



Scientific Drilling
Rocky Mountain Operations

Company: OXY USA RMAT
Project: Garfield County, CO NAD27
Site: Cascade Creek 697-15B Pad



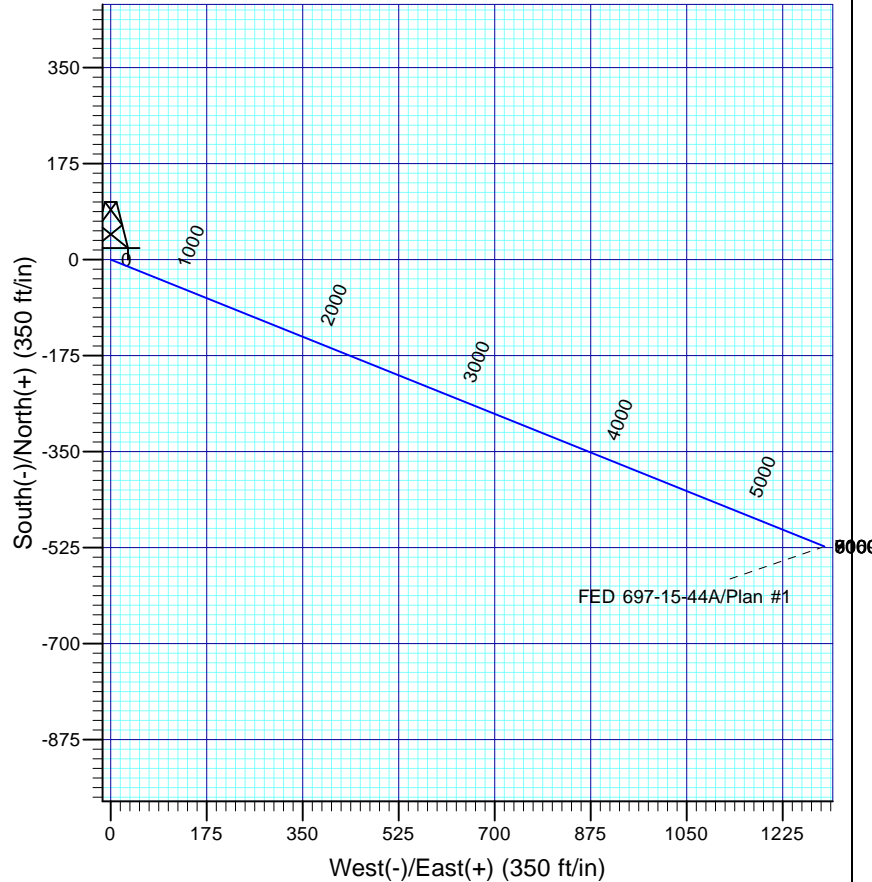
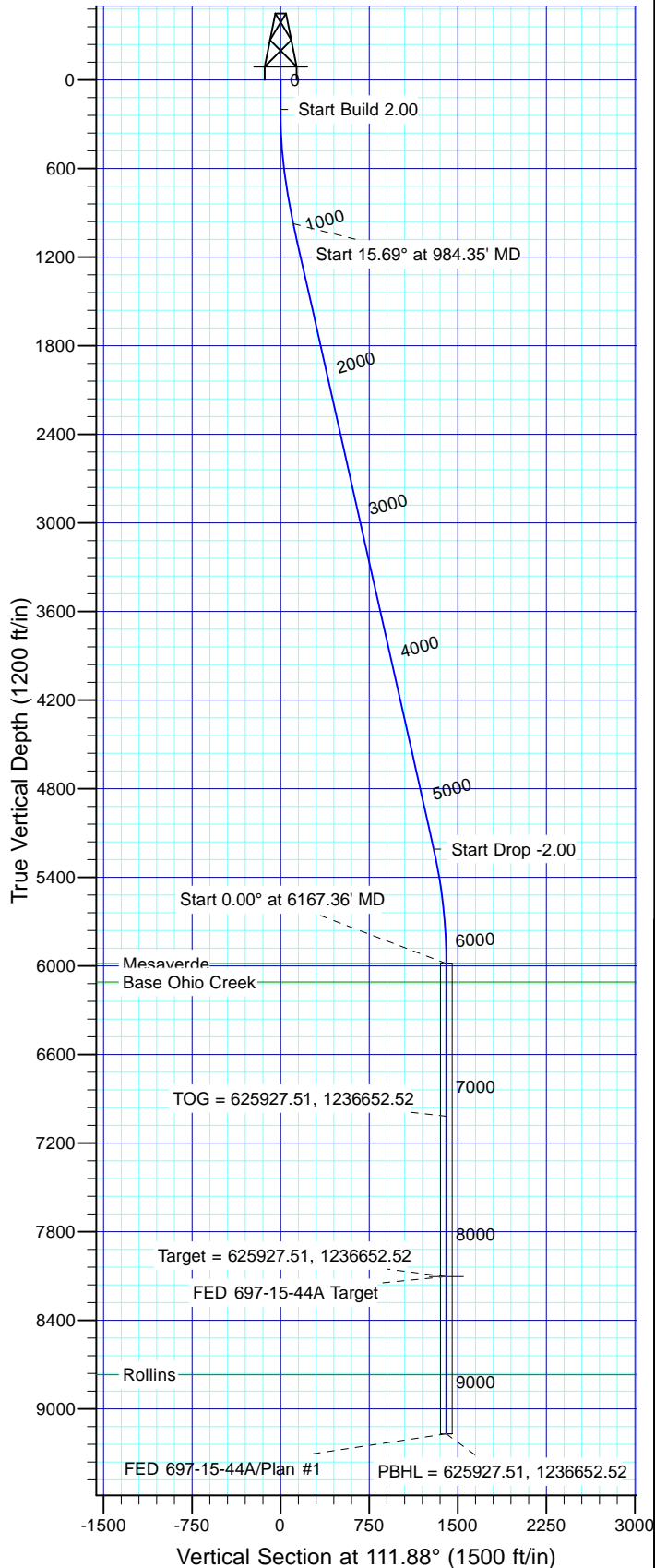
Well Details: FED 697-15-44A

