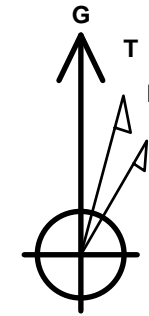


Company: NAG - MASTER  
Project: SAN JUAN NORTH - BP  
Site: SEC 10 - T33N - R08W  
Well: FORD H2  
Wellbore: OH  
Design: Plan #1

PROJECT DETAILS: SAN JUAN NORTH - BP

Geodetic System: US State Plane 1983  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone: Colorado Southern Zone  
System Datum: Mean Sea Level  
Local North: Grid



Azimuths to Grid North  
True North: 1.35°  
Magnetic North: 10.87°

Magnetic Field  
Strength: 50424.9snT  
Dip Angle: 63.71°  
Date: 8/6/2015  
Model: BGGM2014

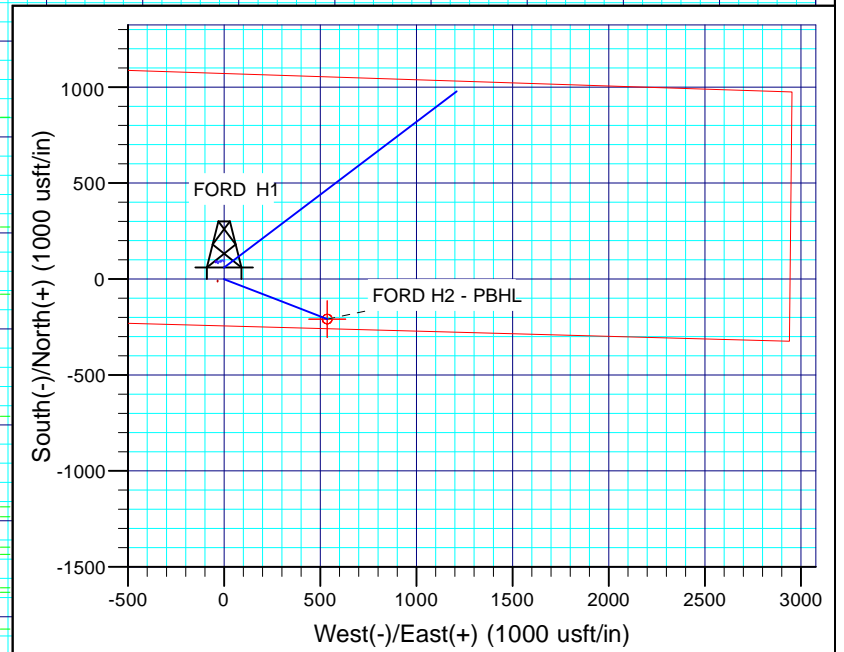
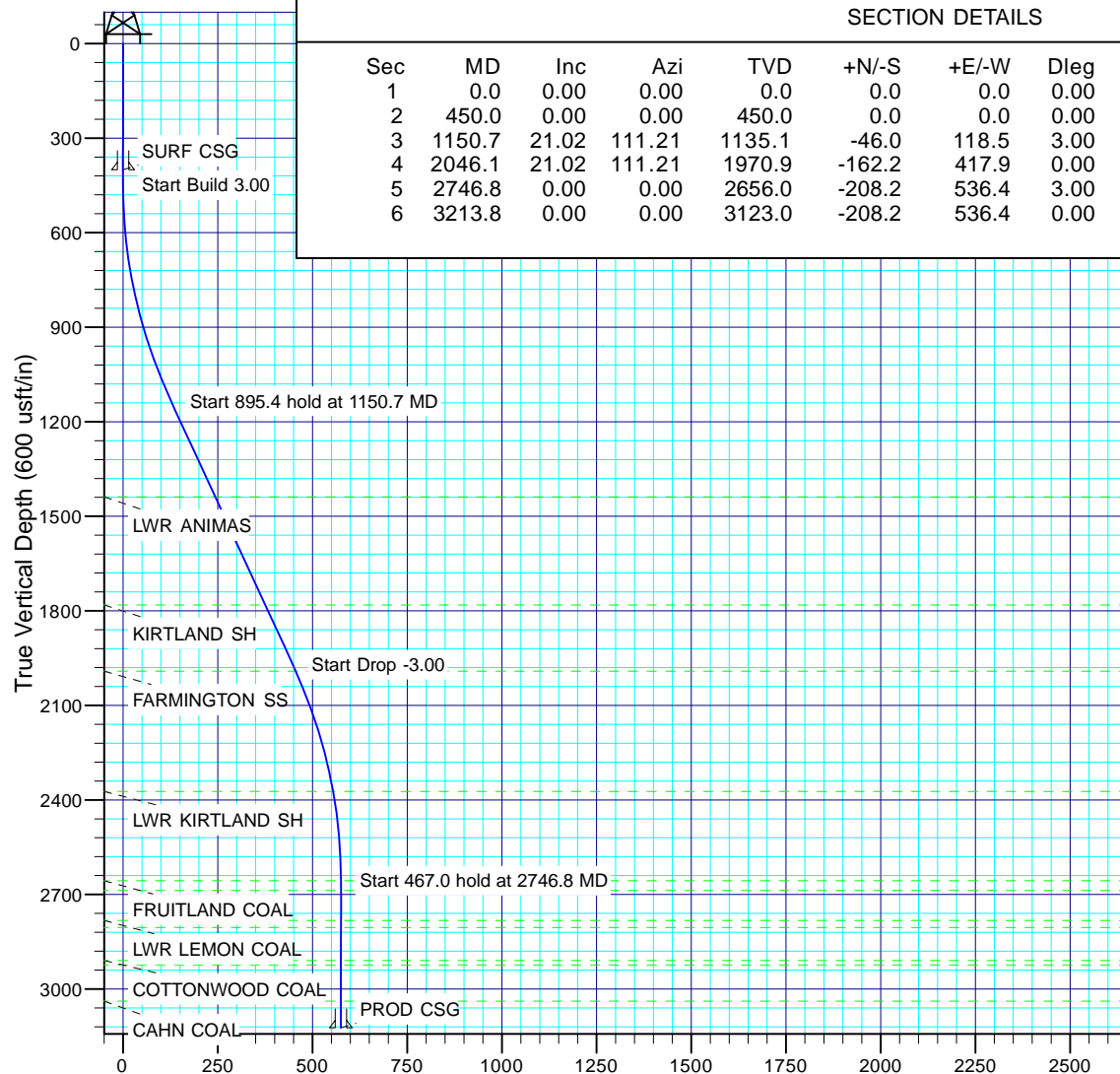
WELL DETAILS: FORD H2

