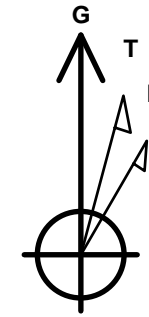


Company: NAG - MASTER
 Project: SAN JUAN NORTH - BP
 Site: SEC 09 - T32N - R06W
 Well: TUBBS 32-6-9 A 2
 Wellbore: 00
 Design: PL-vA.1 AHT-1/25/2015

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: 1.23°
 Magnetic North: 10.70°

Magnetic Field
 Strength: 50472.6snT
 Dip Angle: 63.69°
 Date: 1/25/2015
 Model: BGGM2014

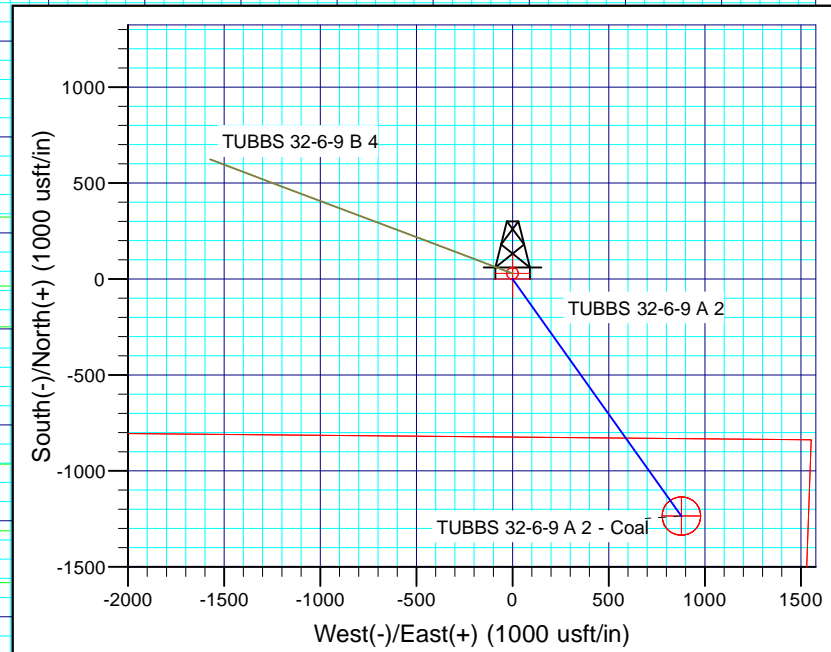
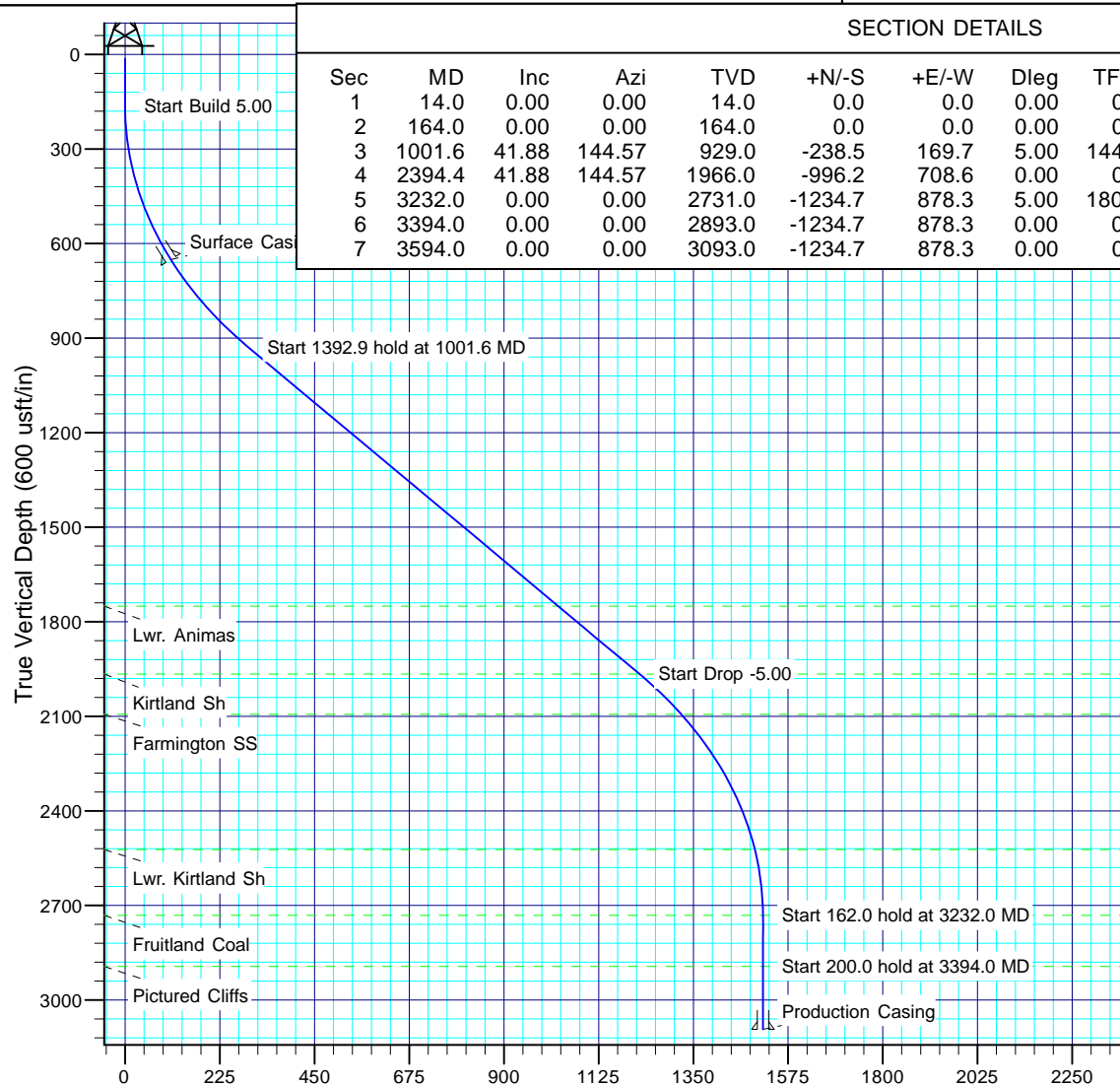
WELL DETAILS: TUBBS 32-6-9 A 2

