

OXY USA RMAT

Garfield County, CO NAD27

Cascade Creek 697-08-53 Pad

CC 697-08-58C - Slot V

OH

Design: OH

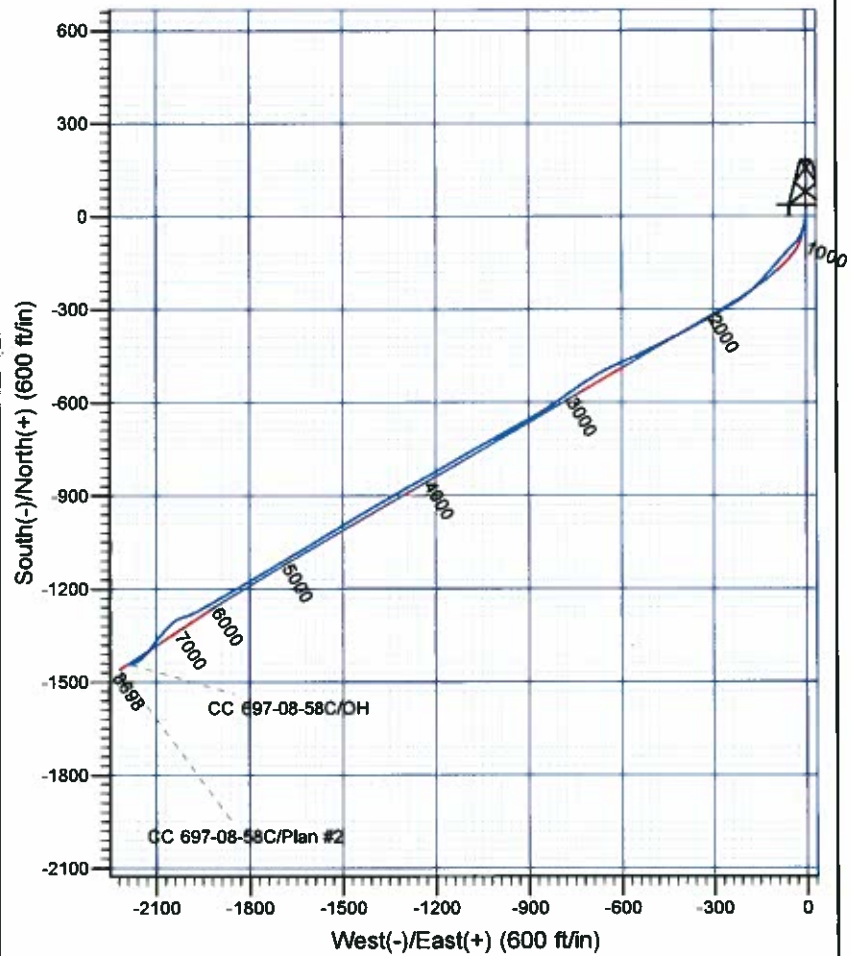
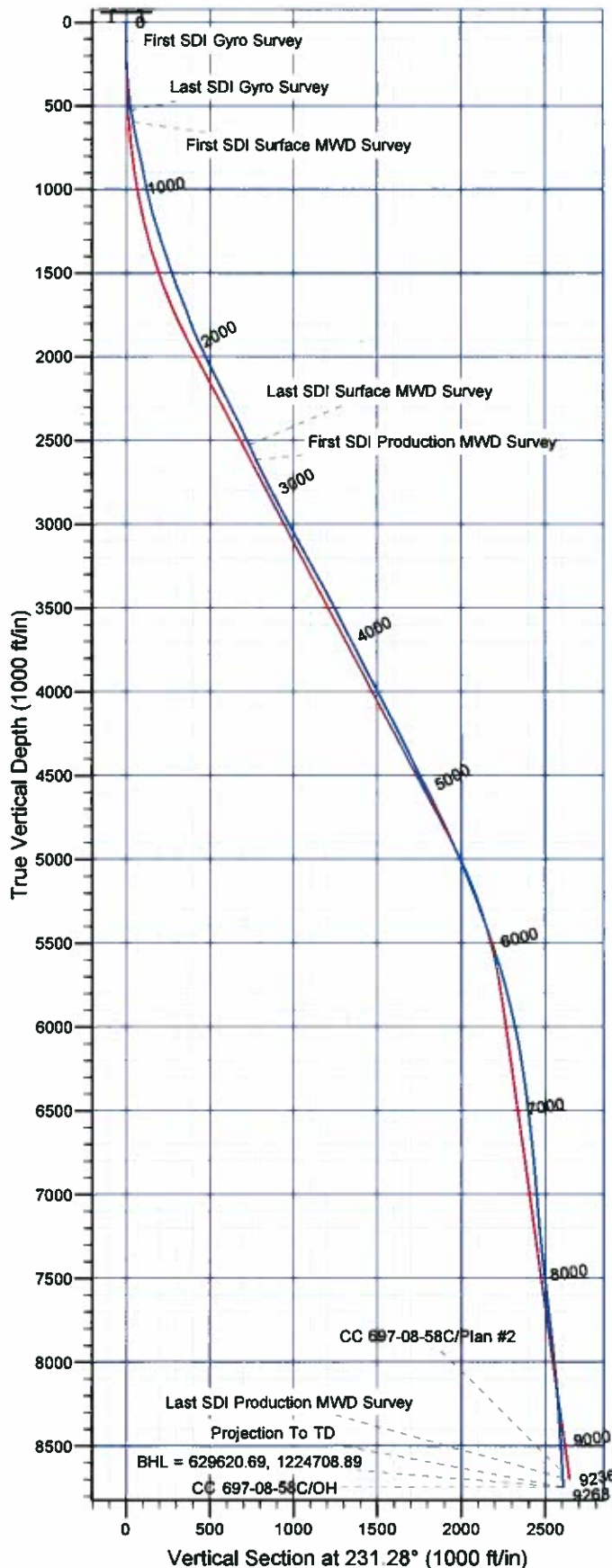
Standard Survey Report