TVD Reference: GL 8439' & RKB 30' @ 8469.00ft (H&P Rig) Ground Level: 8439.00
+N/-S 0.00 +E/-W 0.00 Northing 626488.97 Easting 1235367.06 Latitude 39° 31' 19.942 N Longitude 108° 12' 39.165 W Slot G



Azimuths to True North
Magnetic North: 10.44°

Magnetic Field
Strength: 52208.9snT
Dip Angle: 65.72°
Date: 7/11/2011
Model: IGRF2010



FORMATION TOP DETAILS

TVDPath	MDPath	Formation
5984.00	6167.36	Mesaverde
6109.00	6292.36	Base Ohio Creek
8769.00	8952.36	Rollins

Plan: Plan #1

11:36, July 15 2011

Created By: Janie Cooke

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	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
3	984.35	15.69	111.88	974.59	-39.77	99.02	2.00	111.88	106.70	
4	5383.01	15.69	111.88	5209.41	-483.08	1202.63	0.00	0.001296.03		
5	6167.36	0.00	0.00	5984.00	-522.85	1301.64	2.00	180.001402.73		
6	8287.36	0.00	0.00	8104.00	-522.85	1301.64	0.00	0.001402.73		
7	9352.36	0.00	0.00	9169.00	-522.85	1301.64	0.00	0.001402.73		FED 697-15-44A Target

OXY USA RMAT

**Garfield County, CO NAD27
Cascade Creek 697-15B Pad
FED 697-15-44A - Slot G**

OH

Plan: Plan #1

Standard Planning Report

15 July, 2011





Database:	Rockies Compass Server	Local Co-ordinate Reference:	Well FED 697-15-44A - Slot G
Company:	OXY USA RMAT	TVD Reference:	GL 8439' & RKB 30' @ 8469.00ft (H&P Rig)
Project:	Garfield County, CO NAD27	MD Reference:	GL 8439' & RKB 30' @ 8469.00ft (H&P Rig)
Site:	Cascade Creek 697-15B Pad	North Reference:	True
Well:	FED 697-15-44A	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #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		Cascade Creek 697-15B Pad				
Site Position:		Northing:	626,511.21 usft	Latitude:	39° 31' 20.159 N	
From:	Lat/Long	Easting:	1,235,360.14 usft	Longitude:	108° 12' 39.262 W	
Position Uncertainty:		0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.71 °

