

# **Elm Ridge Exploration Company.**

La Plata County, Co (Nad 83)

Sec 21, T33N, R8W

IGS 146

DD

UWI:

API:

Plan: #1

## **Mesa West Planning Report**

19 June, 2014



Elm Ridge Exploration Company.

Project: La Plata County, Co (Nad 83)  
Site: Sec 21, T33N, R8W  
Well: IGS 146  
Wellbore: DD  
Plan: #1

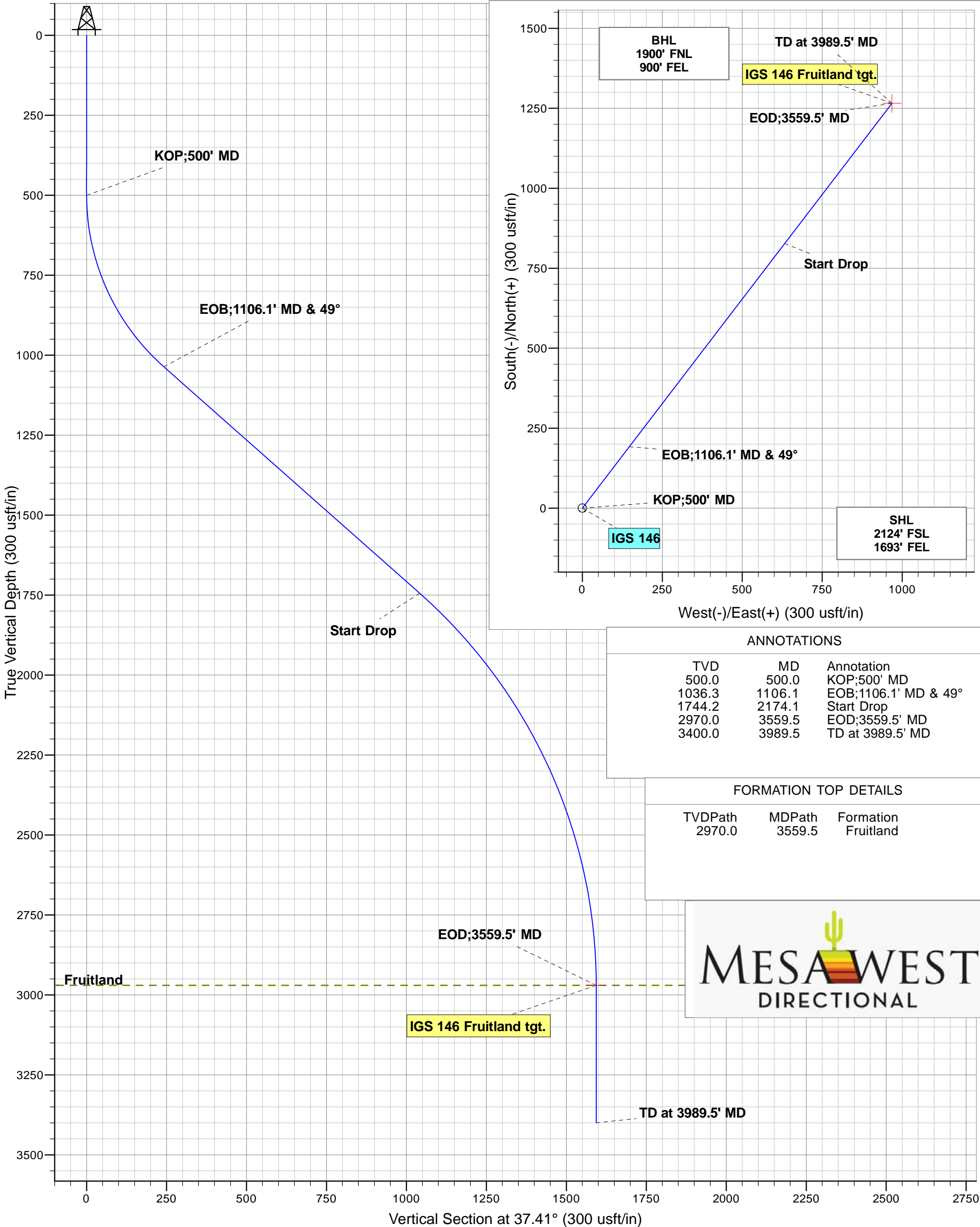
Reference Details - WELL CENTRE  
Geodetic System: US State Plane 1983  
Ellipsoid: GRS 1980  
Zone: Colorado Southern Zone  
Northing: 1161148.21  
Easting: 2352607.95  
Latitude: 37° 5' 17.188 N  
Longitude: 107° 43' 10.403 W  
Grid Convergence: 1.36° East  
Ground Elevation: 6876.0  
KB Elevation: Est RKB @ 6890.0usft



