

KGH Operating

Rio Blanco, Colorado

Sec. 3-T1S-R104W

Meagher #3-3H

Plan A Rev 0

Plan: Plan A Rev 1

Sperry Drilling Services

Proposal Report

05 February, 2014

Well Coordinates: 1,260,339.80 N, 2,006,425.73 E (39° 59' 36.46" N, 109° 02' 49.70" W)

Ground Level: 6,080.00 usft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

Centered on Well Meagher #3-3H
KB 20' @ 6100.00usft (Original Well Elev)

N

True

API - US Survey Feet - Custom

HALLIBURTON

Project: Rio Blanco, Colorado
Site: Sec. 3-T1S-R104W
Well: Meagher #3-3H
Wellbore: Plan A Rev 0
Design: Plan A Rev 1

KGH Operating

HALLIBURTON
Sperry Drilling

WELL DETAILS: Meagher #3-3H

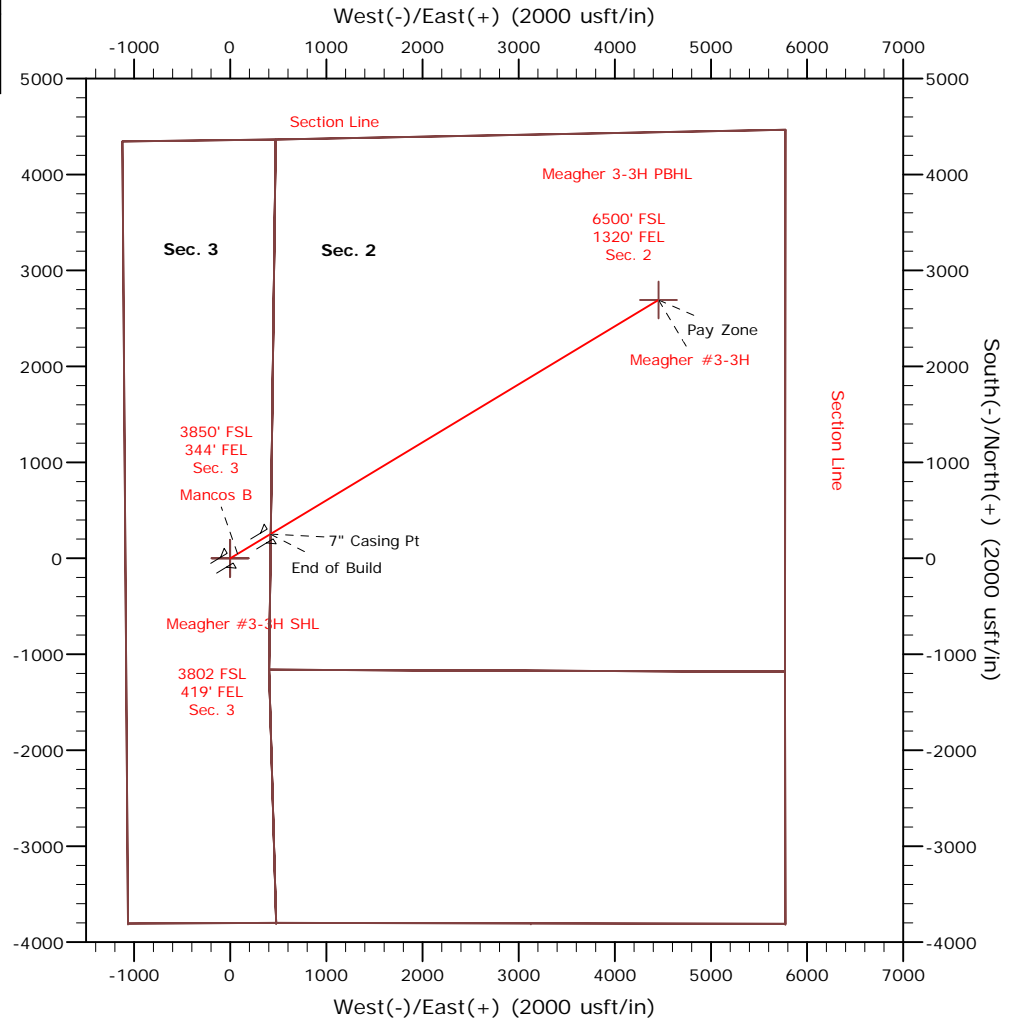
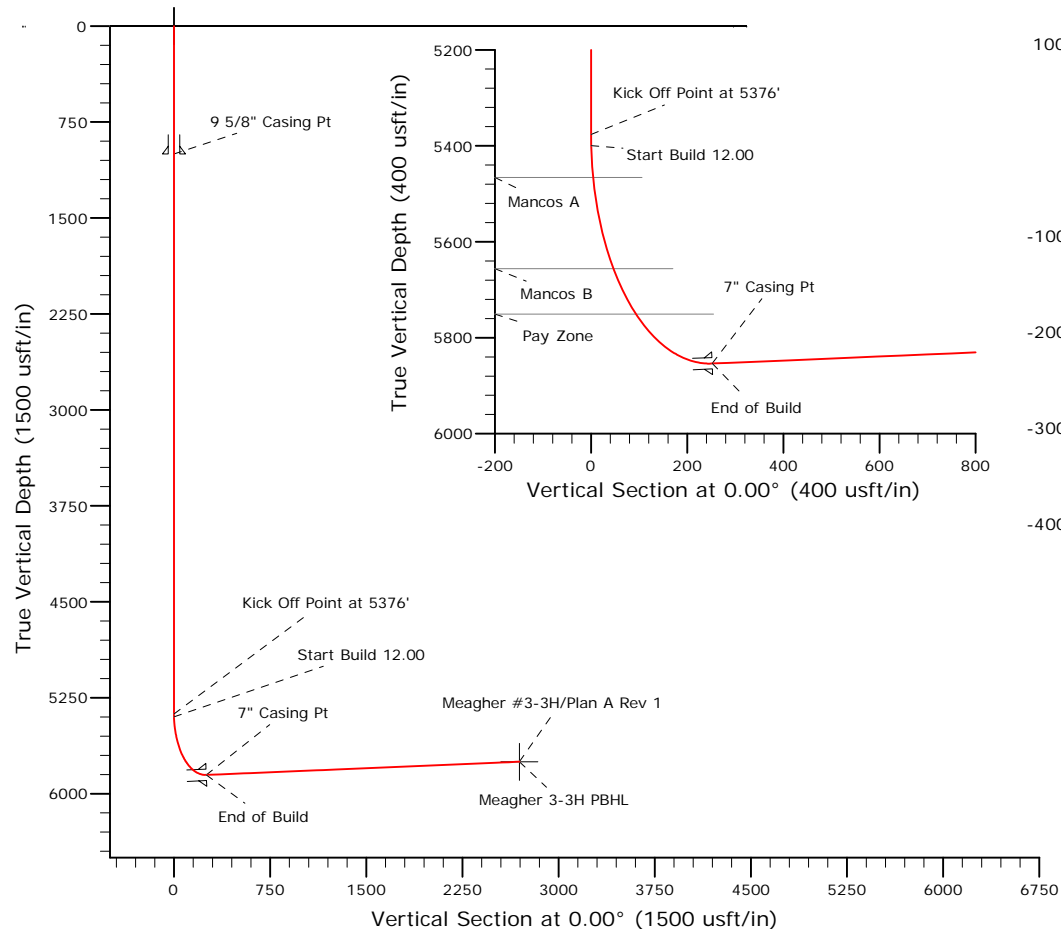
Ground Level:	Northing:	Easting:	Latitude:	Longitude:
6080.00	1260339.80	2006425.73	39° 59' 36.460 N	109° 2' 49.704 W

