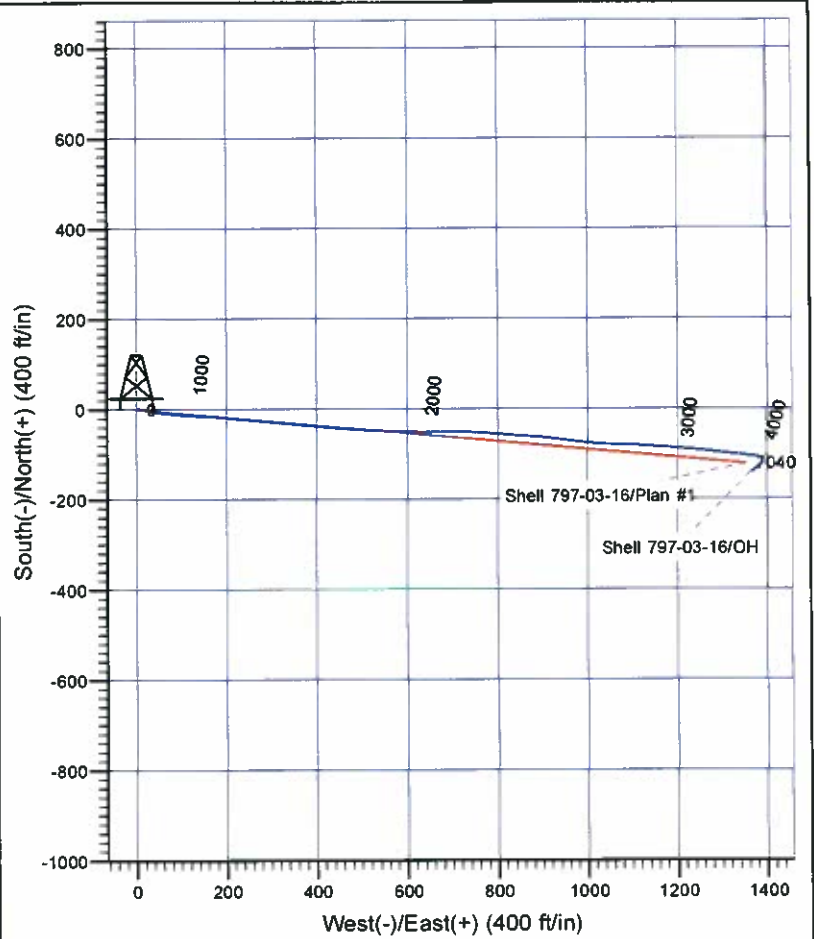
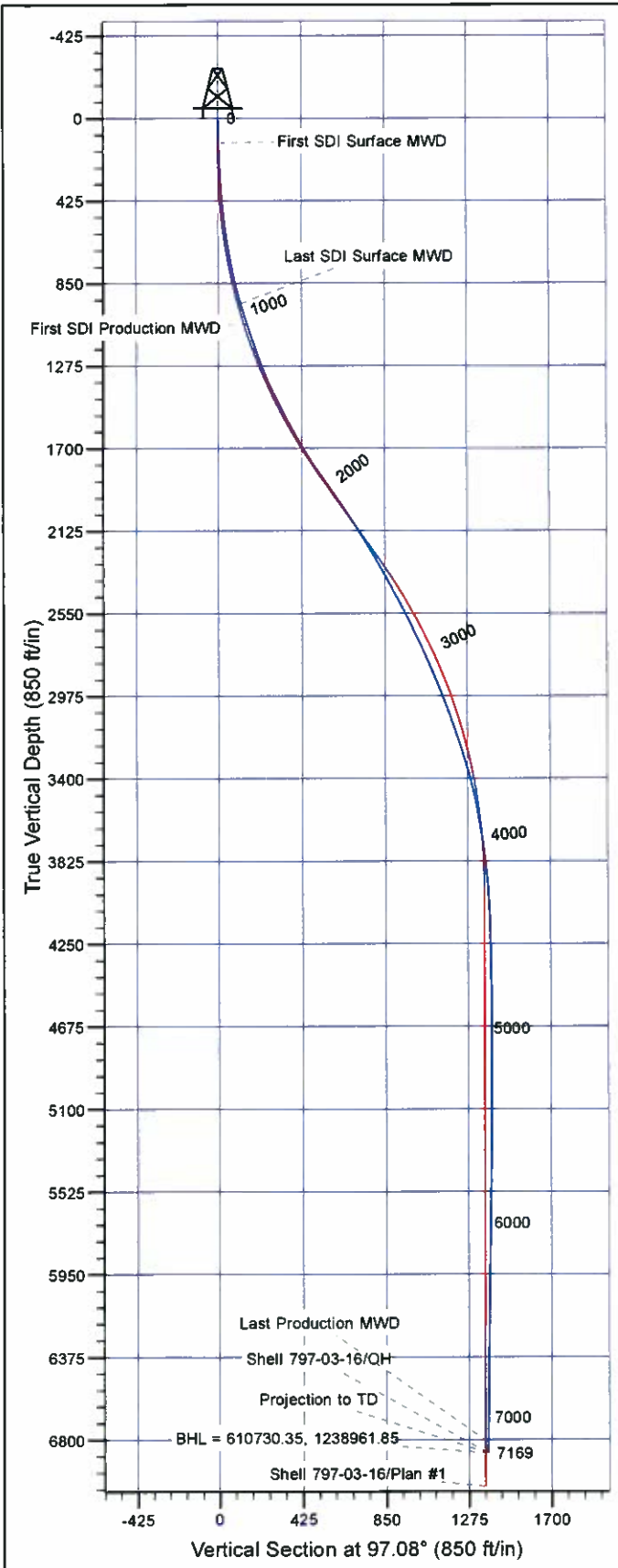




