



Company: B.P.  
Project: La Plata County, CO NAD83  
Site: Arthur Jones Pad  
Well: Arthur Jones H A3



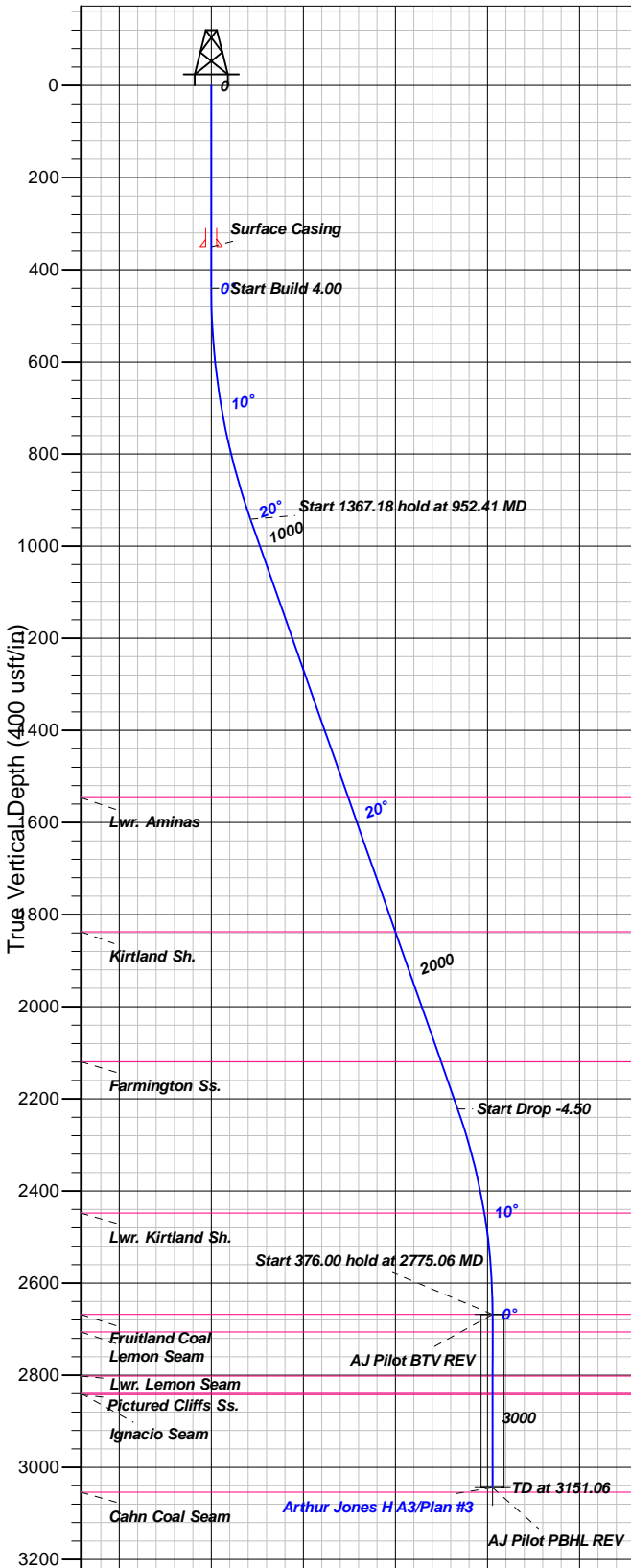
### Well Details: Arthur Jones H A3

GL 6503.17' & RKB 11' @ 6514.17usft (Aztec 507)

