



# Scientific Drilling

Rocky Mountain Operations

Company: OXY USA RMAT  
Project: Garfield County, CO NAD27  
Site: Shell 797-03A Pad



## Well Details: Shell 797-03-29B

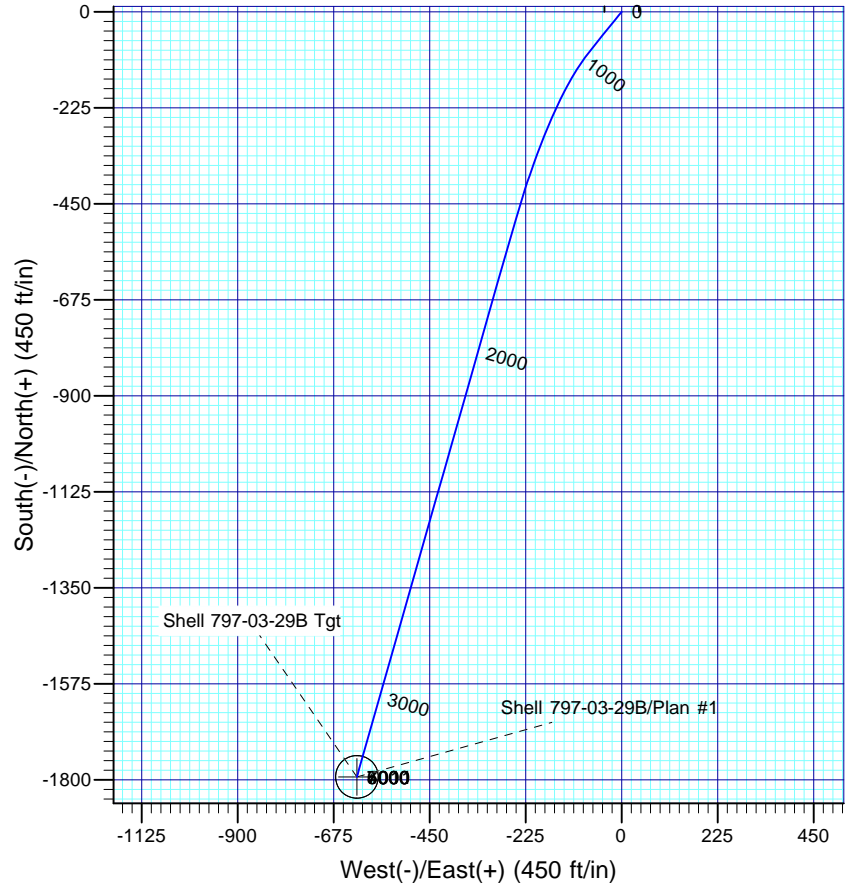
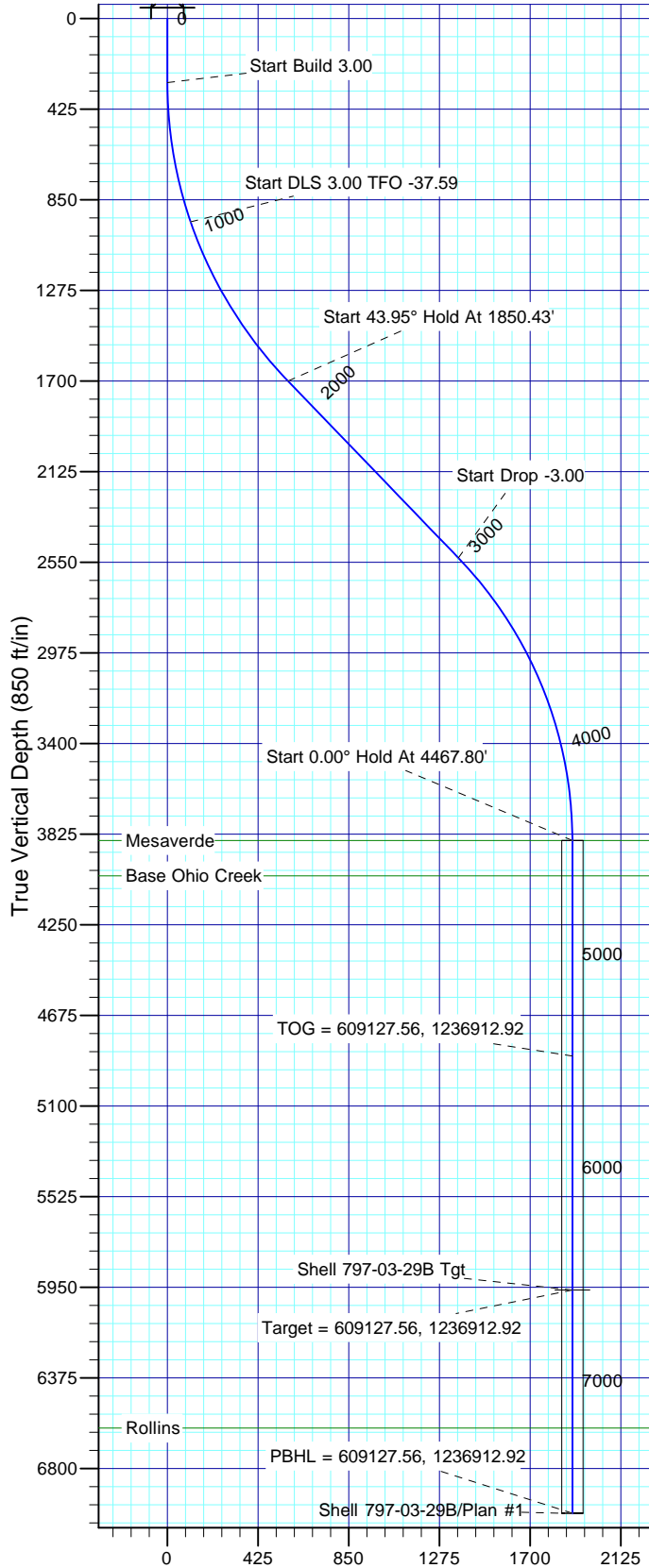
TVD Reference: GL 6485' & RBK 30' @ 6515.00ft (H&P) Ground Level: 6485.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	610901.40	1237586.51	39° 28' 46.599 N	108° 12' 4.941 W	C