Ground Level: 6702.1  
+N/-S 0.0 +E/-W 0.0 Northing 1173080.32 Easting 2356283.43 Latitude 37° 7' 15.989 N Longitude 107° 42' 28.536

Created By: Ashley Henderson Troutman  
Date: 13:45, August 06 2015

SECTION 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	450.0	0.00	0.00	450.0	0.0	0.0	0.00	0.00	0.0	
3	1150.7	21.02	111.21	1135.1	-46.0	118.5	3.00	111.21	127.1	
4	2046.1	21.02	111.21	1970.9	-162.2	417.9	0.00	0.00	448.3	
5	2746.8	0.00	0.00	2656.0	-208.2	536.4	3.00	180.00	575.4	FORD H2 - BTW
6	3213.8	0.00	0.00	3123.0	-208.2	536.4	0.00	0.00	575.4	FORD H2 - PBHL



Vertical Section at 111.21° (500 usft/in)

# **NAG - MASTER**

**SAN JUAN NORTH - BP  
SEC 10 - T33N - R08W  
FORD H2**

**OH**

**Plan: Plan #1**

## **Survey Report - Geographic**

**06 August, 2015**

## Survey Report - Geographic

<b>Company:</b>	NAG - MASTER	<b>Local Co-ordinate Reference:</b>	Well FORD H2
<b>Project:</b>	SAN JUAN NORTH - BP	<b>TVD Reference:</b>	RIG @ 6713.1usft (RIG 507)
<b>Site:</b>	SEC 10 - T33N - R08W	<b>MD Reference:</b>	RIG @ 6713.1usft (RIG 507)
<b>Well:</b>	FORD H2	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Plan #1	<b>Database:</b>	EDM R5K - NAG PROD - NAGP1

