

OXY USA RMAT

Garfield County, CO NAD27

Shell 797-03B Pad

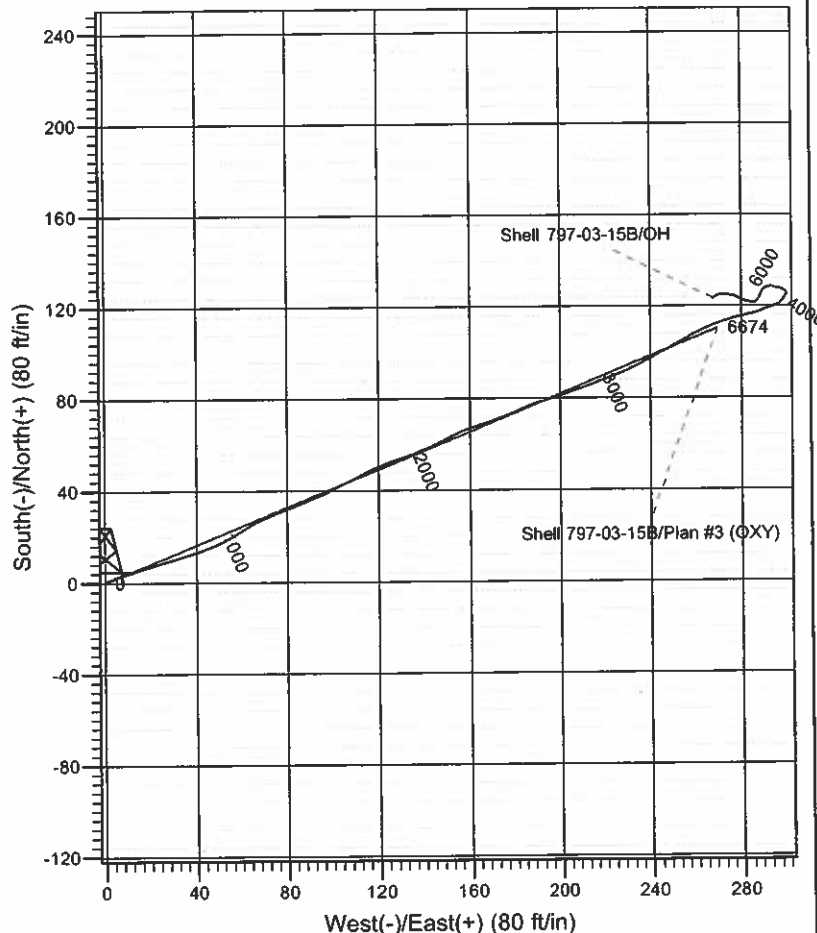
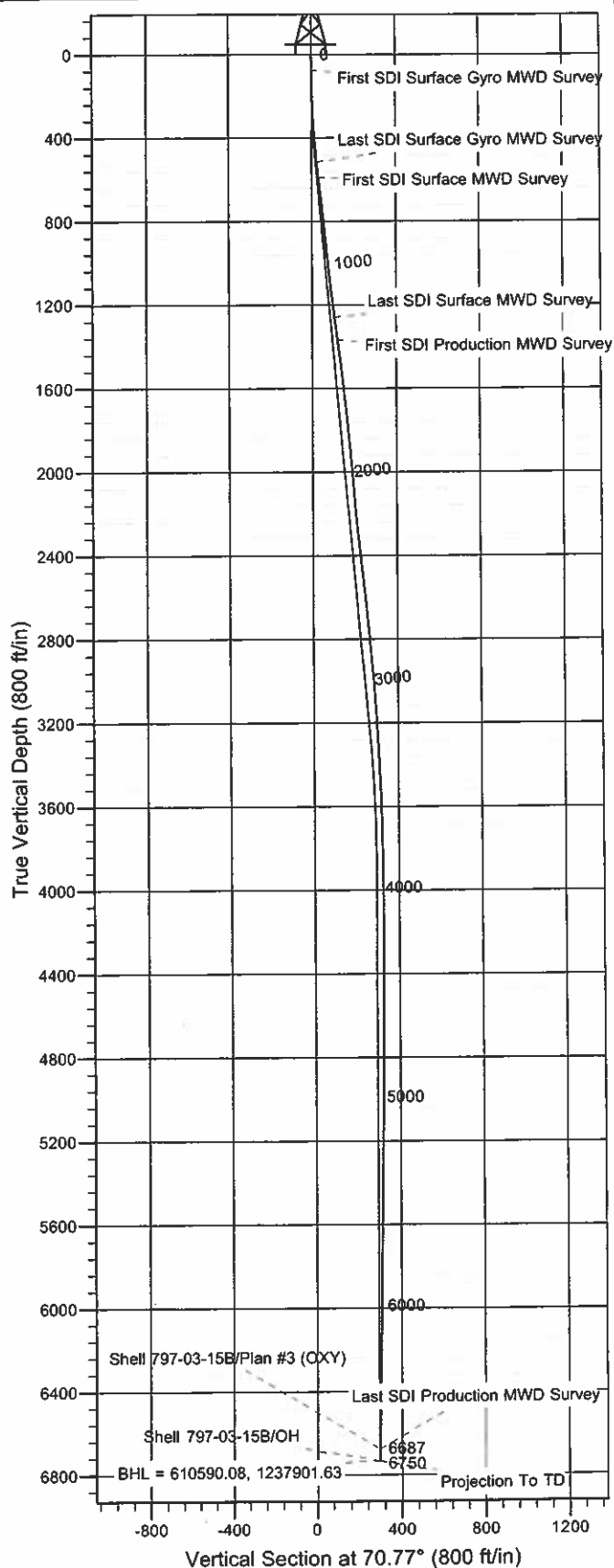
Shell 797-03-15B - Slot O