Ground Level: 6350.9
 +N/-S 0.0 +E/-W 0.0 Northing 1139408.90 Easting 2414944.99 Latitude 37° 1' 56.241 N Longitude 107° 30' 15.504 W

Created By: Ashley Henderson Troutman
 Date: 7:09, February 04 2015

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	14.0	0.00	0.00	14.0	0.0	0.0	0.00	0.00	0.0	
2	164.0	0.00	0.00	164.0	0.0	0.0	0.00	0.00	0.0	
3	1001.6	41.88	144.57	929.0	-238.5	169.7	5.00	144.57	292.7	
4	2394.4	41.88	144.57	1966.0	-996.2	708.6	0.00	0.00	1222.5	
5	3232.0	0.00	0.00	2731.0	-1234.7	878.3	5.00	180.00	1515.2	TUBBS 32-6-9 A 2 - Coal
6	3394.0	0.00	0.00	2893.0	-1234.7	878.3	0.00	0.00	1515.2	TUBBS 32-6-9 A 2 - PC
7	3594.0	0.00	0.00	3093.0	-1234.7	878.3	0.00	0.00	1515.2	



Vertical Section at 144.57° (450 usft/in)

NAG - MASTER

SAN JUAN NORTH - BP

SEC 09 - T32N - R06W

TUBBS 32-6-9 A 2

00

Plan: PL-vA.1 AHT-1/25/2015

Survey Report - Geographic

03 February, 2015

Survey Report - Geographic

Company:	NAG - MASTER	Local Co-ordinate Reference:	Well TUBBS 32-6-9 A 2
Project:	SAN JUAN NORTH - BP	TVD Reference:	RKB @ 6363.9usft (RIG 507)
Site:	SEC 09 - T32N - R06W	MD Reference:	RKB @ 6363.9usft (RIG 507)
Well:	TUBBS 32-6-9 A 2	North Reference:	Grid
Wellbore:	00	Survey Calculation Method:	Minimum Curvature
Design:	PL-vA.1 AHT-1/25/2015	Database:	EDM R5K - NAG PROD - NAGP1