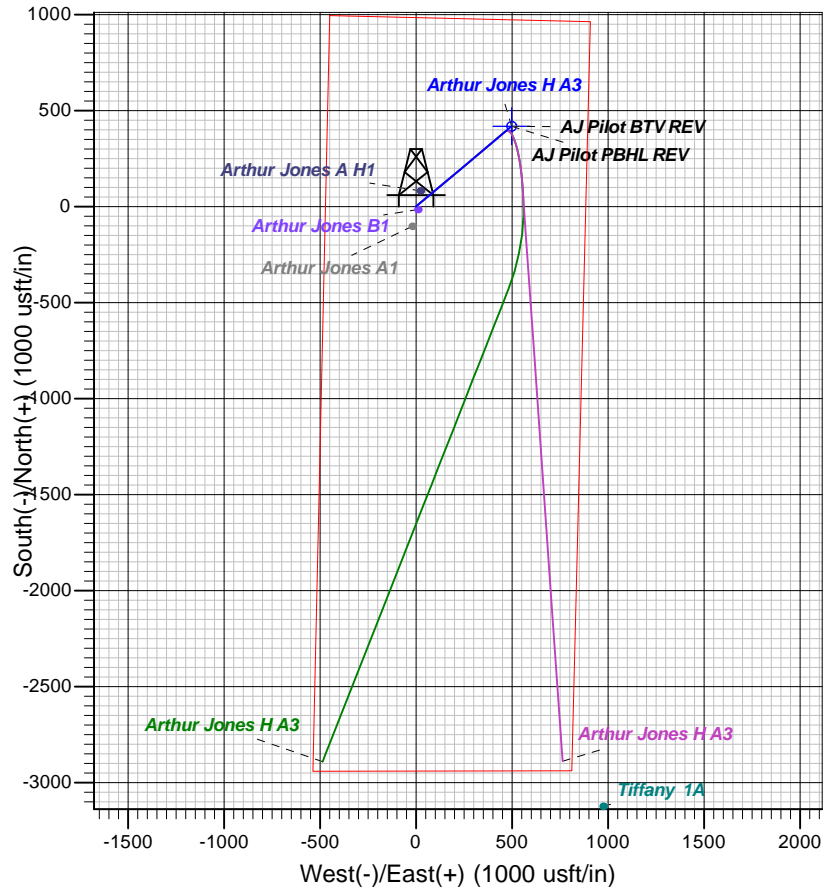
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	1156462.25	2392254.18	37.0777494	-107.5833193	

Azimuths to Grid North  
True North: 1.28°  
Magnetic North: 10.58°

Magnetic Field  
Strength: 50292.2snT  
Dip Angle: 63.67°  
Date: 9/15/2015  
Model: HDGM



Vertical Section at 30.11° (400 usft/in)



#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1546.00	1597.71	Lwr. Aminos
1837.00	1908.38	Kirtland Sh.
2119.00	2209.44	Farmington Ss.
2448.00	2553.95	Lwr. Kirtland Sh.
2668.00	2775.06	Fruitland Coal
2706.00	2813.06	Lemon Seam
2802.00	2909.06	Lwr. Lemon Seam
2839.00	2946.06	Ignacio Seam
2842.00	2949.06	Pictured Cliffs Ss.

#### Plan: Plan #3

10:56, September 28 2015  
Created By: Janie Collins

PROJECT DETAILS: La Plata County, CO NAD83

Geodetic System: US State Plane 1983  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone: Colorado Southern Zone

System Datum: Mean Sea Level

#### CASING DETAILS

TVD	MD	Name	Size
350.00	350.00	Surface Casing	

#### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	440.00	0.00	0.00	440.00	0.00	0.00	0.00	0.00	0.00	
3	952.41	20.50	50.00	941.55	58.29	69.46	4.00	50.00	85.27	
4	2319.59	20.50	50.00	2222.18	366.00	436.18	0.00	0.00	535.43	
5	2775.06	0.00	0.00	2668.00	417.81	497.93	4.50	180.00	611.22	AJ Pilot BTV REV
6	3151.06	0.00	0.00	3044.00	417.81	497.93	0.00	0.00	611.22	AJ Pilot PBHL REV

#### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
AJ Pilot BTV REV	2668.00	417.81	497.93	1156880.06	2392752.11	37.0789271	-107.5816449	Circle (Radius: 25.00)
- plan hits target center								
AJ Pilot PBHL REV	3044.00	417.81	497.93	1156880.06	2392752.11	37.0789271	-107.5816449	Point
- plan hits target center								



**B.P.**

**La Plata County, CO NAD83**

**Arthur Jones Pad**

**Arthur Jones H A3**

**Pilot**

**Plan: Plan #3**

## **Standard Planning Report**

**28 September, 2015**





<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well Arthur Jones H A3
<b>Company:</b>	B.P.	<b>TVD Reference:</b>	GL 6503.17' & RKB 11' @ 6514.17usft (Aztec 507)
<b>Project:</b>	La Plata County, CO NAD83	<b>MD Reference:</b>	GL 6503.17' & RKB 11' @ 6514.17usft (Aztec 507)
<b>Site:</b>	Arthur Jones Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	Arthur Jones H A3	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Pilot		
<b>Design:</b>	Plan #3		