<b>Project</b>	SAN JUAN NORTH - BP, LA PLATA & ARCHULETA COUNTIES		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	Colorado Southern Zone		

<b>Site</b>	SEC 10 - T33N - R08W		
<b>Site Position:</b>		<b>Northing:</b>	1,173,140.32 usft
<b>From:</b>	Map	<b>Easting:</b>	2,356,283.14 usft
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13-3/16"
		<b>Latitude:</b>	37° 7' 16.582 N
		<b>Longitude:</b>	107° 42' 28.557 W
		<b>Grid Convergence:</b>	-1.35 °

<b>Well</b>	FORD H2	API No	
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b> 1,173,080.32 usft
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b> 2,356,283.43 usft
<b>Position Uncertainty</b>	0.0 usft	<b>Wellhead Elevation:</b>	usft
		<b>Latitude:</b>	37° 7' 15.989 N
		<b>Longitude:</b>	107° 42' 28.536 W
		<b>Ground Level:</b>	6,702.1 usft

<b>Wellbore</b>	OH	API no.			
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	BGGM2014	8/6/2015	9.52	63.71	50,425

<b>Design</b>	Plan #1				
<b>Audit Notes:</b>					
<b>Version:</b>		<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	111.21	

<b>Survey Tool Program</b>	<b>Date:</b> 8/6/2015				
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
0.0	3,213.8	Plan #1 (OH)	BLIND	Blind drilling	

# Survey Report - Geographic

<b>Company:</b>	NAG - MASTER	<b>Local Co-ordinate Reference:</b>	Well FORD H2
<b>Project:</b>	SAN JUAN NORTH - BP	<b>TVD Reference:</b>	RIG @ 6713.1usft (RIG 507)
<b>Site:</b>	SEC 10 - T33N - R08W	<b>MD Reference:</b>	RIG @ 6713.1usft (RIG 507)
<b>Well:</b>	FORD H2	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Plan #1	<b>Database:</b>	EDM R5K - NAG PROD - NAGP1

## Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	1,173,080.32	2,356,283.43	37° 7' 15.989 N	107° 42' 28.536 W
100.0	0.00	0.00	100.0	0.0	0.0	1,173,080.32	2,356,283.43	37° 7' 15.989 N	107° 42' 28.536 W
200.0	0.00	0.00	200.0	0.0	0.0	1,173,080.32	2,356,283.43	37° 7' 15.989 N	107° 42' 28.536 W
300.0	0.00	0.00	300.0	0.0	0.0	1,173,080.32	2,356,283.43	37° 7' 15.989 N	107° 42' 28.536 W
400.0	0.00	0.00	400.0	0.0	0.0	1,173,080.32	2,356,283.43	37° 7' 15.989 N	107° 42' 28.536 W
<b>SURF CSG</b>									
450.0	0.00	0.00	450.0	0.0	0.0	1,173,080.32	2,356,283.43	37° 7' 15.989 N	107° 42' 28.536 W
500.0	1.50	111.21	500.0	-0.2	0.6	1,173,080.08	2,356,284.04	37° 7' 15.987 N	107° 42' 28.528 W
600.0	4.50	111.21	599.8	-2.1	5.5	1,173,078.19	2,356,288.92	37° 7' 15.969 N	107° 42' 28.468 W
700.0	7.50	111.21	699.3	-5.9	15.2	1,173,074.41	2,356,298.66	37° 7' 15.934 N	107° 42' 28.346 W
800.0	10.50	111.21	798.0	-11.6	29.8	1,173,068.75	2,356,313.24	37° 7' 15.881 N	107° 42' 28.165 W
900.0	13.50	111.21	895.8	-19.1	49.2	1,173,061.23	2,356,332.63	37° 7' 15.812 N	107° 42' 27.923 W
1,000.0	16.50	111.21	992.4	-28.5	73.3	1,173,051.87	2,356,356.75	37° 7' 15.725 N	107° 42' 27.623 W
1,100.0	19.50	111.21	1,087.5	-39.6	102.1	1,173,040.69	2,356,385.56	37° 7' 15.621 N	107° 42' 27.264 W
1,150.7	21.02	111.21	1,135.1	-46.0	118.5	1,173,034.33	2,356,401.93	37° 7' 15.562 N	107° 42' 27.060 W
1,200.0	21.02	111.21	1,181.1	-52.4	135.0	1,173,027.94	2,356,418.41	37° 7' 15.503 N	107° 42' 26.855 W
1,300.0	21.02	111.21	1,274.4	-65.4	168.4	1,173,014.96	2,356,451.85	37° 7' 15.382 N	107° 42' 26.438 W
1,400.0	21.02	111.21	1,367.8	-78.3	201.9	1,173,001.98	2,356,485.30	37° 7' 15.262 N	107° 42' 26.021 W
1,475.2	21.02	111.21	1,438.0	-88.1	227.0	1,172,992.22	2,356,510.45	37° 7' 15.171 N	107° 42' 25.708 W
<b>LWR ANIMAS</b>									
1,500.0	21.02	111.21	1,461.1	-91.3	235.3	1,172,989.01	2,356,518.74	37° 7' 15.141 N	107° 42' 25.605 W
1,600.0	21.02	111.21	1,554.5	-104.3	268.8	1,172,976.03	2,356,552.18	37° 7' 15.021 N	107° 42' 25.188 W
1,700.0	21.02	111.21	1,647.8	-117.3	302.2	1,172,963.05	2,356,585.62	37° 7' 14.900 N	107° 42' 24.772 W
1,800.0	21.02	111.21	1,741.2	-130.2	335.6	1,172,950.07	2,356,619.07	37° 7' 14.780 N	107° 42' 24.355 W
1,842.7	21.02	111.21	1,781.0	-135.8	349.9	1,172,944.54	2,356,633.34	37° 7' 14.728 N	107° 42' 24.177 W
<b>KIRTLAND SH</b>									
1,900.0	21.02	111.21	1,834.5	-143.2	369.1	1,172,937.10	2,356,652.51	37° 7' 14.659 N	107° 42' 23.939 W
2,000.0	21.02	111.21	1,927.9	-156.2	402.5	1,172,924.12	2,356,685.95	37° 7' 14.539 N	107° 42' 23.522 W
2,046.1	21.02	111.21	1,970.9	-162.2	417.9	1,172,918.14	2,356,701.37	37° 7' 14.483 N	107° 42' 23.330 W
2,067.6	20.38	111.21	1,991.0	-164.9	425.0	1,172,915.39	2,356,708.45	37° 7' 14.458 N	107° 42' 23.242 W
<b>FARMINGTON SS</b>									
2,100.0	19.40	111.21	2,021.5	-168.9	435.3	1,172,911.40	2,356,718.73	37° 7' 14.421 N	107° 42' 23.114 W
2,200.0	16.40	111.21	2,116.6	-180.0	464.0	1,172,900.28	2,356,747.39	37° 7' 14.318 N	107° 42' 22.757 W
2,300.0	13.40	111.21	2,213.2	-189.3	487.9	1,172,890.97	2,356,771.36	37° 7' 14.231 N	107° 42' 22.458 W
2,400.0	10.40	111.21	2,311.1	-196.8	507.2	1,172,883.51	2,356,790.59	37° 7' 14.162 N	107° 42' 22.219 W
2,462.8	8.52	111.21	2,373.0	-200.5	516.8	1,172,879.78	2,356,800.21	37° 7' 14.127 N	107° 42' 22.099 W
<b>LWR KIRTLAND SH</b>									
2,500.0	7.40	111.21	2,409.9	-202.4	521.6	1,172,877.91	2,356,805.02	37° 7' 14.110 N	107° 42' 22.039 W
2,600.0	4.40	111.21	2,509.3	-206.1	531.2	1,172,874.19	2,356,814.61	37° 7' 14.075 N	107° 42' 21.919 W
2,700.0	1.40	111.21	2,609.2	-208.0	535.9	1,172,872.36	2,356,819.33	37° 7' 14.058 N	107° 42' 21.861 W
2,746.8	0.00	0.00	2,656.0	-208.2	536.4	1,172,872.15	2,356,819.87	37° 7' 14.057 N	107° 42' 21.854 W
<b>FRUITLAND COAL</b>									
2,777.8	0.00	0.00	2,687.0	-208.2	536.4	1,172,872.15	2,356,819.87	37° 7' 14.057 N	107° 42' 21.854 W
<b>LEMON COAL</b>									
2,800.0	0.00	0.00	2,709.2	-208.2	536.4	1,172,872.15	2,356,819.87	37° 7' 14.057 N	107° 42' 21.854 W
2,872.8	0.00	0.00	2,782.0	-208.2	536.4	1,172,872.15	2,356,819.87	37° 7' 14.057 N	107° 42' 21.854 W
<b>LWR LEMON COAL</b>									
2,895.8	0.00	0.00	2,805.0	-208.2	536.4	1,172,872.15	2,356,819.87	37° 7' 14.057 N	107° 42' 21.854 W
<b>IGNACIO COAL</b>									
2,900.0	0.00	0.00	2,809.2	-208.2	536.4	1,172,872.15	2,356,819.87	37° 7' 14.057 N	107° 42' 21.854 W
2,999.8	0.00	0.00	2,909.0	-208.2	536.4	1,172,872.15	2,356,819.87	37° 7' 14.057 N	107° 42' 21.854 W
<b>COTTONWOOD COAL</b>									
3,000.0	0.00	0.00	2,909.2	-208.2	536.4	1,172,872.15	2,356,819.87	37° 7' 14.057 N	107° 42' 21.854 W