OH

Design: OH

Standard Survey Report

18 November, 2010



Well Details: Shell 797-03-15B

+N/-S	+E/-W	TVD Reference: GL 6325' & RKB 22' @ 6347.00ft (M37)	Ground Level: 6325.00	Slot
0.00	0.00	Northing	Easting	Latitude
0.00	0.00	610475.01	1237630.60	39° 28' 42.400 N
				108° 12' 4.217 W
				Slot O

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Shell 797-03-15B - Slot O, True North
Vertical (TVD) Reference: GL 6325' & RKB 22' @ 6347.00ft (M37)
Section (VS) Reference: Slot - O(0.00N, 0.00E)
Measured Depth Reference: GL 6325' & RKB 22' @ 6347.00ft (M37)
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

11:18, November 18 2010
Created By: Rex Hall

Scientific Drilling International

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well Shell 797-03-15B - Slot O
Project:	Garfield County, CO NAD27	TVD Reference:	GL 6325' & RKB 22' @ 6347.00ft (M37)
Site:	Shell 797-03B Pad	MD Reference:	GL 6325' & RKB 22' @ 6347.00ft (M37)
Well:	Shell 797-03-15B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies-R5000.1

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 797-03B Pad, Sec 3 T7S R97W				
Site Position:		Northing:	610,470.20 usft	Latitude:	39° 28' 42.340 N
From:	Lat/Long	Easting:	1,237,588.64 usft	Longitude:	108° 12' 4.750 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.70 °

Well	Shell 797-03-15B - Slot O,					
Well Position	+N/-S	0.00 ft	Northing:	610,475.01 usft	Latitude:	39° 28' 42.400 N
	+E/-W	0.00 ft	Easting:	1,237,630.60 usft	Longitude:	108° 12' 4.217 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	6,325.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2005-10	9/15/2008	10.78	65.77	52,511

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	70.77	

Survey Program	Date	11/18/2010			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
78.00	517.00	Survey #1 - Surface Gyro MWD (OH)	Standard Keeper 103	Standard Wireline Keeper ver 1.0.3	
593.00	1,266.00	Survey #2 - Surface MWD (OH)	MWD-SDI	MWD - Standard ISCWSA	
1,377.00	6,750.00	Survey #3 - Production (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	
78.00	0.44	28.30	78.00	0.26	0.14	0.22	0.56	0.56	0.00	
First SDI Surface Gyro MWD Survey										
111.00	1.14	57.48	111.00	0.55	0.48	0.63	2.38	2.12	88.42	
174.00	2.11	72.77	173.97	1.23	2.12	2.40	1.67	1.54	24.27	
236.00	2.20	63.28	235.93	2.11	4.27	4.72	0.59	0.15	-15.31	
299.00	2.99	77.17	298.86	3.01	6.95	7.56	1.59	1.25	22.05	
361.00	3.34	71.10	360.77	3.96	10.24	10.97	0.78	0.56	-9.79	
423.00	4.66	71.79	422.62	5.33	14.34	15.29	2.13	2.13	1.11	

Scientific Drilling International

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well Shell 797-03-15B - Slot O
Project:	Garfield County, CO NAD27	TVD Reference:	GL 6325' & RKB 22' @ 6347.00ft (M37)
Site:	Shell 797-03B Pad	MD Reference:	GL 6325' & RKB 22' @ 6347.00ft (M37)
Well:	Shell 797-03-15B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies-R5000.1