01 December, 2011



Scientific Drilling

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



Well Details: CC 697-08-58C

TVD Reference: GL 8379' & RKB 30' @ 8409.00ft (H&P 330)		North		East		Latitude		Longitude		Slot
+N/-S	+E/-W	North	East	Latitude	Longitude	Latitude	Longitude	Latitude	Longitude	V
0.00	0.00	630998.75	1226932.78	39° 32' 1.994 N	108° 14' 28.485 W					

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well CC 697-08-58C - Slot V, True North
 Vertical (TVD) Reference: GL 8379' & RKB 30' @ 8409.00ft (H&P 330)
 Section (VS) Reference: Slot - V(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

16:23, December 01 2011
 Created By: Rex Hall

Scientific Drilling International

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-08-58C - Slot V
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 697-08-58C	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 697-08-58C - Slot V					
Well Position	+N/-S	0.00 ft	Northing:	630,998.75 usft	Latitude:	39° 32' 1.994 N
	+E/-W	0.00 ft	Easting:	1,226,932.78 usft	Longitude:	108° 14' 28.485 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		231.28

Survey Program	Date	2011/12/01			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
111.00	528.00	Survey #1 - Gyro Survey (OH)	Standard Keeper 103	Standard Wireline Keeper ver 1.0.3	
602.00	2,666.00	Survey #2 - Surface MWD (OH)	MWD-SDI	MWD - Standard ISCWSA	
2,765.00	9,268.00	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	
111.00	0.44	179.56	111.00	-0.43	0.00	0.26	0.40	0.40	0.00	
First SDI Gyro Survey										
171.00	1.06	174.02	170.99	-1.21	0.06	0.71	1.04	1.03	-9.23	
260.00	2.11	187.47	259.96	-3.65	-0.06	2.33	1.24	1.18	15.11	
350.00	5.63	187.29	349.74	-9.68	-0.84	6.71	3.91	3.91	-0.20	
439.00	8.18	191.16	438.09	-20.22	-2.62	14.69	2.91	2.87	4.35	
528.00	10.65	199.69	525.89	-34.18	-6.62	26.54	3.18	2.78	9.58	

