



Well Details: Shell 697-34-05

TVD Reference: GL 6485' & RKB 30' @ 6515.00ft (H&P)						Slot H	
+N/-S	+E/-W	North	East	Latitude	Longitude		
0.00	0.00	610909.94	1237571.29	39° 28' 46.679 N	108° 12' 5.138 W		

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Shell 697-34-05 - Slot H, True North
 Vertical (TVD) Reference: GL 6485' & RKB 30' @ 6515.00ft (H&P)
 Section (VS) Reference: Slot - H(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

15:36, June 21 2012
 Created By: Janie Collins

OXY USA RMAT

Garfield County, CO NAD27

Shell 797-03A Pad

Shell 697-34-05 - Slot H

OH

Design: OH

Standard Survey Report

21 June, 2012

Scientific Drilling International

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well Shell 697-34-05 - Slot H
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 697-34-05	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 697-34-05 - Slot H					
Well Position	+N/-S	0.00 ft	Northing:	610,909.94 usft	Latitude:	39° 28' 46.679 N
	+E/-W	0.00 ft	Easting:	1,237,571.28 usft	Longitude:	108° 12' 5.138 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	6,485.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2011/08/19	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	339.85	

Survey Program	Date	2012/06/21			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
157.00	1,006.00	Survey #1 - Surface MWD (OH)	MWD-SDI	MWD - Standard ISCWSA	
1,075.00	7,884.00	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
157.00	1.43	358.00	156.98	1.96	-0.07	1.86	0.91	0.91	0.00
First SDI Surface MWD									
249.00	2.66	354.17	248.92	5.23	-0.33	5.02	1.34	1.34	-4.16
339.00	4.43	339.83	338.75	10.57	-1.74	10.52	2.18	1.97	-15.93
430.00	6.16	333.68	429.36	18.25	-5.11	18.89	2.00	1.90	-6.76
521.00	7.74	337.28	519.69	28.28	-9.64	29.87	1.80	1.74	3.96
613.00	11.61	339.39	610.36	42.66	-15.30	45.32	4.22	4.21	2.29
703.00	14.68	340.27	697.99	61.88	-22.34	65.78	3.42	3.41	0.98
796.00	18.73	341.67	787.05	87.15	-31.02	92.50	4.38	4.35	1.51

