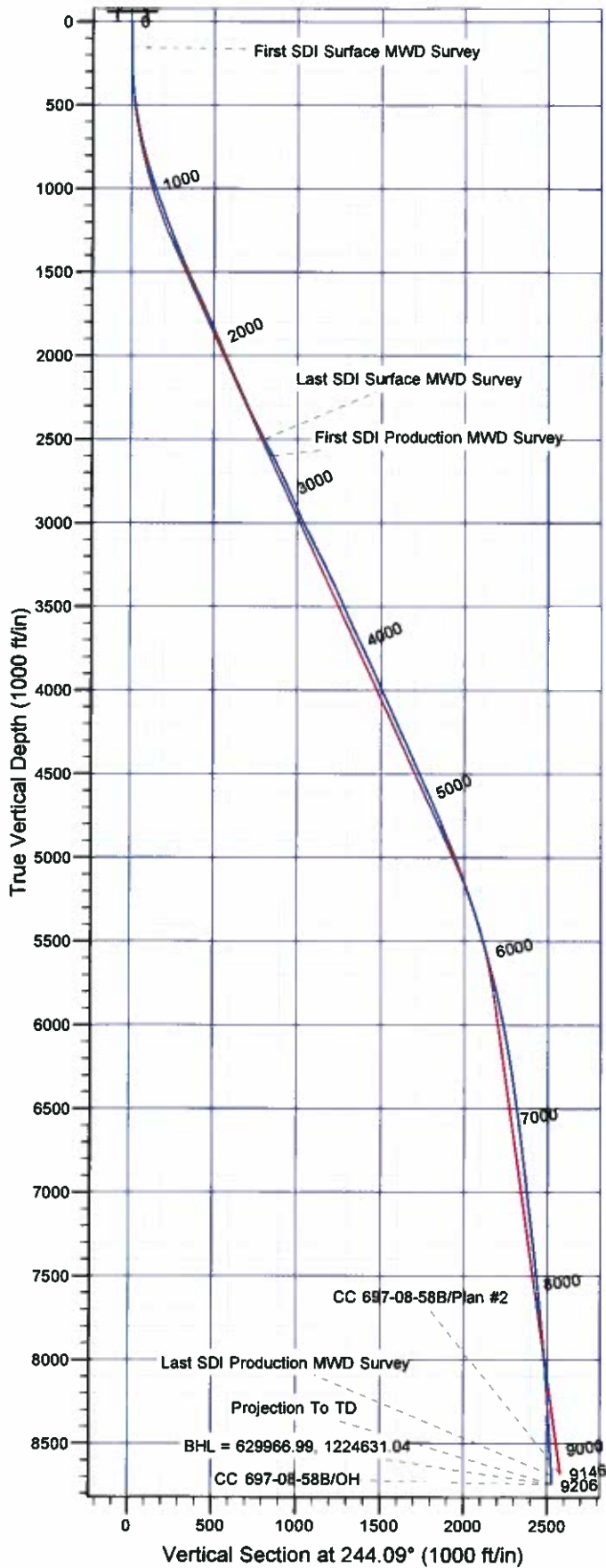
Standard Survey Report

12 November, 2011



Scientific Drilling

Company: OXY USA RMAT
 Project: Garfield County, CO NAD27
 Site: Cascade Creek 697-08-53 Pad
 Well: CC 697-08-58B
 Wellbore: OH
 Design: OH



Well Details: CC 697-08-58B

TVD Reference: GL 8379' & RKB 30' @ 8409.00ft (H&P 330) Level: 8379.00
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.00 0.00 631005.76 1226935.47 39° 32' 2.064 N 108° 14' 28.454 W T

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well CC 697-08-58B - Slot T, True North
 Vertical (TVD) Reference: GL 8379' & RKB 30' @ 8409.00ft (H&P 330)
 Section (VS) Reference: Slot - T(0.00N, 0.00E)
 Measured Depth Reference: GL 8379' & RKB 30' @ 8409.00ft (H&P 330)
 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

