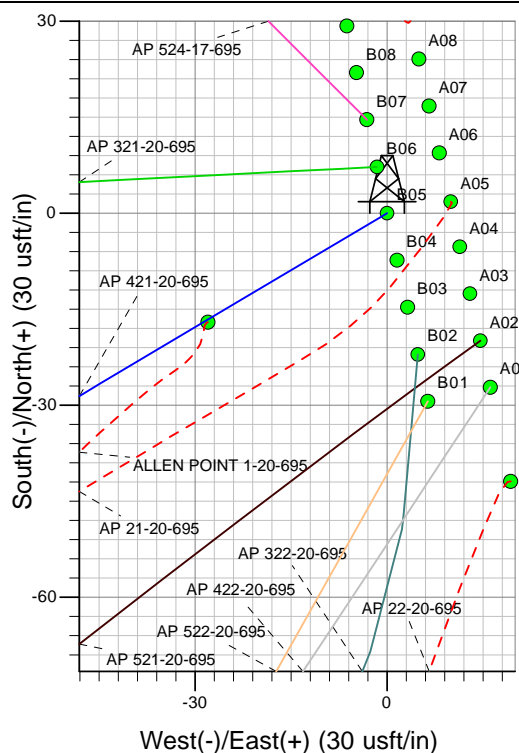
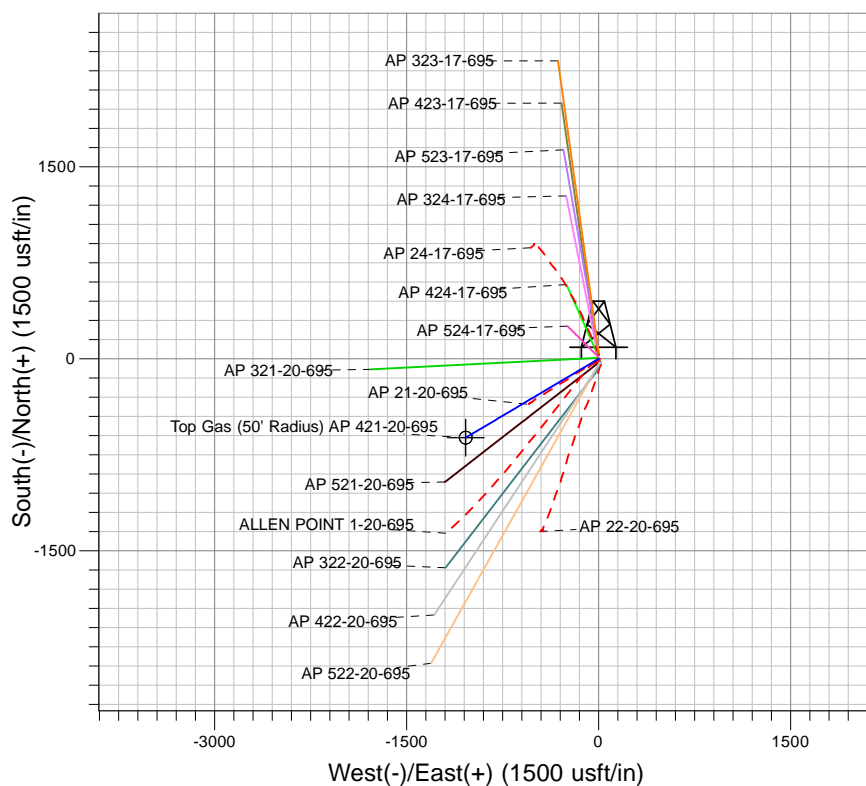
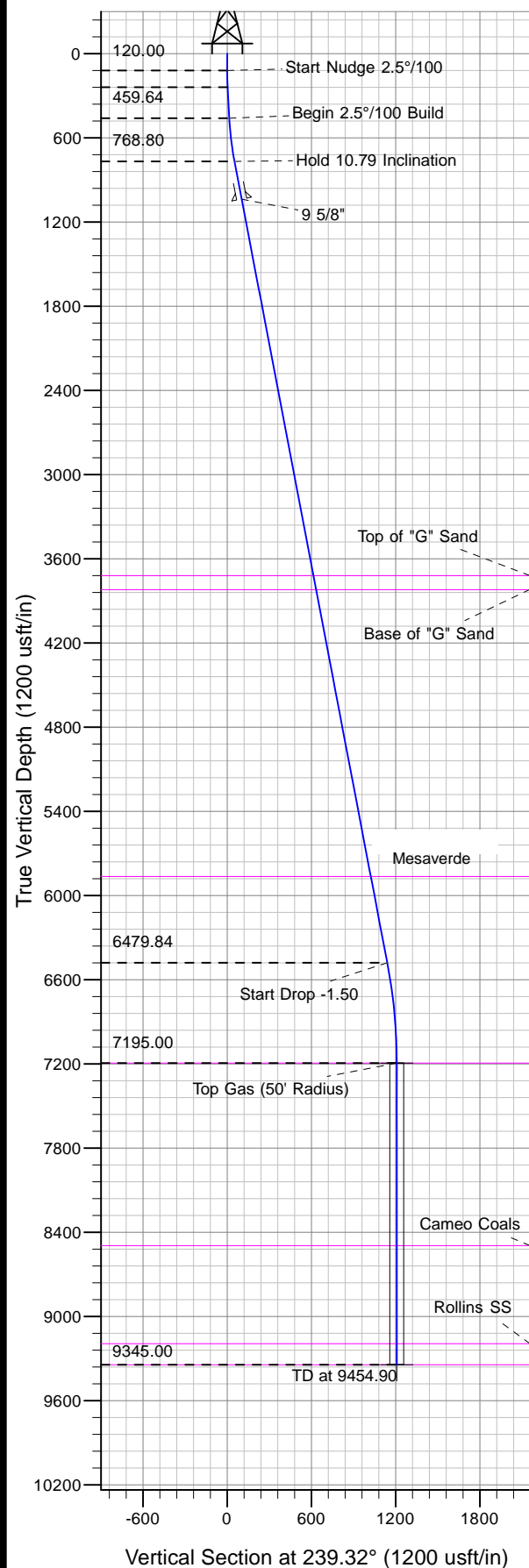