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Survey Report

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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 697-34-05	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)
891.00	21.90	339.83	876.13	118.27	-41.92	125.47	3.40	3.34	-1.94
986.00	24.62	337.10	963.40	153.14	-55.74	162.96	3.08	2.86	-2.87
1,006.00	25.06	336.93	981.55	160.87	-59.02	171.36	2.23	2.20	-0.85
Last SDI Surface MWD									
1,075.00	25.06	336.49	1,044.06	187.72	-70.57	200.54	0.27	0.00	-0.64
First SDI Production MWD									
1,170.00	26.56	341.68	1,129.59	226.33	-85.28	241.86	2.85	1.58	5.46
1,265.00	31.48	344.31	1,212.64	270.41	-98.67	287.85	5.35	5.18	2.77
1,359.00	34.38	341.94	1,291.53	319.28	-113.54	338.85	3.38	3.09	-2.52
1,454.00	37.46	341.41	1,368.46	372.18	-131.07	394.55	3.26	3.24	-0.56
1,549.00	39.04	341.33	1,443.06	427.91	-149.86	453.34	1.66	1.66	-0.08
1,644.00	39.39	337.55	1,516.68	484.12	-170.95	513.38	2.54	0.37	-3.98
1,738.00	37.99	335.53	1,590.05	538.02	-194.32	572.03	2.01	-1.49	-2.15
1,833.00	37.90	339.13	1,664.97	591.90	-216.83	630.37	2.33	-0.09	3.79
1,928.00	39.04	340.27	1,739.35	647.33	-237.33	689.46	1.41	1.20	1.20
2,023.00	37.55	338.95	1,813.91	702.51	-257.83	748.33	1.79	-1.57	-1.39
2,117.00	40.45	341.77	1,886.96	758.22	-277.66	807.47	3.62	3.09	3.00
2,212.00	40.98	340.62	1,958.97	816.88	-297.64	869.41	0.97	0.56	-1.21
2,307.00	39.92	342.29	2,031.26	875.31	-317.25	931.02	1.60	-1.12	1.76
2,401.00	41.06	340.45	2,102.75	933.14	-336.76	992.03	1.76	1.21	-1.96
2,496.00	41.24	338.78	2,174.29	991.73	-356.53	1,054.53	1.17	0.19	-1.76
2,591.00	40.54	338.78	2,246.10	1,049.70	-381.04	1,116.71	0.74	-0.74	0.00
2,685.00	38.95	339.30	2,318.38	1,105.82	-402.54	1,176.80	1.73	-1.69	0.55
2,780.00	39.83	338.43	2,391.80	1,162.05	-424.28	1,237.08	1.09	0.93	-0.92
2,875.00	37.90	336.76	2,465.77	1,217.16	-446.98	1,296.64	2.31	-2.03	-1.76
2,970.00	38.25	338.95	2,540.55	1,271.42	-469.06	1,355.18	1.47	0.37	2.31
3,064.00	36.84	338.69	2,615.08	1,324.83	-489.75	1,412.45	1.51	-1.50	-0.28
3,159.00	35.88	338.95	2,691.59	1,377.34	-510.10	1,468.76	1.02	-1.01	0.27
3,254.00	34.47	338.07	2,769.24	1,428.27	-530.14	1,523.47	1.58	-1.48	-0.93
3,348.00	32.89	339.66	2,847.46	1,476.88	-548.95	1,575.59	1.92	-1.68	1.69
3,443.00	30.16	341.41	2,928.43	1,523.69	-565.53	1,625.25	3.03	-2.87	1.84
3,538.00	29.90	343.17	3,010.68	1,568.98	-579.99	1,672.74	0.97	-0.27	1.85
3,632.00	29.55	343.79	3,092.31	1,613.66	-593.25	1,719.26	0.50	-0.37	0.66
3,727.00	27.87	342.64	3,175.63	1,657.35	-606.41	1,764.81	1.86	-1.77	-1.21
3,822.00	26.47	343.00	3,260.14	1,698.80	-619.23	1,808.13	1.48	-1.47	0.38
3,917.00	25.59	342.12	3,345.51	1,738.57	-631.72	1,849.77	1.01	-0.93	-0.93
4,011.00	24.80	342.82	3,430.56	1,776.72	-643.77	1,889.75	0.90	-0.84	0.74
4,106.00	23.30	342.21	3,517.32	1,813.65	-655.40	1,928.42	1.60	-1.58	-0.64
4,201.00	21.63	341.85	3,605.10	1,848.18	-666.60	1,964.69	1.76	-1.76	-0.38
4,295.00	22.25	342.82	3,692.30	1,881.65	-677.25	1,999.78	0.76	0.66	1.03
4,390.00	20.93	341.06	3,780.63	1,914.88	-688.07	2,034.71	1.55	-1.39	-1.85
4,485.00	19.79	340.89	3,869.89	1,946.13	-698.84	2,067.75	1.20	-1.20	-0.18
4,580.00	17.94	337.72	3,959.59	1,974.87	-709.66	2,098.46	2.23	-1.95	-3.34