Well		FED 697-15-44A - Slot G				
Well Position	+N/-S	-22.02 ft	Northing:	626,488.97 usft	Latitude:	39° 31' 19.942 N
	+E/-W	7.58 ft	Easting:	1,235,367.06 usft	Longitude:	108° 12' 39.165 W
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	8,439.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/11/2011	10.44	65.72	52,209

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	111.88

Plan Sections										
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	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
984.35	15.69	111.88	974.59	-39.77	99.02	2.00	2.00	0.00	111.88	
5,383.01	15.69	111.88	5,209.41	-483.08	1,202.63	0.00	0.00	0.00	0.00	
6,167.36	0.00	0.00	5,984.00	-522.85	1,301.64	2.00	-2.00	0.00	180.00	
8,287.36	0.00	0.00	8,104.00	-522.85	1,301.64	0.00	0.00	0.00	0.00	FED 697-15-44A Tarç
9,352.36	0.00	0.00	9,169.00	-522.85	1,301.64	0.00	0.00	0.00	0.00	



Database:	Rockies Compass Server	Local Co-ordinate Reference:	Well FED 697-15-44A - Slot G
Company:	OXY USA RMAT	TVD Reference:	GL 8439' & RKB 30' @ 8469.00ft (H&P Rig)
Project:	Garfield County, CO NAD27	MD Reference:	GL 8439' & RKB 30' @ 8469.00ft (H&P Rig)
Site:	Cascade Creek 697-15B Pad	North Reference:	True
Well:	FED 697-15-44A	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	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
Start Build 2.00									
300.00	2.00	111.88	299.98	-0.65	1.62	1.75	2.00	2.00	0.00
400.00	4.00	111.88	399.84	-2.60	6.48	6.98	2.00	2.00	0.00
500.00	6.00	111.88	499.45	-5.85	14.56	15.69	2.00	2.00	0.00
600.00	8.00	111.88	598.70	-10.39	25.87	27.88	2.00	2.00	0.00
700.00	10.00	111.88	697.47	-16.22	40.39	43.52	2.00	2.00	0.00
800.00	12.00	111.88	795.62	-23.33	58.09	62.60	2.00	2.00	0.00
900.00	14.00	111.88	893.06	-31.72	78.96	85.10	2.00	2.00	0.00
984.35	15.69	111.88	974.59	-39.77	99.02	106.70	2.00	2.00	0.00
Start 15.69° at 984.35' MD									
1,000.00	15.69	111.88	989.65	-41.35	102.94	110.94	0.00	0.00	0.00
1,100.00	15.69	111.88	1,085.93	-51.43	128.03	137.97	0.00	0.00	0.00
1,200.00	15.69	111.88	1,182.21	-61.51	153.12	165.01	0.00	0.00	0.00
1,300.00	15.69	111.88	1,278.48	-71.59	178.21	192.05	0.00	0.00	0.00
1,400.00	15.69	111.88	1,374.76	-81.66	203.30	219.09	0.00	0.00	0.00
1,500.00	15.69	111.88	1,471.03	-91.74	228.39	246.13	0.00	0.00	0.00
1,600.00	15.69	111.88	1,567.31	-101.82	253.48	273.17	0.00	0.00	0.00
1,700.00	15.69	111.88	1,663.58	-111.90	278.57	300.20	0.00	0.00	0.00
1,800.00	15.69	111.88	1,759.86	-121.98	303.66	327.24	0.00	0.00	0.00
1,900.00	15.69	111.88	1,856.13	-132.05	328.75	354.28	0.00	0.00	0.00
2,000.00	15.69	111.88	1,952.41	-142.13	353.84	381.32	0.00	0.00	0.00
2,100.00	15.69	111.88	2,048.68	-152.21	378.93	408.36	0.00	0.00	0.00
2,200.00	15.69	111.88	2,144.96	-162.29	404.02	435.40	0.00	0.00	0.00
2,300.00	15.69	111.88	2,241.23	-172.37	429.11	462.43	0.00	0.00	0.00
2,400.00	15.69	111.88	2,337.51	-182.45	454.20	489.47	0.00	0.00	0.00
2,500.00	15.69	111.88	2,433.78	-192.52	479.29	516.51	0.00	0.00	0.00
2,600.00	15.69	111.88	2,530.06	-202.60	504.38	543.55	0.00	0.00	0.00
2,700.00	15.69	111.88	2,626.33	-212.68	529.47	570.59	0.00	0.00	0.00
2,800.00	15.69	111.88	2,722.61	-222.76	554.56	597.62	0.00	0.00	0.00
2,900.00	15.69	111.88	2,818.89	-232.84	579.65	624.66	0.00	0.00	0.00
3,000.00	15.69	111.88	2,915.16	-242.92	604.74	651.70	0.00	0.00	0.00
3,100.00	15.69	111.88	3,011.44	-252.99	629.83	678.74	0.00	0.00	0.00
3,200.00	15.69	111.88	3,107.71	-263.07	654.92	705.78	0.00	0.00	0.00
3,300.00	15.69	111.88	3,203.99	-273.15	680.01	732.82	0.00	0.00	0.00
3,400.00	15.69	111.88	3,300.26	-283.23	705.10	759.85	0.00	0.00	0.00
3,500.00	15.69	111.88	3,396.54	-293.31	730.19	786.89	0.00	0.00	0.00
3,600.00	15.69	111.88	3,492.81	-303.38	755.28	813.93	0.00	0.00	0.00
3,700.00	15.69	111.88	3,589.09	-313.46	780.36	840.97	0.00	0.00	0.00
3,800.00	15.69	111.88	3,685.36	-323.54	805.45	868.01	0.00	0.00	0.00
3,900.00	15.69	111.88	3,781.64	-333.62	830.54	895.05	0.00	0.00	0.00
4,000.00	15.69	111.88	3,877.91	-343.70	855.63	922.08	0.00	0.00	0.00
4,100.00	15.69	111.88	3,974.19	-353.78	880.72	949.12	0.00	0.00	0.00
4,200.00	15.69	111.88	4,070.46	-363.85	905.81	976.16	0.00	0.00	0.00
4,300.00	15.69	111.88	4,166.74	-373.93	930.90	1,003.20	0.00	0.00	0.00
4,400.00	15.69	111.88	4,263.01	-384.01	955.99	1,030.24	0.00	0.00	0.00
4,500.00	15.69	111.88	4,359.29	-394.09	981.08	1,057.27	0.00	0.00	0.00
4,600.00	15.69	111.88	4,455.57	-404.17	1,006.17	1,084.31	0.00	0.00	0.00
4,700.00	15.69	111.88	4,551.84	-414.25	1,031.26	1,111.35	0.00	0.00	0.00
4,800.00	15.69	111.88	4,648.12	-424.32	1,056.35	1,138.39	0.00	0.00	0.00
4,900.00	15.69	111.88	4,744.39	-434.40	1,081.44	1,165.43	0.00	0.00	0.00
5,000.00	15.69	111.88	4,840.67	-444.48	1,106.53	1,192.47	0.00	0.00	0.00