Well Name: AP 421-20-695  
Surface Location: AP 21-20-695 Pad  
North American Datum 1983 , US State Plane 1983, Colorado Central Zone  
Ground Elevation: 6909.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Spot
0.00	0.00	1623257.22	2288332.20	39.51749	-108.02295	B05

KELLY BUSHING @ 6935.00usft (Nabors 573 (26' RKB) kjs)



Project: AP 20-06S-095W  
Site: AP 21-20-695 Pad  
Well: AP 421-20-695  
Plan 3 29Aug13 kjs

Azimuths to True North  
Magnetic North: 10.46°

Magnetic Field  
Strength: 52373.1snT  
Dip Angle: 65.79°  
Date: 7/16/2010  
Model: IGRF2005-10

#### ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSection	Departure	Annotation
120.00	120.00	0.00	0.00	0.00	0.00	0.00	0.00	Start Nudge 2.5°/100
239.95	240.00	3.00	239.32	-1.60	-2.70	3.14	3.14	Hold 3.00 Inclination
459.64	460.00	3.00	239.32	-7.48	-12.60	14.65	14.65	Begin 2.5°/100 Build
768.80	771.64	10.79	239.32	-26.55	-44.76	52.04	52.04	Hold 10.79 Inclination
6479.84	6585.50	10.79	239.32	-581.89	-980.96	1140.56	1140.56	Start Drop -1.50
7195.00	7304.90	0.00	0.00	-616.35	-1039.06	1208.11	1208.11	Top Gas
9345.00	9454.90	0.00	0.00	-616.35	-1039.06	1208.11	1208.11	TD at 9454.90



## **PICEANCE VLY NAD 83**

**AP 20-06S-095W**

**AP 21-20-695 Pad**

**AP 421-20-695 - Slot B05**

**Wellbore #1**

**Plan: Plan 3 29Aug13 kjs**

## **Standard Planning Report - Geographic**

**29 October, 2013**



IBM Global Services  
Planning Report - Geographic

<b>Database:</b>	COMPASS-PICEANCE	<b>Local Co-ordinate Reference:</b>	Well AP 421-20-695 - Slot B05
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 6935.00usft (Nabors 573 (26' RKB) kjs)
<b>Project:</b>	AP 20-06S-095W	<b>MD Reference:</b>	KELLY BUSHING @ 6935.00usft (Nabors 573 (26' RKB) kjs)
<b>Site:</b>	AP 21-20-695 Pad	<b>North Reference:</b>	True
<b>Well:</b>	AP 421-20-695	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan 3 29Aug13 kjs		

<b>Project</b>	AP 20-06S-095W, Garfield County, CO, 20-06S-095W		
<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 Central Zone		Using geodetic scale factor

<b>Site</b>	AP 21-20-695 Pad			
<b>Site Position:</b>		<b>Northing:</b>	1,623,258.80 usft	<b>Latitude:</b> 39.51750
<b>From:</b> Map		<b>Easting:</b>	2,288,342.20 usft	<b>Longitude:</b> -108.02291
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b> -1.59 °

