



B.P.

La Plata County, CO NAD83

Ford Pad

Ford H1

OH

Plan: Plan #3

Standard Planning Report

24 November, 2015





Database:	Grand Junction District	Local Co-ordinate Reference:	Well Ford H1
Company:	B.P.	TVD Reference:	GL 6702.10' & RKB 11' @ 6713.10usft (Aztec 507)
Project:	La Plata County, CO NAD83	MD Reference:	GL 6702.10' & RKB 11' @ 6713.10usft (Aztec 507)
Site:	Ford Pad	North Reference:	Grid
Well:	Ford H1	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

Project	La Plata County, CO NAD83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Southern Zone		

Site	Ford Pad					
Site Position:		Northing:	1,173,140.32 usft	Latitude:	37.1212727	
From:	Map	Easting:	2,356,283.14 usft	Longitude:	-107.7079326	
Position Uncertainty:		0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.35 °

Well	Ford H1					
Well Position	+N/-S	0.00 usft	Northing:	1,173,140.32 usft	Latitude:	37.1212727
	+E/-W	0.00 usft	Easting:	2,356,283.14 usft	Longitude:	-107.7079326
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	6,702.10 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	8/6/2015	9.52	63.71	50,425

Design	Plan #3			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	52.81

Plan Sections										
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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
454.00	0.00	0.00	454.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,678.94	36.75	52.81	1,596.67	229.44	302.34	3.00	3.00	0.00	52.81	
3,583.82	36.75	52.81	3,123.00	918.41	1,210.20	0.00	0.00	0.00	0.00	FORD 1H - PBHL ALT



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Wellbore:	OH		
Design:	Plan #3		

Planned Survey

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)
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
200.00	0.00	0.00	200.00	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
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
402.00	0.00	0.00	402.00	0.00	0.00	0.00	0.00	0.00	0.00
SURF CSG									
454.00	0.00	0.00	454.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	1.38	52.81	500.00	0.33	0.44	0.55	3.00	3.00	0.00
600.00	4.38	52.81	599.86	3.37	4.44	5.58	3.00	3.00	0.00
700.00	7.38	52.81	699.32	9.56	12.60	15.82	3.00	3.00	0.00
800.00	10.38	52.81	798.11	18.89	24.90	31.26	3.00	3.00	0.00
900.00	13.38	52.81	895.96	31.34	41.29	51.84	3.00	3.00	0.00
1,000.00	16.38	52.81	992.59	46.86	61.75	77.52	3.00	3.00	0.00
1,100.00	19.38	52.81	1,087.75	65.42	86.20	108.22	3.00	3.00	0.00
1,200.00	22.38	52.81	1,181.17	86.96	114.59	143.85	3.00	3.00	0.00
1,300.00	25.38	52.81	1,272.60	111.43	146.84	184.33	3.00	3.00	0.00
1,400.00	28.38	52.81	1,361.79	138.76	182.85	229.54	3.00	3.00	0.00
1,487.86	31.02	52.81	1,438.10	165.07	217.52	273.06	3.00	3.00	0.00
LWR ANIMAS									
1,500.00	31.38	52.81	1,448.49	168.87	222.53	279.35	3.00	3.00	0.00
1,600.00	34.38	52.81	1,532.46	201.69	265.77	333.63	3.00	3.00	0.00
1,678.94	36.75	52.81	1,596.67	229.44	302.34	379.54	3.00	3.00	0.00
1,700.00	36.75	52.81	1,613.54	237.06	312.38	392.14	0.00	0.00	0.00
1,800.00	36.75	52.81	1,693.67	273.23	360.03	451.97	0.00	0.00	0.00
1,900.00	36.75	52.81	1,773.80	309.40	407.69	511.80	0.00	0.00	0.00
1,909.11	36.75	52.81	1,781.10	312.69	412.04	517.25	0.00	0.00	0.00
KIRTLAND SH									
2,000.00	36.75	52.81	1,853.92	345.56	455.35	571.63	0.00	0.00	0.00
2,100.00	36.75	52.81	1,934.05	381.73	503.01	631.46	0.00	0.00	0.00
2,171.20	36.75	52.81	1,991.10	407.48	536.95	674.06	0.00	0.00	0.00
FARMINGTON SS									
2,200.00	36.75	52.81	2,014.18	417.90	550.67	691.29	0.00	0.00	0.00
2,300.00	36.75	52.81	2,094.31	454.07	598.33	751.12	0.00	0.00	0.00
2,400.00	36.75	52.81	2,174.43	490.24	645.99	810.95	0.00	0.00	0.00
2,500.00	36.75	52.81	2,254.56	526.41	693.65	870.78	0.00	0.00	0.00
2,600.00	36.75	52.81	2,334.69	562.58	741.31	930.61	0.00	0.00	0.00
2,647.94	36.75	52.81	2,373.10	579.91	764.16	959.29	0.00	0.00	0.00
LWR KIRTLAND SH									
2,700.00	36.75	52.81	2,414.82	598.74	788.97	990.44	0.00	0.00	0.00
2,800.00	36.75	52.81	2,494.94	634.91	836.63	1,050.27	0.00	0.00	0.00
2,900.00	36.75	52.81	2,575.07	671.08	884.29	1,110.10	0.00	0.00	0.00
3,000.00	36.75	52.81	2,655.20	707.25	931.95	1,169.93	0.00	0.00	0.00
3,001.13	36.75	52.81	2,656.10	707.66	932.49	1,170.60	0.00	0.00	0.00
FRUITLAND COAL									
3,039.81	36.75	52.81	2,687.10	721.65	950.93	1,193.75	0.00	0.00	0.00
LEMON COAL									
3,100.00	36.75	52.81	2,735.33	743.42	979.61	1,229.76	0.00	0.00	0.00
3,158.38	36.75	52.81	2,782.10	764.53	1,007.43	1,264.69	0.00	0.00	0.00
LWR LEMON COAL									
3,187.08	36.75	52.81	2,805.10	774.91	1,021.11	1,281.86	0.00	0.00	0.00