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Company:	OXY USA RMAT	TVD Reference:	GL 8439' & RKB 30' @ 8469.00ft (H&P Rig)
Project:	Garfield County, CO NAD27	MD Reference:	GL 8439' & RKB 30' @ 8469.00ft (H&P Rig)
Site:	Cascade Creek 697-15B Pad	North Reference:	True
Well:	FED 697-15-44A	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	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)
5,100.00	15.69	111.88	4,936.94	-454.56	1,131.62	1,219.50	0.00	0.00	0.00
5,200.00	15.69	111.88	5,033.22	-464.64	1,156.71	1,246.54	0.00	0.00	0.00
5,300.00	15.69	111.88	5,129.49	-474.72	1,181.80	1,273.58	0.00	0.00	0.00
5,383.01	15.69	111.88	5,209.41	-483.08	1,202.63	1,296.03	0.00	0.00	0.00
Start Drop -2.00									
5,400.00	15.35	111.88	5,225.78	-484.78	1,206.85	1,300.57	2.00	-2.00	0.00
5,500.00	13.35	111.88	5,322.66	-494.01	1,229.84	1,325.35	2.00	-2.00	0.00
5,600.00	11.35	111.88	5,420.34	-501.98	1,249.68	1,346.73	2.00	-2.00	0.00
5,700.00	9.35	111.88	5,518.71	-508.68	1,266.35	1,364.69	2.00	-2.00	0.00
5,800.00	7.35	111.88	5,617.64	-514.09	1,279.82	1,379.21	2.00	-2.00	0.00
5,900.00	5.35	111.88	5,717.03	-518.21	1,290.08	1,390.26	2.00	-2.00	0.00
6,000.00	3.35	111.88	5,816.73	-521.03	1,297.11	1,397.84	2.00	-2.00	0.00
6,100.00	1.35	111.88	5,916.64	-522.56	1,300.91	1,401.94	2.00	-2.00	0.00
6,167.36	0.00	0.00	5,984.00	-522.85	1,301.64	1,402.73	2.00	-2.00	0.00
Start 0.00° at 6167.36' MD - Mesaverde									
6,200.00	0.00	0.00	6,016.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
6,292.36	0.00	0.00	6,109.00	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
Base Ohio Creek									
6,300.00	0.00	0.00	6,116.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
6,400.00	0.00	0.00	6,216.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
6,500.00	0.00	0.00	6,316.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
6,600.00	0.00	0.00	6,416.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
6,700.00	0.00	0.00	6,516.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
6,800.00	0.00	0.00	6,616.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
6,900.00	0.00	0.00	6,716.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
7,000.00	0.00	0.00	6,816.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
7,100.00	0.00	0.00	6,916.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
7,200.00	0.00	0.00	7,016.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
7,202.36	0.00	0.00	7,019.00	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
TOG = 625927.51, 1236652.52									
7,300.00	0.00	0.00	7,116.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
7,400.00	0.00	0.00	7,216.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
7,500.00	0.00	0.00	7,316.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
7,600.00	0.00	0.00	7,416.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
7,700.00	0.00	0.00	7,516.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
7,800.00	0.00	0.00	7,616.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
7,900.00	0.00	0.00	7,716.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
8,000.00	0.00	0.00	7,816.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
8,100.00	0.00	0.00	7,916.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
8,200.00	0.00	0.00	8,016.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
8,287.36	0.00	0.00	8,104.00	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
Target = 625927.51, 1236652.52									
8,300.00	0.00	0.00	8,116.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
8,400.00	0.00	0.00	8,216.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
8,500.00	0.00	0.00	8,316.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
8,600.00	0.00	0.00	8,416.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
8,700.00	0.00	0.00	8,516.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
8,800.00	0.00	0.00	8,616.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
8,900.00	0.00	0.00	8,716.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
8,952.36	0.00	0.00	8,769.00	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
Rollins									
9,000.00	0.00	0.00	8,816.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
9,100.00	0.00	0.00	8,916.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00



