



Scientific Drilling
Rocky Mountain Operations

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



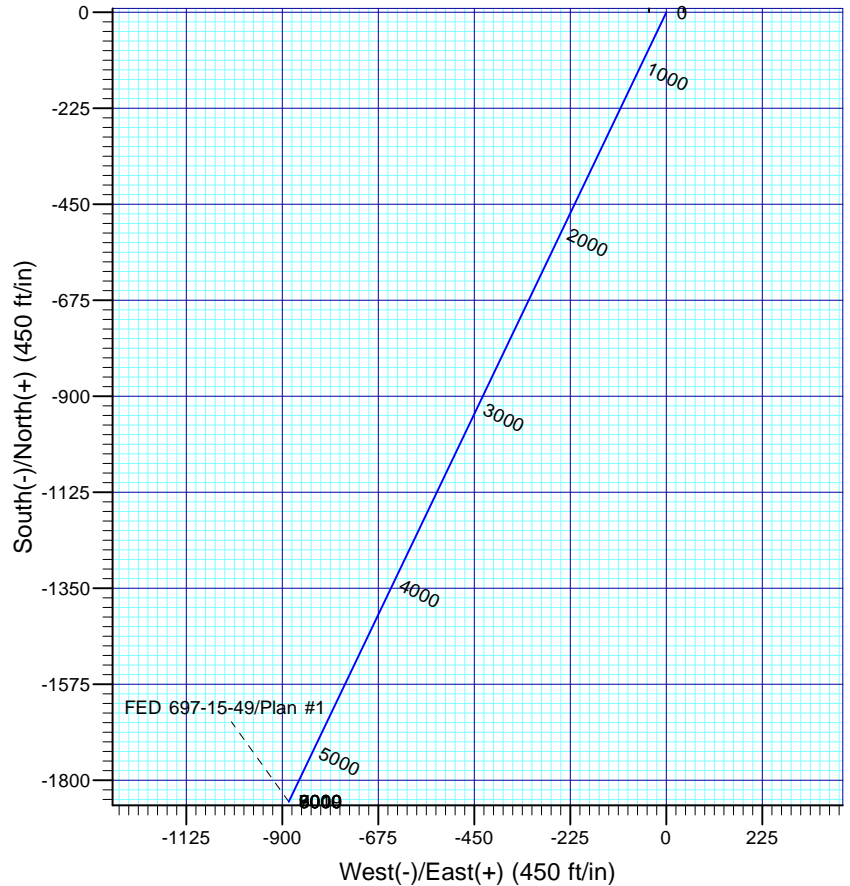
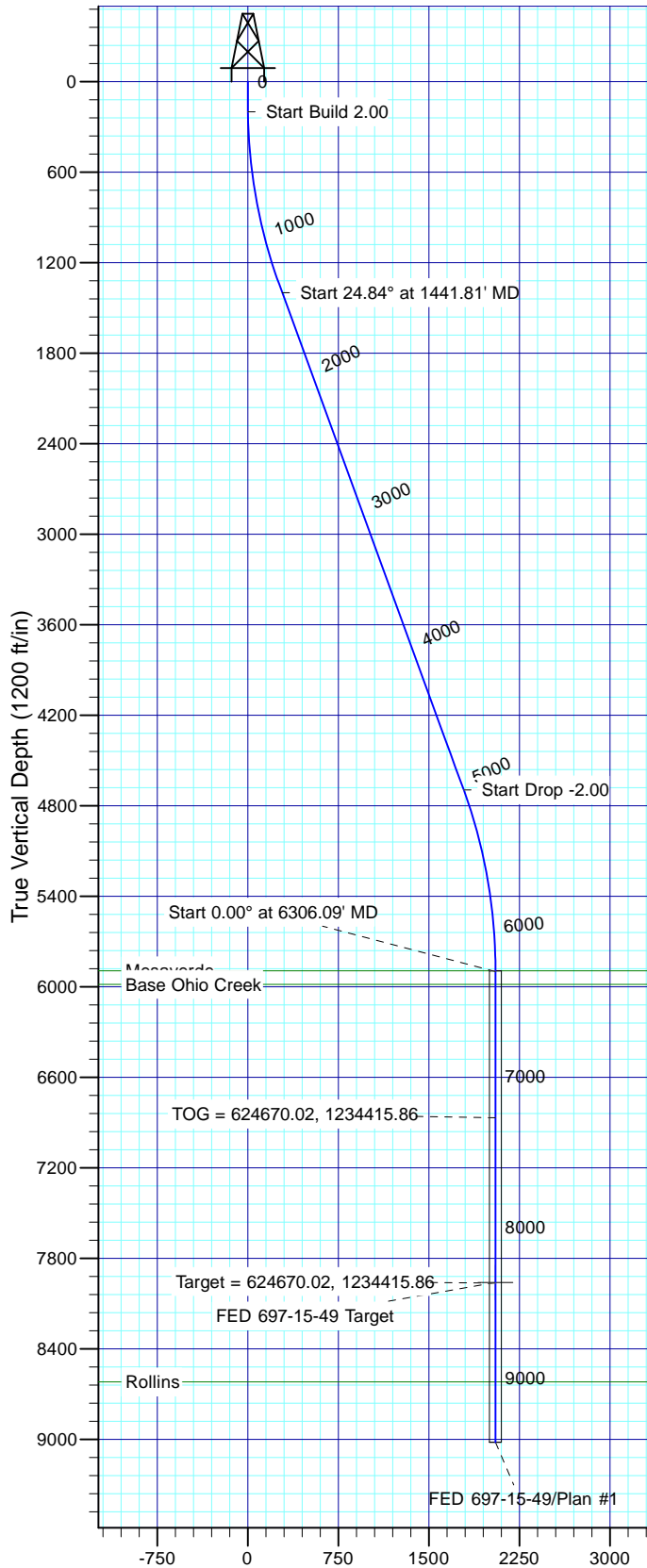
Well Details: FED 697-15-49