<b>Well</b>	AP 421-20-695 - Slot B05			
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	1,623,257.22 usft
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	2,288,332.20 usft
<b>Position Uncertainty</b>	0.00 usft		<b>Wellhead Elevation:</b>	
			<b>Ground Level:</b>	6,909.00 usft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2005-10	7/16/2010	10.46	65.79	52,373

<b>Design</b>	Plan 3 29Aug13 kjs			
<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	239.32

<b>Plan Sections</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	<b>TFO (°)</b>	<b>Target</b>
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
120.00	0.00	0.00	120.00	0.00	0.00	0.00	0.00	0.00	0.00	
240.00	3.00	239.32	239.95	-1.60	-2.70	2.50	2.50	0.00	239.32	
460.00	3.00	239.32	459.64	-7.48	-12.60	0.00	0.00	0.00	0.00	
771.64	10.79	239.32	768.80	-26.55	-44.76	2.50	2.50	0.00	0.01	
6,585.50	10.79	239.32	6,479.84	-581.89	-980.96	0.00	0.00	0.00	0.00	
7,304.91	0.00	0.00	7,195.00	-616.35	-1,039.06	1.50	-1.50	0.00	180.00	Top Gas (50' Radius)
9,454.91	0.00	0.00	9,345.00	-616.35	-1,039.06	0.00	0.00	0.00	0.00	TD / PBHL AP 421-20



**IBM Global Services**  
Planning Report - Geographic

<b>Database:</b>	COMPASS-PICEANCE	<b>Local Co-ordinate Reference:</b>	Well AP 421-20-695 - Slot B05
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 6935.00usft (Nabors 573 (26' RKB) kjs)
<b>Project:</b>	AP 20-06S-095W	<b>MD Reference:</b>	KELLY BUSHING @ 6935.00usft (Nabors 573 (26' RKB) kjs)
<b>Site:</b>	AP 21-20-695 Pad	<b>North Reference:</b>	True
<b>Well:</b>	AP 421-20-695	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan 3 29Aug13 kjs		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.00	0.00	0.00	0.00	0.00	0.00	1,623,257.22	2,288,332.20	39.51749	-108.02295	
120.00	0.00	0.00	120.00	0.00	0.00	1,623,257.22	2,288,332.20	39.51749	-108.02295	
<b>Start Nudge 2.5°/100</b>										
240.00	3.00	239.32	239.95	-1.60	-2.70	1,623,255.69	2,288,329.46	39.51749	-108.02296	
<b>Hold 3.00 Inclination</b>										
460.00	3.00	239.32	459.64	-7.48	-12.60	1,623,250.09	2,288,319.40	39.51747	-108.02299	
<b>Begin 2.5°/100 Build</b>										
500.00	4.00	239.32	499.57	-8.72	-14.70	1,623,248.90	2,288,317.26	39.51747	-108.02300	
771.64	10.79	239.32	768.80	-26.55	-44.76	1,623,231.92	2,288,286.72	39.51742	-108.02311	
<b>Hold 10.79 Inclination</b>										
1,000.00	10.79	239.32	993.11	-48.36	-81.53	1,623,211.14	2,288,249.36	39.51736	-108.02324	
1,045.00	10.79	239.32	1,037.32	-52.66	-88.78	1,623,207.04	2,288,242.00	39.51735	-108.02326	
<b>9 5/8"</b>										
1,500.00	10.79	239.32	1,484.27	-96.12	-162.05	1,623,165.63	2,288,167.55	39.51723	-108.02352	
2,000.00	10.79	239.32	1,975.43	-143.88	-242.56	1,623,120.13	2,288,085.75	39.51710	-108.02381	
2,500.00	10.79	239.32	2,466.59	-191.64	-323.08	1,623,074.62	2,288,003.94	39.51697	-108.02409	
3,000.00	10.79	239.32	2,957.75	-239.40	-403.59	1,623,029.12	2,287,922.13	39.51683	-108.02438	
3,500.00	10.79	239.32	3,448.90	-287.16	-484.11	1,622,983.62	2,287,840.33	39.51670	-108.02467	
3,775.98	10.79	239.32	3,720.00	-313.53	-528.55	1,622,958.50	2,287,795.17	39.51663	-108.02482	
<b>Top of "G" Sand</b>										
3,877.78	10.79	239.32	3,820.00	-323.25	-544.94	1,622,949.24	2,287,778.52	39.51660	-108.02488	
<b>Base of "G" Sand</b>										
4,000.00	10.79	239.32	3,940.06	-334.92	-564.62	1,622,938.11	2,287,758.52	39.51657	-108.02495	
4,500.00	10.79	239.32	4,431.22	-382.68	-645.14	1,622,892.61	2,287,676.71	39.51644	-108.02524	
5,000.00	10.79	239.32	4,922.38	-430.44	-725.65	1,622,847.10	2,287,594.91	39.51631	-108.02552	
5,500.00	10.79	239.32	5,413.54	-478.20	-806.17	1,622,801.60	2,287,513.10	39.51618	-108.02581	
5,959.59	10.79	239.32	5,865.00	-522.10	-880.17	1,622,759.77	2,287,437.90	39.51606	-108.02607	
<b>Mesaverde</b>										
6,000.00	10.79	239.32	5,904.69	-525.96	-886.68	1,622,756.10	2,287,431.29	39.51605	-108.02609	
6,500.00	10.79	239.32	6,395.85	-573.72	-967.20	1,622,710.59	2,287,349.48	39.51592	-108.02638	
6,585.50	10.79	239.32	6,479.84	-581.89	-980.96	1,622,702.81	2,287,335.50	39.51589	-108.02643	
<b>Start Drop -1.50</b>										
7,000.00	4.57	239.32	6,890.42	-610.15	-1,028.60	1,622,675.89	2,287,287.10	39.51582	-108.02659	
7,304.91	0.00	0.00	7,195.00	-616.35	-1,039.06	1,622,669.98	2,287,276.47	39.51580	-108.02663	
<b>Top Gas - Approx. Top Gas</b>										
7,500.00	0.00	0.00	7,390.10	-616.35	-1,039.06	1,622,669.98	2,287,276.47	39.51580	-108.02663	
8,000.00	0.00	0.00	7,890.10	-616.35	-1,039.06	1,622,669.98	2,287,276.47	39.51580	-108.02663	
8,500.00	0.00	0.00	8,390.10	-616.35	-1,039.06	1,622,669.98	2,287,276.47	39.51580	-108.02663	
8,604.91	0.00	0.00	8,495.00	-616.35	-1,039.06	1,622,669.98	2,287,276.47	39.51580	-108.02663	
<b>Cameo Coals</b>										
9,000.00	0.00	0.00	8,890.10	-616.35	-1,039.06	1,622,669.98	2,287,276.47	39.51580	-108.02663	
9,304.91	0.00	0.00	9,195.00	-616.35	-1,039.06	1,622,669.98	2,287,276.47	39.51580	-108.02663	
<b>Rollins SS</b>										
9,454.91	0.00	0.00	9,345.00	-616.35	-1,039.06	1,622,669.98	2,287,276.47	39.51580	-108.02663	
<b>TD at 9454.90 - TD</b>										