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Survey Report

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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 697-34-05	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)
4,674.00	16.80	338.43	4,049.30	2,000.90	-720.14	2,126.50	1.23	-1.21	0.76
4,769.00	15.21	338.07	4,140.61	2,025.23	-729.84	2,152.69	1.68	-1.67	-0.38
4,864.00	13.10	337.90	4,232.72	2,046.76	-738.55	2,175.91	2.22	-2.22	-0.18
4,958.00	12.31	341.06	4,324.42	2,066.11	-745.81	2,196.57	1.12	-0.84	3.36
5,053.00	12.05	346.60	4,417.29	2,085.34	-751.39	2,216.54	1.26	-0.27	5.83
5,148.00	10.97	346.12	4,510.38	2,103.76	-755.86	2,235.38	1.14	-1.14	-0.51
5,242.00	10.59	344.65	4,602.72	2,120.77	-760.29	2,252.87	0.50	-0.40	-1.56
5,337.00	10.02	343.61	4,696.18	2,137.12	-764.94	2,269.82	0.63	-0.60	-1.09
5,432.00	9.58	344.75	4,789.80	2,152.68	-769.35	2,285.94	0.51	-0.46	1.20
5,526.00	9.50	343.70	4,882.50	2,167.67	-773.58	2,301.48	0.20	-0.09	-1.12
5,621.00	8.71	340.27	4,976.30	2,181.96	-778.21	2,316.49	1.01	-0.83	-3.61
5,716.00	7.83	337.46	5,070.31	2,194.71	-783.12	2,330.15	1.02	-0.93	-2.96
5,810.00	7.21	349.24	5,163.51	2,206.42	-786.67	2,342.37	1.76	-0.66	12.53
5,905.00	6.60	350.03	5,257.82	2,217.66	-788.73	2,353.63	0.65	-0.64	0.83
6,000.00	6.07	350.55	5,352.24	2,227.99	-790.50	2,363.93	0.56	-0.56	0.55
6,094.00	6.16	346.34	5,445.71	2,237.79	-792.51	2,373.83	0.49	0.10	-4.48
6,189.00	5.10	347.21	5,540.25	2,246.86	-794.65	2,383.08	1.12	-1.12	0.92
6,284.00	4.92	345.11	5,634.88	2,254.92	-796.63	2,391.33	0.27	-0.19	-2.21
6,378.00	4.75	339.48	5,728.55	2,262.46	-799.03	2,399.23	0.54	-0.18	-5.99
6,473.00	3.61	349.76	5,823.30	2,269.08	-800.94	2,406.11	1.43	-1.20	10.82
6,567.00	4.92	350.99	5,917.03	2,275.98	-802.10	2,412.98	1.40	1.39	1.31
6,662.00	4.75	345.98	6,011.70	2,283.82	-803.69	2,420.89	0.48	-0.18	-5.27
6,757.00	3.87	346.95	6,106.43	2,290.76	-805.37	2,427.98	0.93	-0.93	1.02
6,852.00	3.69	344.41	6,201.22	2,296.82	-806.91	2,434.21	0.26	-0.19	-2.67
6,946.00	3.17	328.14	6,295.05	2,301.95	-809.10	2,439.77	1.17	-0.55	-17.31
7,041.00	3.17	315.93	6,389.91	2,306.06	-812.31	2,444.74	0.71	0.00	-12.85
7,136.00	2.64	306.70	6,484.79	2,309.26	-815.89	2,448.98	0.74	-0.56	-9.72
7,231.00	2.20	298.79	6,579.70	2,311.44	-819.24	2,452.18	0.58	-0.46	-8.33
7,325.00	2.11	316.89	6,673.64	2,313.58	-822.01	2,455.14	0.73	-0.10	19.26
7,420.00	2.29	313.29	6,768.57	2,316.15	-824.58	2,458.45	0.24	0.19	-3.79
7,514.00	2.29	308.45	6,862.49	2,318.61	-827.42	2,461.73	0.21	0.00	-5.15
7,609.00	1.76	319.97	6,957.43	2,320.91	-829.85	2,464.72	0.70	-0.56	12.13
7,679.56	1.95	325.03	7,027.96	2,322.72	-831.23	2,466.90	0.36	0.27	7.18
Shell 697-34-05 PBHL									
7,704.00	2.02	326.56	7,052.38	2,323.42	-831.71	2,467.72	0.36	0.28	6.25
7,799.00	1.14	306.96	7,147.34	2,325.39	-833.39	2,470.14	1.07	-0.93	-20.63
7,829.00	1.41	307.14	7,177.34	2,325.79	-833.92	2,470.71	0.90	0.90	0.60
Last SDI Production MWD									
7,884.00	1.41	307.14	7,232.32	2,326.61	-835.00	2,471.84	0.00	0.00	0.00
Projection to TD - BHL = 613260.34, 1236805.83									

Scientific Drilling International

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well Shell 697-34-05 - Slot H
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 697-34-05	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies Compass Server

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
157.00	156.98	1.96	-0.07	First SDI Surface MWD
1,006.00	981.55	160.87	-59.02	Last SDI Surface MWD
1,075.00	1,044.06	187.72	-70.57	First SDI Production MWD
7,829.00	7,177.34	2,325.79	-833.92	Last SDI Production MWD
7,884.00	7,232.32	2,326.61	-835.00	Projection to TD
7,884.00	7,232.32	2,326.61	-835.00	BHL = 613260.34, 1236805.83

Checked By: _____ Approved By: _____ Date: _____