

Project: Rio Blanco, Colorado
Site: Sec. 14-T1S-R104W
Well: Meagher 14-1H
Wellbore: PARO (Permitting)
Design: PARO (Permitting) Proposal

KGH Operating



WELL DETAILS: Meagher 14-1H

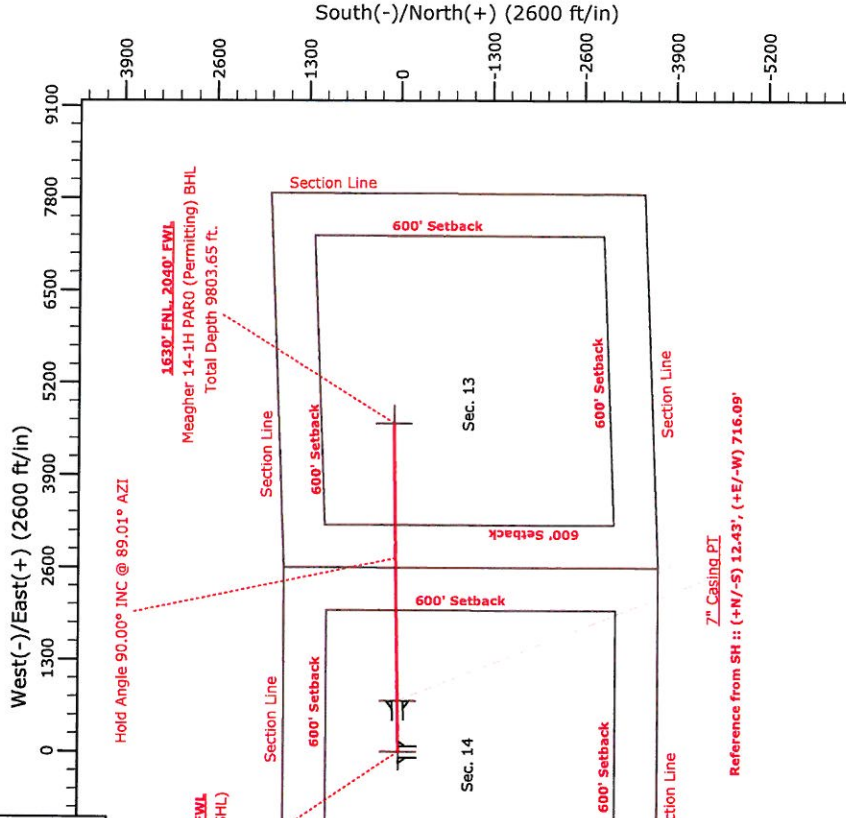
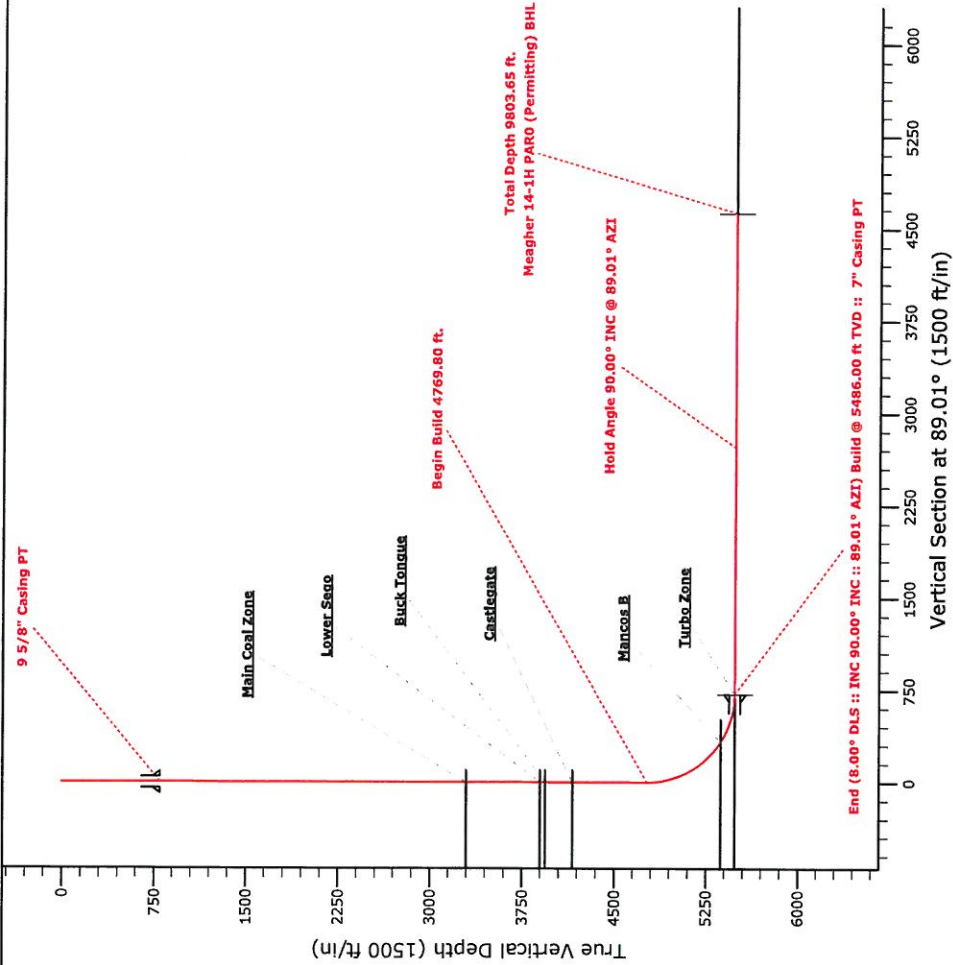
Ground Level: 6535.00 Northing: 1249494.92 Easting: 2009170.30 Latitude: 39.964014 Longitude: -109.035809