11:47, November 12 2011
 Created By: Rex Hall

Scientific Drilling International

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-08-58B - Slot T
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8379' & RKB 30' @ 8409.00ft (H&P 330)
Site:	Cascade Creek 697-08-53 Pad	MD Reference:	GL 8379' & RKB 30' @ 8409.00ft (H&P 330)
Well:	CC 697-08-58B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies Compass Server

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 697-08-53 Pad, Sec. 8 T6S R97W			
Site Position:		Northing:	630,837.78 usft	Latitude:	39° 32' 0.393 N
From:	Map	Easting:	1,226,897.42 usft	Longitude:	108° 14' 28.874 W
Position Uncertainty:	0.00 ft	Slot Radius:	0.000 in	Grid Convergence:	-1.73 °

Well	CC 697-08-58B - Slot T					
Well Position	+N/-S	0.00 ft	Northing:	631,005.76 usft	Latitude:	39° 32' 2.064 N
	+E/-W	0.00 ft	Easting:	1,226,935.47 usft	Longitude:	108° 14' 28.454 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	8,379.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2005-10	2010/09/01	10.54	65.76	52,329

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	244.09	

Survey Program	Date	2011/11/12			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
154.00	2,654.00	Survey #1 - Surface MWD (OH)	MWD-SDI	MWD - Standard ISCWSA	
2,766.00	9,206.00	Survey #2 - 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	
154.00	0.80	303.57	153.99	0.59	-0.90	0.55	0.52	0.52	0.00	
First SDI Surface MWD Survey										
243.00	1.50	260.73	242.98	0.75	-2.56	1.98	1.19	0.79	-48.13	
333.00	3.21	226.22	332.90	-1.18	-5.55	5.51	2.39	1.90	-38.34	
422.00	6.33	242.03	421.59	-5.21	-11.68	12.78	3.77	3.51	17.76	
511.00	8.71	245.55	509.82	-10.30	-22.15	24.42	2.72	2.67	3.96	
602.00	10.82	243.79	599.49	-16.93	-36.09	39.85	2.34	2.32	-1.93	
694.00	12.75	244.93	689.55	-25.04	-53.03	58.64	2.11	2.10	1.24	
786.00	14.68	242.73	778.92	-34.69	-72.59	80.45	2.17	2.10	-2.39	