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

Site	SEC 09 - T32N - R06W		
Site Position:		Northing:	1,139,408.90 usft
From:	Map	Easting:	2,414,944.99 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"
		Latitude:	37° 1' 56.241 N
		Longitude:	107° 30' 15.504 W
		Grid Convergence:	-1.23 °

Well	TUBBS 32-6-9 A 2			API No.
Well Position	+N/-S	0.0 usft	Northing:	1,139,408.90 usft
	+E/-W	0.0 usft	Easting:	2,414,944.99 usft
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft
			Latitude:	37° 1' 56.241 N
			Longitude:	107° 30' 15.504 W
			Ground Level:	6,350.9 usft

Wellbore	00					API no.				
Magnetics	Model Name	Sample Date	Declination (°)		Dip Angle (°)		Field Strength (nT)			
	BGGM2014	1/25/2015	9.47		63.69		50,473			

Design	PL-vA.1 AHT-1/25/2015			
Audit Notes:				
Version:		Phase:	PROTOTYPE	Tie On Depth: 14.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	14.0	0.0	0.0	144.57

Survey Tool Program	Date: 2/3/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
14.0	3,594.0	PL-vA.1 AHT-1/25/2015 (00)		

Survey Report - Geographic

Company:	NAG - MASTER	Local Co-ordinate Reference:	Well TUBBS 32-6-9 A 2
Project:	SAN JUAN NORTH - BP	TVD Reference:	RKB @ 6363.9usft (RIG 507)
Site:	SEC 09 - T32N - R06W	MD Reference:	RKB @ 6363.9usft (RIG 507)
Well:	TUBBS 32-6-9 A 2	North Reference:	Grid
Wellbore:	00	Survey Calculation Method:	Minimum Curvature
Design:	PL-VA.1 AHT-1/25/2015	Database:	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	
14.0	0.00	0.00	14.0	0.0	0.0	1,139,408.90	2,414,944.99	37° 1' 56.241 N	107° 30' 15.504 W	
100.0	0.00	0.00	100.0	0.0	0.0	1,139,408.90	2,414,944.99	37° 1' 56.241 N	107° 30' 15.504 W	
164.0	0.00	0.00	164.0	0.0	0.0	1,139,408.90	2,414,944.99	37° 1' 56.241 N	107° 30' 15.504 W	
200.0	1.80	144.57	200.0	-0.5	0.3	1,139,408.44	2,414,945.32	37° 1' 56.236 N	107° 30' 15.500 W	
300.0	6.80	144.57	299.7	-6.6	4.7	1,139,402.33	2,414,949.66	37° 1' 56.177 N	107° 30' 15.445 W	
400.0	11.80	144.57	398.3	-19.7	14.0	1,139,389.17	2,414,959.03	37° 1' 56.049 N	107° 30' 15.326 W	
500.0	16.80	144.57	495.2	-39.9	28.3	1,139,369.05	2,414,973.34	37° 1' 55.853 N	107° 30' 15.144 W	
600.0	21.80	144.57	589.6	-66.8	47.5	1,139,342.12	2,414,992.49	37° 1' 55.591 N	107° 30' 14.901 W	
667.0	25.15	144.57	651.0	-88.5	63.0	1,139,320.38	2,415,007.96	37° 1' 55.379 N	107° 30' 14.704 W	
Surface Casing										
700.0	26.80	144.57	680.7	-100.3	71.3	1,139,308.60	2,415,016.34	37° 1' 55.264 N	107° 30' 14.598 W	
800.0	31.80	144.57	767.8	-140.2	99.7	1,139,268.73	2,415,044.70	37° 1' 54.876 N	107° 30' 14.238 W	
900.0	36.80	144.57	850.4	-186.1	132.4	1,139,222.83	2,415,077.35	37° 1' 54.430 N	107° 30' 13.823 W	
1,000.0	41.80	144.57	927.8	-237.7	169.1	1,139,171.23	2,415,114.05	37° 1' 53.927 N	107° 30' 13.357 W	
1,001.6	41.88	144.57	929.0	-238.5	169.7	1,139,170.38	2,415,114.66	37° 1' 53.919 N	107° 30' 13.349 W	
1,100.0	41.88	144.57	1,002.2	-292.1	207.8	1,139,116.84	2,415,152.75	37° 1' 53.398 N	107° 30' 12.865 W	
1,200.0	41.88	144.57	1,076.7	-346.5	246.5	1,139,062.44	2,415,191.44	37° 1' 52.868 N	107° 30' 12.374 W	
1,300.0	41.88	144.57	1,151.2	-400.9	285.1	1,139,008.04	2,415,230.14	37° 1' 52.339 N	107° 30' 11.882 W	
