

KGH Operating

Rio Blanco, Colorado

Sec. 14-T1S-R104W

Meagher 14-2H

Plan A Rev 0

Plan: Plan A Rev 0 Proposal

Sperry Drilling Services

Proposal Report

05 June, 2013

Well Coordinates: 1,249,736.27 N, 2,009,176.03 E (39° 57' 52.84" N, 109° 02' 08.96" W)

Ground Level: 6,530.00 ft

Local Coordinate Origin:

Centered on Well Meagher 14-2H

Viewing Datum:

KB-20' @ 6550.00ft (Unknown Rig)

TVDs to System:

N

North Reference:

True

Unit System:

API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 431

HALLIBURTON

Project: Rio Blanco, Colorado
 Site: Sec. 14-T1S-R104W
 Well: Meagher 14-2H
 Wellbore: Plan A Rev 0
 Design: Plan A Rev 0 Proposal

KGH Operating

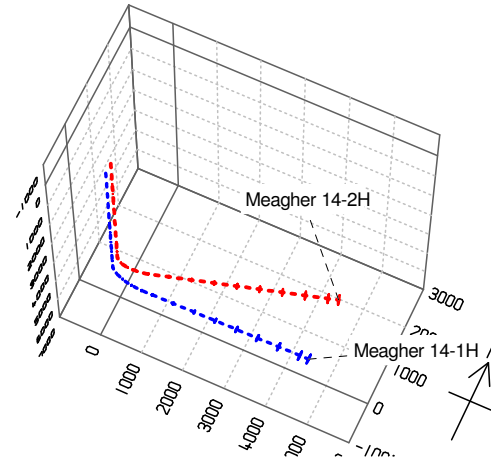
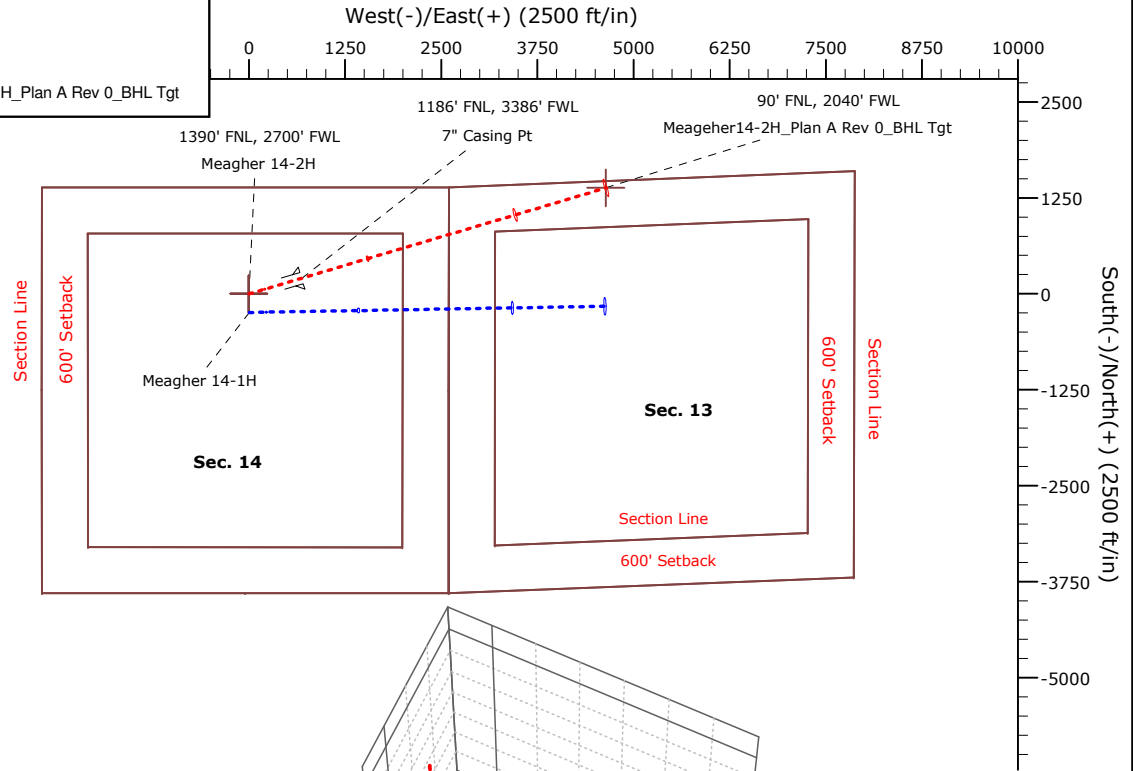
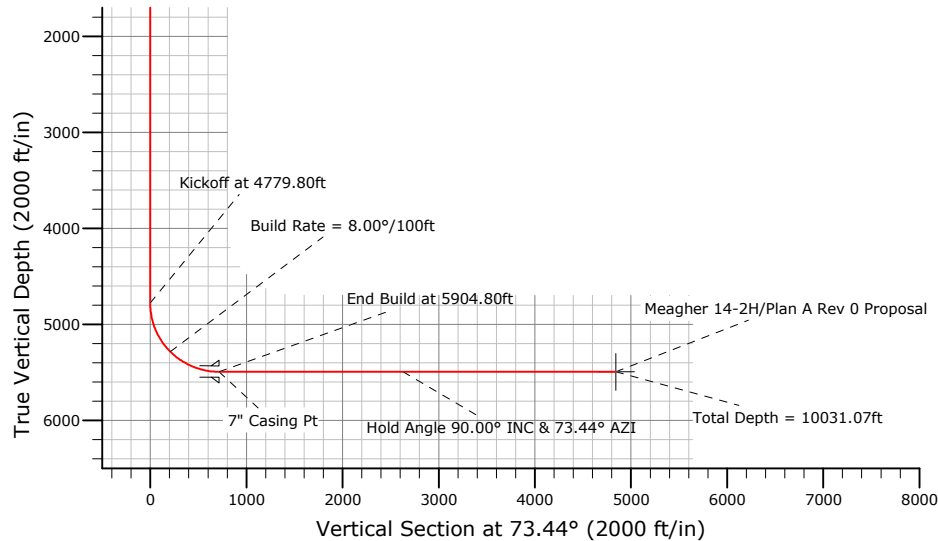
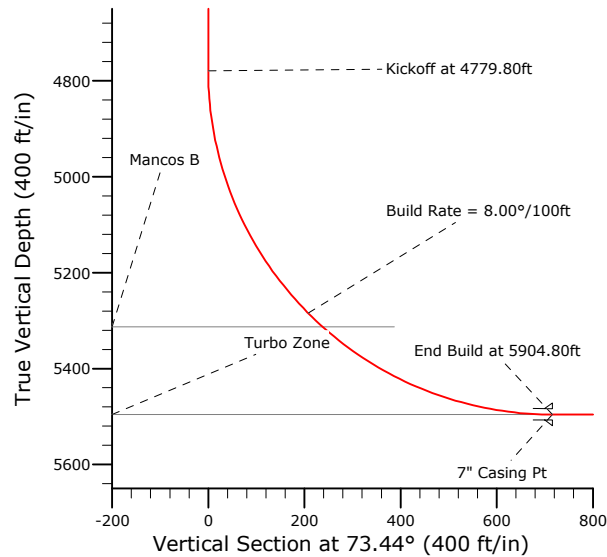
HALLIBURTON
 Sperry Drilling