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	
2	4769.80	0.00	0.00	4769.80	0.01	0.00	0.00	0.00	0.00	
3	5894.80	90.00	89.01	5486.00	12.43	716.09	8.00	89.01	716.20	Meagher 14-1H PARO (Permitting) Landing
4	5969.80	90.00	89.01	5486.00	13.73	791.08	0.00	0.00	791.20	
5	9803.65	90.00	89.01	5486.00	80.25	4624.35	0.00	0.00	4625.05	Meagher 14-1H PARO (Permitting) BHL

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
Meagher 14-1H PARO (Permitting) Landing	5486.00	12.43	716.09	1249478.78	2009886.29	39.964048	-109.033254	Point
Meagher 14-1H PARO (Permitting) BHL	5486.00	80.25	4624.35	1249390.75	2013794.03	39.964233	-109.019312	Point



Plan: PARO (Permitting) Proposal (Meagher 14-1H/PARO (Permitting))

Created By: Phil Carr Date: 11/20/2012
Checked: Date:
Reviewed: Date:
Approved: Date:

KGH Operating

Rio Blanco, Colorado

Sec. 14-T1S-R104W

Meagher 14-1H

PAR0 (Permitting)

Plan: PAR0 (Permitting) Proposal

Sperry Drilling Services

Proposal Report

20 November, 2012

Well Coordinates: 1,249,494.92 N, 2,009,170.30 E (39° 57' 50.45" N, 109° 02' 08.91" W)

Ground Level: 6,535.00 ft

Local Coordinate Origin:

Centered on Well Meagher 14-1H

Viewing Datum:

RKB 20 ft. @ 6555.00ft (Unknown Rig)

TVDs to System:

N

North Reference:

True

Unit System:

API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 43I

HALLIBURTON

Plan Report for Meagher 14-1H - PAR0 (Permitting) 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	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Meagher 14-1H (SHL)										
100.00	0.00	0.00	100.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8" Casing PT										
900.00	0.00	0.00	900.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
3,296.00	0.00	0.00	3,296.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Main Coal Zone										
3,300.00	0.00	0.00	3,300.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
3,902.00	0.00	0.00	3,902.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Lower Seg										
3,943.00	0.00	0.00	3,943.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Buck Tongue										
4,000.00	0.00	0.00	4,000.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
4,165.00	0.00	0.00	4,165.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Castlegate										
4,200.00	0.00	0.00	4,200.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00

