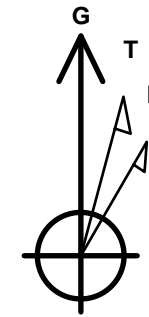


Company: NAG - MASTER  
 Project: SAN JUAN NORTH - BP  
 Site: SEC 06 - T34N - R07W  
 Well: RHODES 1  
 Wellbore: RHODES 1  
 Design: PLAN #1 - AHT 5/28/2015

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: 1.25°  
 Magnetic North: 10.73°

Magnetic Field  
 Strength: 50516.8snT  
 Dip Angle: 63.82°  
 Date: 5/28/2015  
 Model: BGGM2014

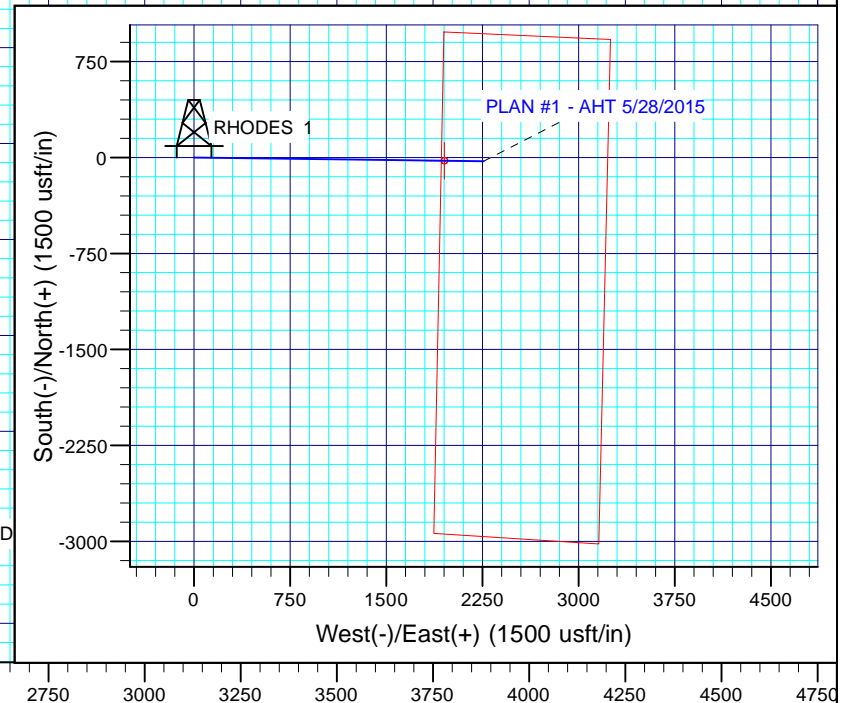
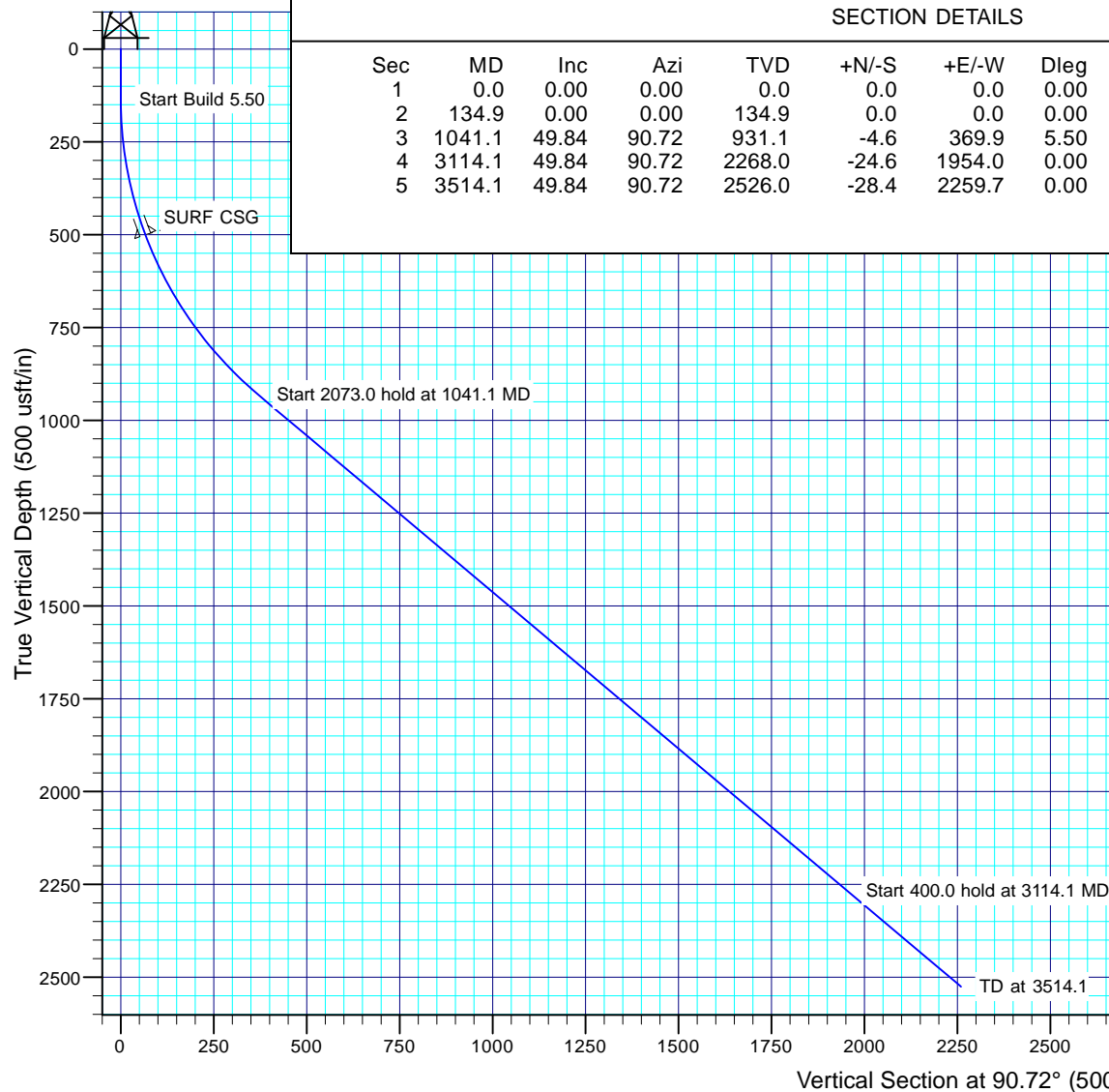
WELL DETAILS: RHODES 1