Azimuths to True North  
Magnetic North: 10.42°

Magnetic Field  
Strength: 52192.1nT  
Dip Angle: 65.68°  
Date: 08/18/2011  
Model: IGRF2010



### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3855.00	4467.80	Mesaverde
4020.00	4632.80	Base Ohio Creek
6610.00	7222.80	Rollins

### Plan: Plan #1

13:59, September 09 2011  
Created By: Rex Hall

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

### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	
3	966.67	20.00	219.00	953.21	-89.51	-72.48	3.00	219.00	108.29	
4	1850.28	43.95	195.90	1699.81	-509.35	-254.85	3.00	-37.59	564.69	Shell 797-03-29B Tgt
5	1850.43	43.95	195.90	1699.92	-509.45	-254.88	3.00	0.00	564.80	
6	3002.64	43.95	195.90	2529.39	-1278.59	-473.99	0.00	0.001363.29		
7	4467.80	0.00	0.00	3855.00	-1793.09	-620.56	3.00	180.001897.44		
8	6575.30	0.00	0.00	5962.50	-1793.09	-620.56	0.00	0.001897.44		Shell 797-03-29B Tgt
9	7622.80	0.00	0.00	7010.00	-1793.09	-620.56	0.00	0.001897.44		

# **OXY USA RMAT**

**Garfield County, CO NAD27**

**Shell 797-03A Pad**

**Shell 797-03-29B - Slot C**

**OH**

**Plan: Plan #1**

## **Standard Planning Report**

**09 September, 2011**

# Scientific Drilling International

## Planning Report

<b>Database:</b>	Rockies Compass Server	<b>Local Co-ordinate Reference:</b>	Well Shell 797-03-29B - Slot C
<b>Company:</b>	OXY USA RMAT	<b>TVD Reference:</b>	GL 6485' & RBK 30' @ 6515.00ft (H&P)
<b>Project:</b>	Garfield County, CO NAD27	<b>MD Reference:</b>	GL 6485' & RBK 30' @ 6515.00ft (H&P)
<b>Site:</b>	Shell 797-03A Pad	<b>North Reference:</b>	True
<b>Well:</b>	Shell 797-03-29B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