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Survey Report

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Project:	Garfield County, CO NAD27	TVD Reference:	GL 8379' & RKB 30' @ 8409.00ft (H&P 330)
Site:	Cascade Creek 697-08-53 Pad	MD Reference:	GL 8379' & RKB 30' @ 8409.00ft (H&P 330)
Well:	CC 697-08-58B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	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)
875.00	17.06	242.47	864.52	-45.89	-94.19	104.78	2.68	2.67	-0.29
966.00	18.38	241.68	951.20	-58.87	-118.66	132.46	1.47	1.45	-0.87
1,060.00	19.17	241.24	1,040.20	-73.32	-145.24	162.68	0.85	0.84	-0.47
1,155.00	20.31	242.38	1,129.62	-88.47	-173.52	194.74	1.27	1.20	1.20
1,250.00	21.02	243.26	1,218.51	-103.78	-203.35	228.25	0.82	0.75	0.93
1,344.00	21.80	244.40	1,306.02	-118.91	-234.14	262.56	0.94	0.83	1.21
1,439.00	23.39	243.79	1,393.72	-134.86	-266.97	299.06	1.69	1.67	-0.64
1,534.00	24.36	247.22	1,480.60	-150.77	-301.96	337.49	1.78	1.02	3.61
1,628.00	25.32	248.71	1,565.90	-165.58	-338.56	376.88	1.22	1.02	1.59
1,723.00	24.53	248.54	1,652.05	-180.17	-375.84	416.79	0.83	-0.83	-0.18
1,818.00	24.18	245.02	1,738.60	-195.60	-411.83	455.91	1.57	-0.37	-3.71
1,913.00	23.92	244.76	1,825.36	-212.03	-446.89	494.62	0.30	-0.27	-0.27
2,007.00	23.65	243.97	1,911.37	-228.43	-481.07	532.53	0.44	-0.29	-0.84
2,102.00	22.95	243.35	1,998.62	-245.10	-514.75	570.10	0.78	-0.74	-0.65
2,196.00	23.57	242.56	2,084.98	-261.98	-547.81	607.22	0.74	0.66	-0.84
2,291.00	24.09	240.98	2,171.89	-280.14	-581.62	645.56	0.87	0.55	-1.66
2,386.00	24.09	240.71	2,258.61	-299.03	-615.48	684.28	0.12	0.00	-0.28
2,480.00	25.24	242.73	2,344.04	-317.60	-650.03	723.47	1.52	1.22	2.15
2,575.00	27.61	245.81	2,429.11	-335.90	-688.12	765.73	2.88	2.49	3.24
2,654.00	27.79	247.13	2,499.05	-350.56	-721.79	802.42	0.81	0.23	1.67
Last SDI Surface MWD Survey									
2,766.00	26.20	247.22	2,598.85	-370.28	-768.64	853.18	1.42	-1.42	0.08
First SDI Production MWD Survey									
2,860.00	25.76	247.13	2,683.35	-386.26	-806.59	894.30	0.47	-0.47	-0.10
2,955.00	24.18	243.17	2,769.47	-403.06	-842.98	934.37	2.42	-1.66	-4.17
3,050.00	23.21	243.26	2,856.46	-420.27	-877.06	972.54	1.02	-1.02	0.09
3,145.00	24.01	240.27	2,943.51	-438.28	-910.57	1,010.55	1.52	0.84	-3.15
3,239.00	26.20	239.83	3,028.63	-458.19	-945.12	1,050.33	2.34	2.33	-0.47
3,334.00	27.96	242.03	3,113.21	-479.18	-982.92	1,093.50	2.13	1.85	2.32
3,429.00	26.82	243.26	3,197.56	-499.27	-1,021.73	1,137.19	1.34	-1.20	1.29
3,524.00	25.59	242.73	3,282.80	-518.31	-1,059.11	1,179.13	1.32	-1.29	-0.56
3,618.00	24.53	242.38	3,367.95	-536.66	-1,094.44	1,218.93	1.14	-1.13	-0.37
3,713.00	22.95	242.73	3,454.90	-554.29	-1,128.38	1,257.16	1.67	-1.66	0.37
3,807.00	24.53	245.28	3,540.95	-570.85	-1,162.40	1,294.99	2.00	1.68	2.71
3,902.00	23.83	245.37	3,627.61	-587.09	-1,197.76	1,333.90	0.74	-0.74	0.09
3,997.00	25.94	244.40	3,713.79	-604.07	-1,233.95	1,373.87	2.26	2.22	-1.02
4,091.00	25.06	243.88	3,798.63	-621.72	-1,270.36	1,414.33	0.97	-0.94	-0.55
4,186.00	24.09	244.93	3,885.03	-638.79	-1,305.99	1,453.84	1.12	-1.02	1.11
4,281.00	23.21	244.93	3,972.05	-654.94	-1,340.51	1,491.94	0.93	-0.93	0.00
4,376.00	24.97	243.70	4,058.77	-671.76	-1,375.44	1,530.72	1.93	1.85	-1.29
4,470.00	24.36	244.23	4,144.19	-688.98	-1,410.69	1,569.94	0.69	-0.65	0.56
4,565.00	23.57	242.82	4,231.00	-706.17	-1,445.23	1,608.53	1.03	-0.83	-1.48
4,660.00	24.45	242.38	4,317.78	-723.96	-1,479.55	1,647.17	0.95	0.93	-0.46