TVD Reference: GL 8439' & RKB 30' @ 8469.00ft (H&P Rig) Ground Level: 8439.00
+N/-S 0.00 +E/-W 0.00 Northing 626493.45 Easting 1235355.81 Latitude 39° 31' 19.983 N Longitude 108° 12' 39.311 W Slot F



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
5894.00	6301.52	Mesaverde
5984.00	6391.52	Base Ohio Creek
8619.00	9026.52	Rollins

Plan: Plan #1

11:38, 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	V Sect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	150.00	0.00	0.00	150.00	0.00	0.00	0.00	0.00	0.00	
3	1375.48	24.51	205.56	1338.45	-232.88	-111.38	2.00	205.56	258.14	
4	5076.04	24.51	205.56	4705.55	-1617.79	-773.75	0.00	0.00	1793.30	
5	6301.52	0.00	0.00	5894.00	-1850.67	-885.13	2.00	180.00	2051.44	
6	8367.52	0.00	0.00	7960.00	-1850.67	-885.13	0.00	0.00	2051.44	FED 697-15-49 Target
7	9426.52	0.00	0.00	9019.00	-1850.67	-885.13	0.00	0.00	2051.44	

OXY USA RMAT

**Garfield County, CO NAD27
Cascade Creek 697-15B Pad
FED 697-15-49 - Slot F**

OH

Plan: Plan #1

Standard Planning Report

15 July, 2011





Database:	Rockies Compass Server	Local Co-ordinate Reference:	Well FED 697-15-49 - Slot F
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 697-15-49	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
From:	Lat/Long	Easting:	1,235,360.14 usft
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in
		Latitude:	39° 31' 20.159 N
		Longitude:	108° 12' 39.262 W
		Grid Convergence:	-1.71 °

Well	FED 697-15-49 - Slot F		
Well Position	+N/-S	-17.88 ft	Northing: 626,493.45 usft
	+E/-W	-3.80 ft	Easting: 1,235,355.81 usft
Position Uncertainty	0.00 ft	Wellhead Elevation:	Latitude: 39° 31' 19.983 N
			Longitude: 108° 12' 39.311 W
			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)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.00	0.00	0.00	205.56