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	5376.62	0.00	0.00	5376.62	0.00	0.00	0.00	0.00	0.00	
3	6137.04	91.25	58.84	5853.97	252.41	417.51	12.00	58.84	252.41	
4	10857.26	91.25	58.84	5751.00	2693.93	4455.93	0.00	0.00	2693.93	Meagher 3-3H PBHL

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Meagher 3-3H PBHL	5751.00	2693.93	4455.93	1262853.29	2010985.69	40° 0' 3.078 N	109° 1' 52.446 W



Plan: Plan A Rev 1 (Meagher #3-3H/Plan A Rev 0)

Created By: Troy Stoute

Date: 14:25, February 05 2014

Checked: _____ Date: _____

Reviewed: _____ Date: _____

Approved: _____ Date: _____

Plan Report for Meagher #3-3H - Plan A Rev 1

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	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
9 5/8" Casing Pt										
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
3,400.00	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
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
4,148.00	0.00	0.00	4,148.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lower Sego										
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
4,314.00	0.00	0.00	4,314.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Buck Tongue										
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
4,513.00	0.00	0.00	4,513.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Castlegate										
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
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Plan Report for Meagher #3-3H - Plan A Rev 1

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Toolface Azimuth (°)
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5,376.62	0.00	0.00	5,376.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kick Off Point at 5376'										
5,400.00	2.81	58.84	5,399.99	0.30	0.49	0.30	12.00	12.00	0.00	58.84
Start Build 12.00										
5,466.53	10.79	58.84	5,466.00	4.37	7.22	4.37	12.00	12.00	0.00	0.00
Mancos A										
5,500.00	14.81	58.84	5,498.63	8.20	13.57	8.20	12.00	12.00	0.00	0.00
5,600.00	26.81	58.84	5,591.94	26.54	43.91	26.54	12.00	12.00	0.00	0.00
5,675.06	35.81	58.84	5,656.00	46.70	77.25	46.70	11.99	11.99	0.00	0.00
Mancos B										
5,700.00	38.81	58.84	5,675.84	54.52	90.19	54.52	12.03	12.03	0.00	0.00
5,800.00	50.81	58.84	5,746.66	90.92	150.38	90.92	12.00	12.00	0.00	0.00
5,806.93	51.64	58.84	5,751.00	93.71	155.01	93.71	12.00	12.00	0.00	0.00
Pay Zone										
5,900.00	62.81	58.84	5,801.31	134.13	221.86	134.13	12.00	12.00	0.00	0.00
6,000.00	74.81	58.84	5,837.39	182.28	301.51	182.28	12.00	12.00	0.00	0.00
6,100.00	86.81	58.84	5,853.34	233.26	385.83	233.26	12.00	12.00	0.00	0.00
6,137.00	91.25	58.84	5,853.97	252.40	417.48	252.40	12.00	12.00	0.00	0.00
End of Build - 7" Casing Pt										
