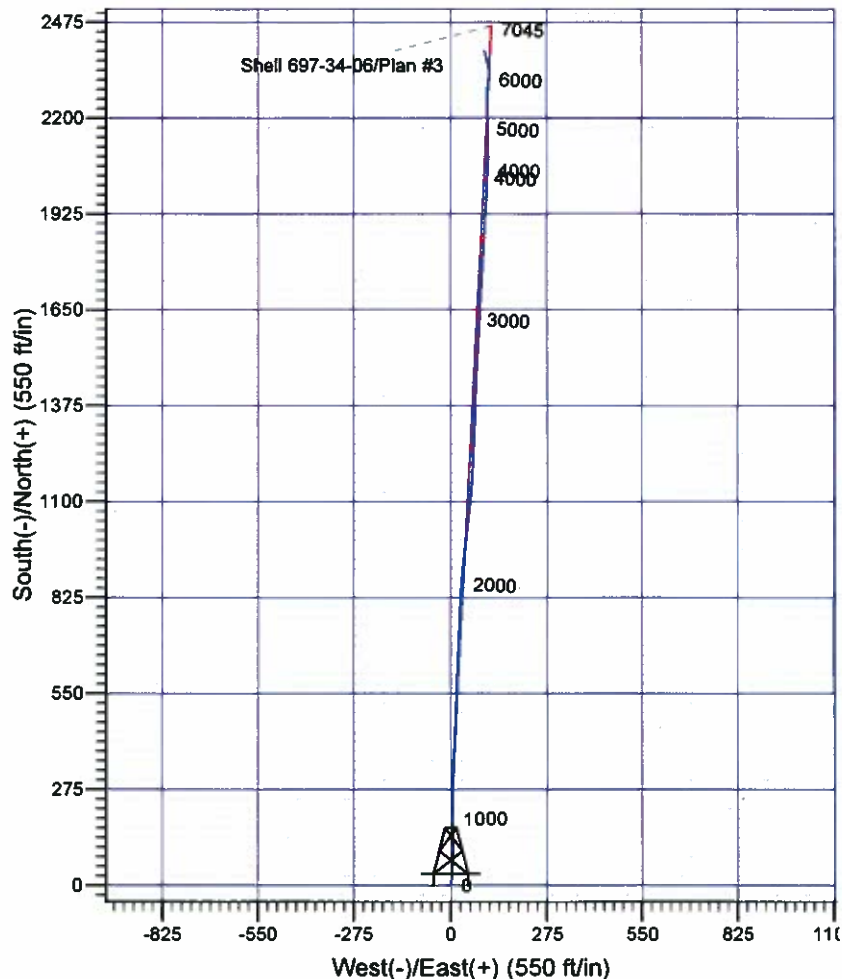
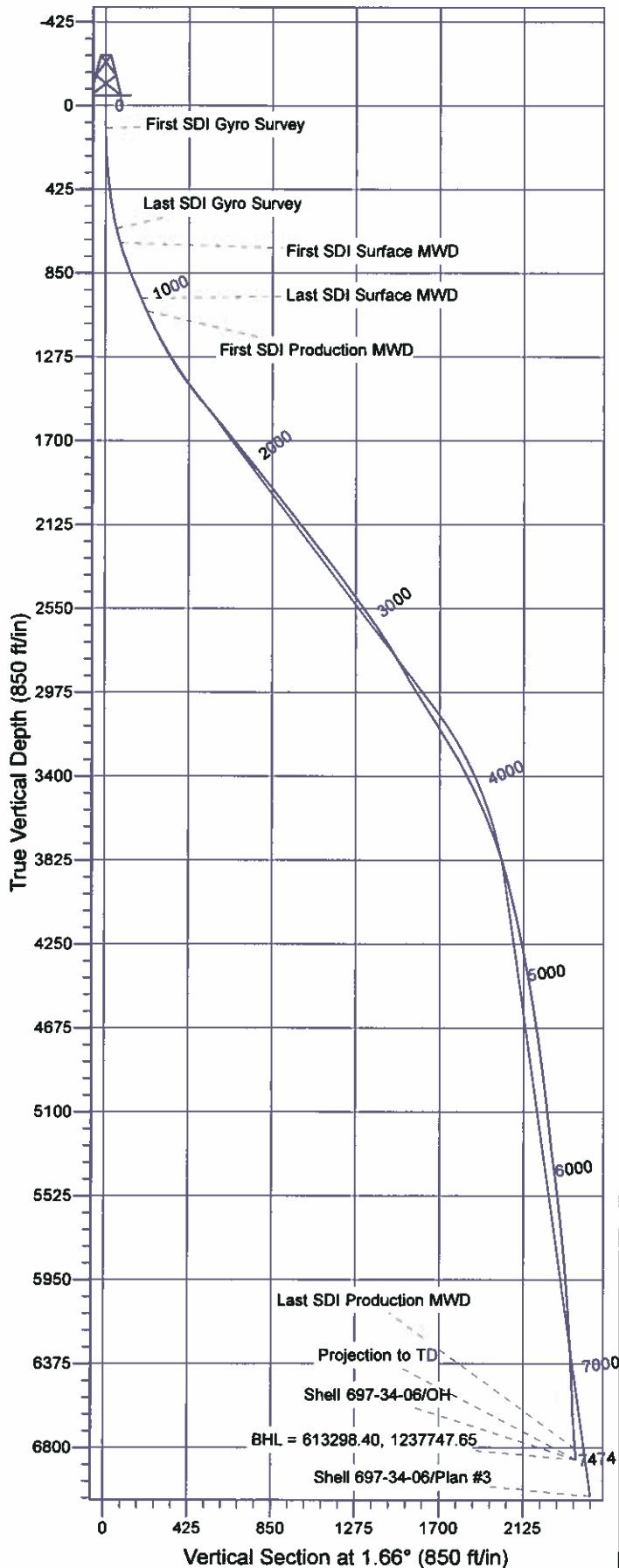