Ground Level: 6927.1  
 +N/-S +E/-W Northing Easting Latitude Longitude  
 0.0 0.0 1203654.31 2404205.25 37° 12' 28.983 N 107° 32' 45.267 W

Created By: Ashley Henderson Troutman  
 Date: 16:13, May 28 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	134.9	0.00	0.00	134.9	0.0	0.0	0.00	0.00	0.0	
3	1041.1	49.84	90.72	931.1	-4.6	369.9	5.50	90.72	369.9	
4	3114.1	49.84	90.72	2268.0	-24.6	1954.0	0.00	0.00	1954.1	TOP OF COAL
5	3514.1	49.84	90.72	2526.0	-28.4	2259.7	0.00	0.00	2259.8	



# **NAG - MASTER**

**SAN JUAN NORTH - BP**

**SEC 06 - T34N - R07W**

**RHODES 1**

**RHODES 1**

**Plan: PLAN #1 - AHT 5/28/2015**

## **Survey Report - Geographic**

**28 May, 2015**

## Survey Report - Geographic

<b>Company:</b>	NAG - MASTER	<b>Local Co-ordinate Reference:</b>	Well RHODES 1
<b>Project:</b>	SAN JUAN NORTH - BP	<b>TVD Reference:</b>	RIG @ 6938.1usft
<b>Site:</b>	SEC 06 - T34N - R07W	<b>MD Reference:</b>	RIG @ 6938.1usft
<b>Well:</b>	RHODES 1	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	RHODES 1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	PLAN #1 - AHT 5/28/2015	<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		

Site		SEC 06 - T34N - R07W			
Site Position:		Northing:	1,203,654.31 usft	Latitude:	37° 12' 28.983 N
From:	Map	Easting:	2,404,205.25 usft	Longitude:	107° 32' 45.267 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.25 °

Well	RHODES 1		API No.			
Well Position	+N/-S	0.0 usft	Northing:	1,203,654.31 usft	Latitude:	37° 12' 28.983 N
	+E/-W	0.0 usft	Easting:	2,404,205.25 usft	Longitude:	107° 32' 45.267 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	6,927.1 usft