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	
150.00	0.00	0.00	150.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,375.48	24.51	205.56	1,338.45	-232.88	-111.38	2.00	2.00	0.00	205.56	
5,076.04	24.51	205.56	4,705.55	-1,617.79	-773.75	0.00	0.00	0.00	0.00	
6,301.52	0.00	0.00	5,894.00	-1,850.67	-885.13	2.00	-2.00	0.00	180.00	
8,367.52	0.00	0.00	7,960.00	-1,850.67	-885.13	0.00	0.00	0.00	0.00	FED 697-15-49 Targe
9,426.52	0.00	0.00	9,019.00	-1,850.67	-885.13	0.00	0.00	0.00	0.00	



Database:	Rockies Compass Server	Local Co-ordinate Reference:	Well FED 697-15-49 - Slot F
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 697-15-49	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
150.00	0.00	0.00	150.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	1.00	205.56	200.00	-0.39	-0.19	0.44	2.00	2.00	0.00
Start Build 2.00									
300.00	3.00	205.56	299.93	-3.54	-1.69	3.93	2.00	2.00	0.00
400.00	5.00	205.56	399.68	-9.83	-4.70	10.90	2.00	2.00	0.00
500.00	7.00	205.56	499.13	-19.26	-9.21	21.35	2.00	2.00	0.00
600.00	9.00	205.56	598.15	-31.82	-15.22	35.27	2.00	2.00	0.00
700.00	11.00	205.56	696.63	-47.48	-22.71	52.63	2.00	2.00	0.00
800.00	13.00	205.56	794.44	-66.24	-31.68	73.42	2.00	2.00	0.00
900.00	15.00	205.56	891.46	-88.06	-42.12	97.62	2.00	2.00	0.00
1,000.00	17.00	205.56	987.58	-112.93	-54.01	125.18	2.00	2.00	0.00
1,100.00	19.00	205.56	1,082.68	-140.80	-67.34	156.08	2.00	2.00	0.00
1,200.00	21.00	205.56	1,176.65	-171.66	-82.10	190.28	2.00	2.00	0.00
1,300.00	23.00	205.56	1,269.36	-205.45	-98.26	227.74	2.00	2.00	0.00
1,375.48	24.51	205.56	1,338.45	-232.88	-111.38	258.14	2.00	2.00	0.00
1,400.00	24.51	205.56	1,360.76	-242.05	-115.77	268.31	0.00	0.00	0.00
1,441.81	24.51	205.56	1,398.80	-257.70	-123.25	285.66	0.00	0.00	0.00
Start 24.84° at 1441.81° MD									
1,500.00	24.51	205.56	1,451.75	-279.48	-133.67	309.80	0.00	0.00	0.00
1,600.00	24.51	205.56	1,542.73	-316.90	-151.57	351.28	0.00	0.00	0.00
1,700.00	24.51	205.56	1,633.72	-354.33	-169.47	392.77	0.00	0.00	0.00
1,800.00	24.51	205.56	1,724.71	-391.75	-187.37	434.25	0.00	0.00	0.00