Scientific Drilling

Company: OXY USA RMAI
 Project: Garfield County, CO NAD27
 Site: Shell 797-03A Pad
 Well: Shell 697-34-06
 Wellbore: OH
 Design: OH



Well Details: Shell 697-34-06

+N/-S	+E/-W	North	East	Latitude	Longitude	Slot
0.00	0.00	610910.10	1237578.85	39° 28' 46.683 N	108° 12' 5.042 W	I

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Shell 697-34-06 - Slot I, True North
 Vertical (TVD) Reference: GL 6485' & RKB 30' @ 6515.00ft (H&P)
 Section (VS) Reference: Slot - I(0.00N, 0.00E)
 Measured Depth Reference: GL 6485' & RKB 30' @ 6515.00ft (H&P)
 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

14:43, June 19 2012
 Created By: Janie Collins

OXY USA RMAT

Garfield County, CO NAD27

Shell 797-03A Pad

Shell 697-34-06 - Slot I

OH

Design: OH

Standard Survey Report

19 June, 2012

Scientific Drilling International

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well Shell 697-34-06 - Slot I
Project:	Garfield County, CO NAD27	TVD Reference:	GL 6485' & RKB 30' @ 6515.00ft (H&P)
Site:	Shell 797-03A Pad	MD Reference:	GL 6485' & RKB 30' @ 6515.00ft (H&P)
Well:	Shell 697-34-06	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	Shell 797-03A Pad				
Site Position:		Northing:	610,902.00 usft	Latitude:	39° 28' 46.610 N
From:	Lat/Long	Easting:	1,237,601.62 usft	Longitude:	108° 12' 4.748 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.70 °

Well	Shell 697-34-06 - Slot I					
Well Position	+N-S	0.00 ft	Northing:	610,910.10 usft	Latitude:	39° 28' 46.683 N
	+E-W	0.00 ft	Easting:	1,237,578.85 usft	Longitude:	108° 12' 5.042 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	6,485.00 ft

Wellbore	OH
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2011/08/18	10.42	65.68	52,192