Scientific Drilling

Company: OXY USA RMAT
 Project: Garfield County, CO NAD27
 Site: Shell 797-03A Pad
 Well: Shell 797-03-16
 Wellbore: OH
 Design: OH



Well Details: Shell 797-03-16

TVD Reference: GL 6485' & RKB 30' @ 6515.00ft (H&P) (6485.00)
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.00 0.00 610910.87 1237601.30 39° 28' 46.697 N 108° 12' 4.756 W L

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Shell 797-03-16 - Slot L, True North
 Vertical (TVD) Reference: GL 6485' & RKB 30' @ 6515.00ft (H&P)
 Section (VS) Reference: Slot - L(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

16:17, July 02 2012
 Created By: Janie Collins

OXY USA RMAT

Garfield County, CO NAD27

Shell 797-03A Pad

Shell 797-03-16 - Slot L

OH

Design: OH

Standard Survey Report

02 July, 2012

Scientific Drilling International

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well Shell 797-03-16 - Slot L
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 797-03-16	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 797-03-16 - Slot L			
Well Position	+N/-S	0.00 ft	Northing: 610,910.88 usft	Latitude: 39° 28' 46.697 N
	+E/-W	0.00 ft	Easting: 1,237,601.30 usft	Longitude: 108° 12' 4.756 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	97.08	

Survey Program	Date	2012/07/02			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
127.00	965.00	Survey #1 - Surface MWD (OH)	MWD-SDI	MWD - Standard ISCWSA	
1,076.00	7,169.00	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	
127.00	1.36	84.94	126.99	0.13	1.50	1.47	1.07	1.07	0.00	
First SDI Surface MWD										
155.00	1.68	76.29	154.98	0.26	2.23	2.18	1.40	1.14	-30.89	
247.00	3.89	89.19	246.86	0.62	6.66	6.53	2.48	2.40	14.02	
337.00	3.96	103.84	336.66	-0.08	12.73	12.64	1.11	0.08	16.28	
428.00	5.19	105.60	427.36	-1.94	19.75	19.84	1.36	1.35	1.93	
519.00	6.68	103.31	517.87	-4.26	28.86	29.17	1.66	1.64	-2.52	
611.00	8.71	98.22	609.04	-6.49	40.97	41.45	2.33	2.21	-5.53	
701.00	9.94	96.72	697.85	-8.37	55.43	56.04	1.39	1.37	-1.67	