<b>Wellbore</b>	RHODES 1		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	5/28/2015	9.48	63.82	50,517

<b>Design</b>	PLAN #1 - AHT 5/28/2015				
<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	90.72	

<b>Survey Tool Program</b>	<b>Date:</b> 5/28/2015				
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
0.0	3,514.1	PLAN #1 - AHT 5/28/2015 (RHODES 1)	BLIND	Blind drilling	

# Survey Report - Geographic

<b>Company:</b>	NAG - MASTER	<b>Local Co-ordinate Reference:</b>	Well RHODES 1
<b>Project:</b>	SAN JUAN NORTH - BP	<b>TVD Reference:</b>	RIG @ 6938.1usft
<b>Site:</b>	SEC 06 - T34N - R07W	<b>MD Reference:</b>	RIG @ 6938.1usft
<b>Well:</b>	RHODES 1	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	RHODES 1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	PLAN #1 - AHT 5/28/2015	<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	1,203,654.31	2,404,205.25	37° 12' 28.983 N	107° 32' 45.267 W
100.0	0.00	0.00	100.0	0.0	0.0	1,203,654.31	2,404,205.25	37° 12' 28.983 N	107° 32' 45.267 W
134.9	0.00	0.00	134.9	0.0	0.0	1,203,654.31	2,404,205.25	37° 12' 28.983 N	107° 32' 45.267 W
200.0	3.58	90.72	200.0	0.0	2.0	1,203,654.28	2,404,207.28	37° 12' 28.984 N	107° 32' 45.242 W
300.0	9.08	90.72	299.3	-0.2	13.0	1,203,654.15	2,404,218.30	37° 12' 28.985 N	107° 32' 45.106 W
400.0	14.58	90.72	397.1	-0.4	33.5	1,203,653.89	2,404,238.78	37° 12' 28.986 N	107° 32' 44.852 W
500.0	20.08	90.72	492.6	-0.8	63.3	1,203,653.51	2,404,268.55	37° 12' 28.989 N	107° 32' 44.484 W
507.9	20.51	90.72	500.0	-0.8	66.0	1,203,653.48	2,404,271.30	37° 12' 28.989 N	107° 32' 44.451 W
SURF CSG									
600.0	25.58	90.72	584.7	-1.3	102.1	1,203,653.03	2,404,307.33	37° 12' 28.993 N	107° 32' 44.005 W
700.0	31.08	90.72	672.7	-1.9	149.5	1,203,652.43	2,404,354.76	37° 12' 28.997 N	107° 32' 43.419 W
800.0	36.58	90.72	755.7	-2.6	205.2	1,203,651.73	2,404,410.41	37° 12' 29.002 N	107° 32' 42.731 W
900.0	42.08	90.72	833.1	-3.4	268.5	1,203,650.94	2,404,473.75	37° 12' 29.008 N	107° 32' 41.948 W
1,000.0	47.58	90.72	904.0	-4.3	339.0	1,203,650.05	2,404,544.22	37° 12' 29.015 N	107° 32' 41.077 W
1,041.1	49.84	90.72	931.1	-4.6	369.9	1,203,649.66	2,404,575.12	37° 12' 29.017 N	107° 32' 40.695 W
1,100.0	49.84	90.72	969.1	-5.2	414.9	1,203,649.10	2,404,620.10	37° 12' 29.022 N	107° 32' 40.139 W
1,200.0	49.84	90.72	1,033.6	-6.2	491.3	1,203,648.14	2,404,696.52	37° 12' 29.029 N	107° 32' 39.194 W
1,300.0	49.84	90.72	1,098.0	-7.1	567.7	1,203,647.18	2,404,772.94	37° 12' 29.036 N	107° 32' 38.249 W
1,400.0	49.84	90.72	1,162.5	-8.1	644.1	1,203,646.22	2,404,849.36	37° 12' 29.043 N	107° 32' 37.305 W
1,500.0	49.84	90.72	1,227.0	-9.1	720.5	1,203,645.26	2,404,925.78	37° 12' 29.050 N	107° 32' 36.360 W
1,600.0	49.84	90.72	1,291.5	-10.0	796.9	1,203,644.30	2,405,002.20	37° 12' 29.057 N	107° 32' 35.416 W
1,700.0	49.84	90.72	1,356.0	-11.0	873.4	1,203,643.34	2,405,078.62	37° 12' 29.064 N	107° 32' 34.471 W