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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 697-08-58C	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)
Last SDI Gyro Survey									
602.00	12.57	197.65	598.37	-48.29	-11.36	39.07	2.65	2.59	-2.76
First SDI Surface MWD Survey									
694.00	13.01	208.90	688.10	-66.90	-19.40	56.99	2.74	0.48	12.23
786.00	11.96	223.49	777.95	-82.89	-30.97	76.01	3.60	-1.14	15.86
875.00	11.17	224.54	865.14	-95.72	-43.37	93.71	0.92	-0.89	1.18
966.00	12.13	222.61	954.28	-109.04	-56.02	111.92	1.14	1.05	-2.12
1,060.00	13.54	221.82	1,045.91	-124.51	-70.05	132.53	1.51	1.50	-0.84
1,155.00	15.56	220.59	1,137.86	-142.48	-85.75	156.03	2.15	2.13	-1.29
1,250.00	17.94	220.67	1,228.82	-163.25	-103.58	182.93	2.51	2.51	0.08
1,344.00	19.79	221.55	1,317.77	-186.14	-123.57	212.85	1.99	1.97	0.94
1,439.00	17.59	224.72	1,407.76	-208.38	-144.34	242.96	2.55	-2.32	3.34
1,534.00	19.17	227.53	1,497.91	-229.11	-165.95	272.79	1.91	1.66	2.96
1,628.00	21.10	229.38	1,586.16	-250.55	-190.18	305.11	2.16	2.05	1.97
1,723.00	21.02	236.41	1,674.83	-271.12	-217.36	339.17	2.66	-0.08	7.40
1,818.00	20.58	239.83	1,763.64	-288.93	-245.99	372.65	1.36	-0.46	3.60
1,913.00	21.46	240.19	1,852.32	-305.96	-275.50	406.34	0.94	0.93	0.38
2,007.00	25.68	241.15	1,938.46	-324.35	-308.27	443.41	4.51	4.49	1.02
2,102.00	26.29	241.24	2,023.85	-344.40	-344.75	484.41	0.64	0.64	0.09
2,196.00	27.44	242.38	2,107.71	-364.46	-382.19	526.16	1.34	1.22	1.21
2,291.00	27.44	242.47	2,192.02	-384.73	-420.99	569.12	0.04	0.00	0.09
2,386.00	27.61	243.35	2,276.27	-404.72	-460.08	612.12	0.46	0.18	0.93
2,480.00	26.91	243.17	2,359.83	-424.09	-498.53	654.23	0.75	-0.74	-0.19
2,575.00	25.94	245.28	2,444.90	-442.48	-536.59	695.43	1.42	-1.02	2.22
2,666.00	25.76	245.20	2,526.80	-459.10	-572.62	733.94	0.20	-0.20	-0.09
Last SDI Surface MWD Survey									
2,765.00	25.24	247.13	2,616.15	-476.33	-611.60	775.12	0.99	-0.53	1.95
First SDI Production MWD Survey									
2,860.00	28.05	243.35	2,701.06	-494.22	-650.23	816.46	3.45	2.96	-3.98
2,955.00	28.31	238.60	2,784.81	-515.98	-689.43	860.65	2.38	0.27	-5.00
3,049.00	27.61	235.70	2,867.84	-539.87	-726.45	904.48	1.63	-0.74	-3.09
3,144.00	28.58	235.00	2,951.65	-565.31	-763.25	949.11	1.08	1.02	-0.74
3,239.00	27.17	234.56	3,035.62	-590.92	-799.54	993.44	1.50	-1.48	-0.46
3,334.00	28.75	236.85	3,119.53	-615.99	-836.34	1,037.84	2.01	1.66	2.41
3,428.00	30.07	240.01	3,201.42	-640.13	-875.67	1,083.62	2.17	1.40	3.36
3,523.00	29.46	241.06	3,283.89	-663.33	-916.73	1,130.16	0.84	-0.64	1.11
3,618.00	28.84	240.89	3,366.86	-685.78	-957.19	1,175.78	0.66	-0.65	-0.18
3,712.00	27.96	240.80	3,449.54	-707.56	-996.23	1,219.86	0.94	-0.94	-0.10
3,807.00	27.44	240.63	3,533.66	-729.16	-1,034.75	1,263.43	0.55	-0.55	-0.18
3,901.00	26.82	240.80	3,617.31	-750.13	-1,072.14	1,305.71	0.66	-0.66	0.18
3,996.00	28.23	240.10	3,701.56	-771.79	-1,110.32	1,349.05	1.52	1.48	-0.74
4,091.00	27.44	239.92	3,785.57	-793.96	-1,148.74	1,392.90	0.84	-0.83	-0.19
4,185.00	26.64	240.10	3,869.29	-815.32	-1,185.76	1,435.13	0.86	-0.85	0.19
4,280.00	28.67	240.19	3,953.43	-837.27	-1,224.00	1,478.70	2.14	2.14	0.09

