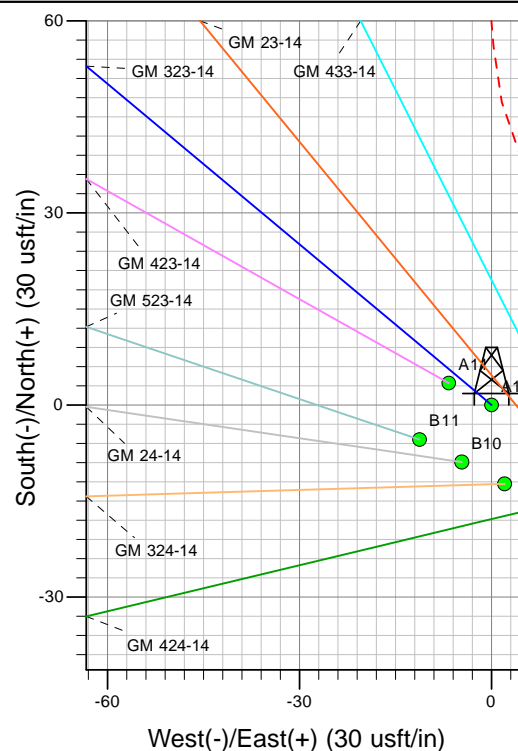
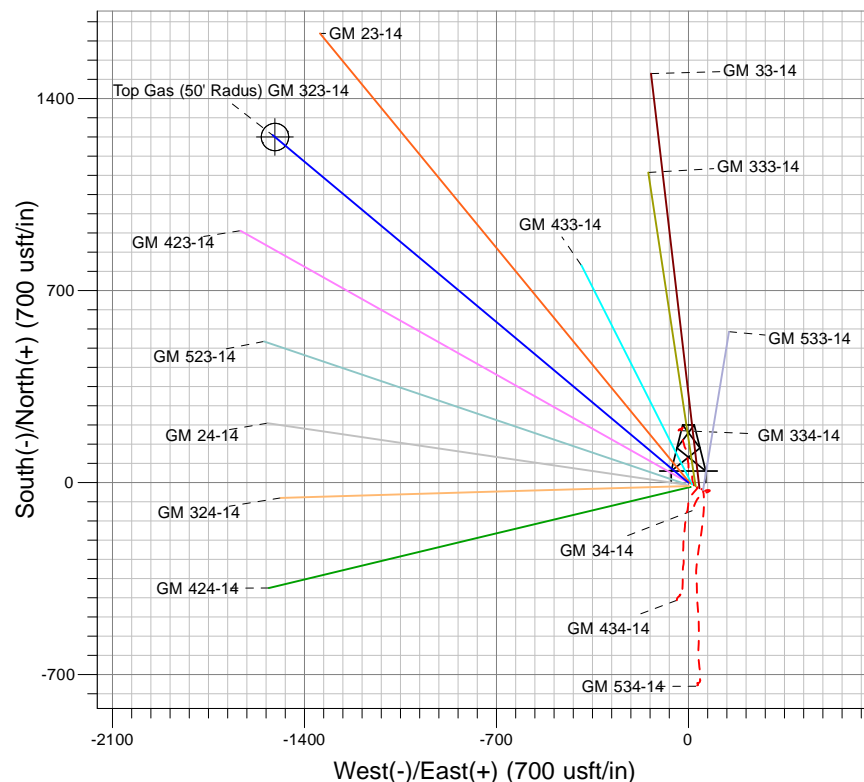
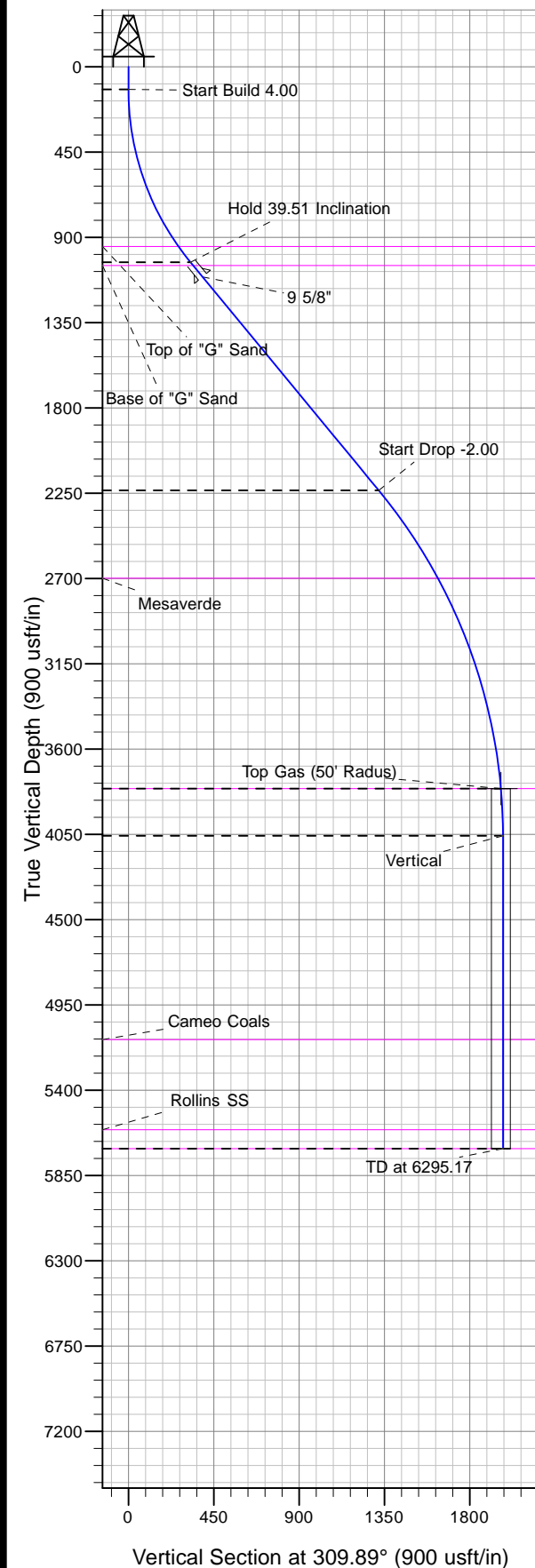