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Survey Report

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Project:	Garfield County, CO NAD27	TVD Reference:	GL 8379' & RKB 30' @ 8409.00ft (H&P 330)
Site:	Cascade Creek 697-08-53 Pad	MD Reference:	GL 8379' & RKB 30' @ 8409.00ft (H&P 330)
Well:	CC 697-08-58B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	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)
4,755.00	23.65	242.30	4,404.53	-741.94	-1,513.84	1,685.86	0.84	-0.84	-0.08
4,849.00	25.24	241.50	4,490.11	-760.26	-1,548.15	1,724.73	1.73	1.69	-0.85
4,944.00	23.92	241.33	4,576.50	-779.17	-1,582.85	1,764.20	1.39	-1.39	-0.18
5,039.00	23.39	243.44	4,663.51	-796.84	-1,616.61	1,802.30	1.05	-0.56	2.22
5,133.00	23.30	244.14	4,749.82	-813.29	-1,650.03	1,839.55	0.31	-0.10	0.74
5,228.00	21.37	244.40	4,837.69	-828.97	-1,682.55	1,875.65	2.03	-2.03	0.27
5,323.00	22.86	243.53	4,925.70	-844.67	-1,714.68	1,911.41	1.61	1.57	-0.92
5,417.00	21.72	244.32	5,012.67	-860.35	-1,746.70	1,947.06	1.25	-1.21	0.84
5,512.00	20.40	244.05	5,101.32	-875.21	-1,777.43	1,981.20	1.39	-1.39	-0.28
5,607.00	19.17	244.23	5,190.71	-889.24	-1,806.37	2,013.35	1.30	-1.29	0.19
5,702.00	18.38	244.14	5,280.66	-902.55	-1,833.89	2,043.93	0.83	-0.83	-0.09
5,796.00	17.32	244.84	5,370.13	-914.97	-1,859.89	2,072.74	1.15	-1.13	0.74
5,891.00	16.27	246.07	5,461.08	-926.38	-1,884.86	2,100.18	1.17	-1.11	1.29
5,986.00	15.48	246.69	5,552.46	-936.79	-1,908.66	2,126.15	0.85	-0.83	0.65
6,081.00	15.12	245.99	5,644.09	-946.85	-1,931.63	2,151.20	0.43	-0.38	-0.74
6,175.00	13.89	246.60	5,735.09	-956.32	-1,953.18	2,174.72	1.32	-1.31	0.65
6,270.00	12.40	248.27	5,827.60	-964.63	-1,973.12	2,196.29	1.62	-1.57	1.76
6,365.00	12.40	244.76	5,920.38	-972.75	-1,991.82	2,216.66	0.79	0.00	-3.69
6,459.00	11.52	245.11	6,012.34	-981.01	-2,009.47	2,236.14	0.94	-0.94	0.37
6,554.00	10.20	247.48	6,105.64	-988.22	-2,025.84	2,254.02	1.47	-1.39	2.49
6,649.00	9.06	245.55	6,199.30	-994.54	-2,040.42	2,269.89	1.25	-1.20	-2.03
6,743.00	9.50	239.31	6,292.07	-1,001.56	-2,053.83	2,285.02	1.17	0.47	-6.64
6,838.00	8.62	240.98	6,385.89	-1,009.02	-2,066.80	2,299.94	0.97	-0.93	1.76
6,932.00	8.00	244.32	6,478.90	-1,015.27	-2,078.85	2,313.52	0.84	-0.66	3.55
7,027.00	7.03	244.58	6,573.08	-1,020.63	-2,090.06	2,325.94	1.02	-1.02	0.27
7,122.00	5.98	245.72	6,667.47	-1,025.16	-2,099.82	2,336.70	1.11	-1.11	1.20
7,217.00	7.12	241.77	6,761.85	-1,029.98	-2,109.52	2,347.53	1.29	1.20	-4.16
7,311.00	7.39	239.92	6,855.10	-1,035.76	-2,119.89	2,359.38	0.38	0.29	-1.97
7,406.00	5.98	244.58	6,949.45	-1,040.95	-2,129.64	2,370.43	1.59	-1.48	4.91
7,501.00	6.16	241.68	7,043.92	-1,045.49	-2,138.60	2,380.47	0.37	0.19	-3.05
7,596.00	7.56	238.87	7,138.23	-1,051.14	-2,148.44	2,391.78	1.52	1.47	-2.96
7,690.00	7.12	243.53	7,231.46	-1,056.94	-2,158.94	2,403.77	0.79	-0.47	4.96
7,785.00	6.42	241.42	7,325.80	-1,062.10	-2,168.88	2,414.96	0.78	-0.74	-2.22
7,880.00	6.07	244.40	7,420.24	-1,066.81	-2,178.07	2,425.29	0.50	-0.37	3.14
7,974.00	5.28	244.23	7,513.78	-1,070.84	-2,186.45	2,434.58	0.84	-0.84	-0.18
8,069.00	5.80	236.49	7,608.33	-1,075.39	-2,194.39	2,443.71	0.96	0.55	-8.15
8,164.00	6.33	232.10	7,702.80	-1,081.26	-2,202.52	2,453.59	0.74	0.56	-4.62
8,258.00	5.54	236.32	7,796.30	-1,086.96	-2,210.39	2,463.16	0.96	-0.84	4.49
8,353.00	5.36	240.01	7,890.87	-1,091.72	-2,218.05	2,472.13	0.41	-0.19	3.88
8,448.00	4.75	247.22	7,985.50	-1,095.46	-2,225.52	2,480.48	0.93	-0.64	7.59
8,542.00	4.40	254.69	8,079.20	-1,097.92	-2,232.58	2,487.91	0.73	-0.37	7.95
8,637.00	4.22	254.42	8,173.93	-1,099.82	-2,239.47	2,494.93	0.19	-0.19	-0.28
8,732.00	3.61	255.83	8,268.71	-1,101.49	-2,245.73	2,501.30	0.65	-0.64	1.48
8,826.00	3.52	262.33	8,362.53	-1,102.60	-2,251.46	2,506.94	0.44	-0.10	6.91