Scientific Drilling International

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well Shell 797-03-16 - Slot L
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 797-03-16	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)
794.00	11.87	95.76	789.17	-10.27	72.92	73.63	2.08	2.08	-1.03
889.00	13.45	96.37	881.85	-12.48	93.62	94.44	1.67	1.66	0.64
965.00	16.62	93.21	955.24	-14.07	113.26	114.13	4.31	4.17	-4.16
Last SDI Surface MWD									
1,076.00	18.29	92.14	1,061.13	-15.61	146.52	147.32	1.53	1.50	-0.96
First SDI Production MWD									
1,170.00	18.29	94.51	1,150.38	-17.32	175.96	176.75	0.79	0.00	2.52
1,265.00	20.22	96.53	1,240.07	-20.36	207.13	208.06	2.15	2.03	2.13
1,360.00	22.51	95.21	1,328.53	-23.88	241.56	242.66	2.46	2.41	-1.39
1,455.00	25.15	94.95	1,415.42	-27.27	279.79	281.02	2.78	2.78	-0.27
1,550.00	27.79	95.48	1,500.46	-31.13	321.95	323.33	2.79	2.78	0.56
1,644.00	27.79	95.21	1,583.62	-35.21	365.59	367.14	0.13	0.00	-0.29
1,739.00	29.90	95.48	1,666.82	-39.48	411.22	412.95	2.23	2.22	0.28
1,834.00	31.92	94.77	1,748.33	-43.83	459.82	461.72	2.16	2.13	-0.75
1,929.00	34.82	92.84	1,827.66	-47.27	511.95	513.87	3.25	3.05	-2.03
2,023.00	35.09	92.14	1,904.70	-49.60	565.75	567.55	0.51	0.29	-0.74
2,118.00	34.47	91.78	1,982.73	-51.46	619.91	621.53	0.69	-0.65	-0.38
2,213.00	33.33	89.50	2,061.58	-52.07	672.89	674.17	1.80	-1.20	-2.40
2,307.00	32.27	89.85	2,140.60	-51.78	723.80	724.67	1.15	-1.13	0.37
2,402.00	31.48	94.95	2,221.28	-53.85	773.89	774.62	2.95	-0.83	5.37
2,497.00	29.28	94.42	2,303.24	-57.78	821.77	822.62	2.33	-2.32	-0.56
2,591.00	27.79	93.10	2,385.82	-60.74	866.57	867.45	1.72	-1.59	-1.40
2,686.00	28.84	96.53	2,469.45	-64.54	911.45	912.46	2.04	1.11	3.61
2,781.00	27.44	97.85	2,553.22	-70.14	955.90	957.26	1.61	-1.47	1.39
2,875.00	26.20	96.35	2,637.11	-75.39	997.98	999.66	1.50	-1.32	-1.60
2,970.00	25.06	92.75	2,722.77	-78.68	1,038.93	1,040.70	2.03	-1.20	-3.79
3,065.00	23.39	92.31	2,809.40	-80.40	1,077.87	1,079.56	1.77	-1.76	-0.46
3,160.00	21.46	91.52	2,897.21	-81.62	1,114.08	1,115.65	2.06	-2.03	-0.83
3,254.00	21.37	95.65	2,984.73	-83.76	1,148.32	1,149.89	1.61	-0.10	4.39
3,349.00	20.31	94.16	3,073.51	-86.66	1,181.99	1,183.66	1.25	-1.12	-1.57
3,444.00	19.52	92.84	3,162.83	-88.65	1,214.28	1,215.95	0.96	-0.83	-1.39
3,538.00	17.32	96.44	3,252.01	-91.00	1,243.88	1,245.61	2.63	-2.34	3.83
3,633.00	16.44	96.44	3,342.92	-94.09	1,271.29	1,273.19	0.93	-0.93	0.00
3,728.00	14.07	96.88	3,434.56	-96.98	1,296.11	1,298.18	2.50	-2.49	0.46
3,822.00	10.90	96.71	3,526.33	-99.39	1,316.29	1,318.50	3.37	-3.37	-0.18
3,917.00	10.11	94.86	3,619.73	-101.14	1,333.52	1,335.82	0.90	-0.83	-1.95
4,012.00	7.56	99.96	3,713.60	-102.93	1,347.98	1,350.39	2.81	-2.68	5.37
4,106.00	7.39	100.66	3,806.80	-105.12	1,360.02	1,362.60	0.21	-0.18	0.74
4,201.00	5.89	91.96	3,901.17	-106.42	1,370.89	1,373.55	1.90	-1.58	-9.16
4,296.00	3.96	104.35	3,995.81	-107.40	1,378.94	1,381.66	2.31	-2.03	13.04
4,391.00	2.37	112.26	4,090.66	-108.95	1,383.94	1,386.81	1.73	-1.67	8.33
4,485.00	2.02	121.93	4,184.60	-110.57	1,387.14	1,390.19	0.54	-0.37	10.29
4,580.00	0.88	120.44	4,279.56	-111.82	1,389.19	1,392.38	1.20	-1.20	-1.57