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Site:	Ford Pad	North Reference:	Grid
Well:	Ford H1	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

Planned Survey

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)
IGNACIO COAL									
3,200.00	36.75	52.81	2,815.45	779.59	1,027.27	1,289.59	0.00	0.00	0.00
3,209.63	36.75	52.81	2,823.17	783.07	1,031.86	1,295.35	0.00	0.00	0.00
FORD 1H - BTV ALT									
3,300.00	36.75	52.81	2,895.58	815.76	1,074.93	1,349.42	0.00	0.00	0.00
3,316.87	36.75	52.81	2,909.10	821.86	1,082.97	1,359.51	0.00	0.00	0.00
COTTONWOOD COAL									
3,334.35	36.75	52.81	2,923.10	828.18	1,091.30	1,369.97	0.00	0.00	0.00
PICTURED CLIFFS									
3,400.00	36.75	52.81	2,975.71	851.92	1,122.59	1,409.25	0.00	0.00	0.00
3,477.87	36.75	52.81	3,038.10	880.09	1,159.70	1,455.84	0.00	0.00	0.00
CAHN COAL									
3,500.00	36.75	52.81	3,055.83	888.09	1,170.25	1,469.08	0.00	0.00	0.00
3,583.82	36.75	52.81	3,123.00	918.41	1,210.20	1,519.23	0.00	0.00	0.00
PROD CSG - FORD 1H - PBHL ALT									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
FORD 1H - BTV ALT - plan misses target center by 279.41usft at 3209.63usft MD (2823.17 TVD, 783.07 N, 1031.86 E) - Circle (radius 50.00)	0.00	360.00	2,656.00	918.41	1,210.20	1,174,058.73	2,357,493.34	37.1238728	-107.7038575
FORD 1H - PBHL ALT - plan hits target center - Circle (radius 50.00)	0.00	360.00	3,123.00	918.41	1,210.20	1,174,058.73	2,357,493.34	37.1238728	-107.7038575

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
402.00	402.00	SURF CSG	8.63	12.25
3,583.82	3,123.00	PROD CSG	5.50	7.88



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Site:	Ford Pad	North Reference:	Grid
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Wellbore:	OH		
Design:	Plan #3		

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,487.86	1,438.10	LWR ANIMAS		0.00	
1,909.11	1,781.10	KIRTLAND SH		0.00	
2,171.20	1,991.10	FARMINGTON SS		0.00	
2,647.94	2,373.10	LWR KIRTLAND SH		0.00	
3,001.13	2,656.10	FRUITLAND COAL		0.00	
3,039.81	2,687.10	LEMON COAL		0.00	
3,158.38	2,782.10	LWR LEMON COAL		0.00	
3,187.08	2,805.10	IGNACIO COAL		0.00	
3,316.87	2,909.10	COTTONWOOD COAL		0.00	
3,334.35	2,923.10	PICTURED CLIFFS		0.00	
3,477.87	3,038.10	CAHN COAL		0.00	