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

Site		Arthur Jones Pad			
Site Position:		Northing:	1,156,462.25 usft	Latitude:	37.0777494
From:	Map	Easting:	2,392,254.18 usft	Longitude:	-107.5833193
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.28 °

Well	Arthur Jones H A3					
Well Position	+N/-S	0.00 usft	Northing:	1,156,462.25 usft	Latitude:	37.0777494
	+E/-W	0.00 usft	Easting:	2,392,254.18 usft	Longitude:	-107.5833193
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,503.17 usft

<b>Wellbore</b>	Pilot				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	9/15/2015	9.30	63.67	50,292

<b>Design</b>	Plan #3			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	30.11

<b>Plan Sections</b>										
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	
440.00	0.00	0.00	440.00	0.00	0.00	0.00	0.00	0.00	0.00	
952.41	20.50	50.00	941.55	58.29	69.46	4.00	4.00	0.00	50.00	
2,319.59	20.50	50.00	2,222.18	366.00	436.18	0.00	0.00	0.00	0.00	
2,775.06	0.00	0.00	2,668.00	417.81	497.93	4.50	-4.50	0.00	180.00	AJ Pilot BTV REV
3,151.06	0.00	0.00	3,044.00	417.81	497.93	0.00	0.00	0.00	0.00	AJ Pilot PBHL REV



<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well Arthur Jones H A3
<b>Company:</b>	B.P.	<b>TVD Reference:</b>	GL 6503.17' & RKB 11' @ 6514.17usft (Aztec 507)
<b>Project:</b>	La Plata County, CO NAD83	<b>MD Reference:</b>	GL 6503.17' & RKB 11' @ 6514.17usft (Aztec 507)
<b>Site:</b>	Arthur Jones Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	Arthur Jones H A3	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Pilot		
<b>Design:</b>	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
350.00	0.00	0.00	350.00	0.00	0.00	0.00	0.00	0.00	0.00
Surface Casing									
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
440.00	0.00	0.00	440.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	2.40	50.00	499.98	0.81	0.96	1.18	4.00	4.00	0.00
600.00	6.40	50.00	599.67	5.74	6.84	8.39	4.00	4.00	0.00
700.00	10.40	50.00	698.57	15.13	18.03	22.13	4.00	4.00	0.00
800.00	14.40	50.00	796.22	28.93	34.47	42.32	4.00	4.00	0.00
900.00	18.40	50.00	892.13	47.07	56.10	68.86	4.00	4.00	0.00
952.41	20.50	50.00	941.55	58.29	69.46	85.27	4.00	4.00	0.00
1,000.00	20.50	50.00	986.13	69.00	82.23	100.94	0.00	0.00	0.00
1,100.00	20.50	50.00	1,079.80	91.51	109.05	133.87	0.00	0.00	0.00
1,200.00	20.50	50.00	1,173.47	114.01	135.88	166.79	0.00	0.00	0.00
1,300.00	20.50	50.00	1,267.14	136.52	162.70	199.72	0.00	0.00	0.00
1,400.00	20.50	50.00	1,360.81	159.03	189.52	232.64	0.00	0.00	0.00
1,500.00	20.50	50.00	1,454.48	181.53	216.34	265.57	0.00	0.00	0.00
1,597.71	20.50	50.00	1,546.00	203.53	242.55	297.74	0.00	0.00	0.00
Lwr. Aminas									
1,600.00	20.50	50.00	1,548.14	204.04	243.17	298.50	0.00	0.00	0.00
1,700.00	20.50	50.00	1,641.81	226.55	269.99	331.42	0.00	0.00	0.00
1,800.00	20.50	50.00	1,735.48	249.06	296.81	364.35	0.00	0.00	0.00
1,900.00	20.50	50.00	1,829.15	271.56	323.64	397.27	0.00	0.00	0.00
1,908.38	20.50	50.00	1,837.00	273.45	325.88	400.03	0.00	0.00	0.00
Kirtland Sh.									
2,000.00	20.50	50.00	1,922.82	294.07	350.46	430.20	0.00	0.00	0.00
2,100.00	20.50	50.00	2,016.49	316.58	377.28	463.13	0.00	0.00	0.00
2,200.00	20.50	50.00	2,110.16	339.08	404.10	496.05	0.00	0.00	0.00
2,209.44	20.50	50.00	2,119.00	341.21	406.64	499.16	0.00	0.00	0.00
Farmington Ss.									
2,300.00	20.50	50.00	2,203.83	361.59	430.93	528.98	0.00	0.00	0.00
2,319.59	20.50	50.00	2,222.18	366.00	436.18	535.43	0.00	0.00	0.00
2,400.00	16.88	50.00	2,298.34	382.56	455.91	559.65	4.50	-4.50	0.00
2,500.00	12.38	50.00	2,395.07	398.79	475.26	583.39	4.50	-4.50	0.00
2,553.95	9.95	50.00	2,448.00	405.50	483.26	593.22	4.50	-4.50	0.00
Lwr. Kirtland Sh.									
2,600.00	7.88	50.00	2,493.49	410.09	488.72	599.92	4.50	-4.50	0.00
2,700.00	3.38	50.00	2,592.98	416.39	496.23	609.14	4.50	-4.50	0.00
2,773.96	0.05	50.00	2,666.90	417.81	497.93	611.22	4.50	-4.50	0.00
AJ Pilot BTV									
2,775.06	0.00	0.00	2,668.00	417.81	497.93	611.22	4.50	-4.50	-4,539.74
Fruitland Coal - AJ Pilot BTV REV									
2,800.00	0.00	0.00	2,692.94	417.81	497.93	611.22	0.00	0.00	0.00
2,813.06	0.00	0.00	2,706.00	417.81	497.93	611.22	0.00	0.00	0.00
Lemon Seam									
2,900.00	0.00	0.00	2,792.94	417.81	497.93	611.22	0.00	0.00	0.00
2,909.06	0.00	0.00	2,802.00	417.81	497.93	611.22	0.00	0.00	0.00
Lwr. Lemon Seam									