1,900.00	24.51	205.56	1,815.70	-429.18	-205.26	475.74	0.00	0.00	0.00
2,000.00	24.51	205.56	1,906.69	-466.60	-223.16	517.22	0.00	0.00	0.00
2,100.00	24.51	205.56	1,997.68	-504.02	-241.06	558.71	0.00	0.00	0.00
2,200.00	24.51	205.56	2,088.67	-541.45	-258.96	600.19	0.00	0.00	0.00
2,300.00	24.51	205.56	2,179.66	-578.87	-276.86	641.67	0.00	0.00	0.00
2,400.00	24.51	205.56	2,270.65	-616.30	-294.76	683.16	0.00	0.00	0.00
2,500.00	24.51	205.56	2,361.64	-653.72	-312.66	724.64	0.00	0.00	0.00
2,600.00	24.51	205.56	2,452.63	-691.15	-330.56	766.13	0.00	0.00	0.00
2,700.00	24.51	205.56	2,543.62	-728.57	-348.46	807.61	0.00	0.00	0.00
2,800.00	24.51	205.56	2,634.60	-765.99	-366.36	849.10	0.00	0.00	0.00
2,900.00	24.51	205.56	2,725.59	-803.42	-384.26	890.58	0.00	0.00	0.00
3,000.00	24.51	205.56	2,816.58	-840.84	-402.16	932.07	0.00	0.00	0.00
3,100.00	24.51	205.56	2,907.57	-878.27	-420.06	973.55	0.00	0.00	0.00
3,200.00	24.51	205.56	2,998.56	-915.69	-437.96	1,015.04	0.00	0.00	0.00
3,300.00	24.51	205.56	3,089.55	-953.12	-455.85	1,056.52	0.00	0.00	0.00
3,400.00	24.51	205.56	3,180.54	-990.54	-473.75	1,098.01	0.00	0.00	0.00
3,500.00	24.51	205.56	3,271.53	-1,027.97	-491.65	1,139.49	0.00	0.00	0.00
3,600.00	24.51	205.56	3,362.52	-1,065.39	-509.55	1,180.97	0.00	0.00	0.00
3,700.00	24.51	205.56	3,453.51	-1,102.81	-527.45	1,222.46	0.00	0.00	0.00
3,800.00	24.51	205.56	3,544.50	-1,140.24	-545.35	1,263.94	0.00	0.00	0.00
3,900.00	24.51	205.56	3,635.49	-1,177.66	-563.25	1,305.43	0.00	0.00	0.00
4,000.00	24.51	205.56	3,726.47	-1,215.09	-581.15	1,346.91	0.00	0.00	0.00
4,100.00	24.51	205.56	3,817.46	-1,252.51	-599.05	1,388.40	0.00	0.00	0.00
4,200.00	24.51	205.56	3,908.45	-1,289.94	-616.95	1,429.88	0.00	0.00	0.00
4,300.00	24.51	205.56	3,999.44	-1,327.36	-634.85	1,471.37	0.00	0.00	0.00
4,400.00	24.51	205.56	4,090.43	-1,364.79	-652.75	1,512.85	0.00	0.00	0.00
4,500.00	24.51	205.56	4,181.42	-1,402.21	-670.65	1,554.34	0.00	0.00	0.00
4,600.00	24.51	205.56	4,272.41	-1,439.63	-688.54	1,595.82	0.00	0.00	0.00
4,700.00	24.51	205.56	4,363.40	-1,477.06	-706.44	1,637.30	0.00	0.00	0.00
4,800.00	24.51	205.56	4,454.39	-1,514.48	-724.34	1,678.79	0.00	0.00	0.00