6,137.04	91.25	58.84	5,853.97	252.41	417.51	252.41	12.00	12.00	0.00	0.00
6,200.00	91.25	58.84	5,852.60	284.98	471.38	284.98	0.00	0.00	0.00	0.00
6,300.00	91.25	58.84	5,850.42	336.71	556.93	336.71	0.00	0.00	0.00	0.00
6,400.00	91.25	58.84	5,848.23	388.43	642.49	388.43	0.00	0.00	0.00	0.00
6,500.00	91.25	58.84	5,846.05	440.16	728.05	440.16	0.00	0.00	0.00	0.00
6,600.00	91.25	58.84	5,843.87	491.88	813.60	491.88	0.00	0.00	0.00	0.00
6,700.00	91.25	58.84	5,841.69	543.61	899.16	543.61	0.00	0.00	0.00	0.00
6,800.00	91.25	58.84	5,839.51	595.33	984.71	595.33	0.00	0.00	0.00	0.00
6,900.00	91.25	58.84	5,837.33	647.05	1,070.27	647.05	0.00	0.00	0.00	0.00
7,000.00	91.25	58.84	5,835.15	698.78	1,155.83	698.78	0.00	0.00	0.00	0.00
7,100.00	91.25	58.84	5,832.96	750.50	1,241.38	750.50	0.00	0.00	0.00	0.00
7,200.00	91.25	58.84	5,830.78	802.23	1,326.94	802.23	0.00	0.00	0.00	0.00
7,300.00	91.25	58.84	5,828.60	853.95	1,412.49	853.95	0.00	0.00	0.00	0.00
7,400.00	91.25	58.84	5,826.42	905.68	1,498.05	905.68	0.00	0.00	0.00	0.00
7,500.00	91.25	58.84	5,824.24	957.40	1,583.60	957.40	0.00	0.00	0.00	0.00
7,600.00	91.25	58.84	5,822.06	1,009.13	1,669.16	1,009.13	0.00	0.00	0.00	0.00
7,700.00	91.25	58.84	5,819.88	1,060.85	1,754.72	1,060.85	0.00	0.00	0.00	0.00
7,800.00	91.25	58.84	5,817.69	1,112.58	1,840.27	1,112.58	0.00	0.00	0.00	0.00
7,900.00	91.25	58.84	5,815.51	1,164.30	1,925.83	1,164.30	0.00	0.00	0.00	0.00
8,000.00	91.25	58.84	5,813.33	1,216.03	2,011.38	1,216.03	0.00	0.00	0.00	0.00
8,100.00	91.25	58.84	5,811.15	1,267.75	2,096.94	1,267.75	0.00	0.00	0.00	0.00
8,200.00	91.25	58.84	5,808.97	1,319.48	2,182.50	1,319.48	0.00	0.00	0.00	0.00
8,300.00	91.25	58.84	5,806.79	1,371.20	2,268.05	1,371.20	0.00	0.00	0.00	0.00
8,400.00	91.25	58.84	5,804.60	1,422.92	2,353.61	1,422.92	0.00	0.00	0.00	0.00
8,500.00	91.25	58.84	5,802.42	1,474.65	2,439.16	1,474.65	0.00	0.00	0.00	0.00
8,600.00	91.25	58.84	5,800.24	1,526.37	2,524.72	1,526.37	0.00	0.00	0.00	0.00
8,700.00	91.25	58.84	5,798.06	1,578.10	2,610.27	1,578.10	0.00	0.00	0.00	0.00
8,800.00	91.25	58.84	5,795.88	1,629.82	2,695.83	1,629.82	0.00	0.00	0.00	0.00
8,900.00	91.25	58.84	5,793.70	1,681.55	2,781.39	1,681.55	0.00	0.00	0.00	0.00
9,000.00	91.25	58.84	5,791.52	1,733.27	2,866.94	1,733.27	0.00	0.00	0.00	0.00
9,100.00	91.25	58.84	5,789.33	1,785.00	2,952.50	1,785.00	0.00	0.00	0.00	0.00
9,200.00	91.25	58.84	5,787.15	1,836.72	3,038.05	1,836.72	0.00	0.00	0.00	0.00
9,300.00	91.25	58.84	5,784.97	1,888.45	3,123.61	1,888.45	0.00	0.00	0.00	0.00
9,400.00	91.25	58.84	5,782.79	1,940.17	3,209.17	1,940.17	0.00	0.00	0.00	0.00
9,500.00	91.25	58.84	5,780.61	1,991.90	3,294.72	1,991.90	0.00	0.00	0.00	0.00
9,600.00	91.25	58.84	5,778.43	2,043.62	3,380.28	2,043.62	0.00	0.00	0.00	0.00
9,700.00	91.25	58.84	5,776.25	2,095.35	3,465.83	2,095.35	0.00	0.00	0.00	0.00