<b>Project</b>	Garfield County, CO NAD27		
<b>Map System:</b>	US State Plane 1927 (Exact solution)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD 1927 (NADCON CONUS)		
<b>Map Zone:</b>	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 797-03-29B - Slot C					
Well Position	+N/-S	-1.04 ft	Northing:	610,901.40 usft	Latitude:	39° 28' 46.599 N
	+E/-W	-15.09 ft	Easting:	1,237,586.51 usft	Longitude:	108° 12' 4.941 W
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	6,485.00 ft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	08/18/11	10.42	65.68	52,192

<b>Design</b>	Plan #1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	199.09

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
966.67	20.00	219.00	953.21	-89.51	-72.48	3.00	3.00	0.00	219.00	
1,850.28	43.95	195.90	1,699.81	-509.35	-254.85	3.00	2.71	-2.61	-37.59	Shell 797-03-29B Tgt
1,850.43	43.95	195.90	1,699.92	-509.45	-254.88	3.00	3.00	0.00	0.00	
3,002.64	43.95	195.90	2,529.39	-1,278.59	-473.99	0.00	0.00	0.00	0.00	
4,467.80	0.00	0.00	3,855.00	-1,793.09	-620.56	3.00	-3.00	0.00	180.00	
6,575.30	0.00	0.00	5,962.50	-1,793.09	-620.56	0.00	0.00	0.00	0.00	Shell 797-03-29B Tgt
7,622.80	0.00	0.00	7,010.00	-1,793.09	-620.56	0.00	0.00	0.00	0.00	

# Scientific Drilling International

## Planning Report

<b>Database:</b>	Rockies Compass Server	<b>Local Co-ordinate Reference:</b>	Well Shell 797-03-29B - Slot C
<b>Company:</b>	OXY USA RMAT	<b>TVD Reference:</b>	GL 6485' & RBK 30' @ 6515.00ft (H&P)
<b>Project:</b>	Garfield County, CO NAD27	<b>MD Reference:</b>	GL 6485' & RBK 30' @ 6515.00ft (H&P)
<b>Site:</b>	Shell 797-03A Pad	<b>North Reference:</b>	True
<b>Well:</b>	Shell 797-03-29B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