1,800.0	49.84	90.72	1,420.5	-11.9	949.8	1,203,642.38	2,405,155.03	37° 12' 29.071 N	107° 32' 33.526 W
1,900.0	49.84	90.72	1,485.0	-12.9	1,026.2	1,203,641.42	2,405,231.45	37° 12' 29.078 N	107° 32' 32.582 W
2,000.0	49.84	90.72	1,549.5	-13.9	1,102.6	1,203,640.46	2,405,307.87	37° 12' 29.085 N	107° 32' 31.637 W
2,100.0	49.84	90.72	1,614.0	-14.8	1,179.0	1,203,639.50	2,405,384.29	37° 12' 29.092 N	107° 32' 30.692 W
2,200.0	49.84	90.72	1,678.5	-15.8	1,255.5	1,203,638.54	2,405,460.71	37° 12' 29.099 N	107° 32' 29.748 W
2,300.0	49.84	90.72	1,743.0	-16.7	1,331.9	1,203,637.58	2,405,537.13	37° 12' 29.106 N	107° 32' 28.803 W
2,400.0	49.84	90.72	1,807.5	-17.7	1,408.3	1,203,636.62	2,405,613.54	37° 12' 29.113 N	107° 32' 27.858 W
2,500.0	49.84	90.72	1,872.0	-18.7	1,484.7	1,203,635.66	2,405,689.96	37° 12' 29.120 N	107° 32' 26.914 W
2,600.0	49.84	90.72	1,936.5	-19.6	1,561.1	1,203,634.70	2,405,766.38	37° 12' 29.127 N	107° 32' 25.969 W
2,700.0	49.84	90.72	2,000.9	-20.6	1,637.6	1,203,633.74	2,405,842.80	37° 12' 29.134 N	107° 32' 25.024 W
2,800.0	49.84	90.72	2,065.4	-21.5	1,714.0	1,203,632.78	2,405,919.22	37° 12' 29.141 N	107° 32' 24.080 W
2,900.0	49.84	90.72	2,129.9	-22.5	1,790.4	1,203,631.82	2,405,995.64	37° 12' 29.148 N	107° 32' 23.135 W
3,000.0	49.84	90.72	2,194.4	-23.5	1,866.8	1,203,630.86	2,406,072.06	37° 12' 29.155 N	107° 32' 22.190 W
3,100.0	49.84	90.72	2,258.9	-24.4	1,943.2	1,203,629.90	2,406,148.47	37° 12' 29.162 N	107° 32' 21.246 W
3,114.1	49.84	90.72	2,268.0	-24.6	1,954.0	1,203,629.76	2,406,159.24	37° 12' 29.163 N	107° 32' 21.113 W
3,200.0	49.84	90.72	2,323.4	-25.4	2,019.6	1,203,628.94	2,406,224.89	37° 12' 29.169 N	107° 32' 20.301 W
3,300.0	49.84	90.72	2,387.9	-26.3	2,096.1	1,203,627.98	2,406,301.31	37° 12' 29.176 N	107° 32' 19.356 W
3,400.0	49.84	90.72	2,452.4	-27.3	2,172.5	1,203,627.01	2,406,377.73	37° 12' 29.183 N	107° 32' 18.412 W
3,500.0	49.84	90.72	2,516.9	-28.3	2,248.9	1,203,626.05	2,406,454.15	37° 12' 29.190 N	107° 32' 17.467 W
3,514.1	49.84	90.72	2,526.0	-28.4	2,259.7	1,203,625.92	2,406,464.91	37° 12' 29.191 N	107° 32' 17.334 W

## Survey Report - Geographic

<b>Company:</b>	NAG - MASTER	<b>Local Co-ordinate Reference:</b>	Well RHODES 1
<b>Project:</b>	SAN JUAN NORTH - BP	<b>TVD Reference:</b>	RIG @ 6938.1usft
<b>Site:</b>	SEC 06 - T34N - R07W	<b>MD Reference:</b>	RIG @ 6938.1usft
<b>Well:</b>	RHODES 1	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	RHODES 1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	PLAN #1 - AHT 5/28/2015	<b>Database:</b>	EDM R5K - NAG PROD - NAGP1

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
TOP OF COAL - plan hits target center - Circle (radius 25.0)	0.00	360.00	2,268.0	-24.6	1,954.0	1,203,629.76	2,406,159.24	37° 12' 29.163 N	107° 32' 21.113 W

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
507.9	500.0	SURF CSG	8-5/8	12-1/4	

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