Plan Report for Meagher 14-1H - PAR0 (Permitting) 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 (°)
4,769.80	0.00	0.00	4,769.80	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Begin Build 4769.80 ft.										
4,800.00	2.42	89.01	4,799.99	0.02	0.64	0.64	8.00	8.00	0.00	89.01
4,850.00	6.42	89.01	4,849.83	0.09	4.49	4.49	8.00	8.00	0.00	0.00
4,900.00	10.42	89.01	4,899.28	0.21	11.80	11.80	8.00	8.00	0.00	0.00
4,950.00	14.42	89.01	4,948.10	0.40	22.55	22.55	8.00	8.00	0.00	0.00
5,000.00	18.42	89.01	4,996.06	0.64	36.67	36.68	8.00	8.00	0.00	0.00
5,050.00	22.42	89.01	5,042.91	0.95	54.11	54.12	8.00	8.00	0.00	0.00
5,100.00	26.42	89.01	5,088.43	1.31	74.77	74.78	8.00	8.00	0.00	0.00
5,150.00	30.42	89.01	5,132.39	1.72	98.55	98.57	8.00	8.00	0.00	0.00
5,200.00	34.42	89.01	5,174.59	2.18	125.35	125.37	8.00	8.00	0.00	0.00
5,250.00	38.42	89.01	5,214.82	2.70	155.02	155.04	8.00	8.00	0.00	0.00
5,300.00	42.42	89.01	5,252.88	3.26	187.42	187.45	8.00	8.00	0.00	0.00
5,350.00	46.42	89.01	5,288.59	3.87	222.41	222.44	8.00	8.00	0.00	0.00
5,400.00	50.42	89.01	5,321.77	4.51	259.79	259.83	8.00	8.00	0.00	0.00
5,450.00	54.42	89.01	5,352.26	5.20	299.40	299.45	8.00	8.00	0.00	0.00
5,483.30	57.08	89.01	5,371.00	5.68	326.92	326.97	8.00	8.00	0.00	0.00
Mancos B										
5,500.00	58.42	89.01	5,379.91	5.92	341.04	341.09	8.00	8.00	0.00	0.00
5,550.00	62.42	89.01	5,404.59	6.68	384.51	384.56	8.00	8.00	0.00	0.00
5,600.00	66.42	89.01	5,426.18	7.46	429.59	429.65	8.00	8.00	0.00	0.00
5,650.00	70.42	89.01	5,444.57	8.26	476.06	476.14	8.00	8.00	0.00	0.00
5,700.00	74.42	89.01	5,459.67	9.09	523.71	523.79	8.00	8.00	0.00	0.00
5,750.00	78.42	89.01	5,471.41	9.93	572.30	572.38	8.00	8.00	0.00	0.00
5,800.00	82.42	89.01	5,479.73	10.79	621.58	621.67	8.00	8.00	0.00	0.00
5,850.00	86.42	89.01	5,484.60	11.65	671.33	671.43	8.00	8.00	0.00	0.00
5,894.80	90.00	89.01	5,486.00	12.43	716.09	716.20	8.00	8.00	0.00	0.00
End (8.00° DLS :: INC 90.00° INC :: 89.01° AZI) Build @ 5486.00 ft TVD :: (12.43 N/S :: 716.09 E/W) - LPT - Turbo Zone - 7" Casin										
5,900.00	90.00	89.01	5,486.00	12.52	721.29	721.40	0.00	0.00	0.00	0.00
5,969.80	90.00	89.01	5,486.00	13.73	791.08	791.20	0.00	0.00	0.00	0.00
End of Hold @ 5969.80 ft. (Out of Casing)										
6,000.00	90.00	89.01	5,486.00	14.25	821.27	821.40	0.00	0.00	0.00	0.00
6,100.00	90.00	89.01	5,486.00	15.98	921.26	921.40	0.00	0.00	0.00	0.00
6,200.00	90.00	89.01	5,486.00	17.72	1,021.24	1,021.40	0.00	0.00	0.00	0.00
6,300.00	90.00	89.01	5,486.00	19.45	1,121.23	1,121.40	0.00	0.00	0.00	0.00
6,400.00	90.00	89.01	5,486.00	21.19	1,221.21	1,221.40	0.00	0.00	0.00	0.00
6,500.00	90.00	89.01	5,486.00	22.92	1,321.20	1,321.40	0.00	0.00	0.00	0.00
6,600.00	90.00	89.01	5,486.00	24.65	1,421.18	1,421.40	0.00	0.00	0.00	0.00
6,700.00	90.00	89.01	5,486.00	26.39	1,521.17	1,521.40	0.00	0.00	0.00	0.00
6,800.00	90.00	89.01	5,486.00	28.12	1,621.15	1,621.40	0.00	0.00	0.00	0.00
6,900.00	90.00	89.01	5,486.00	29.85	1,721.14	1,721.40	0.00	0.00	0.00	0.00
7,000.00	90.00	89.01	5,486.00	31.59	1,821.12	1,821.40	0.00	0.00	0.00	0.00
7,100.00	90.00	89.01	5,486.00	33.32	1,921.11	1,921.40	0.00	0.00	0.00	0.00
7,200.00	90.00	89.01	5,486.00	35.06	2,021.09	2,021.40	0.00	0.00	0.00	0.00
7,300.00	90.00	89.01	5,486.00	36.79	2,121.08	2,121.40	0.00	0.00	0.00	0.00
7,400.00	90.00	89.01	5,486.00	38.52	2,221.06	2,221.40	0.00	0.00	0.00	0.00
7,500.00	90.00	89.01	5,486.00	40.26	2,321.05	2,321.40	0.00	0.00	0.00	0.00
7,600.00	90.00	89.01	5,486.00	41.99	2,421.03	2,421.40	0.00	0.00	0.00	0.00
7,700.00	90.00	89.01	5,486.00	43.73	2,521.02	2,521.40	0.00	0.00	0.00	0.00
7,800.00	90.00	89.01	5,486.00	45.46	2,621.00	2,621.40	0.00	0.00	0.00	0.00
7,900.00	90.00	89.01	5,486.00	47.19	2,720.99	2,721.40	0.00	0.00	0.00	0.00
Hold Angle 90.00° INC @ 89.01° AZI										
8,000.00	90.00	89.01	5,486.00	48.93	2,820.97	2,821.40	0.00	0.00	0.00	0.00
8,100.00	90.00	89.01	5,486.00	50.66	2,920.96	2,921.40	0.00	0.00	0.00	0.00
8,200.00	90.00	89.01	5,486.00	52.40	3,020.94	3,021.40	0.00	0.00	0.00	0.00
8,300.00	90.00	89.01	5,486.00	54.13	3,120.93	3,121.40	0.00	0.00	0.00	0.00
8,400.00	90.00	89.01	5,486.00	55.86	3,220.91	3,221.40	0.00	0.00	0.00	0.00
8,500.00	90.00	89.01	5,486.00	57.60	3,320.90	3,321.40	0.00	0.00	0.00	0.00
8,600.00	90.00	89.01	5,486.00	59.33	3,420.88	3,421.40	0.00	0.00	0.00	0.00