Azimuths to True North  
Magnetic North: 9.55°  
  
Magnetic Field  
Strength: 50637.1snT  
Dip Angle: 63.70°  
Date: 6/19/2014  
Model: IGRF2010

PLAN DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.0	
3	1106.1	48.49	37.41	1036.3	191.9	146.7	8.00	37.41	241.5	
4	2174.1	48.49	37.41	1744.2	827.1	632.6	0.00	0.00	1041.3	
5	3559.5	0.00	0.00	2970.0	1265.7	967.9	3.50	180.00	1593.3	IGS 146 Fruitland tgt.
6	3989.5	0.00	0.00	3400.0	1265.7	967.9	0.00	0.00	1593.3	



## Mesa West Directional

## Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well IGS 146
<b>Company:</b>	Elm Ridge Exploration Company.	<b>TVD Reference:</b>	Est RKB @ 6890.0usft
<b>Project:</b>	La Plata County, Co (Nad 83)	<b>MD Reference:</b>	Est RKB @ 6890.0usft
<b>Site:</b>	Sec 21, T33N, R8W	<b>North Reference:</b>	True
<b>Well:</b>	IGS 146	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Plan:</b>	#1		

<b>Project</b>	La Plata County, Co (Nad 83)		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Southern Zone		

Site		Sec 21, T33N, R8W			
Site Position:		Northing:	1,163,263.59 usft	Latitude:	37° 5' 37.644 N
From:	Lat/Long	Easting:	2,350,681.94 usft	Longitude:	107° 43' 34.788 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.37 °

Well		IGS 146				
Well Position	+N/-S	-2,068.9 usft	Northing:	1,161,148.21 usft	Latitude:	37° 5' 17.188 N
	+E/-W	1,975.9 usft	Easting:	2,352,607.95 usft	Longitude:	107° 43' 10.403 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	6,876.0 usft

<b>Wellbore</b>	DD				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	6/19/2014	9.55	63.70	50,637

<b>Plan</b>	#1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	37.41

<b>Plan Sections</b>										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	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	
1,106.1	48.49	37.41	1,036.3	191.9	146.7	8.00	8.00	0.00	37.41	
2,174.1	48.49	37.41	1,744.2	827.1	632.6	0.00	0.00	0.00	0.00	
3,559.5	0.00	0.00	2,970.0	1,265.7	967.9	3.50	-3.50	0.00	180.00	IGS 146 Fruitland tgt.
3,989.5	0.00	0.00	3,400.0	1,265.7	967.9	0.00	0.00	0.00	0.00	

