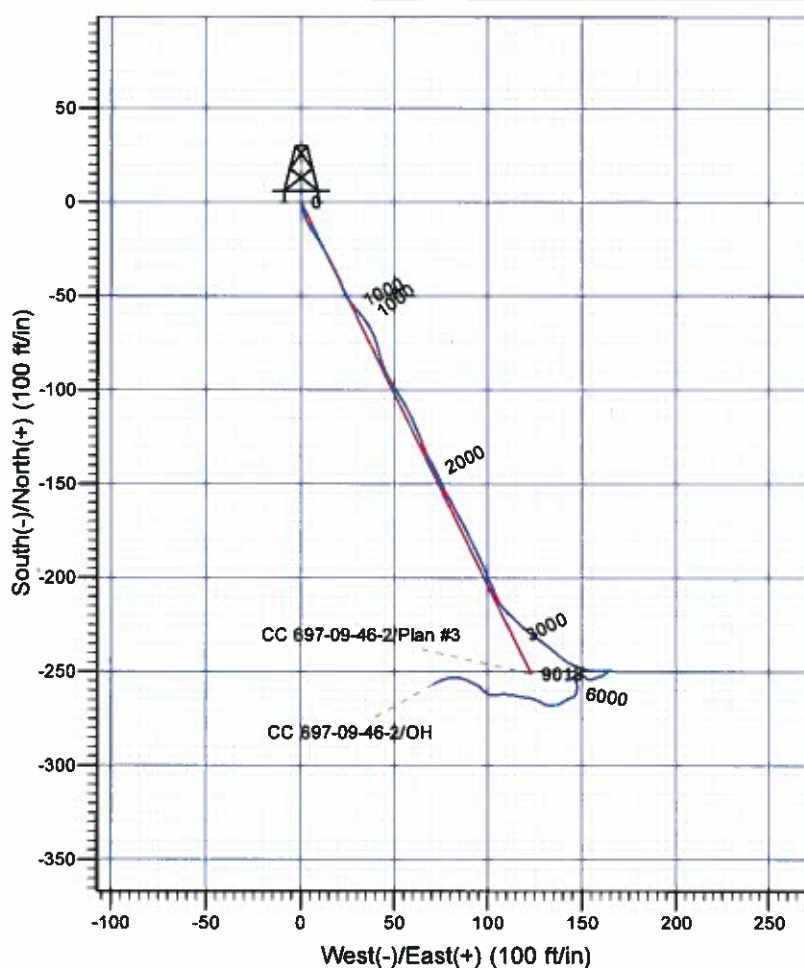
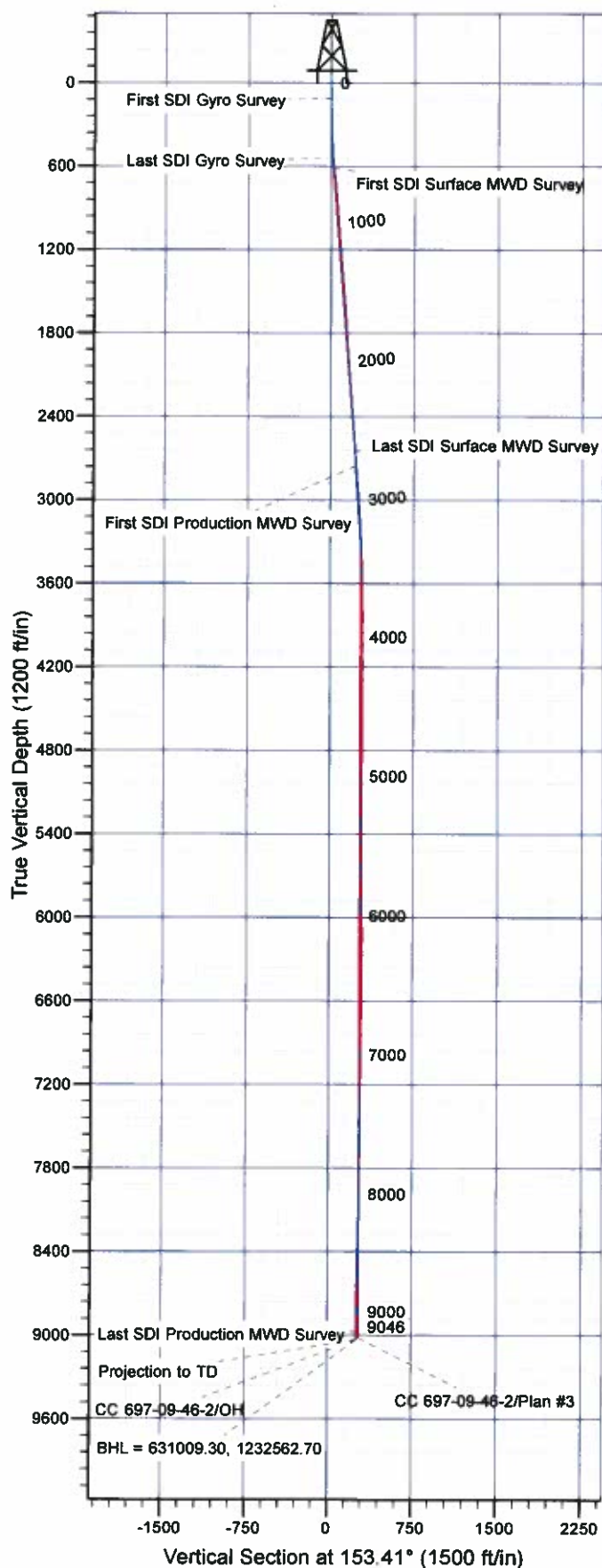