WELL DETAILS: Meagher 14-2H

Ground Level: Northing: Easting: Latitude: Longitude:

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	4779.80	0.00	0.00	4779.80	0.00	0.00	0.00	0.00	0.00	
3	5904.80	90.00	73.44	5496.00	204.12	686.49	8.00	73.44	716.20	
4	10031.07	90.00	73.44	5496.00	1380.12	4641.63	0.00	0.00	4842.47	Meageher14-2H_Plan A Rev 0_BHL Tgt



Created By: Tatiana Gomez Date: 6/5/2013
 Checked: _____ Date: _____
 Reviewed: _____ Date: _____
 Approved: _____ Date: _____

Plan Report for Meagher 14-2H - Plan A Rev 0 Proposal

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)	Toolface Azimuth (°)
0.00	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	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,306.00	0.00	0.00	3,306.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Main Coal Zone										
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,912.00	0.00	0.00	3,912.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lower Sego										
3,953.00	0.00	0.00	3,953.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Buck Tongue										
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,175.00	0.00	0.00	4,175.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Castlegate										
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,779.80	0.00	0.00	4,779.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kickoff at 4779.80ft										

Plan Report for Meagher 14-2H - Plan A Rev 0 Proposal

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)	Toolface Azimuth (°)
4,800.00	1.62	73.44	4,800.00	0.08	0.27	0.28	8.00	8.00	0.00	73.44
4,900.00	9.62	73.44	4,899.44	2.87	9.65	10.06	8.00	8.00	0.00	0.00
5,000.00	17.62	73.44	4,996.55	9.57	32.19	33.58	8.00	8.00	0.00	0.00
5,100.00	25.62	73.44	5,089.44	20.06	67.47	70.39	8.00	8.00	0.00	0.00
5,200.00	33.62	73.44	5,176.30	34.14	114.80	119.77	8.00	8.00	0.00	0.00
5,300.00	41.62	73.44	5,255.45	51.52	173.26	180.76	8.00	8.00	0.00	0.00
5,340.00	44.82	73.44	5,284.60	59.32	199.51	208.14	8.00	8.00	0.00	0.00
Build Rate = 8.00°/100ft										
5,381.00	48.10	73.44	5,312.84	67.79	227.99	237.86	8.00	8.00	0.00	0.00
Mancos B										
5,400.00	49.62	73.44	5,325.34	71.87	241.71	252.17	8.00	8.00	0.00	0.00
5,500.00	57.62	73.44	5,384.61	94.79	318.81	332.61	8.00	8.00	0.00	0.00
5,600.00	65.62	73.44	5,432.11	119.85	403.07	420.51	8.00	8.00	0.00	0.00
5,700.00	73.62	73.44	5,466.92	146.54	492.85	514.17	8.00	8.00	0.00	0.00
5,800.00	81.62	73.44	5,488.35	174.36	586.40	611.77	8.00	8.00	0.00	0.00
5,900.00	89.62	73.44	5,495.98	202.75	681.89	711.39	8.00	8.00	0.00	0.00
5,904.80	90.00	73.44	5,496.00	204.12	686.49	716.19	8.00	8.00	0.00	0.00
End Build at 5904.80ft - Turbo Zone - 7" Casing Pt										
6,000.00	90.00	73.44	5,496.00	231.25	777.74	811.39	0.00	0.00	0.00	0.00
6,100.00	90.00	73.44	5,496.00	259.75	873.60	911.39	0.00	0.00	0.00	0.00
6,200.00	90.00	73.44	5,496.00	288.25	969.45	1,011.39	0.00	0.00	0.00	0.00
