

Elm Ridge Exploration Company.

La Plata County, Co (Nad 83)

Sec 9-T33N-R8W

IGE 129

Vertical

UWI:

WL:

Survey: Final

Standard Survey Report

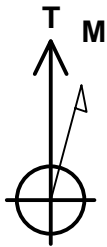
23 July, 2014



Elm Ridge Exploration Company.

Project: La Plata County, Co (Nad 83)
Site: Sec 9-T33N-R8W
Well: IGE 129
Wellbore: Vertical
Plan: Final

Reference Details - WELL CENTRE
Geodetic System: US State Plane 1983
Ellipsoid: GRS 1980
Zone: Colorado Southern Zone
Northing: 1171100.59
Easting: 2350264.98
Latitude: 37° 6' 55.008 N
Longitude: 107° 43' 42.240 W
Grid Convergence: 1.37° East
Ground Elevation: 6713.0
KB Elevation: RKB @ 6725.0usft (Bearcat #1)

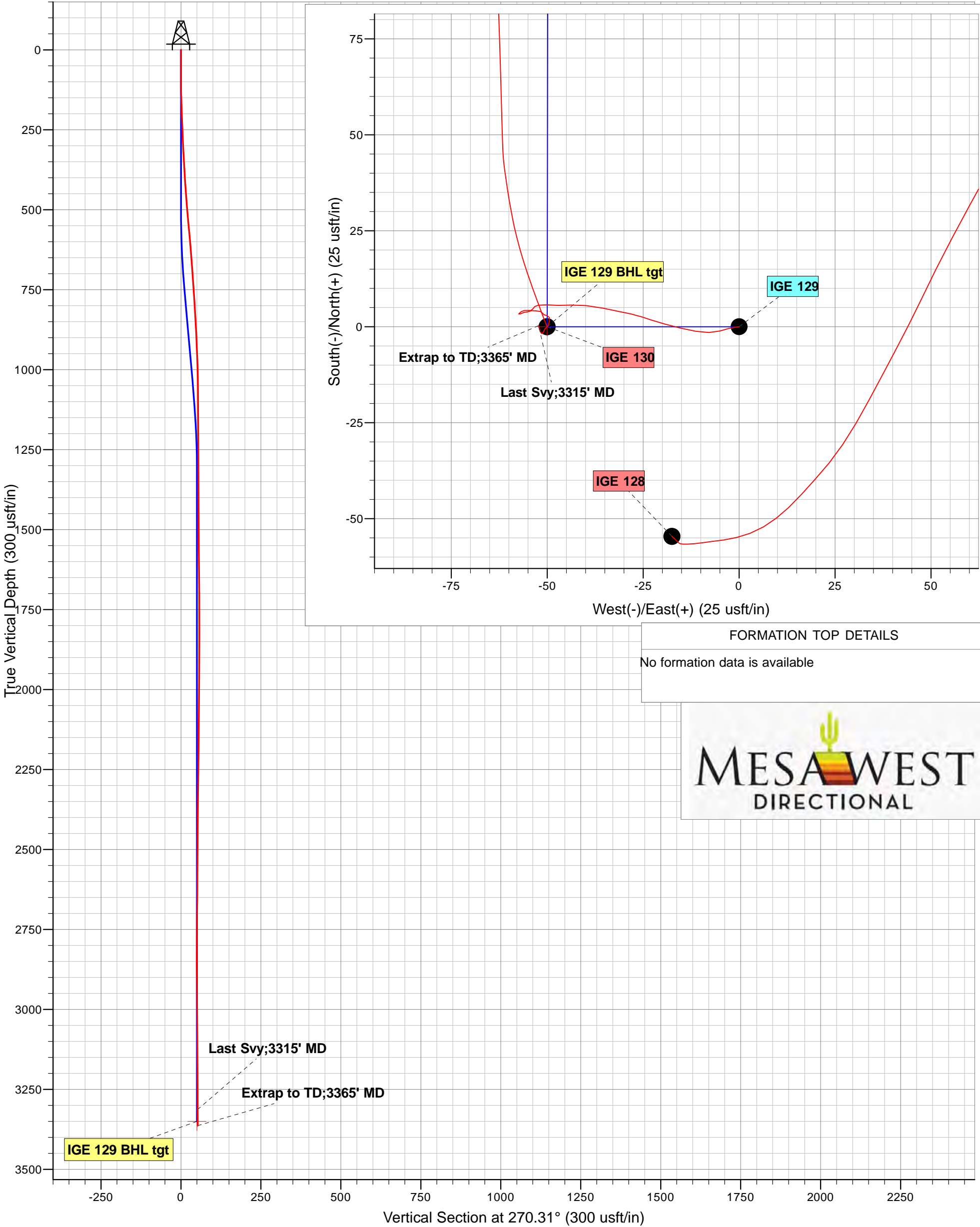


Azimuths to True North
Magnetic North: 9.55°

Magnetic Field
Strength: 50645.9snT
Dip Angle: 63.72°
Date: 7/14/2014
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	750.0	5.00	270.00	749.7	0.0	-10.9	2.00	270.00	10.9	
4	1073.5	5.00	270.00	1072.0	0.0	-39.1	0.00	0.00	39.1	
5	1323.5	0.00	0.00	1321.7	0.0	-50.0	2.00	180.00	50.0	
6	3351.9	0.00	0.00	3350.0	0.0	-50.0	0.00	0.00	50.0	IGE 129 BHL tgt



FORMATION TOP DETAILS

No formation data is available



Mesa West Directional

Survey Report



Company:	Elm Ridge Exploration Company.	Local Co-ordinate Reference:	Well IGE 129
Project:	La Plata County, Co (Nad 83)	TVD Reference:	RKB @ 6725.0usft (Bearcat #1)
Site:	Sec 9-T33N-R8W	MD Reference:	RKB @ 6725.0usft (Bearcat #1)
Well:	IGE 129	North Reference:	True
Wellbore:	Vertical	Survey Calculation Method:	Minimum Curvature
Design:	Final	Database:	EDM 5000.1 Single User Db

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

Site		Sec 9-T33N-R8W			
Site Position:		Northing:	1,171,100.59 usft	Latitude:	37° 6' 55.008 N