Scientific Drilling

Rocky Mountain Operations

Company: OXY USA RMAT
Project: Garfield County, CO NAD27
Site: Cascade Creek 609-33 Pad
Well: CC 697-09-46-2
Wellbore: OH
Design: OH



Well Details: CC 697-09-46-2

TVD Reference: GL 8381' & RKB 30' @ 8411.00ft (H&P 330)							Slot
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude		S
0.00	0.00	631267.98	1232499.39	39° 32' 6.308 N	108° 13' 17.571 W		

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well CC 697-09-46-2 - Slot S, True North
Vertical (TVD) Reference: GL 8381' & RKB 30' @ 8411.00ft (H&P 330)
Section (VS) Reference: Slot - S(0.00N, 0.00E)
Measured Depth Reference: GL 8381' & RKB 30' @ 8411.00ft (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

15:26, August 16 2011
Created By: Janie Cooke

OXY USA RMAT

Garfield County, CO NAD27

Cascade Creek 609-33 Pad

CC 697-09-46-2 - Slot S

OH

Design: OH

Standard Survey Report

16 August, 2011





Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-09-46-2 - Slot S
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8381' & RKB 30' @ 8411.00ft (H&P 330)
Site:	Cascade Creek 609-33 Pad	MD Reference:	GL 8381' & RKB 30' @ 8411.00ft (H&P 330)
Well:	CC 697-09-46-2	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 609-33 Pad, Sec 9 T6S R97W				
Site Position:		Northing:	631,314.66 usft	Latitude:	39° 32' 6.734 N
From:	Map	Easting:	1,232,383.54 usft	Longitude:	108° 13' 19.067 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.72 °

Well	CC 697-09-46-2 - Slot S					
Well Position	+N/-S	0.00 ft	Northing:	631,267.99 usft	Latitude:	39° 32' 6.308 N
	+E/-W	0.00 ft	Easting:	1,232,499.39 usft	Longitude:	108° 13' 17.571 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	8,381.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2005-10	2009/12/31	10.62	65.78	52,397

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	153.41	

Survey Program	Date	2011/08/16			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
112.00	542.00	Survey #1 - Gyro Survey (OH)	Standard Keeper 103	Standard Wireline Keeper ver 1.0.3	
617.00	2,658.00	Survey #2 - Surface MWD (OH)	MWD-SDI	MWD - Standard ISCWSA	
2,765.00	9,046.00	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
112.00	0.09	68.12	112.00	0.03	0.08	0.01	0.08	0.08	0.00
First SDI Gyro Survey									
174.00	0.62	164.79	174.00	-0.27	0.21	0.34	1.03	0.85	155.92
266.00	0.44	150.12	265.99	-1.06	0.52	1.18	0.24	-0.20	-15.95
358.00	2.82	173.67	357.95	-3.62	0.95	3.66	2.63	2.59	25.60
450.00	3.61	159.35	449.81	-8.58	2.22	8.66	1.22	0.86	-15.57
542.00	6.77	145.63	541.42	-15.76	6.30	16.92	3.67	3.43	-14.91



Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-09-46-2 - Slot S
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8381' & RKB 30' @ 8411.00ft (H&P 330)
Site:	Cascade Creek 609-33 Pad	MD Reference:	GL 8381' & RKB 30' @ 8411.00ft (H&P 330)
Well:	CC 697-09-46-2	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									
617.00	8.27	149.85	615.78	-24.08	11.51	26.68	2.13	2.00	5.63
First SDI Surface MWD Survey									
709.00	8.44	152.31	706.80	-35.78	17.97	40.04	0.43	0.18	2.67
800.00	5.54	162.94	797.12	-45.89	22.36	51.05	3.48	-3.19	11.68
892.00	5.28	138.95	888.72	-53.33	26.44	59.53	2.46	-0.28	-26.08
984.00	6.77	140.71	980.21	-60.72	32.66	68.92	1.63	1.62	1.91
1,078.00	5.63	155.21	1,073.66	-69.20	38.10	78.93	2.05	-1.21	15.43
1,173.00	5.45	166.02	1,168.22	-77.80	41.14	87.99	1.11	-0.19	11.38
1,268.00	6.07	160.57	1,262.74	-86.92	43.91	97.38	0.87	0.65	-5.74
1,363.00	5.36	148.00	1,357.27	-95.42	47.93	106.78	1.51	-0.75	-13.23
1,457.00	5.89	147.83	1,450.82	-103.22	52.82	115.95	0.56	0.56	-0.18
1,552.00	6.16	153.27	1,545.30	-111.90	57.71	125.90	0.66	0.28	5.73
1,647.00	4.04	157.32	1,639.91	-119.54	61.29	134.34	2.26	-2.23	4.26
1,741.00	4.40	159.43	1,733.66	-125.98	63.84	141.22	0.42	0.38	2.24
1,836.00	5.45	155.21	1,828.31	-133.48	67.01	149.36	1.17	1.11	-4.44
1,930.00	5.45	151.16	1,921.88	-141.45	71.03	158.28	0.41	0.00	-4.31
2,025.00	4.75	155.03	2,016.51	-148.96	74.87	166.72	0.82	-0.74	4.07
2,120.00	4.66	154.07	2,111.19	-156.00	78.22	174.51	0.13	-0.09	-1.01
2,215.00	5.63	149.67	2,205.80	-163.49	82.26	183.02	1.10	1.02	-4.63
2,310.00	5.19	153.19	2,300.38	-171.35	86.55	191.97	0.58	-0.46	3.71
2,404.00	6.24	153.10	2,393.91	-179.70	90.78	201.33	1.12	1.12	-0.10
2,499.00	5.54	155.47	2,488.41	-188.48	95.02	211.07	0.78	-0.74	2.49
2,594.00	4.48	157.58	2,583.05	-196.08	98.34	219.36	1.13	-1.12	2.22
2,658.00	4.31	153.19	2,646.86	-200.54	100.38	224.25	0.59	-0.27	-6.86
Last SDI Surface MWD Survey									
2,765.00	3.34	162.33	2,753.62	-207.09	103.14	231.35	1.07	-0.91	8.54
First SDI Production MWD Survey									
2,859.00	3.96	149.58	2,847.43	-212.50	105.61	237.30	1.08	0.66	-13.56
2,954.00	6.24	134.99	2,942.05	-218.98	110.92	245.47	2.74	2.40	-15.36
3,049.00	5.01	132.97	3,036.59	-225.46	117.61	254.26	1.31	-1.29	-2.13
3,143.00	5.89	126.91	3,130.17	-231.15	124.47	262.42	1.12	0.94	-6.45
3,238.00	5.80	126.99	3,224.67	-236.97	132.20	271.08	0.10	-0.09	0.08
3,332.00	5.45	130.69	3,318.22	-242.74	139.38	279.45	0.54	-0.37	3.94
3,427.00	3.87	108.63	3,412.91	-246.70	145.84	285.89	2.49	-1.66	-23.22
3,522.00	3.52	110.30	3,507.71	-248.74	151.61	290.29	0.39	-0.37	1.76
3,617.00	2.64	90.43	3,602.58	-249.77	156.54	293.42	1.44	-0.93	-20.92
3,711.00	2.11	86.65	3,696.50	-249.68	160.43	295.08	0.59	-0.56	-4.02
3,806.00	1.93	85.86	3,791.44	-249.47	163.77	296.38	0.19	-0.19	-0.83
3,901.00	0.09	152.40	3,886.42	-249.42	165.40	297.07	2.00	-1.94	70.04
3,996.00	0.35	246.61	3,981.42	-249.60	165.17	297.13	0.39	0.27	99.17
4,090.00	0.44	273.16	4,075.42	-249.69	164.55	296.93	0.21	0.10	28.24
4,185.00	0.53	251.54	4,170.41	-249.81	163.76	296.69	0.21	0.09	-22.76
4,280.00	0.53	221.30	4,265.41	-250.28	163.06	296.79	0.29	0.00	-31.83



Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-09-46-2 - Slot S
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8381' & RKB 30' @ 8411.00ft (H&P 330)
Site:	Cascade Creek 609-33 Pad	MD Reference:	GL 8381' & RKB 30' @ 8411.00ft (H&P 330)
Well:	CC 697-09-46-2	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)
4,374.00	0.88	225.70	4,359.40	-251.11	162.25	297.18	0.38	0.37	4.68
4,469.00	0.53	237.65	4,454.39	-251.86	161.36	297.44	0.40	-0.37	12.58
4,563.00	1.14	249.34	4,548.38	-252.42	160.12	297.39	0.67	0.65	12.44
4,658.00	1.06	261.99	4,643.37	-252.87	158.36	297.01	0.27	-0.08	13.32
4,753.00	2.73	243.27	4,738.31	-254.01	155.47	296.74	1.85	1.76	-19.71
4,847.00	1.67	325.72	4,832.26	-253.89	152.70	295.39	3.20	-1.13	87.71
4,942.00	1.76	288.98	4,927.22	-252.27	150.54	292.97	1.14	0.09	-38.67
5,037.00	0.97	256.28	5,022.19	-251.99	148.38	291.75	1.14	-0.83	-34.42
5,132.00	0.88	249.16	5,117.18	-252.44	146.92	291.50	0.15	-0.09	-7.49
5,226.00	0.97	255.49	5,211.17	-252.89	145.47	291.26	0.14	0.10	6.73
5,321.00	1.41	225.34	5,306.15	-253.92	143.86	291.45	0.79	0.46	-31.74
5,415.00	0.62	278.34	5,400.14	-254.66	142.54	291.52	1.22	-0.84	56.38
5,510.00	0.70	295.57	5,495.13	-254.33	141.51	290.77	0.22	0.08	18.14
5,605.00	0.53	67.76	5,590.13	-253.91	141.39	290.34	1.19	-0.18	139.15
5,700.00	1.58	81.56	5,685.11	-253.56	143.09	290.79	1.13	1.11	14.53
5,794.00	1.41	112.23	5,779.08	-253.80	145.44	292.06	0.86	-0.18	32.63
5,889.00	1.49	153.45	5,874.05	-255.35	147.08	294.17	1.08	0.08	43.39
5,984.00	2.29	186.15	5,969.00	-258.34	147.43	297.01	1.38	0.84	34.42
6,079.00	2.02	196.43	6,063.93	-261.83	146.75	299.83	0.50	-0.28	10.82
6,173.00	0.97	265.77	6,157.91	-263.48	145.49	300.74	2.03	-1.12	73.77
6,268.00	1.76	248.02	6,252.88	-264.09	143.33	300.31	0.93	0.83	-18.68
6,363.00	2.02	232.02	6,347.83	-265.66	140.66	300.53	0.62	0.27	-16.84
6,458.00	2.11	247.84	6,442.77	-267.35	137.72	300.72	0.61	0.09	16.65
6,552.00	2.55	267.71	6,536.69	-268.09	134.03	299.73	0.97	0.47	21.14
6,647.00	1.93	293.37	6,631.62	-267.54	130.45	297.63	1.23	-0.65	27.01
6,742.00	1.06	304.53	6,726.59	-266.41	128.26	295.64	0.96	-0.92	11.75
6,836.00	1.14	294.34	6,820.57	-265.53	126.69	294.15	0.22	0.09	-10.84
6,931.00	1.14	293.64	6,915.55	-264.76	124.96	292.69	0.01	0.00	-0.74
7,025.00	1.32	285.73	7,009.53	-264.09	123.06	291.24	0.26	0.19	-8.41
7,120.00	1.85	271.49	7,104.49	-263.76	120.48	289.78	0.69	0.56	-14.99
7,215.00	1.58	281.59	7,199.45	-263.45	117.66	288.25	0.43	-0.28	10.63
7,309.00	0.62	295.92	7,293.43	-262.97	115.93	287.05	1.05	-1.02	15.24
7,404.00	1.32	277.55	7,388.42	-262.60	114.39	286.03	0.80	0.74	-19.34
7,498.00	0.88	266.83	7,482.40	-262.50	112.59	285.13	0.51	-0.47	-11.40
7,593.00	1.06	287.22	7,577.39	-262.28	111.02	284.23	0.41	0.19	21.46
7,687.00	0.97	276.23	7,671.37	-261.94	109.40	283.20	0.23	-0.10	-11.69
7,782.00	1.32	263.05	7,766.35	-261.98	107.52	282.40	0.46	0.37	-13.87
7,877.00	1.67	259.53	7,861.32	-262.37	105.07	281.65	0.38	0.37	-3.71
7,971.00	1.58	275.53	7,955.28	-262.49	102.43	280.58	0.49	-0.10	17.02
8,066.00	1.67	295.04	8,050.25	-261.78	99.88	278.79	0.59	0.09	20.54
8,161.00	1.58	319.65	8,145.21	-260.19	97.77	276.44	0.73	-0.09	25.91
8,255.00	1.67	314.29	8,239.17	-258.25	95.95	273.88	0.19	0.10	-5.70
8,350.00	1.58	291.26	8,334.14	-256.81	93.74	271.60	0.69	-0.09	-24.24



Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-09-46-2 - Slot S
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Site:	Cascade Creek 609-33 Pad	MD Reference:	GL 8381' & RKB 30' @ 8411.00ft (H&P 330)
Well:	CC 697-09-46-2	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)
8,444.00	1.67	296.54	8,428.10	-255.73	91.31	269.55	0.19	0.10	5.62
8,539.00	1.76	291.35	8,523.05	-254.58	88.71	267.36	0.19	0.09	-5.46
8,634.00	2.37	286.78	8,617.99	-253.48	85.47	264.93	0.66	0.64	-4.81
8,728.00	1.67	269.82	8,711.93	-252.92	82.24	262.98	0.97	-0.74	-18.04
8,823.00	1.93	259.53	8,806.89	-253.22	79.28	261.92	0.44	0.27	-10.83
8,919.00	2.37	246.17	8,902.82	-254.31	75.88	261.38	0.69	0.46	-13.92
8,988.00	2.46	243.36	8,971.76	-255.55	73.25	261.31	0.22	0.13	-4.07
Last SDI Production MWD Survey									
9,046.00	2.46	243.36	9,029.71	-256.67	71.03	261.31	0.00	0.00	0.00
Projection to TD - BHL = 631009.30, 1232562.70									

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
112.00	112.00	0.03	0.08	First SDI Gyro Survey
542.00	541.42	-15.76	6.30	Last SDI Gyro Survey
617.00	615.78	-24.08	11.51	First SDI Surface MWD Survey
2,658.00	2,646.86	-200.54	100.38	Last SDI Surface MWD Survey
2,765.00	2,753.62	-207.09	103.14	First SDI Production MWD Survey
8,988.00	8,971.76	-255.55	73.25	Last SDI Production MWD Survey
9,046.00	9,029.71	-256.67	71.03	Projection to TD
9,046.00	9,029.71	-256.67	71.03	BHL = 631009.30, 1232562.70

Checked By: _____ Approved By: _____ Date: _____