6,300.00	90.00	73.44	5,496.00	316.75	1,065.30	1,111.39	0.00	0.00	0.00	0.00
6,400.00	90.00	73.44	5,496.00	345.25	1,161.15	1,211.39	0.00	0.00	0.00	0.00
6,500.00	90.00	73.44	5,496.00	373.75	1,257.01	1,311.39	0.00	0.00	0.00	0.00
6,600.00	90.00	73.44	5,496.00	402.25	1,352.86	1,411.39	0.00	0.00	0.00	0.00
6,700.00	90.00	73.44	5,496.00	430.75	1,448.71	1,511.39	0.00	0.00	0.00	0.00
6,800.00	90.00	73.44	5,496.00	459.25	1,544.56	1,611.39	0.00	0.00	0.00	0.00
6,900.00	90.00	73.44	5,496.00	487.75	1,640.42	1,711.39	0.00	0.00	0.00	0.00
7,000.00	90.00	73.44	5,496.00	516.26	1,736.27	1,811.39	0.00	0.00	0.00	0.00
7,100.00	90.00	73.44	5,496.00	544.76	1,832.12	1,911.39	0.00	0.00	0.00	0.00
7,200.00	90.00	73.44	5,496.00	573.26	1,927.97	2,011.39	0.00	0.00	0.00	0.00
7,300.00	90.00	73.44	5,496.00	601.76	2,023.83	2,111.39	0.00	0.00	0.00	0.00
7,400.00	90.00	73.44	5,496.00	630.26	2,119.68	2,211.39	0.00	0.00	0.00	0.00
7,500.00	90.00	73.44	5,496.00	658.76	2,215.53	2,311.39	0.00	0.00	0.00	0.00
7,600.00	90.00	73.44	5,496.00	687.26	2,311.38	2,411.39	0.00	0.00	0.00	0.00
7,700.00	90.00	73.44	5,496.00	715.76	2,407.24	2,511.39	0.00	0.00	0.00	0.00
7,800.00	90.00	73.44	5,496.00	744.26	2,503.09	2,611.39	0.00	0.00	0.00	0.00
7,820.00	90.00	73.44	5,496.00	749.96	2,522.26	2,631.39	0.00	0.00	0.00	0.00
Hold Angle 90.00° INC & 73.44° AZI										
7,900.00	90.00	73.44	5,496.00	772.76	2,598.94	2,711.39	0.00	0.00	0.00	0.00
8,000.00	90.00	73.44	5,496.00	801.26	2,694.80	2,811.39	0.00	0.00	0.00	0.00
8,100.00	90.00	73.44	5,496.00	829.76	2,790.65	2,911.39	0.00	0.00	0.00	0.00
8,200.00	90.00	73.44	5,496.00	858.26	2,886.50	3,011.39	0.00	0.00	0.00	0.00
8,300.00	90.00	73.44	5,496.00	886.76	2,982.35	3,111.39	0.00	0.00	0.00	0.00
8,400.00	90.00	73.44	5,496.00	915.26	3,078.21	3,211.39	0.00	0.00	0.00	0.00
8,500.00	90.00	73.44	5,496.00	943.76	3,174.06	3,311.39	0.00	0.00	0.00	0.00
8,600.00	90.00	73.44	5,496.00	972.26	3,269.91	3,411.39	0.00	0.00	0.00	0.00
8,700.00	90.00	73.44	5,496.00	1,000.76	3,365.76	3,511.39	0.00	0.00	0.00	0.00
8,800.00	90.00	73.44	5,496.00	1,029.26	3,461.62	3,611.39	0.00	0.00	0.00	0.00
8,900.00	90.00	73.44	5,496.00	1,057.76	3,557.47	3,711.39	0.00	0.00	0.00	0.00
9,000.00	90.00	73.44	5,496.00	1,086.26	3,653.32	3,811.39	0.00	0.00	0.00	0.00
9,100.00	90.00	73.44	5,496.00	1,114.76	3,749.17	3,911.39	0.00	0.00	0.00	0.00
9,200.00	90.00	73.44	5,496.00	1,143.27	3,845.03	4,011.39	0.00	0.00	0.00	0.00
9,300.00	90.00	73.44	5,496.00	1,171.77	3,940.88	4,111.39	0.00	0.00	0.00	0.00
9,400.00	90.00	73.44	5,496.00	1,200.27	4,036.73	4,211.39	0.00	0.00	0.00	0.00
9,500.00	90.00	73.44	5,496.00	1,228.77	4,132.58	4,311.39	0.00	0.00	0.00	0.00
9,600.00	90.00	73.44	5,496.00	1,257.27	4,228.44	4,411.39	0.00	0.00	0.00	0.00
9,700.00	90.00	73.44	5,496.00	1,285.77	4,324.29	4,511.39	0.00	0.00	0.00	0.00
9,800.00	90.00	73.44	5,496.00	1,314.27	4,420.14	4,611.39	0.00	0.00	0.00	0.00

