



Well Details: Shell 797-03-13

+N/-S	+E/-W	North	East	Latitude	Longitude	Slot
0.00	0.00	610909.56	1237556.39	39° 28' 46.671 N	108° 12' 5.328 W	M

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Shell 797-03-13 - Slot M, True North
 Vertical (TVD) Reference: GL 6485' & RKB 30' @ 6515.00ft (H&P)
 Section (VS) Reference: Slot - M(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

10:55, June 19 2012
 Created By: Janie Collins

OXY USA RMAT

Garfield County, CO NAD27

Shell 797-03A Pad

Shell 797-03-13 - Slot M

OH

Design: OH

Standard Survey Report

19 June, 2012

Scientific Drilling International

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well Shell 797-03-13 - Slot M
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 797-03-13	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 797-03-13 - Slot M					
Well Position	+N-S	0.00 ft	Northing:	610,909.56 usft	Latitude:	39° 28' 46.671 N
	+E-W	0.00 ft	Easting:	1,237,556.39 usft	Longitude:	108° 12' 5.328 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	261.61	

Survey Program	Date	2012/06/19			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
157.00	1,006.00	Survey #1 - Surface MWD (OH)	MWD-SDI	MWD - Standard ISCWSA	
1,170.00	6,975.00	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	0.60	275.58	157.00	0.08	-0.82	0.80	0.38	0.38	0.00
First SDI Surface MWD									
249.00	1.64	256.11	248.98	-0.19	-2.58	2.58	1.19	1.13	-21.16
339.00	2.85	267.63	338.91	-0.59	-6.06	6.08	1.43	1.34	12.80
430.00	4.98	254.55	429.69	-1.74	-12.13	12.25	2.52	2.34	-14.37
521.00	8.27	248.69	520.07	-5.17	-22.04	22.56	3.69	3.62	-6.44
613.00	9.85	256.60	610.93	-9.40	-35.86	36.84	2.18	1.72	8.60
703.00	10.46	265.38	699.52	-11.84	-51.49	52.67	1.85	0.68	9.76
796.00	11.87	270.66	790.76	-12.41	-69.47	70.54	1.87	1.52	5.68

Scientific Drilling International

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well Shell 797-03-13 - Slot M
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 797-03-13	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	12.84	265.47	883.56	-13.13	-89.76	90.72	1.55	1.02	-5.46
986.00	14.86	258.97	975.80	-16.30	-112.25	113.42	2.68	2.13	-6.84
1,006.00	15.12	258.53	995.12	-17.30	-117.32	118.59	1.42	1.30	-2.20
Last SDI Surface MWD									
1,170.00	15.56	260.47	1,153.28	-25.20	-159.98	161.94	0.41	0.27	1.18
First SDI Production MWD									
1,265.00	16.80	260.12	1,244.51	-29.67	-186.07	188.41	1.31	1.31	-0.37
1,360.00	18.20	260.73	1,335.12	-34.41	-214.24	216.97	1.49	1.47	0.64
1,454.00	18.99	260.29	1,424.21	-39.36	-243.80	246.93	0.85	0.84	-0.47
1,549.00	18.03	257.30	1,514.29	-45.19	-273.38	277.05	1.42	-1.01	-3.15
1,644.00	18.73	261.26	1,604.45	-50.74	-302.80	306.96	1.51	0.74	4.17
1,739.00	18.20	258.01	1,694.56	-56.14	-332.39	337.02	1.22	-0.56	-3.42
1,833.00	18.38	262.05	1,783.82	-61.24	-361.43	366.49	1.36	0.19	4.30
1,928.00	18.20	263.46	1,874.02	-65.01	-391.00	396.30	0.50	-0.19	1.48
2,023.00	18.91	265.65	1,964.08	-67.86	-421.09	426.48	1.05	0.75	2.31
2,118.00	18.47	265.21	2,054.07	-70.29	-451.43	456.86	0.49	-0.46	-0.46
2,212.00	17.23	263.19	2,143.54	-73.18	-480.10	485.64	1.47	-1.32	-2.15
2,307.00	17.67	265.04	2,234.17	-76.10	-508.43	514.09	0.75	0.46	1.95
2,402.00	17.76	264.16	2,324.67	-78.82	-537.21	542.96	0.30	0.09	-0.93
2,496.00	17.50	265.92	2,414.25	-81.28	-565.57	571.38	0.63	-0.28	1.87
2,591.00	16.88	266.27	2,505.01	-83.20	-593.58	599.37	0.66	-0.65	0.37
2,686.00	17.23	264.16	2,595.83	-85.52	-621.34	627.17	0.75	0.37	-2.22
2,780.00	16.00	261.17	2,685.91	-88.93	-647.99	654.03	1.59	-1.31	-3.18
2,875.00	16.38	260.82	2,777.14	-93.08	-674.15	680.52	0.41	0.40	-0.37
2,970.00	14.60	261.17	2,868.69	-97.05	-699.21	705.89	1.88	-1.87	0.37
3,065.00	16.18	261.08	2,960.28	-100.94	-724.12	731.10	1.66	1.66	-0.09
3,159.00	14.68	260.38	3,050.89	-104.96	-748.80	756.11	1.61	-1.60	-0.74
3,254.00	13.89	260.03	3,142.95	-108.95	-771.90	779.54	0.84	-0.83	-0.37
3,349.00	12.31	258.45	3,235.47	-112.95	-793.06	801.05	1.71	-1.66	-1.66
3,443.00	10.64	262.66	3,327.59	-116.07	-811.48	819.73	1.99	-1.78	4.48
3,538.00	8.62	259.41	3,421.25	-118.50	-827.18	835.62	2.20	-2.13	-3.42
3,633.00	7.91	259.76	3,515.26	-120.97	-840.61	849.27	0.75	-0.75	0.37
3,727.00	5.89	262.40	3,608.58	-122.75	-851.76	860.55	2.17	-2.15	2.81
3,822.00	5.54	264.51	3,703.10	-123.84	-861.16	870.01	0.43	-0.37	2.22
3,917.00	3.34	255.19	3,797.81	-124.98	-868.40	877.34	2.43	-2.32	-9.81
4,011.00	1.67	256.78	3,891.72	-126.00	-872.38	881.43	1.78	-1.78	1.69
4,106.00	0.88	255.02	3,986.70	-126.50	-874.43	883.53	0.83	-0.83	-1.85
4,201.00	0.79	233.48	4,081.69	-127.08	-875.66	884.83	0.34	-0.09	-22.67
4,295.00	0.97	208.87	4,175.68	-128.16	-876.57	885.88	0.44	0.19	-26.18
4,390.00	0.97	234.71	4,270.66	-129.33	-877.61	887.09	0.46	0.00	27.20
4,485.00	1.23	207.29	4,365.65	-130.70	-878.73	888.40	0.61	0.27	-28.86
4,580.00	1.14	213.62	4,460.63	-132.40	-879.73	889.63	0.17	-0.09	6.66
4,674.00	0.97	196.13	4,554.61	-133.94	-880.46	890.58	0.39	-0.18	-18.61