1,400.0	41.88	144.57	1,225.6	-455.3	323.8	1,138,953.65	2,415,268.83	37° 1' 51.809 N	107° 30' 11.391 W	
1,500.0	41.88	144.57	1,300.1	-509.7	362.5	1,138,899.25	2,415,307.53	37° 1' 51.280 N	107° 30' 10.899 W	
1,600.0	41.88	144.57	1,374.5	-564.0	401.2	1,138,844.85	2,415,346.22	37° 1' 50.750 N	107° 30' 10.408 W	
1,700.0	41.88	144.57	1,449.0	-618.4	439.9	1,138,790.46	2,415,384.92	37° 1' 50.221 N	107° 30' 9.916 W	
1,800.0	41.88	144.57	1,523.4	-672.8	478.6	1,138,736.06	2,415,423.61	37° 1' 49.691 N	107° 30' 9.425 W	
1,900.0	41.88	144.57	1,597.9	-727.2	517.3	1,138,681.66	2,415,462.30	37° 1' 49.162 N	107° 30' 8.934 W	
2,000.0	41.88	144.57	1,672.4	-781.6	556.0	1,138,627.27	2,415,501.00	37° 1' 48.632 N	107° 30' 8.442 W	
2,100.0	41.88	144.57	1,746.8	-836.0	594.7	1,138,572.87	2,415,539.69	37° 1' 48.103 N	107° 30' 7.951 W	
2,104.3	41.88	144.57	1,750.0	-838.4	596.4	1,138,570.54	2,415,541.35	37° 1' 48.080 N	107° 30' 7.930 W	
Lwr. Animas										
2,200.0	41.88	144.57	1,821.3	-890.4	633.4	1,138,518.47	2,415,578.39	37° 1' 47.573 N	107° 30' 7.459 W	
2,300.0	41.88	144.57	1,895.7	-944.8	672.1	1,138,464.07	2,415,617.08	37° 1' 47.044 N	107° 30' 6.968 W	
2,394.4	41.88	144.57	1,966.0	-996.2	708.6	1,138,412.73	2,415,653.61	37° 1' 46.544 N	107° 30' 6.504 W	
Kirtland Sh										
2,394.4	41.88	144.57	1,966.0	-996.2	708.6	1,138,412.70	2,415,653.63	37° 1' 46.544 N	107° 30' 6.504 W	
2,400.0	41.60	144.57	1,970.2	-999.2	710.8	1,138,409.69	2,415,655.77	37° 1' 46.515 N	107° 30' 6.476 W	
2,500.0	36.60	144.57	2,047.8	-1,050.6	747.3	1,138,358.31	2,415,692.32	37° 1' 46.014 N	107° 30' 6.012 W	
2,555.4	33.83	144.57	2,093.0	-1,076.6	765.8	1,138,332.29	2,415,710.83	37° 1' 45.761 N	107° 30' 5.777 W	
Farmington SS										
2,600.0	31.60	144.57	2,130.5	-1,096.3	779.8	1,138,312.64	2,415,724.81	37° 1' 45.570 N	107° 30' 5.600 W	
2,700.0	26.60	144.57	2,217.9	-1,135.9	808.0	1,138,273.02	2,415,752.99	37° 1' 45.184 N	107° 30' 5.242 W	
2,800.0	21.60	144.57	2,309.1	-1,169.1	831.7	1,138,239.76	2,415,776.65	37° 1' 44.860 N	107° 30' 4.941 W	
2,900.0	16.60	144.57	2,403.6	-1,195.8	850.6	1,138,213.10	2,415,795.61	37° 1' 44.601 N	107° 30' 4.700 W	
3,000.0	11.60	144.57	2,500.6	-1,215.6	864.7	1,138,193.25	2,415,809.73	37° 1' 44.408 N	107° 30' 4.521 W	
3,022.9	10.46	144.57	2,523.0	-1,219.2	867.3	1,138,189.69	2,415,812.27	37° 1' 44.373 N	107° 30' 4.489 W	
Lwr. Kirtland Sh										
3,100.0	6.60	144.57	2,599.3	-1,228.5	873.9	1,138,180.37	2,415,818.90	37° 1' 44.282 N	107° 30' 4.405 W	
3,200.0	1.60	144.57	2,699.0	-1,234.4	878.0	1,138,174.54	2,415,823.04	37° 1' 44.226 N	107° 30' 4.352 W	
3,232.0	0.00	0.00	2,731.0	-1,234.7	878.3	1,138,174.18	2,415,823.30	37° 1' 44.222 N	107° 30' 4.349 W	
Fruitland Coal										
3,300.0	0.00	0.00	2,799.0	-1,234.7	878.3	1,138,174.18	2,415,823.30	37° 1' 44.222 N	107° 30' 4.349 W	
3,394.0	0.00	0.00	2,893.0	-1,234.7	878.3	1,138,174.18	2,415,823.30	37° 1' 44.222 N	107° 30' 4.349 W	
Pictured Cliffs										
3,400.0	0.00	0.00	2,899.0	-1,234.7	878.3	1,138,174.18	2,415,823.30	37° 1' 44.222 N	107° 30' 4.349 W	
3,500.0	0.00	0.00	2,999.0	-1,234.7	878.3	1,138,174.18	2,415,823.30	37° 1' 44.222 N	107° 30' 4.349 W	