Plan Report for Meagher #3-3H - Plan A Rev 1

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Toolface Azimuth (°)
9,800.00	91.25	58.84	5,774.06	2,147.07	3,551.39	2,147.07	0.00	0.00	0.00	0.00
9,900.00	91.25	58.84	5,771.88	2,198.79	3,636.94	2,198.79	0.00	0.00	0.00	0.00
10,000.00	91.25	58.84	5,769.70	2,250.52	3,722.50	2,250.52	0.00	0.00	0.00	0.00
10,100.00	91.25	58.84	5,767.52	2,302.24	3,808.06	2,302.24	0.00	0.00	0.00	0.00
10,200.00	91.25	58.84	5,765.34	2,353.97	3,893.61	2,353.97	0.00	0.00	0.00	0.00
10,300.00	91.25	58.84	5,763.16	2,405.69	3,979.17	2,405.69	0.00	0.00	0.00	0.00
10,400.00	91.25	58.84	5,760.98	2,457.42	4,064.72	2,457.42	0.00	0.00	0.00	0.00
10,500.00	91.25	58.84	5,758.79	2,509.14	4,150.28	2,509.14	0.00	0.00	0.00	0.00
10,600.00	91.25	58.84	5,756.61	2,560.87	4,235.84	2,560.87	0.00	0.00	0.00	0.00
10,700.00	91.25	58.84	5,754.43	2,612.59	4,321.39	2,612.59	0.00	0.00	0.00	0.00
10,800.00	91.25	58.84	5,752.25	2,664.32	4,406.95	2,664.32	0.00	0.00	0.00	0.00
10,857.26	91.25	58.84	5,751.00	2,693.93	4,455.93	2,693.93	0.00	0.00	0.00	0.00

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
5,376.62	5,376.62	0.00	0.00	Kick Off Point at 5376'
5,400.00	5,399.99	0.30	0.49	Start Build 12.00
6,137.00	5,853.97	252.40	417.48	End of Build

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (usft)	+E/-W (usft)	Start TVD (usft)
Target	No Target (Freehand)	0.00	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	6,137.00	Plan A Rev 1	MWD
6,137.00	10,857.26	Plan A Rev 1	MWD

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,000.00	1,000.00	9 5/8" Casing Pt	9-5/8	12-1/4
6,137.00	5,853.97	7" Casing Pt	7	8-3/4

Plan Report for Meagher #3-3H - Plan A Rev 1

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,148.00	4,148.00	Lower Sego		0.00	
4,314.00	4,314.00	Buck Tongue		0.00	
4,513.00	4,513.00	Castlegate		0.00	
5,466.53	5,466.00	Mancos A		0.00	
5,675.06	5,656.00	Mancos B		0.00	
5,806.93	5,751.00	Pay Zone		0.00	

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
Meagher 3-3H Section Divider	0.00	0.00	0.00	Polygon
Meagher 3-3H Section Divider Lower	0.00	0.00	0.00	Polygon
Meagher 3-3H Section Horiz	0.00	0.00	0.00	Polygon
Meagher 3-3H Section 2&3 Lines	0.00	0.00	0.00	Polygon
Meagher 3-3H PBHL	5,751.00	2,693.93	4,455.93	Point

Directional Difficulty Index

Average Dogleg over Survey:	0.84 °/100usft	Maximum Dogleg over Survey:	12.00 °/100usft at 6,137.04 usft
Net Tortousity applicable to Plans:	0.84 °/100usft	Directional Difficulty Index:	6.057

Audit Info

North Reference Sheet for Sec. 3-T1S-R104W - Meagher #3-3H - 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' @ 6100.00usft (Original Well Elev). Northing and Easting are relative to Meagher #3-3H
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° 0' 0.000 E°, Latitude Origin:40° 47' 0.000 N°
False Easting: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99996687

Grid Coordinates of Well: 1,260,339.80 usft N, 2,006,425.73 usft E
Geographical Coordinates of Well: 39° 59' 36.46" N, 109° 02' 49.70" W
Grid Convergence at Surface is: -2.29°

Based upon Minimum Curvature type calculations, at a Measured Depth of 10,857.26usft
the Bottom Hole Displacement is 5,206.98usft in the Direction of 58.84° (True).

Magnetic Convergence at surface is: -12.91° (4 March 2014, , BGGM2013)