Plan Report for Meagher 14-1H - PAR0 (Permitting) 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 (°)
8,700.00	90.00	89.01	5,486.00	61.06	3,520.87	3,521.40	0.00	0.00	0.00	0.00
8,800.00	90.00	89.01	5,486.00	62.80	3,620.85	3,621.40	0.00	0.00	0.00	0.00
8,900.00	90.00	89.01	5,486.00	64.53	3,720.84	3,721.40	0.00	0.00	0.00	0.00
9,000.00	90.00	89.01	5,486.00	66.27	3,820.82	3,821.40	0.00	0.00	0.00	0.00
9,100.00	90.00	89.01	5,486.00	68.00	3,920.81	3,921.40	0.00	0.00	0.00	0.00
9,200.00	90.00	89.01	5,486.00	69.73	4,020.79	4,021.40	0.00	0.00	0.00	0.00
9,300.00	90.00	89.01	5,486.00	71.47	4,120.78	4,121.40	0.00	0.00	0.00	0.00
9,400.00	90.00	89.01	5,486.00	73.20	4,220.76	4,221.40	0.00	0.00	0.00	0.00
9,500.00	90.00	89.01	5,486.00	74.94	4,320.75	4,321.40	0.00	0.00	0.00	0.00
9,600.00	90.00	89.01	5,486.00	76.67	4,420.73	4,421.40	0.00	0.00	0.00	0.00
9,700.00	90.00	89.01	5,486.00	78.40	4,520.72	4,521.40	0.00	0.00	0.00	0.00
9,803.65	90.00	89.01	5,486.00	80.20	4,624.35	4,625.05	0.00	0.00	0.00	0.00
Total Depth 9803.65 ft. - Meagher 14-1H PAR0 (Permitting) BHL										