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Survey Report

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Project:	Garfield County, CO NAD27	TVD Reference:	GL 8379' & RKB 30' @ 8409.00ft (H&P 330)
Site:	Cascade Creek 697-08-53 Pad	MD Reference:	GL 8379' & RKB 30' @ 8409.00ft (H&P 330)
Well:	CC 697-08-58B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	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)
8,921.00	3.61	256.89	8,457.34	-1,103.67	-2,257.26	2,512.62	0.37	0.09	-5.73
9,015.00	3.34	255.83	8,551.17	-1,105.01	-2,262.80	2,518.19	0.30	-0.29	-1.13
9,110.00	2.99	254.25	8,646.03	-1,106.36	-2,267.87	2,523.34	0.38	-0.37	-1.66
9,150.00	2.55	249.59	8,685.98	-1,106.95	-2,269.71	2,525.25	1.23	-1.10	-11.65
Last SDI Production MWD Survey									
9,206.00	2.55	249.59	8,741.92	-1,107.82	-2,272.04	2,527.73	0.00	0.00	0.00
Projection To TD - BHL = 629966.99, 1224631.04									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
154.00	153.99	0.59	-0.90	First SDI Surface MWD Survey
2,654.00	2,499.05	-350.56	-721.79	Last SDI Surface MWD Survey
2,766.00	2,598.85	-370.28	-768.64	First SDI Production MWD Survey
9,150.00	8,685.98	-1,106.95	-2,269.71	Last SDI Production MWD Survey
9,206.00	8,741.92	-1,107.82	-2,272.04	Projection To TD
9,206.00	8,741.92	-1,107.82	-2,272.04	BHL = 629966.99, 1224631.04

Checked By: _____	Approved By: _____	Date: _____
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