**IBM Global Services**  
Planning Report - Geographic

<b>Database:</b>	COMPASS-PICEANCE	<b>Local Co-ordinate Reference:</b>	Well AP 421-20-695 - Slot B05
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 6935.00usft (Nabors 573 (26' RKB) kjs)
<b>Project:</b>	AP 20-06S-095W	<b>MD Reference:</b>	KELLY BUSHING @ 6935.00usft (Nabors 573 (26' RKB) kjs)
<b>Site:</b>	AP 21-20-695 Pad	<b>North Reference:</b>	True
<b>Well:</b>	AP 421-20-695	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan 3 29Aug13 kjs		

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
Top Gas (50' Radius) AF - plan hits target center - Circle (radius 50.00)	0.00	0.00	7,195.00	-616.35	-1,039.06	1,622,669.98	2,287,276.47	39.51580	-108.02663
TD / PBHL AP 421-20-6' - plan hits target center - Point	0.00	0.00	9,345.00	-616.35	-1,039.06	1,622,669.98	2,287,276.47	39.51580	-108.02663

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,045.00	1,037.32	9 5/8"	9.625	12.250	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,775.98	3,720.00	Top of "G" Sand				
3,877.78	3,820.00	Base of "G" Sand				
5,959.59	5,865.00	Mesaverde				
7,304.91	7,195.00	Approx. Top Gas				
8,604.91	8,495.00	Cameo Coals				
9,304.91	9,195.00	Rollins SS				
9,454.91	9,345.00	TD				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
120.00	120.00	0.00	0.00	Start Nudge 2.5°/100	
240.00	239.95	-1.60	-2.70	Hold 3.00 Inclination	
460.00	459.64	-7.48	-12.60	Begin 2.5°/100 Build	
771.64	768.80	-26.55	-44.76	Hold 10.79 Inclination	
6,585.50	6,479.84	-581.89	-980.96	Start Drop -1.50	
7,304.91	7,195.00	-616.35	-1,039.06	Top Gas	
9,454.91	9,345.00	-616.35	-1,039.06	TD at 9454.90	