Scientific Drilling International

Survey Report

Company: OXY USA RMAT
Project: Garfield County, CO NAD27
Site: Shell 797-03A Pad
Well: Shell 797-03-13
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well Shell 797-03-13 - Slot M
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)
4,769.00	1.41	210.98	4,649.59	-135.71	-881.29	891.66	0.56	0.46	15.63
4,864.00	1.58	197.54	4,744.56	-137.96	-882.29	892.97	0.41	0.18	-14.15
4,958.00	1.76	195.69	4,838.52	-140.59	-883.07	894.13	0.20	0.19	-1.97
5,053.00	1.85	195.78	4,933.47	-143.47	-883.88	895.35	0.09	0.09	0.09
5,148.00	1.93	196.22	5,028.42	-146.48	-884.74	896.65	0.09	0.08	0.46
5,242.00	1.93	197.19	5,122.37	-149.51	-885.65	897.99	0.03	0.00	1.03
5,337.00	1.76	185.50	5,217.32	-152.49	-886.26	899.03	0.43	-0.18	-12.31
5,432.00	1.32	228.30	5,312.29	-154.67	-887.22	900.29	1.26	-0.46	45.05
5,527.00	1.58	215.12	5,407.26	-156.47	-888.79	902.11	0.44	0.27	-13.87
5,621.00	1.41	207.20	5,501.22	-158.56	-890.07	903.68	0.28	-0.18	-8.43
5,716.00	1.76	217.58	5,596.19	-160.76	-891.49	905.41	0.48	0.37	10.93
5,810.00	0.88	234.80	5,690.16	-162.32	-892.96	907.09	1.02	-0.94	18.32
5,905.00	0.97	186.29	5,785.15	-163.54	-893.64	907.94	0.80	0.09	-51.06
6,000.00	0.79	188.40	5,880.14	-164.98	-893.83	908.34	0.19	-0.19	2.22
6,094.00	1.14	208.26	5,974.13	-166.45	-894.37	909.08	0.51	0.37	21.13
6,100.92	1.09	212.20	5,981.04	-166.57	-894.43	909.16	1.29	-0.65	56.90
Rev Shell 797-03-13 Tgt									
6,189.00	1.14	273.12	6,069.11	-167.23	-895.76	910.57	1.29	0.05	69.17
6,284.00	1.49	287.89	6,164.09	-166.80	-897.88	912.60	0.51	0.37	15.55
6,378.00	2.29	266.27	6,258.04	-166.55	-900.91	915.57	1.13	0.85	-23.00
6,473.00	1.49	295.10	6,352.98	-166.15	-903.93	918.49	1.28	-0.84	30.35
6,568.00	1.49	327.44	6,447.95	-164.58	-905.71	920.03	0.87	0.00	34.04
6,662.00	0.97	17.54	6,541.93	-162.79	-906.13	920.18	1.22	-0.55	53.30
6,757.00	1.32	4.44	6,636.92	-160.93	-905.80	919.59	0.46	0.37	-13.79
6,852.00	0.35	351.79	6,731.90	-159.56	-905.76	919.34	1.03	-1.02	-13.32
6,921.00	0.44	283.23	6,800.90	-159.29	-906.04	919.59	0.65	0.13	-99.36
Last SDI Production MWD									
6,975.00	0.44	283.23	6,854.90	-159.19	-906.45	919.97	0.00	0.00	0.00
Projection to TD - BHL = 610777.39, 1236645.61									

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
157.00	157.00	0.08	-0.82	First SDI Surface MWD
1,006.00	995.12	-17.30	-117.32	Last SDI Surface MWD
1,170.00	1,153.28	-25.20	-159.98	First SDI Production MWD
6,921.00	6,800.90	-159.29	-906.04	Last SDI Production MWD
6,975.00	6,854.90	-159.19	-906.45	Projection to TD
6,975.00	6,854.90	-159.19	-906.45	BHL = 610777.39, 1236645.61

Checked By: _____

Approved By: _____

Date: _____