## Survey Report - Geographic

<b>Company:</b>	NAG - MASTER	<b>Local Co-ordinate Reference:</b>	Well FORD H2
<b>Project:</b>	SAN JUAN NORTH - BP	<b>TVD Reference:</b>	RIG @ 6713.1usft (RIG 507)
<b>Site:</b>	SEC 10 - T33N - R08W	<b>MD Reference:</b>	RIG @ 6713.1usft (RIG 507)
<b>Well:</b>	FORD H2	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Plan #1	<b>Database:</b>	EDM R5K - NAG PROD - NAGP1

### Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
3,013.8	0.00	0.00	2,923.0	-208.2	536.4	1,172,872.15	2,356,819.87	37° 7' 14.057 N	107° 42' 21.854 W
<b>PICTURED CLIFFS</b>									
3,100.0	0.00	0.00	3,009.2	-208.2	536.4	1,172,872.15	2,356,819.87	37° 7' 14.057 N	107° 42' 21.854 W
3,128.8	0.00	0.00	3,038.0	-208.2	536.4	1,172,872.15	2,356,819.87	37° 7' 14.057 N	107° 42' 21.854 W
<b>CAHN COAL</b>									
3,200.0	0.00	0.00	3,109.2	-208.2	536.4	1,172,872.15	2,356,819.87	37° 7' 14.057 N	107° 42' 21.854 W
3,213.8	0.00	0.00	3,123.0	-208.2	536.4	1,172,872.15	2,356,819.87	37° 7' 14.057 N	107° 42' 21.854 W
<b>PROD CSG</b>									

### 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 H2 - PBHL - plan hits target center - Circle (radius 25.0)	0.00	360.00	3,123.0	-208.2	536.4	1,172,872.15	2,356,819.87	37° 7' 14.057 N	107° 42' 21.854 W
FORD H2 - BTV - plan hits target center - Circle (radius 25.0)	0.00	360.00	2,656.0	-208.2	536.4	1,172,872.15	2,356,819.87	37° 7' 14.057 N	107° 42' 21.854 W

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_