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Site:	Cascade Creek 697-15B Pad	North Reference:	True
Well:	FED 697-15-49	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)
4,900.00	24.51	205.56	4,545.38	-1,551.91	-742.24	1,720.27	0.00	0.00	0.00
5,000.00	24.51	205.56	4,636.37	-1,589.33	-760.14	1,761.76	0.00	0.00	0.00
5,064.27	24.51	205.56	4,694.85	-1,613.39	-771.65	1,788.42	0.00	0.00	0.00
Start Drop -2.00									
5,076.04	24.51	205.56	4,705.55	-1,617.79	-773.75	1,793.30	0.00	0.00	0.00
5,100.00	24.03	205.56	4,727.40	-1,626.67	-778.00	1,803.15	2.00	-2.00	0.00
5,200.00	22.03	205.56	4,819.42	-1,661.97	-794.88	1,842.27	2.00	-2.00	0.00
5,300.00	20.03	205.56	4,912.76	-1,694.34	-810.36	1,878.16	2.00	-2.00	0.00
5,400.00	18.03	205.56	5,007.29	-1,723.75	-824.43	1,910.76	2.00	-2.00	0.00
5,500.00	16.03	205.56	5,102.90	-1,750.17	-837.07	1,940.05	2.00	-2.00	0.00
5,600.00	14.03	205.56	5,199.47	-1,773.57	-848.26	1,965.98	2.00	-2.00	0.00
5,700.00	12.03	205.56	5,296.89	-1,793.91	-857.98	1,988.53	2.00	-2.00	0.00
5,800.00	10.03	205.56	5,395.04	-1,811.17	-866.24	2,007.66	2.00	-2.00	0.00
5,900.00	8.03	205.56	5,493.79	-1,825.32	-873.01	2,023.35	2.00	-2.00	0.00
6,000.00	6.03	205.56	5,593.04	-1,836.37	-878.29	2,035.59	2.00	-2.00	0.00
6,100.00	4.03	205.56	5,692.65	-1,844.28	-882.08	2,044.36	2.00	-2.00	0.00
6,200.00	2.03	205.56	5,792.50	-1,849.04	-884.36	2,049.65	2.00	-2.00	0.00
6,300.00	0.03	205.56	5,892.48	-1,850.67	-885.13	2,051.44	2.00	-2.00	0.00
6,301.52	0.00	0.00	5,894.00	-1,850.67	-885.13	2,051.45	2.00	-2.00	0.00
Mesaverde									
6,306.09	0.00	0.00	5,898.56	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
Start 0.00° at 6306.09' MD									
6,391.52	0.00	0.00	5,984.00	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
Base Ohio Creek									
6,400.00	0.00	0.00	5,992.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
6,500.00	0.00	0.00	6,092.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
6,600.00	0.00	0.00	6,192.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
6,700.00	0.00	0.00	6,292.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
6,800.00	0.00	0.00	6,392.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
6,900.00	0.00	0.00	6,492.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
7,000.00	0.00	0.00	6,592.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
7,100.00	0.00	0.00	6,692.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
7,200.00	0.00	0.00	6,792.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
7,276.52	0.00	0.00	6,869.00	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
TOG = 624670.02, 1234415.86									
7,300.00	0.00	0.00	6,892.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
7,400.00	0.00	0.00	6,992.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
7,500.00	0.00	0.00	7,092.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
7,600.00	0.00	0.00	7,192.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
7,700.00	0.00	0.00	7,292.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
7,800.00	0.00	0.00	7,392.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
7,900.00	0.00	0.00	7,492.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
8,000.00	0.00	0.00	7,592.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
8,100.00	0.00	0.00	7,692.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
8,200.00	0.00	0.00	7,792.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
8,300.00	0.00	0.00	7,892.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
8,367.52	0.00	0.00	7,960.00	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
8,372.09	0.00	0.00	7,964.56	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
Target = 624670.02, 1234415.86									
8,400.00	0.00	0.00	7,992.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
8,500.00	0.00	0.00	8,092.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
8,600.00	0.00	0.00	8,192.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
8,700.00	0.00	0.00	8,292.48	-1,850.67	-885.13	2,051.45	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 697-15-49	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)
8,800.00	0.00	0.00	8,392.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
8,900.00	0.00	0.00	8,492.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
9,000.00	0.00	0.00	8,592.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
9,026.52	0.00	0.00	8,619.00	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
Rollins									
9,100.00	0.00	0.00	8,692.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
9,200.00	0.00	0.00	8,792.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
9,300.00	0.00	0.00	8,892.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
9,400.00	0.00	0.00	8,992.48	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00
9,426.52	0.00	0.00	9,019.00	-1,850.67	-885.13	2,051.45	0.00	0.00	0.00

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
FED 697-15-49 Target	0.00	0.00	7,960.00	-1,850.67	-885.13	624,670.02	1,234,415.85	39° 31' 1.691 N	108° 12' 50.605 W
- plan hits target center									
- Circle (radius 50.00)									

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,301.52	5,894.00	Mesaverde		0.00	
6,391.52	5,984.00	Base Ohio Creek		0.00	
9,026.52	8,619.00	Rollins		0.00	

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
200.00	200.00	-0.39	-0.19	Start Build 2.00
1,441.81	1,398.80	-257.70	-123.25	Start 24.84° at 1441.81' MD
5,064.27	4,694.85	-1,613.39	-771.65	Start Drop -2.00
6,306.09	5,898.56	-1,850.67	-885.13	Start 0.00° at 6306.09' MD
7,276.52	6,869.00	-1,850.67	-885.13	TOG = 624670.02, 1234415.86
8,372.09	7,964.56	-1,850.67	-885.13	Target = 624670.02, 1234415.86
9,431.00				PBHL = 624670.02, 1234415.86