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
0.00	0.00	0.01	0.00	Meagher 14-1H (SHL)
4,769.80	4,769.80	0.01	0.00	Begin Build 4769.80 ft.
5,894.80	5,486.00	12.43	716.09	End (8.00° DLS :: INC 90.00° INC :: 89.01° AZI) Build @ 5486.00 ft
				TVD :: (12.43 N/S :: 716.09 E/W) - LPT
5,969.80	5,486.00	13.73	791.08	End of Hold @ 5969.80 ft. (Out of Casing)
7,900.00	5,486.00	47.19	2,720.99	Hold Angle 90.00° INC @ 89.01° AZI
9,803.65	5,486.00	80.20	4,624.35	Total Depth 9803.65 ft.

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	+N/-S (ft)	+E/-W (ft)	Start TVD (ft)
Target	Meagher 14-1H PAR0 (Permitting) BHL	89.01	Slot	0.01	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	9,803.65	PAR0 (Permitting) Proposal	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
800.00	800.00	9 5/8" Casing PT	9-5/8	12-1/4
5,894.80	5,486.00	7" Casing PT	7	8-3/4

Plan Report for Meagher 14-1H - PAR0 (Permitting) Proposal

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,296.00	3,296.00	Main Coal Zone			
3,902.00	3,902.00	Lower Sego			
3,943.00	3,943.00	Buck Tongue			
4,165.00	4,165.00	Castlegate			
5,483.30	5,371.00	Mancos B			
5,894.80	5,486.00	Turbo Zone			

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Meagher 14-1H Sec. 14 (SL)	0.00	0.01	0.00	Polygon
Meagher 14-1H Sec. 13 (SB)	0.00	0.01	0.00	Polygon
Meagher 14-1H Sec. 14 (SB)	0.00	0.01	0.00	Polygon
Meagher 14-1H Sec. 13 (SL)	0.00	0.01	0.00	Polygon
Meagher 14-1H PAR0 (Permitting) BHL	5,486.00	80.25	4,624.35	Point
Meagher 14-1H PAR0 (Permitting) Landing	5,486.00	12.43	716.09	Point

**North Reference Sheet for Sec. 14-T1S-R104W - Meagher 14-1H - PAR0
(Permitting)**

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

Vertical Depths are relative to RKB 20 ft. @ 6555.00ft (Unknown Rig). Northing and Easting are relative to Meagher 14-1H

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: 0.99996930

Grid Coordinates of Well: 1,249,494.92 ft N, 2,009,170.30 ft E

Geographical Coordinates of Well: 39° 57' 50.45" N, 109° 02' 08.91" W

Grid Convergence at Surface is: -2.28°

Based upon Minimum Curvature type calculations, at a Measured Depth of 9,803.65ft
the Bottom Hole Displacement is 4,625.05ft in the Direction of 89.01° (True).

Magnetic Convergence at surface is: -12.94° (10 April 2013, , BGGM2012)