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Company:	OXY USA RMAT	TVD Reference:	GL 8439' & RKB 30' @ 8469.00ft (H&P Rig)
Project:	Garfield County, CO NAD27	MD Reference:	GL 8439' & RKB 30' @ 8469.00ft (H&P Rig)
Site:	Cascade Creek 697-15B Pad	North Reference:	True
Well:	FED 697-15-44A	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	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)
9,200.00	0.00	0.00	9,016.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
9,300.00	0.00	0.00	9,116.64	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
9,352.30	0.00	0.00	9,168.94	-522.85	1,301.64	1,402.73	0.00	0.00	0.00
PBHL = 625927.51, 1236652.52									
9,352.36	0.00	0.00	9,169.00	-522.85	1,301.64	1,402.73	0.00	0.00	0.00

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
FED 697-15-44A Target - plan hits target center - Circle (radius 50.00)	0.00	0.00	8,104.00	-522.85	1,301.64	625,927.52	1,236,652.52	39° 31' 14.774 N	108° 12' 22.555 W

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,167.36	5,984.00	Mesaverde		0.00	
6,292.36	6,109.00	Base Ohio Creek		0.00	
8,952.36	8,769.00	Rollins		0.00	

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
200.00	200.00	0.00	0.00	Start Build 2.00
984.35	974.59	-39.77	99.02	Start 15.69° at 984.35' MD
5,383.01	5,209.41	-483.08	1,202.63	Start Drop -2.00
6,167.36	5,984.00	-522.85	1,301.64	Start 0.00° at 6167.36' MD
7,202.36	7,019.00	-522.85	1,301.64	TOG = 625927.51, 1236652.52
8,287.36	8,104.00	-522.85	1,301.64	Target = 625927.51, 1236652.52
9,352.30	9,168.94	-522.85	1,301.64	PBHL = 625927.51, 1236652.52