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)
517.00	5.72	73.74	516.23	7.84	22.46	23.79	1.14	1.13	2.07
Last SDI Surface Gyro MWD Survey									
593.00	6.24	72.55	591.81	10.13	30.04	31.70	0.70	0.68	-1.57
First SDI Surface MWD Survey									
686.00	7.30	73.43	684.16	13.33	40.52	42.65	1.15	1.14	0.95
779.00	6.24	63.85	776.52	17.25	50.72	53.57	1.66	-1.14	-10.30
873.00	5.54	55.50	870.02	22.07	59.05	63.02	1.18	-0.74	-8.88
967.00	5.54	65.26	963.59	26.54	66.91	71.92	1.00	0.00	10.38
1,062.00	6.07	68.86	1,058.10	30.27	75.76	81.50	0.68	0.56	3.79
1,157.00	6.95	69.21	1,152.49	34.12	85.82	92.27	0.93	0.93	0.37
1,252.00	7.30	65.87	1,246.75	38.63	96.70	104.03	0.57	0.37	-3.52
1,266.00	7.47	64.55	1,260.64	39.38	98.33	105.82	1.72	1.21	-9.43
Last SDI Surface MWD Survey									
1,377.00	8.00	60.86	1,370.63	46.24	111.59	120.60	0.65	0.48	-3.32
First SDI Production MWD Survey									
1,472.00	7.12	69.48	1,464.80	51.53	122.88	133.00	1.51	-0.93	9.07
1,568.00	6.16	72.20	1,560.16	55.19	133.36	144.10	1.05	-1.00	2.83
1,663.00	6.16	64.20	1,654.61	58.96	142.80	154.25	0.90	0.00	-8.42
1,758.00	6.07	62.62	1,749.07	63.49	151.85	164.29	0.20	-0.09	-1.66
1,853.00	5.36	72.11	1,843.60	67.17	160.53	173.70	1.24	-0.75	9.99
1,948.00	5.28	71.67	1,938.19	69.90	168.91	182.50	0.09	-0.08	-0.46
2,044.00	4.75	68.51	2,033.82	72.75	176.80	190.89	0.62	-0.55	-3.29
2,140.00	4.31	64.29	2,129.52	75.77	183.75	198.45	0.57	-0.46	-4.40
2,235.00	5.10	75.28	2,224.20	78.39	191.05	206.21	1.26	0.83	11.57
2,330.00	6.68	71.67	2,318.70	81.20	200.38	215.94	1.71	1.66	-3.80
2,425.00	6.51	69.92	2,413.07	84.79	210.68	226.85	0.28	-0.18	-1.84
2,521.00	6.16	70.62	2,508.49	88.37	220.65	237.44	0.37	-0.36	0.73
2,616.00	5.89	66.52	2,602.96	92.00	229.93	247.40	0.53	-0.28	-4.32
2,710.00	6.16	59.98	2,696.44	96.45	238.72	257.16	0.78	0.29	-6.96
2,806.00	5.19	62.36	2,791.97	101.04	247.03	266.52	1.04	-1.01	2.48
2,902.00	4.92	60.60	2,887.60	105.07	254.46	274.87	0.32	-0.28	-1.83
2,997.00	4.99	61.84	2,982.24	109.02	261.65	282.96	0.13	0.07	1.31
3,093.00	3.43	72.46	3,077.98	111.86	268.07	289.95	1.81	-1.63	11.06
3,189.00	3.25	72.29	3,173.82	113.55	273.40	295.54	0.19	-0.19	-0.18
3,284.00	3.34	75.10	3,268.66	115.08	278.64	301.00	0.19	0.09	2.96
3,380.00	3.17	76.77	3,364.51	116.41	283.93	306.42	0.20	-0.18	1.74
3,476.00	2.11	67.28	3,460.40	117.70	288.14	310.83	1.19	-1.10	-9.89
3,572.00	2.20	70.79	3,556.34	118.99	291.51	314.44	0.17	0.09	3.66
3,668.00	2.11	70.00	3,652.27	120.20	294.91	318.04	0.10	-0.09	-0.82
3,763.00	0.62	44.87	3,747.24	121.16	296.92	320.26	1.65	-1.57	-26.45
3,859.00	0.62	29.31	3,843.23	121.98	297.54	321.11	0.17	0.00	-16.21
3,954.00	0.62	28.08	3,938.23	122.88	298.03	321.88	0.01	0.00	-1.29
4,048.00	0.62	32.30	4,032.22	123.76	298.54	322.65	0.05	0.00	4.49
4,144.00	0.79	31.33	4,128.22	124.77	299.16	323.57	0.18	0.18	-1.01