Well Name: GM 323-14  
Surface Location: GM 34-14 Pad  
North American Datum 1983 , US State Plane 1983, Colorado Central Zone  
Ground Elevation: 5173.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	1592886.90	2272793.00	39.43295	-108.07495	A10

KELLY BUSHING @ 5199.00usft (Nabors rig (26' RKB) kjs)



Project: GV 14-07S-096W  
Site: GM 34-14 Pad  
Well: GM 323-14  
Design #1 23Apr13 kjs



Azimuths to True North  
Magnetic North: 10.11°  
Magnetic Field  
Strength: 52065.0snT  
Dip Angle: 65.64°  
Date: 4/23/2013  
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 Build 4.00
1031.35	1107.81	39.51	309.89	209.89	-251.16	327.32	327.32	Hold 39.51 Inclination
2235.98	2669.24	39.51	309.89	846.94	-1013.47	1320.77	1320.77	Start Drop -2.00
3809.00	4394.85	5.00	309.89	1259.74	-1507.43	1964.51	1964.51	Top Gas
4058.68	4644.85	0.00	0.00	1266.73	-1515.79	1975.41	1975.41	Vertical
5709.00	6295.17	0.00	0.00	1266.73	-1515.79	1975.41	1975.41	TD at 6295.17



## **PICEANCE VLY NAD 83**

**GV 14-07S-096W**

**GM 34-14 Pad**

**GM 323-14 - Slot A10**

**Wellbore #1**

**Plan: Design #1 23Apr13 kjs**

## **Standard Planning Report - Geographic**

**19 September, 2013**



IBM Global Services  
Planning Report - Geographic

<b>Database:</b>	COMPASS-PICEANCE	<b>Local Co-ordinate Reference:</b>	Well GM 323-14 - Slot A10
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 5199.00usft (Nabors rig (26' RKB) kjs)
<b>Project:</b>	GV 14-07S-096W	<b>MD Reference:</b>	KELLY BUSHING @ 5199.00usft (Nabors rig (26' RKB) kjs)
<b>Site:</b>	GM 34-14 Pad	<b>North Reference:</b>	True
<b>Well:</b>	GM 323-14	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 23Apr13 kjs		