Planned 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
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 3.00									
400.00	3.00	219.00	399.95	-2.03	-1.65	2.46	3.00	3.00	0.00
500.00	6.00	219.00	499.63	-8.13	-6.58	9.84	3.00	3.00	0.00
600.00	9.00	219.00	598.77	-18.27	-14.80	22.11	3.00	3.00	0.00
700.00	12.00	219.00	697.08	-32.43	-26.26	39.24	3.00	3.00	0.00
800.00	15.00	219.00	794.31	-50.57	-40.95	61.19	3.00	3.00	0.00
900.00	18.00	219.00	890.18	-72.64	-58.83	87.89	3.00	3.00	0.00
966.67	20.00	219.00	953.21	-89.51	-72.48	108.29	3.00	3.00	0.00
Start DLS 3.00 TFO -37.59									
1,000.00	20.80	217.28	984.45	-98.65	-79.66	119.28	3.00	2.40	-5.15
1,100.00	23.29	212.82	1,077.14	-129.40	-101.13	155.36	3.00	2.49	-4.46
1,200.00	25.89	209.20	1,168.07	-165.08	-122.50	196.07	3.00	2.59	-3.63
1,300.00	28.56	206.20	1,256.99	-205.59	-143.71	241.28	3.00	2.67	-3.00
1,400.00	31.28	203.67	1,343.66	-250.82	-164.69	290.89	3.00	2.72	-2.52
1,500.00	34.05	201.52	1,427.84	-300.65	-185.38	344.75	3.00	2.77	-2.15
1,600.00	36.84	199.66	1,509.30	-354.94	-205.74	402.71	3.00	2.80	-1.86
1,700.00	39.67	198.02	1,587.82	-413.54	-225.71	464.61	3.00	2.82	-1.63
1,800.00	42.51	196.57	1,663.18	-476.29	-245.23	530.30	3.00	2.84	-1.45
1,850.28	43.95	195.90	1,699.81	-509.35	-254.85	564.69	3.00	2.86	-1.33
1,850.43	43.95	195.90	1,699.92	-509.45	-254.88	564.80	0.00	0.00	0.00
Start 43.95° Hold At 1850.43'									
1,900.00	43.95	195.90	1,735.61	-542.54	-264.31	599.15	0.01	0.01	0.00
2,000.00	43.95	195.90	1,807.60	-609.30	-283.32	668.45	0.00	0.00	0.00
2,100.00	43.95	195.90	1,879.59	-676.05	-302.34	737.75	0.00	0.00	0.00
2,200.00	43.95	195.90	1,951.57	-742.80	-321.36	807.05	0.00	0.00	0.00
2,300.00	43.95	195.90	2,023.56	-809.56	-340.37	876.35	0.00	0.00	0.00
2,400.00	43.95	195.90	2,095.55	-876.31	-359.39	945.66	0.00	0.00	0.00
2,500.00	43.95	195.90	2,167.54	-943.06	-378.41	1,014.96	0.00	0.00	0.00
2,600.00	43.95	195.90	2,239.53	-1,009.81	-397.42	1,084.26	0.00	0.00	0.00
2,700.00	43.95	195.90	2,311.52	-1,076.57	-416.44	1,153.56	0.00	0.00	0.00
2,800.00	43.95	195.90	2,383.51	-1,143.32	-435.45	1,222.86	0.00	0.00	0.00
2,900.00	43.95	195.90	2,455.50	-1,210.07	-454.47	1,292.16	0.00	0.00	0.00
3,000.00	43.95	195.90	2,527.49	-1,276.83	-473.49	1,361.46	0.00	0.00	0.00
3,002.64	43.95	195.90	2,529.39	-1,278.59	-473.99	1,363.30	0.00	0.00	0.00
Start Drop -3.00									
3,100.00	41.03	195.90	2,601.17	-1,341.83	-492.01	1,428.95	3.00	-3.00	0.00
3,200.00	38.03	195.90	2,678.28	-1,403.04	-509.44	1,492.50	3.00	-3.00	0.00
3,300.00	35.03	195.90	2,758.63	-1,460.29	-525.75	1,551.93	3.00	-3.00	0.00
3,400.00	32.03	195.90	2,841.97	-1,513.41	-540.88	1,607.08	3.00	-3.00	0.00
3,500.00	29.03	195.90	2,928.09	-1,562.27	-554.80	1,657.80	3.00	-3.00	0.00
3,600.00	26.03	195.90	3,016.76	-1,606.72	-567.47	1,703.95	3.00	-3.00	0.00
3,700.00	23.03	195.90	3,107.72	-1,646.65	-578.84	1,745.41	3.00	-3.00	0.00
3,800.00	20.03	195.90	3,200.73	-1,681.95	-588.90	1,782.05	3.00	-3.00	0.00
3,900.00	17.03	195.90	3,295.53	-1,712.51	-597.60	1,813.78	3.00	-3.00	0.00
4,000.00	14.03	195.90	3,391.87	-1,738.27	-604.94	1,840.52	3.00	-3.00	0.00
4,100.00	11.03	195.90	3,489.47	-1,759.14	-610.89	1,862.19	3.00	-3.00	0.00
4,200.00	8.03	195.90	3,588.08	-1,775.06	-615.42	1,878.72	3.00	-3.00	0.00
4,300.00	5.03	195.90	3,687.42	-1,786.01	-618.54	1,890.08	3.00	-3.00	0.00
4,400.00	2.03	195.90	3,787.22	-1,791.93	-620.23	1,896.24	3.00	-3.00	0.00
4,467.80	0.00	0.00	3,855.00	-1,793.09	-620.56	1,897.44	3.00	-3.00	0.00

# Scientific Drilling International

## Planning Report

<b>Database:</b>	Rockies Compass Server	<b>Local Co-ordinate Reference:</b>	Well Shell 797-03-29B - Slot C
<b>Company:</b>	OXY USA RMAT	<b>TVD Reference:</b>	GL 6485' & RBK 30' @ 6515.00ft (H&P)
<b>Project:</b>	Garfield County, CO NAD27	<b>MD Reference:</b>	GL 6485' & RBK 30' @ 6515.00ft (H&P)
<b>Site:</b>	Shell 797-03A Pad	<b>North Reference:</b>	True
<b>Well:</b>	Shell 797-03-29B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