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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 697-08-58C	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)
4,375.00	28.14	240.80	4,037.00	-859.53	-1,263.33	1,523.31	0.64	-0.56	0.64
4,470.00	26.56	240.98	4,121.37	-880.76	-1,301.46	1,566.34	1.67	-1.66	0.19
4,565.00	28.14	240.01	4,205.75	-902.26	-1,339.43	1,609.42	1.73	1.66	-1.02
4,659.00	27.17	239.66	4,289.01	-924.18	-1,377.16	1,652.56	1.05	-1.03	-0.37
4,754.00	25.32	240.54	4,374.22	-945.13	-1,413.57	1,694.07	1.99	-1.95	0.93
4,849.00	26.73	238.60	4,459.58	-966.26	-1,449.49	1,735.32	1.73	1.48	-2.04
4,944.00	26.91	238.25	4,544.36	-988.70	-1,486.01	1,777.85	0.25	0.19	-0.37
5,038.00	27.26	238.78	4,628.05	-1,011.05	-1,522.51	1,820.30	0.45	0.37	0.56
5,133.00	25.59	239.57	4,713.13	-1,032.72	-1,558.81	1,862.18	1.80	-1.76	0.83
5,227.00	25.50	238.34	4,797.94	-1,053.62	-1,593.53	1,902.35	0.57	-0.10	-1.31
5,322.00	24.09	239.48	4,884.18	-1,074.20	-1,627.64	1,941.84	1.57	-1.48	1.20
5,417.00	22.42	239.48	4,971.46	-1,093.25	-1,659.95	1,978.96	1.76	-1.76	0.00
5,512.00	22.95	239.13	5,059.11	-1,111.96	-1,691.46	2,015.24	0.58	0.56	-0.37
5,606.00	21.90	239.40	5,146.00	-1,130.28	-1,722.28	2,050.75	1.12	-1.12	0.29
5,701.00	21.28	240.19	5,234.33	-1,147.87	-1,752.49	2,085.32	0.72	-0.65	0.83
5,796.00	20.49	239.13	5,323.09	-1,164.97	-1,781.72	2,118.82	0.92	-0.83	-1.12
5,891.00	20.05	239.13	5,412.21	-1,181.86	-1,809.97	2,151.43	0.46	-0.46	0.00
5,985.00	19.17	239.57	5,500.75	-1,197.95	-1,837.10	2,182.66	0.95	-0.94	0.47
6,080.00	17.94	239.92	5,590.81	-1,213.18	-1,863.22	2,212.56	1.30	-1.29	0.37
6,175.00	16.44	239.04	5,681.57	-1,227.43	-1,887.41	2,240.35	1.60	-1.58	-0.93
6,269.00	15.04	240.19	5,772.04	-1,240.34	-1,909.40	2,265.58	1.53	-1.49	1.22
6,364.00	13.63	239.31	5,864.08	-1,252.18	-1,929.72	2,288.84	1.50	-1.48	-0.93
6,459.00	12.93	241.50	5,956.54	-1,262.96	-1,948.68	2,310.38	0.91	-0.74	2.31
6,553.00	10.82	243.35	6,048.52	-1,271.94	-1,965.81	2,329.36	2.28	-2.24	1.97
6,648.00	9.67	244.49	6,142.01	-1,279.37	-1,980.98	2,345.85	1.23	-1.21	1.20
6,743.00	8.97	247.66	6,235.75	-1,285.63	-1,995.04	2,360.72	0.91	-0.74	3.34
6,837.00	8.35	250.82	6,328.68	-1,290.65	-2,008.26	2,374.19	0.83	-0.66	3.36
6,932.00	8.35	253.11	6,422.68	-1,294.92	-2,021.38	2,387.09	0.35	0.00	2.41
7,027.00	7.47	242.12	6,516.78	-1,299.82	-2,033.44	2,399.56	1.84	-0.93	-11.57
7,121.00	6.60	227.97	6,610.07	-1,306.29	-2,042.85	2,410.96	2.06	-0.93	-15.05
7,216.00	5.89	223.84	6,704.51	-1,313.46	-2,050.28	2,421.24	0.88	-0.75	-4.35
7,311.00	5.63	224.63	6,799.03	-1,320.29	-2,056.93	2,430.70	0.29	-0.27	0.83
7,406.00	4.57	227.62	6,893.65	-1,326.16	-2,063.00	2,439.11	1.15	-1.12	3.15
7,501.00	4.13	228.50	6,988.38	-1,330.98	-2,068.36	2,446.30	0.47	-0.46	0.93
7,595.00	5.19	218.39	7,082.07	-1,336.55	-2,073.54	2,453.83	1.42	1.13	-10.76
7,690.00	5.98	217.51	7,176.62	-1,343.85	-2,079.22	2,462.82	0.84	0.83	-0.93
7,784.00	5.19	221.29	7,270.17	-1,350.93	-2,085.00	2,471.77	0.93	-0.84	4.02
7,879.00	5.63	224.10	7,364.75	-1,357.50	-2,091.08	2,480.62	0.54	0.46	2.96
7,974.00	7.03	218.74	7,459.17	-1,365.38	-2,097.96	2,490.92	1.60	1.47	-5.64
8,068.00	7.30	216.63	7,552.43	-1,374.66	-2,105.13	2,502.31	0.40	0.29	-2.24
8,163.00	7.74	216.98	7,646.62	-1,384.62	-2,112.58	2,514.35	0.47	0.46	0.37
8,258.00	6.95	216.46	7,740.84	-1,394.35	-2,119.84	2,526.11	0.83	-0.83	-0.55
8,353.00	6.33	217.51	7,835.20	-1,403.13	-2,126.44	2,536.75	0.67	-0.65	1.11