From:	Lat/Long	Easting:	2,350,264.98 usft	Longitude:	107° 43' 42.240 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.37 °

Well	IGE 129					
Well Position	+N/-S	0.0 usft	Northing:	1,171,100.59 usft	Latitude:	37° 6' 55.008 N
	+E/-W	0.0 usft	Easting:	2,350,264.98 usft	Longitude:	107° 43' 42.240 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	6,713.0 usft

Wellbore	Vertical				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/14/2014	9.55	63.72	50,646

Design	Final				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	270.31	

Survey Program	Date	7/23/2014			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
105.0	3,365.0	Final (Vertical)	MWD	MWD - Standard	

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	-6,725.0	0.0	0.0	0.0	0.00	0.00	0.00
105.0	0.00	0.00	105.0	-6,620.0	0.0	0.0	0.0	0.00	0.00	0.00
143.0	1.70	263.20	143.0	-6,582.0	-0.1	-0.6	0.6	4.47	4.47	0.00
205.0	2.20	257.00	205.0	-6,520.0	-0.4	-2.6	2.6	0.87	0.81	-10.00
266.0	2.50	253.10	265.9	-6,459.1	-1.1	-5.0	5.0	0.56	0.49	-6.39
327.0	2.90	269.20	326.8	-6,398.2	-1.5	-7.9	7.9	1.40	0.66	26.39
389.0	3.60	280.50	388.7	-6,336.3	-1.2	-11.3	11.3	1.53	1.13	18.23
450.0	4.40	282.90	449.6	-6,275.4	-0.3	-15.5	15.5	1.34	1.31	3.93
498.0	5.00	285.90	497.4	-6,227.6	0.7	-19.3	19.3	1.35	1.25	6.25
540.0	5.10	287.82	539.3	-6,185.7	1.8	-22.9	22.9	0.47	0.24	4.57

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Survey Report



Company:	Elm Ridge Exploration Company.	Local Co-ordinate Reference:	Well IGE 129
Project:	La Plata County, Co (Nad 83)	TVD Reference:	RKB @ 6725.0usft (Bearcat #1)
Site:	Sec 9-T33N-R8W	MD Reference:	RKB @ 6725.0usft (Bearcat #1)
Well:	IGE 129	North Reference:	True
Wellbore:	Vertical	Survey Calculation Method:	Minimum Curvature
Design:	Final	Database:	EDM 5000.1 Single User Db