Survey Report - Geographic

Company:	NAG - MASTER	Local Co-ordinate Reference:	Well TUBBS 32-6-9 A 2
Project:	SAN JUAN NORTH - BP	TVD Reference:	RKB @ 6363.9usft (RIG 507)
Site:	SEC 09 - T32N - R06W	MD Reference:	RKB @ 6363.9usft (RIG 507)
Well:	TUBBS 32-6-9 A 2	North Reference:	Grid
Wellbore:	00	Survey Calculation Method:	Minimum Curvature
Design:	PL-vA.1 AHT-1/25/2015	Database:	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
3,594.0	0.00	0.00	3,093.0	-1,234.7	878.3	1,138,174.18	2,415,823.30	37° 1' 44.222 N	107° 30' 4.349 W
Production Casing									

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
TUBBS 32-6-9 A 2 - Drill	0.00	360.00	0.0	0.0	0.0	1,139,408.90	2,414,944.99	37° 1' 56.241 N	107° 30' 15.504 W
- plan misses target center by 14.0usft at 14.0usft MD (14.0 TVD, 0.0 N, 0.0 E)									
- Polygon									
NW Corner Drilling W			0.0	-801.1	-2,413.2	1,138,607.80	2,412,531.79		
NE Corner Drilling W			0.0	-837.7	1,553.9	1,138,571.20	2,416,498.89		
SE Corner Drilling W			0.0	-2,164.5	1,507.6	1,137,244.40	2,416,452.59		
SW Corner Drilling W			0.0	-2,126.0	-2,443.4	1,137,282.90	2,412,501.59		
TUBBS 32-6-9 A 2 - Coe	0.00	0.00	2,731.0	-1,234.7	878.3	1,138,174.18	2,415,823.30	37° 1' 44.222 N	107° 30' 4.349 W
- plan hits target center									
- Circle (radius 100.0)									
TUBBS 32-6-9 A 2 - PC	0.00	0.00	2,893.0	-1,234.7	878.3	1,138,174.18	2,415,823.30	37° 1' 44.222 N	107° 30' 4.349 W
- plan hits target center									
- Circle (radius 100.0)									
TUBBS 32-6-9 B 4	0.00	0.00	0.0	30.0	-0.2	1,139,438.87	2,414,944.81	37° 1' 56.537 N	107° 30' 15.514 W
- plan misses target center by 33.1usft at 14.0usft MD (14.0 TVD, 0.0 N, 0.0 E)									
- Circle (radius 30.0)									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
667.0	651.0	Surface Casing	8-5/8	12-1/4	
3,594.0	3,093.0	Production Casing	5-1/2	7-7/8	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,104.3	1,750.0	Lwr. Animas		0.00	
2,394.4	1,966.0	Kirtland Sh		0.00	
2,555.4	2,093.0	Farmington SS		0.00	
3,022.9	2,523.0	Lwr. Kirtland Sh		0.00	
3,232.0	2,731.0	Fruitland Coal		0.00	
3,394.0	2,893.0	Pictured Cliffs		0.00	

Checked By: _____	Approved By: _____	Date: _____
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