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Site:	Cascade Creek 697-08-53 Pad	MD Reference:	GL 8379' & RKB 30' @ 8409.00ft (H&P 330)
Well:	CC 697-08-58C	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)
8,447.00	5.80	217.95	7,928.67	-1,410.98	-2,132.52	2,546.41	0.57	-0.56	0.47
8,542.00	5.10	228.06	8,023.24	-1,417.59	-2,138.61	2,555.29	1.25	-0.74	10.64
8,636.00	4.84	232.63	8,116.89	-1,422.79	-2,144.87	2,563.43	0.50	-0.28	4.86
8,731.00	4.22	235.88	8,211.59	-1,427.18	-2,150.95	2,570.92	0.71	-0.65	3.42
8,826.00	4.04	241.15	8,306.35	-1,430.76	-2,156.78	2,577.70	0.44	-0.19	5.55
8,920.00	3.96	236.67	8,400.12	-1,434.14	-2,162.39	2,584.19	0.34	-0.09	-4.77
9,015.00	3.78	238.34	8,494.90	-1,437.59	-2,167.80	2,590.57	0.22	-0.19	1.76
9,110.00	3.69	241.33	8,589.70	-1,440.70	-2,173.14	2,596.69	0.23	-0.09	3.15
9,212.00	3.08	246.87	8,691.52	-1,443.35	-2,178.54	2,602.56	0.68	-0.60	5.43
Last SDI Production MWD Survey									
9,268.00	3.08	246.87	8,747.44	-1,444.53	-2,181.31	2,605.45	0.00	0.00	0.00
Projection To TD - BHL = 629620.69, 1224708.89									

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
111.00	111.00	-0.43	0.00	First SDI Gyro Survey
528.00	525.89	-34.18	-6.62	Last SDI Gyro Survey
602.00	598.37	-48.29	-11.36	First SDI Surface MWD Survey
2,666.00	2,526.80	-459.10	-572.62	Last SDI Surface MWD Survey
2,765.00	2,616.15	-476.33	-611.60	First SDI Production MWD Survey
9,212.00	8,691.52	-1,443.35	-2,178.54	Last SDI Production MWD Survey
9,268.00	8,747.44	-1,444.53	-2,181.31	Projection To TD
9,268.00	8,747.44	-1,444.53	-2,181.31	BHL = 629620.69, 1224708.89

Checked By: _____ Approved By: _____ Date: _____