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<b>Site:</b>	Arthur Jones Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	Arthur Jones H A3	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Pilot		
<b>Design:</b>	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)
2,946.06	0.00	0.00	2,839.00	417.81	497.93	611.22	0.00	0.00	0.00
<b>Ignacio Seam</b>									
2,949.06	0.00	0.00	2,842.00	417.81	497.93	611.22	0.00	0.00	0.00
<b>Pictured Cliffs Ss.</b>									
3,000.00	0.00	0.00	2,892.94	417.81	497.93	611.22	0.00	0.00	0.00
3,100.00	0.00	0.00	2,992.94	417.81	497.93	611.22	0.00	0.00	0.00
3,151.06	0.00	0.00	3,044.00	417.81	497.93	611.22	0.00	0.00	0.00
<b>AJ Pilot PBHL - AJ Pilot PBHL REV</b>									

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
AJ Pilot BTV REV - plan hits target center - Circle (radius 25.00)	0.00	0.00	2,668.00	417.81	497.93	1,156,880.06	2,392,752.11	37.0789271	-107.5816449
AJ Pilot PBHL REV - plan hits target center - Point	0.00	0.00	3,044.00	417.81	497.93	1,156,880.06	2,392,752.11	37.0789271	-107.5816449

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
350.00	350.00	Surface Casing			

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,597.71	1,546.00	Lwr. Aminos		0.00	0.00	
1,908.38	1,837.00	Kirtland Sh.		0.00	0.00	
2,209.44	2,119.00	Farmington Ss.		0.00	0.00	
2,553.95	2,448.00	Lwr. Kirtland Sh.		0.00	0.00	
2,775.06	2,668.00	Fruitland Coal		0.00	0.00	
2,813.06	2,706.00	Lemon Seam		0.00	0.00	
2,909.06	2,802.00	Lwr. Lemon Seam		0.00	0.00	
2,946.06	2,839.00	Ignacio Seam		0.00	0.00	
2,949.06	2,842.00	Pictured Cliffs Ss.		0.00	0.00	