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)
569.0	5.50	287.40	568.1	-6,156.9	2.6	-25.4	25.4	1.39	1.38	-1.45
599.0	5.40	283.30	598.0	-6,127.0	3.3	-28.2	28.2	1.34	-0.33	-13.67
630.0	4.70	280.10	628.9	-6,096.1	3.9	-30.8	30.8	2.43	-2.26	-10.32
661.0	4.30	283.30	659.8	-6,065.2	4.4	-33.2	33.2	1.52	-1.29	10.32
691.0	4.40	280.00	689.7	-6,035.3	4.8	-35.4	35.5	0.90	0.33	-11.00
754.0	3.90	277.40	752.5	-5,972.5	5.5	-39.9	40.0	0.85	-0.79	-4.13
817.0	3.10	264.90	815.4	-5,909.6	5.7	-43.8	43.8	1.75	-1.27	-19.84
881.0	2.90	272.30	879.3	-5,845.7	5.6	-47.1	47.1	0.68	-0.31	11.56
943.0	2.60	273.00	941.3	-5,783.7	5.7	-50.1	50.1	0.49	-0.48	1.13
1,007.0	1.50	258.10	1,005.2	-5,719.8	5.6	-52.3	52.4	1.90	-1.72	-23.28
1,070.0	0.30	200.40	1,068.2	-5,656.8	5.3	-53.2	53.2	2.16	-1.90	-91.59
1,197.0	0.50	234.30	1,195.2	-5,529.8	4.6	-53.8	53.8	0.24	0.16	26.69
1,323.0	0.20	211.10	1,321.2	-5,403.8	4.1	-54.3	54.4	0.26	-0.24	-18.41
1,450.0	0.50	265.70	1,448.2	-5,276.8	3.9	-55.0	55.0	0.33	0.24	42.99
1,577.0	0.40	254.90	1,575.2	-5,149.8	3.7	-56.0	56.0	0.10	-0.08	-8.50
1,704.0	0.60	244.80	1,702.2	-5,022.8	3.3	-57.0	57.0	0.17	0.16	-7.95
1,831.0	0.30	33.50	1,829.2	-4,895.8	3.3	-57.4	57.4	0.69	-0.24	117.09
1,958.0	0.50	57.50	1,956.2	-4,768.8	3.9	-56.8	56.8	0.20	0.16	18.90
2,085.0	0.30	88.80	2,083.2	-4,641.8	4.2	-56.0	56.0	0.23	-0.16	24.65
2,212.0	0.80	89.40	2,210.2	-4,514.8	4.2	-54.8	54.8	0.39	0.39	0.47
2,339.0	0.80	95.70	2,337.2	-4,387.8	4.2	-53.0	53.0	0.07	0.00	4.96
2,465.0	0.30	104.10	2,463.2	-4,261.8	4.0	-51.8	51.8	0.40	-0.40	6.67
2,591.0	0.50	144.00	2,589.2	-4,135.8	3.5	-51.1	51.2	0.26	0.16	31.67
2,654.0	0.40	124.10	2,652.2	-4,072.8	3.1	-50.8	50.8	0.29	-0.16	-31.59
2,718.0	1.00	98.90	2,716.1	-4,008.9	2.9	-50.1	50.1	1.03	0.94	-39.38
2,781.0	0.80	165.70	2,779.1	-3,945.9	2.4	-49.4	49.4	1.59	-0.32	106.03
2,845.0	1.20	192.60	2,843.1	-3,881.9	1.3	-49.5	49.5	0.95	0.63	42.03
2,908.0	0.70	203.40	2,906.1	-3,818.9	0.3	-49.7	49.7	0.84	-0.79	17.14
2,971.0	0.30	257.60	2,969.1	-3,755.9	-0.1	-50.1	50.1	0.92	-0.63	86.03
3,035.0	0.80	219.50	3,033.1	-3,691.9	-0.5	-50.5	50.5	0.93	0.78	-59.53
3,098.0	1.00	199.50	3,096.1	-3,628.9	-1.3	-51.0	51.0	0.59	0.32	-31.75
3,162.0	0.50	281.60	3,160.1	-3,564.9	-1.8	-51.4	51.4	1.65	-0.78	128.28
3,225.0	0.70	347.80	3,223.1	-3,501.9	-1.4	-51.8	51.8	1.07	0.32	105.08
3,288.0	0.70	343.20	3,286.1	-3,438.9	-0.6	-52.0	52.0	0.09	0.00	-7.30
Last Svy;3315' MD										
3,315.0	0.70	341.90	3,313.1	-3,411.9	-0.3	-52.1	52.1	0.06	0.00	-4.81
Extrap to TD;3365' MD										
3,365.0	0.70	341.90	3,363.1	-3,361.9	0.3	-52.3	52.3	0.00	0.00	0.00

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Wellbore:	Vertical	Survey Calculation Method:	Minimum Curvature
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Survey Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
3,315.0	3,313.1	-0.3	-52.1	Last Svy;3315' MD	
3,365.0	3,363.1	0.3	-52.3	Extrap to TD;3365' MD	

Checked By: _____	Approved By: _____	Date: _____
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