



Elm Ridge Exploration Company

La Plata County, Colorado

Sec 17, T-33N-R8W

IGE 140

Wellbore #1

Plan: Design #1

Standard Planning Report

25 April, 2013



Mesa West Directional

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Sec 17, T-33N-R8W
Company:	Elm Ridge Exploration Company	TVD Reference:	WELL @ 6731.0ft (Original Well Elev)
Project:	La Plata County, Colorado	MD Reference:	WELL @ 6731.0ft (Original Well Elev)
Site:	Sec 17, T-33N-R8W	North Reference:	True
Well:	IGE 140	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project	La Plata County, Colorado		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Southern Zone		

Site		Sec 17, T-33N-R8W			
Site Position:		Northing:	1,165,649.13 ft	Latitude:	37° 5' 59.820 N
From:	Lat/Long	Easting:	2,344,856.12 ft	Longitude:	107° 44' 47.436 W
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.38 °

Well	IGE 140					
Well Position	+N/-S	0.0 ft	Northing:	1,165,649.13 ft	Latitude:	37° 5' 59.820 N
	+E/-W	0.0 ft	Easting:	2,344,856.12 ft	Longitude:	107° 44' 47.436 W
Position Uncertainty		0.0 ft	Wellhead Elevation:		Ground Level:	6,731.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	25/04/2013	9.71	63.73	50,756

Design	Design #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	37.11

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
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,200.8	21.03	37.11	1,185.2	101.4	76.7	3.00	3.00	0.00	37.11	
3,573.6	21.03	37.11	3,400.0	780.3	590.4	0.00	0.00	0.00	0.00	TD_IGE 140



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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)
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP at 500.0 TVD, BUR = 3°/100'									
600.0	3.00	37.11	600.0	2.1	1.6	2.6	3.00	3.00	0.00
700.0	6.00	37.11	699.6	8.3	6.3	10.5	3.00	3.00	0.00
800.0	9.00	37.11	798.8	18.8	14.2	23.5	3.00	3.00	0.00
900.0	12.00	37.11	897.1	33.3	25.2	41.7	3.00	3.00	0.00
1,000.0	15.00	37.11	994.3	51.9	39.3	65.1	3.00	3.00	0.00
1,100.0	18.00	37.11	1,090.2	74.5	56.4	93.5	3.00	3.00	0.00
1,200.8	21.03	37.11	1,185.2	101.4	76.7	127.2	3.00	3.00	0.00
Start 2372.8 hold at 1200.8 MD									
1,300.0	21.03	37.11	1,277.8	129.8	98.2	162.7	0.00	0.00	0.00
1,400.0	21.03	37.11	1,371.1	158.4	119.8	198.6	0.00	0.00	0.00
1,500.0	21.03	37.11	1,464.5	187.0	141.5	234.5	0.00	0.00	0.00
1,600.0	21.03	37.11	1,557.8	215.6	163.1	270.4	0.00	0.00	0.00
1,700.0	21.03	37.11	1,651.1	244.2	184.8	306.2	0.00	0.00	0.00
1,800.0	21.03	37.11	1,744.5	272.8	206.4	342.1	0.00	0.00	0.00
1,900.0	21.03	37.11	1,837.8	301.4	228.1	378.0	0.00	0.00	0.00
2,000.0	21.03	37.11	1,931.2	330.0	249.7	413.9	0.00	0.00	0.00
2,100.0	21.03	37.11	2,024.5	358.7	271.4	449.8	0.00	0.00	0.00
2,200.0	21.03	37.11	2,117.9	387.3	293.0	485.6	0.00	0.00	0.00
2,300.0	21.03	37.11	2,211.2	415.9	314.7	521.5	0.00	0.00	0.00
2,400.0	21.03	37.11	2,304.5	444.5	336.3	557.4	0.00	0.00	0.00
2,500.0	21.03	37.11	2,397.9	473.1	358.0	593.3	0.00	0.00	0.00
2,600.0	21.03	37.11	2,491.2	501.7	379.6	629.1	0.00	0.00	0.00
2,700.0	21.03	37.11	2,584.6	530.3	401.3	665.0	0.00	0.00	0.00
2,800.0	21.03	37.11	2,677.9	558.9	422.9	700.9	0.00	0.00	0.00
2,900.0	21.03	37.11	2,771.3	587.5	444.6	736.8	0.00	0.00	0.00
2,920.1	21.03	37.11	2,790.0	593.3	448.9	744.0	0.00	0.00	0.00
Top of Coal									
3,000.0	21.03	37.11	2,864.6	616.2	466.2	772.6	0.00	0.00	0.00
3,100.0	21.03	37.11	2,957.9	644.8	487.9	808.5	0.00	0.00	0.00
3,200.0	21.03	37.11	3,051.3	673.4	509.5	844.4	0.00	0.00	0.00
3,300.0	21.03	37.11	3,144.6	702.0	531.1	880.3	0.00	0.00	0.00
3,400.0	21.03	37.11	3,238.0	730.6	552.8	916.2	0.00	0.00	0.00
3,500.0	21.03	37.11	3,331.3	759.2	574.4	952.0	0.00	0.00	0.00
3,573.6	21.03	37.11	3,400.0	780.3	590.4	978.4	0.00	0.00	0.00
TD at 3573.6 MD, 3400.0 TVD - TD_IGE 140									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
TD_IGE 140	0.00	0.00	3,400.0	780.3	590.4	1,166,414.97	2,345,465.08	37° 6' 7.534 N	107° 44' 40.149 W
- plan hits target center									
- Point									



Mesa West Directional

Planning Report

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Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,920.1	2,790.0	Top of Coal		0.00	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
500.0	500.0	0.0	0.0	KOP at 500.0 TVD, BUR = 3°/100'	
1,200.8	1,185.2	101.4	76.7	Start 2372.8 hold at 1200.8 MD	
3,573.6	3,400.0	780.3	590.4	TD at 3573.6 MD, 3400.0 TVD	