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<b>Company:</b>	Elm Ridge Exploration Company.	<b>TVD Reference:</b>	Est RKB @ 6890.0usft
<b>Project:</b>	La Plata County, Co (Nad 83)	<b>MD Reference:</b>	Est RKB @ 6890.0usft
<b>Site:</b>	Sec 21, T33N, R8W	<b>North Reference:</b>	True
<b>Well:</b>	IGS 146	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Plan:</b>	#1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	-6,890.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>KOP;500' MD</b>										
500.0	0.00	0.00	500.0	-6,390.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	8.00	37.41	599.7	-6,290.3	5.5	4.2	7.0	8.00	8.00	0.00
700.0	16.00	37.41	697.4	-6,192.6	22.0	16.9	27.7	8.00	8.00	0.00
800.0	24.00	37.41	791.3	-6,098.7	49.2	37.6	61.9	8.00	8.00	0.00
900.0	32.00	37.41	879.5	-6,010.5	86.4	66.1	108.8	8.00	8.00	0.00
1,000.0	40.00	37.41	960.4	-5,929.6	133.1	101.8	167.6	8.00	8.00	0.00
1,100.0	48.00	37.41	1,032.2	-5,857.8	188.2	144.0	237.0	8.00	8.00	0.00
<b>EOB;1106.1' MD &amp; 49°</b>										
1,106.1	48.49	37.41	1,036.3	-5,853.7	191.9	146.7	241.5	8.00	8.00	0.00
1,200.0	48.49	37.41	1,098.5	-5,791.5	247.7	189.4	311.8	0.00	0.00	0.00
1,300.0	48.49	37.41	1,164.8	-5,725.2	307.2	234.9	386.7	0.00	0.00	0.00
1,400.0	48.49	37.41	1,231.1	-5,658.9	366.7	280.4	461.6	0.00	0.00	0.00
1,500.0	48.49	37.41	1,297.4	-5,592.6	426.1	325.9	536.5	0.00	0.00	0.00
1,600.0	48.49	37.41	1,363.6	-5,526.4	485.6	371.4	611.4	0.00	0.00	0.00
1,700.0	48.49	37.41	1,429.9	-5,460.1	545.1	416.9	686.2	0.00	0.00	0.00
1,800.0	48.49	37.41	1,496.2	-5,393.8	604.6	462.4	761.1	0.00	0.00	0.00
1,900.0	48.49	37.41	1,562.5	-5,327.5	664.1	507.9	836.0	0.00	0.00	0.00
2,000.0	48.49	37.41	1,628.7	-5,261.3	723.6	553.3	910.9	0.00	0.00	0.00
2,100.0	48.49	37.41	1,695.0	-5,195.0	783.0	598.8	985.8	0.00	0.00	0.00
<b>Start Drop</b>										
2,174.1	48.49	37.41	1,744.2	-5,145.8	827.1	632.6	1,041.3	0.00	0.00	0.00
2,200.0	47.58	37.41	1,761.5	-5,128.5	842.4	644.2	1,060.5	3.50	-3.50	0.00
2,300.0	44.08	37.41	1,831.1	-5,058.9	899.4	687.8	1,132.2	3.50	-3.50	0.00
2,400.0	40.58	37.41	1,905.0	-4,985.0	952.9	728.7	1,199.6	3.50	-3.50	0.00
2,500.0	37.08	37.41	1,982.9	-4,907.1	1,002.7	766.8	1,262.3	3.50	-3.50	0.00
2,600.0	33.58	37.41	2,064.5	-4,825.5	1,048.6	801.9	1,320.1	3.50	-3.50	0.00
2,700.0	30.08	37.41	2,149.4	-4,740.6	1,090.5	834.0	1,372.8	3.50	-3.50	0.00
2,800.0	26.58	37.41	2,237.4	-4,652.6	1,128.2	862.8	1,420.3	3.50	-3.50	0.00
2,900.0	23.08	37.41	2,328.2	-4,561.8	1,161.5	888.3	1,462.3	3.50	-3.50	0.00
3,000.0	19.58	37.41	2,421.3	-4,468.7	1,190.4	910.4	1,498.7	3.50	-3.50	0.00
3,100.0	16.08	37.41	2,516.5	-4,373.5	1,214.8	929.0	1,529.3	3.50	-3.50	0.00
3,200.0	12.58	37.41	2,613.4	-4,276.6	1,234.4	944.0	1,554.0	3.50	-3.50	0.00
3,300.0	9.08	37.41	2,711.6	-4,178.4	1,249.3	955.5	1,572.8	3.50	-3.50	0.00
3,400.0	5.58	37.41	2,810.7	-4,079.3	1,259.5	963.2	1,585.6	3.50	-3.50	0.00
3,500.0	2.08	37.41	2,910.5	-3,979.5	1,264.8	967.3	1,592.3	3.50	-3.50	0.00
<b>EOD;3559.5' MD - Fruitland</b>										
3,559.5	0.00	0.00	2,970.0	-3,920.0	1,265.7	967.9	1,593.3	3.50	-3.50	-62.84
<b>TD at 3989.5' MD</b>										
3,989.5	0.00	0.00	3,400.0	-3,490.0	1,265.7	967.9	1,593.3	0.00	0.00	0.00

# Mesa West Directional

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<b>Site:</b>	Sec 21, T33N, R8W	<b>North Reference:</b>	True
<b>Well:</b>	IGS 146	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Plan:</b>	#1		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
IGS 146 Fruitland tgt.	0.00	0.00	2,970.0	1,265.7	967.9	1,162,390.51	2,353,605.67	37° 5' 29.702 N	107° 42' 58.457 W
- plan hits target center									
- Point									

Formations						
Measured Depth	Vertical Depth	Subsea Depth	Name	Lithology	Dip	Dip Direction
(usft)	(usft)	(usft)			(°)	(°)
3,559.5	2,970.0	3,920.0	Fruitland		0.00	

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N/-S (usft)	+E/-W (usft)	
500.0	500.0	0.0	0.0	KOP;500' MD
1,106.1	1,036.3	191.9	146.7	EOB;1106.1' MD & 49°
2,174.1	1,744.2	827.1	632.6	Start Drop
3,559.5	2,970.0	1,265.7	967.9	EOD;3559.5' MD
3,989.5	3,400.0	1,265.7	967.9	TD at 3989.5' MD