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Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well Shell 797-03-15B - Slot O
Project:	Garfield County, CO NAD27	TVD Reference:	GL 6325' & RKB 22' @ 6347.00ft (M37)
Site:	Shell 797-03B Pad	MD Reference:	GL 6325' & RKB 22' @ 6347.00ft (M37)
Well:	Shell 797-03-15B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies-R5000.1

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)	
4,239.00	0.51	331.46	4,223.21	125.70	299.30	324.00	0.73	-0.29	-63.02	
4,334.00	0.62	308.71	4,318.21	126.39	298.70	323.66	0.26	0.12	-23.95	
4,429.00	0.53	295.53	4,413.20	126.90	297.90	323.08	0.17	-0.09	-13.87	
4,524.00	0.62	306.61	4,508.20	127.40	297.09	322.48	0.15	0.09	11.66	
4,620.00	0.44	277.87	4,604.19	127.76	296.31	321.86	0.33	-0.19	-29.94	
4,714.00	0.62	269.43	4,698.19	127.80	295.45	321.05	0.21	0.19	-8.98	
4,810.00	0.53	283.49	4,794.18	127.90	294.49	320.19	0.17	-0.09	14.65	
4,906.00	0.62	289.93	4,890.18	128.18	293.57	319.41	0.12	0.09	6.71	
5,000.00	0.62	279.54	4,984.17	128.44	292.59	318.57	0.12	0.00	-11.05	
5,095.00	0.79	250.79	5,079.17	128.31	291.47	317.47	0.41	0.18	-30.26	
5,191.00	0.97	227.15	5,175.16	127.54	290.25	316.06	0.42	0.19	-24.63	
5,286.00	0.83	224.64	5,270.14	126.50	289.18	314.70	0.15	-0.15	-2.64	
5,381.00	0.97	196.13	5,365.13	125.24	288.47	313.62	0.49	0.15	-30.01	
5,476.00	1.14	209.75	5,460.12	123.65	287.78	312.44	0.32	0.18	14.34	
5,572.00	1.23	217.92	5,556.10	122.00	286.67	310.86	0.20	0.09	8.51	
5,667.00	0.76	270.71	5,651.08	121.21	285.41	309.41	1.03	-0.49	55.57	
5,762.00	0.79	293.42	5,746.07	121.47	284.18	308.33	0.32	0.03	23.91	
5,858.00	1.32	278.22	5,842.06	121.90	282.48	306.87	0.62	0.55	-15.83	
5,953.00	1.23	288.94	5,937.03	122.38	280.43	305.09	0.27	-0.09	11.28	
6,048.00	0.79	310.38	6,032.02	123.14	278.97	303.96	0.60	-0.46	22.57	
6,143.00	0.62	303.18	6,127.01	123.84	278.04	303.32	0.20	-0.18	-7.58	
6,238.00	0.62	278.13	6,222.01	124.20	277.10	302.55	0.28	0.00	-26.37	
6,334.00	1.06	285.42	6,318.00	124.51	275.73	301.35	0.47	0.46	7.59	
6,429.00	1.14	276.72	6,412.98	124.85	273.94	299.78	0.19	0.08	-9.16	
6,524.00	0.97	268.55	6,507.96	124.94	272.20	298.17	0.24	-0.18	-8.60	
6,618.00	1.23	258.53	6,601.95	124.72	270.42	296.41	0.34	0.28	-10.66	
6,694.00	1.58	235.24	6,677.92	123.96	268.76	294.59	0.87	0.46	-30.64	
Last SDI Production MWD Survey										
6,750.00	1.58	235.24	6,733.90	123.08	267.49	293.10	0.00	0.00	0.00	
Projection To TD - BHL = 610590.08, 1237901.63										

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
78.00	78.00	0.26	0.14	First SDI Surface Gyro MWD Survey
517.00	516.23	7.84	22.46	Last SDI Surface Gyro MWD Survey
593.00	591.81	10.13	30.04	First SDI Surface MWD Survey
1,266.00	1,260.64	39.38	98.33	Last SDI Surface MWD Survey
1,377.00	1,370.63	46.24	111.59	First SDI Production MWD Survey
6,694.00	6,677.92	123.96	268.76	Last SDI Production MWD Survey
6,750.00	6,733.90	123.08	267.49	Projection To TD
6,750.00	6,733.90	123.08	267.49	BHL = 610590.08, 1237901.63

Scientific Drilling International
Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well Shell 797-03-15B - Slot O
Project:	Garfield County, CO NAD27	TVD Reference:	GL 6325' & RKB 22' @ 6347.00ft (M37)
Site:	Shell 797-03B Pad	MD Reference:	GL 6325' & RKB 22' @ 6347.00ft (M37)
Well:	Shell 797-03-15B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies-R5000.1

Checked By: _____ Approved By: _____ Date: _____