Planned 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)
<b>Start 0.00° Hold At 4467.80' - Mesaverde</b>									
4,500.00	0.00	0.00	3,887.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
4,600.00	0.00	0.00	3,987.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
4,632.80	0.00	0.00	4,020.00	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
<b>Base Ohio Creek</b>									
4,700.00	0.00	0.00	4,087.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
4,800.00	0.00	0.00	4,187.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
4,900.00	0.00	0.00	4,287.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
5,000.00	0.00	0.00	4,387.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
5,100.00	0.00	0.00	4,487.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
5,200.00	0.00	0.00	4,587.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
5,300.00	0.00	0.00	4,687.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
5,400.00	0.00	0.00	4,787.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
5,477.80	0.00	0.00	4,865.00	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
<b>TOG = 609127.56, 1236912.92</b>									
5,500.00	0.00	0.00	4,887.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
5,600.00	0.00	0.00	4,987.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
5,700.00	0.00	0.00	5,087.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
5,800.00	0.00	0.00	5,187.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
5,900.00	0.00	0.00	5,287.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
6,000.00	0.00	0.00	5,387.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
6,100.00	0.00	0.00	5,487.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
6,200.00	0.00	0.00	5,587.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
6,300.00	0.00	0.00	5,687.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
6,400.00	0.00	0.00	5,787.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
6,500.00	0.00	0.00	5,887.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
6,575.30	0.00	0.00	5,962.50	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
<b>Target = 609127.56, 1236912.92</b>									
6,600.00	0.00	0.00	5,987.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
6,700.00	0.00	0.00	6,087.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
6,800.00	0.00	0.00	6,187.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
6,900.00	0.00	0.00	6,287.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
7,000.00	0.00	0.00	6,387.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
7,100.00	0.00	0.00	6,487.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
7,200.00	0.00	0.00	6,587.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
7,222.80	0.00	0.00	6,610.00	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
<b>Rollins</b>									
7,300.00	0.00	0.00	6,687.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
7,400.00	0.00	0.00	6,787.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
7,500.00	0.00	0.00	6,887.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
7,600.00	0.00	0.00	6,987.20	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
7,622.80	0.00	0.00	7,010.00	-1,793.09	-620.56	1,897.44	0.00	0.00	0.00
<b>PBHL = 609127.56, 1236912.92</b>									

# Scientific Drilling International

## Planning Report

<b>Database:</b>	Rockies Compass Server	<b>Local Co-ordinate Reference:</b>	Well Shell 797-03-29B - Slot C
<b>Company:</b>	OXY USA RMAT	<b>TVD Reference:</b>	GL 6485' & RBK 30' @ 6515.00ft (H&P)
<b>Project:</b>	Garfield County, CO NAD27	<b>MD Reference:</b>	GL 6485' & RBK 30' @ 6515.00ft (H&P)
<b>Site:</b>	Shell 797-03A Pad	<b>North Reference:</b>	True
<b>Well:</b>	Shell 797-03-29B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)		
- Shape									
Shell 797-03-29B Tgt	0.00	0.00	5,962.50	-1,793.09	-620.56	609,127.56	1,236,912.91	39° 28' 28.877 N	108° 12' 12.855 W
- plan hits target center									
- Circle (radius 50.00)									

Formations					
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction
(ft)	(ft)			(°)	(°)
4,467.80	3,855.00	Mesaverde		0.00	
4,632.80	4,020.00	Base Ohio Creek		0.00	
7,222.80	6,610.00	Rollins		0.00	

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
300.00	300.00	0.00	0.00	Start Build 3.00
966.67	953.21	-89.51	-72.48	Start DLS 3.00 TFO -37.59
1,850.43	1,699.92	-509.45	-254.88	Start 43.95° Hold At 1850.43'
3,002.64	2,529.39	-1,278.59	-473.99	Start Drop -3.00
4,467.80	3,855.00	-1,793.09	-620.56	Start 0.00° Hold At 4467.80'
5,477.80	4,865.00	-1,793.09	-620.56	TOG = 609127.56, 1236912.92
6,575.30	5,962.50	-1,793.09	-620.56	Target = 609127.56, 1236912.92
7,622.80	7,010.00	-1,793.09	-620.56	PBHL = 609127.56, 1236912.92