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	1.66	

Survey Program		Date	2012/06/19		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
114.00	628.00	Survey #1 - Gyro Survey (OH)	SDI Standard Keeper 103	SDI Standard Wireline Keeper ver 1.0.3	
703.00	1,005.00	Survey #2 - Surface MWD (OH)	MWD-SDI	MWD - Standard ISCWSA	
1,075.00	7,474.00	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
114.00	0.18	228.08	114.00	-0.12	-0.13	-0.12	0.16	0.16	0.00
First SDI Gyro Survey									
172.00	2.11	8.26	171.99	0.88	-0.05	0.87	3.88	3.33	241.69
264.00	4.13	4.57	263.85	5.86	0.46	5.87	2.21	2.20	-4.01
354.00	5.28	8.70	353.54	13.18	1.34	13.21	1.33	1.28	4.59
445.00	6.95	0.00	444.02	22.82	1.98	22.87	2.09	1.84	-9.56
536.00	9.94	4.22	534.03	36.17	2.56	36.23	3.35	3.29	4.64
628.00	13.81	5.45	624.04	55.02	4.18	55.12	4.22	4.21	1.34

Scientific Drilling International

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well Shell 697-34-06 - Slot I
Project:	Garfield County, CO NAD27	TVD Reference:	GL 6485' & RKB 30' @ 6515.00ft (H&P)
Site:	Shell 797-03A Pad	MD Reference:	GL 6485' & RKB 30' @ 6515.00ft (H&P)
Well:	Shell 697-34-06	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									
703.00	16.44	1.80	696.44	74.55	5.37	74.67	3.73	3.51	-4.87
First SDI Surface MWD									
795.00	19.87	0.04	783.85	103.20	5.79	103.33	3.78	3.73	-1.91
890.00	21.72	359.78	872.65	136.93	5.73	137.04	1.95	1.95	-0.27
985.00	23.39	359.16	960.38	173.36	5.39	173.45	1.78	1.76	-0.65
1,005.00	23.65	359.08	978.72	181.34	5.26	181.42	1.31	1.30	-0.40
Last SDI Surface MWD									
1,075.00	23.72	358.57	1,042.83	209.46	4.69	209.50	0.31	0.10	-0.73
First SDI Production MWD									
1,169.00	25.85	359.06	1,128.16	248.85	3.88	248.86	2.28	2.27	0.52
1,264.00	28.31	1.43	1,212.74	292.09	4.10	292.08	2.83	2.59	2.49
1,359.00	32.54	3.89	1,294.65	340.12	6.40	340.16	4.64	4.45	2.59
1,454.00	35.09	2.93	1,373.57	392.89	9.53	393.00	2.74	2.68	-1.01
1,549.00	38.25	2.58	1,449.76	449.55	12.25	449.72	3.33	3.33	-0.37