Plan Report for Meagher 14-2H - Plan A Rev 0 Proposal

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)	Toolface Azimuth (°)
9,900.00	90.00	73.44	5,496.00	1,342.77	4,516.00	4,711.39	0.00	0.00	0.00	0.00
10,000.00	90.00	73.44	5,496.00	1,371.27	4,611.85	4,811.39	0.00	0.00	0.00	0.00
10,031.07	90.00	73.44	5,496.00	1,380.12	4,641.63	4,842.46	0.00	0.00	0.00	0.00
Total Depth = 10031.07ft										

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
4,779.80	4,779.80	0.00	0.00	Kickoff at 4779.80ft
5,340.00	5,284.60	59.32	199.51	Build Rate = 8.00°/100ft
5,904.80	5,496.00	204.12	686.49	End Build at 5904.80ft
7,820.00	5,496.00	749.96	2,522.26	Hold Angle 90.00° INC & 73.44° AZI
10,031.07	5,496.00	1,380.12	4,641.63	Total Depth = 10031.07ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	Meageher14-2H_Plan A Rev 0_BHL Tgt	73.44	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	5,904.80	Plan A Rev 0 Proposal	MWD
5,904.80	10,031.07	Plan A Rev 0 Proposal	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
5,904.80	5,496.00	7" Casing Pt	7	8-3/4

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,306.00	3,306.00	Main Coal Zone		0.00	
3,912.00	3,912.00	Lower Sego		0.00	
3,953.00	3,953.00	Buck Tongue		0.00	
4,175.00	4,175.00	Castlegate		0.00	
5,381.00	5,312.84	Mancos B		0.00	
5,904.80	5,496.00	Turbo Zone		0.00	

Plan Report for Meagher 14-2H - Plan A Rev 0 Proposal

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Meageher14-2H_Section Lines_Sec.14	0.00	0.02	0.00	Polygon
Meageher14-2H_Setbacks_Sec.14	0.00	0.02	0.00	Polygon
Meageher14-2H_Section Lines_Sec.13	0.00	0.02	0.00	Polygon
Meageher14-2H_Plan A Rev 0_BHL Tgt	5,496.00	1,380.12	4,641.63	Point
Meageher14-2H_Setbacks_Sec.13	0.00	0.02	0.00	Polygon

North Reference Sheet for Sec. 14-T1S-R104W - Meagher 14-2H - Plan A Rev 0

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to True North Reference.

Vertical Depths are relative to KB-20' @ 6550.00ft (Unknown Rig). Northing and Easting are relative to Meagher 14-2H

Coordinate System is US State Plane 1983, Colorado Northern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is -105.50°, Longitude Origin:0.000000°, Latitude Origin:40.783333°

False Easting: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 0.99996924

Grid Coordinates of Well: 1,249,736.27 ft N, 2,009,176.03 ft E

Geographical Coordinates of Well: 39° 57' 52.84" N, 109° 02' 08.96" W

Grid Convergence at Surface is: -2.28°

Based upon Minimum Curvature type calculations, at a Measured Depth of 10,031.07ft

the Bottom Hole Displacement is 4,842.46ft in the Direction of 73.44° (True).

Magnetic Convergence at surface is: -12.97° (15 June 2013, , BGGM2013)