Scientific Drilling International

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well Shell 797-03-16 - Slot L
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 797-03-16	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)
4,675.00	0.44	168.51	4,374.56	-112.55	1,389.89	1,393.17	0.71	-0.46	50.60
4,769.00	0.97	171.33	4,468.55	-113.69	1,390.09	1,393.50	0.56	0.56	3.00
4,864.00	0.62	162.36	4,563.54	-114.97	1,390.36	1,393.93	0.39	-0.37	-9.44
4,959.00	0.88	180.55	4,658.53	-116.19	1,390.51	1,394.23	0.37	0.27	19.15
5,054.00	0.62	147.51	4,753.53	-117.36	1,390.78	1,394.64	0.52	-0.27	-34.78
5,148.00	0.70	187.23	4,847.52	-118.35	1,390.98	1,394.96	0.48	0.09	42.26
5,243.00	0.88	183.54	4,942.51	-119.66	1,390.86	1,395.01	0.20	0.19	-3.88
5,338.00	0.53	209.21	5,037.50	-120.77	1,390.60	1,394.89	0.49	-0.37	27.02
5,432.00	0.62	208.59	5,131.50	-121.60	1,390.15	1,394.54	0.10	0.10	-0.66
5,527.00	1.06	194.09	5,226.49	-122.90	1,389.69	1,394.24	0.51	0.46	-15.26
5,622.00	0.79	226.26	5,321.48	-124.20	1,389.00	1,393.72	0.60	-0.28	33.86
5,716.00	1.14	243.57	5,415.46	-125.07	1,387.70	1,392.53	0.48	0.37	18.41
5,811.00	1.06	240.41	5,510.45	-125.92	1,386.09	1,391.04	0.11	-0.08	-3.33
5,906.00	0.97	241.64	5,605.43	-126.74	1,384.61	1,389.68	0.10	-0.09	1.29
6,000.00	1.58	231.53	5,699.41	-127.92	1,382.90	1,388.12	0.69	0.65	-10.76
6,095.00	1.14	225.29	5,794.38	-129.40	1,381.20	1,386.62	0.49	-0.46	-6.57
6,189.00	1.32	231.62	5,888.36	-130.73	1,379.69	1,385.28	0.24	0.19	6.73
6,284.00	1.49	247.35	5,983.33	-131.89	1,377.69	1,383.44	0.44	0.18	16.56
6,308.52	1.37	244.83	6,007.84	-132.14	1,377.13	1,382.92	0.54	-0.47	-10.27
Shell 797-03-16 Tgt									
6,379.00	1.06	234.61	6,078.31	-132.87	1,375.84	1,381.72	0.54	-0.44	-14.50
6,473.00	0.97	228.45	6,172.29	-133.90	1,374.53	1,380.55	0.15	-0.10	-6.55
6,568.00	0.88	224.06	6,267.28	-134.96	1,373.42	1,379.58	0.12	-0.09	-4.62
6,663.00	0.97	226.43	6,362.27	-136.04	1,372.33	1,378.64	0.10	0.09	2.49
6,757.00	0.97	231.71	6,456.25	-137.08	1,371.13	1,377.57	0.10	0.00	5.62
6,852.00	0.88	211.05	6,551.24	-138.20	1,370.12	1,376.71	0.36	-0.09	-21.75
6,947.00	0.79	239.27	6,646.23	-139.16	1,369.18	1,375.90	0.44	-0.09	29.71
7,042.00	1.06	268.01	6,741.22	-139.53	1,367.74	1,374.51	0.56	0.28	30.25
7,115.00	1.14	255.70	6,814.21	-139.73	1,366.37	1,373.17	0.34	0.11	-16.86
Last Production MWD									
7,169.00	1.14	255.70	6,868.20	-140.00	1,365.32	1,372.17	0.00	0.00	0.00
Projection to TD - BHL = 610730.35, 1238961.85									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
127.00	126.99	0.13	1.50	First SDI Surface MWD
965.00	955.24	-14.07	113.26	Last SDI Surface MWD
1,076.00	1,061.13	-15.61	146.52	First SDI Production MWD
7,115.00	6,814.21	-139.73	1,366.37	Last Production MWD
7,169.00	6,868.20	-140.00	1,365.32	Projection to TD
7,169.00	6,868.20	-140.00	1,365.32	BHL = 610730.35, 1238961.85

Scientific Drilling International

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well Shell 797-03-16 - Slot L
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 797-03-16	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies Compass Server

Checked By: _____	Approved By: _____	Date: _____
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