1,643.00	40.54	2.40	1,522.40	509.15	14.84	509.37	2.44	2.44	-0.19
1,738.00	39.48	0.73	1,595.16	570.20	16.52	570.44	1.59	-1.12	-1.76
1,833.00	39.66	2.75	1,668.39	630.68	18.36	630.95	1.37	0.19	2.13
1,928.00	39.13	3.02	1,741.81	690.90	21.39	691.23	0.59	-0.56	0.28
2,022.00	38.43	2.49	1,815.09	749.71	24.22	750.09	0.82	-0.74	-0.56
2,117.00	37.55	1.96	1,889.96	808.13	26.49	808.56	0.99	-0.93	-0.56
2,212.00	38.25	3.81	1,964.92	866.41	29.44	866.90	1.40	0.74	1.95
2,306.00	39.22	6.88	2,038.25	924.96	34.93	925.58	2.29	1.03	3.27
2,401.00	38.51	6.97	2,112.22	984.13	42.12	984.94	0.75	-0.75	0.09
2,496.00	37.99	6.97	2,186.83	1,042.51	49.26	1,043.50	0.55	-0.55	0.00
2,590.00	37.28	4.95	2,261.27	1,099.59	55.22	1,100.73	1.51	-0.76	-2.15
2,685.00	37.46	3.63	2,336.77	1,157.09	59.53	1,158.33	0.86	0.19	-1.39
2,780.00	36.40	2.40	2,412.71	1,214.09	62.54	1,215.39	1.36	-1.12	-1.29
2,874.00	35.88	2.49	2,488.62	1,269.47	64.91	1,270.82	0.56	-0.55	0.10
2,969.00	35.35	2.66	2,565.85	1,324.74	67.39	1,326.14	0.57	-0.56	0.18
3,064.00	34.56	1.78	2,643.72	1,379.12	69.51	1,380.56	0.99	-0.83	-0.93
3,159.00	32.27	1.26	2,723.01	1,431.42	70.90	1,432.87	2.43	-2.41	-0.55
3,253.00	29.81	2.31	2,803.54	1,479.86	72.40	1,481.34	2.68	-2.62	1.12
3,348.00	29.99	4.77	2,885.90	1,527.12	75.32	1,528.66	1.30	0.19	2.59
3,443.00	31.92	2.75	2,967.37	1,575.87	78.50	1,577.48	2.31	2.03	-2.13
3,537.00	32.89	3.45	3,046.73	1,626.17	81.23	1,627.84	1.11	1.03	0.74
3,632.00	31.57	4.07	3,127.09	1,676.72	84.55	1,678.47	1.43	-1.39	0.65
3,727.00	31.13	3.89	3,208.22	1,726.03	87.98	1,727.85	0.47	-0.46	-0.19
3,821.00	30.95	2.49	3,288.76	1,774.42	90.68	1,776.30	0.79	-0.19	-1.49
3,916.00	27.87	3.72	3,371.51	1,821.00	93.18	1,822.93	3.30	-3.24	1.29
4,011.00	25.50	2.84	3,456.38	1,863.58	95.63	1,865.57	2.53	-2.49	-0.93
4,105.00	24.71	2.14	3,541.50	1,903.43	97.37	1,905.45	0.90	-0.84	-0.74
4,200.00	22.25	3.89	3,628.63	1,941.22	99.33	1,943.28	2.69	-2.59	1.84
4,295.00	19.08	2.66	3,717.51	1,974.68	101.27	1,976.79	3.37	-3.34	-1.29

Scientific Drilling International

Survey Report

Company: OXY USA RMAT
Project: Garfield County, CO NAD27
Site: Shell 797-03A Pad
Well: Shell 697-34-06
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well Shell 697-34-06 - Slot I
TVD Reference: GL 6485' & RKB 30' @ 6515.00ft (H&P)
MD Reference: GL 6485' & RKB 30' @ 6515.00ft (H&P)
North Reference: True
Survey Calculation Method: Minimum Curvature
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)
4,390.00	18.29	2.66	3,807.50	2,005.09	102.69	2,007.22	0.83	-0.83	0.00
4,484.00	14.86	2.49	3,897.58	2,031.87	103.89	2,034.03	3.65	-3.65	-0.18
4,579.00	13.63	1.26	3,989.66	2,055.23	104.67	2,057.40	1.33	-1.29	-1.29
4,674.00	13.01	2.22	4,082.10	2,077.11	105.33	2,079.29	0.69	-0.65	1.01
4,769.00	12.31	1.26	4,174.79	2,097.92	105.97	2,100.11	0.77	-0.74	-1.01
4,863.00	11.52	0.11	4,266.77	2,117.32	106.20	2,119.51	0.88	-0.84	-1.22
4,958.00	10.55	359.68	4,360.01	2,135.51	106.17	2,137.69	1.02	-1.02	-0.45
5,053.00	9.67	358.97	4,453.53	2,152.18	105.98	2,154.35	0.94	-0.93	-0.75
5,147.00	9.32	0.29	4,546.25	2,167.69	105.88	2,169.84	0.44	-0.37	1.40
5,242.00	8.71	0.99	4,640.07	2,182.57	106.04	2,184.73	0.65	-0.64	0.74
5,337.00	8.71	1.35	4,733.98	2,196.95	106.34	2,199.11	0.06	0.00	0.38
5,431.00	7.74	359.24	4,827.01	2,210.40	106.42	2,212.56	1.08	-1.03	-2.24
5,526.00	7.30	359.24	4,921.19	2,222.83	106.25	2,224.98	0.46	-0.46	0.00
5,621.00	6.60	356.86	5,015.49	2,234.32	105.88	2,236.45	0.80	-0.74	-2.51
5,715.00	5.89	352.38	5,108.93	2,244.49	104.94	2,246.59	0.92	-0.76	-4.77
5,810.00	6.42	356.86	5,203.39	2,254.63	104.00	2,256.69	0.75	0.56	4.72
5,905.00	6.86	1.52	5,297.75	2,265.60	103.86	2,267.66	0.73	0.46	4.91
5,999.00	7.83	8.64	5,390.98	2,277.54	104.97	2,279.63	1.41	1.03	7.57
6,094.00	7.30	8.90	5,485.15	2,289.90	106.88	2,292.04	0.56	-0.56	0.27
6,188.00	6.86	8.82	5,578.44	2,301.35	108.66	2,303.54	0.47	-0.47	-0.09
6,283.00	5.98	5.92	5,672.84	2,311.88	110.04	2,314.10	0.99	-0.93	-3.05
6,378.00	5.10	4.07	5,767.39	2,321.01	110.85	2,323.25	0.95	-0.93	-1.95
6,472.00	4.92	355.98	5,861.04	2,329.20	110.87	2,331.44	0.77	-0.19	-8.61
6,567.00	4.66	355.81	5,955.71	2,337.12	110.30	2,339.33	0.27	-0.27	-0.18
6,662.00	3.96	349.74	6,050.44	2,344.19	109.43	2,346.38	0.88	-0.74	-6.39
6,756.00	3.87	351.33	6,144.22	2,350.52	108.38	2,352.68	0.15	-0.10	1.69
6,851.00	3.52	343.50	6,239.02	2,356.49	107.07	2,358.60	0.65	-0.37	-8.24
6,946.00	2.81	336.21	6,333.87	2,361.42	105.30	2,363.48	0.86	-0.75	-7.67
7,041.00	2.90	350.80	6,428.76	2,365.92	103.98	2,367.94	0.77	0.09	15.36
7,135.00	2.73	346.14	6,522.64	2,370.44	103.06	2,372.43	0.30	-0.18	-4.96
7,230.00	2.46	347.19	6,617.55	2,374.62	102.06	2,376.59	0.29	-0.28	1.11
7,325.00	4.57	346.14	6,712.36	2,380.29	100.71	2,382.21	2.22	2.22	-1.11
7,419.00	4.84	345.88	6,806.05	2,387.77	98.84	2,389.63	0.29	0.29	-0.28
Last SDI Production MWD									
7,474.00	4.84	345.88	6,860.85	2,392.27	97.71	2,394.10	0.00	0.00	0.00
Projection to TD - BHL = 613298.40, 1237747.65 - Rev Shell 697-34-06 PBHL									

Scientific Drilling International

Survey Report

Company: OXY USA RMAT
Project: Garfield County, CO NAD27
Site: Shell 797-03A Pad
Well: Shell 697-34-06
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well Shell 697-34-06 - Slot I
TVD Reference: GL 6485' & RKB 30' @ 6515.00ft (H&P)
MD Reference: GL 6485' & RKB 30' @ 6515.00ft (H&P)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: Rockies Compass Server

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
114.00	114.00	-0.12	-0.13	First SDI Gyro Survey
628.00	624.04	55.02	4.18	Last SDI Gyro Survey
703.00	696.44	74.55	5.37	First SDI Surface MWD
1,005.00	978.72	181.34	5.26	Last SDI Surface MWD
1,075.00	1,042.83	209.46	4.69	First SDI Production MWD
7,419.00	6,806.05	2,387.77	98.84	Last SDI Production MWD
7,474.00	6,860.85	2,392.27	97.71	Projection to TD
7,474.00	6,860.85	2,392.27	97.71	BHL = 613298.40, 1237747.65

Checked By: _____ Approved By: _____ Date: _____