<b>Project</b>	GV 14-07S-096W, Garfield County, CO, 14-07S-096W		
<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>	GM 34-14 Pad		
<b>Site Position:</b>		<b>Northing:</b>	1,592,854.30 usft
<b>From:</b>	Map	<b>Easting:</b>	2,272,852.10 usft
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13.200 in
		<b>Latitude:</b>	39.43286
		<b>Longitude:</b>	-108.07474
		<b>Grid Convergence:</b>	-1.62 °

<b>Well</b>	GM 323-14 - Slot A10		
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b> 1,592,886.90 usft
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b> 2,272,793.00 usft
<b>Position Uncertainty</b>	0.00 usft	<b>Wellhead Elevation:</b>	<b>Latitude:</b> 39.43295
			<b>Longitude:</b> -108.07496
			<b>Ground Level:</b> 5,173.00 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	4/23/2013	10.11	65.64	52,065

<b>Design</b>	Design #1 23Apr13 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	309.89

<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	
1,107.81	39.51	309.89	1,031.35	209.89	-251.16	4.00	4.00	0.00	309.89	
2,669.24	39.51	309.89	2,235.98	846.94	-1,013.47	0.00	0.00	0.00	0.00	
4,394.85	5.00	309.89	3,809.00	1,259.74	-1,507.43	2.00	-2.00	0.00	180.00	Top Gas (50' Radius)
4,644.85	0.00	0.00	4,058.68	1,266.73	-1,515.79	2.00	-2.00	0.00	180.00	
6,295.17	0.00	0.00	5,709.00	1,266.73	-1,515.79	0.00	0.00	0.00	0.00	



**IBM Global Services**  
Planning Report - Geographic

<b>Database:</b>	COMPASS-PICEANCE	<b>Local Co-ordinate Reference:</b>	Well GM 323-14 - Slot A10
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 5199.00usft (Nabors rig (26' RKB) kjs)
<b>Project:</b>	GV 14-07S-096W	<b>MD Reference:</b>	KELLY BUSHING @ 5199.00usft (Nabors rig (26' RKB) kjs)
<b>Site:</b>	GM 34-14 Pad	<b>North Reference:</b>	True
<b>Well:</b>	GM 323-14	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 23Apr13 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	1,592,886.90	2,272,793.00	39.43295	-108.07496	
120.00	0.00	0.00	120.00	0.00	0.00	1,592,886.90	2,272,793.00	39.43295	-108.07496	
Start Build 4.00										
500.00	15.20	309.89	495.56	32.13	-38.45	1,592,920.10	2,272,755.48	39.43303	-108.07509	
1,000.00	35.20	309.89	945.68	167.96	-200.98	1,593,060.47	2,272,596.87	39.43341	-108.07567	
1,004.07	35.36	309.89	949.00	169.46	-202.78	1,593,062.03	2,272,595.11	39.43341	-108.07568	
Top of "G" Sand										
1,107.81	39.51	309.89	1,031.35	209.89	-251.16	1,593,103.81	2,272,547.90	39.43352	-108.07585	
Hold 39.51 Inclination										
1,130.68	39.51	309.89	1,049.00	219.23	-262.33	1,593,113.46	2,272,537.00	39.43355	-108.07589	
Base of "G" Sand										
1,208.00	39.51	309.89	1,108.65	250.77	-300.08	1,593,146.06	2,272,500.16	39.43364	-108.07602	
9 5/8"										
1,500.00	39.51	309.89	1,333.92	369.90	-442.63	1,593,269.18	2,272,361.05	39.43396	-108.07652	
2,000.00	39.51	309.89	1,719.67	573.90	-686.74	1,593,480.00	2,272,122.83	39.43452	-108.07739	
2,500.00	39.51	309.89	2,105.41	777.90	-930.84	1,593,690.82	2,271,884.62	39.43508	-108.07825	
2,669.24	39.51	309.89	2,235.98	846.94	-1,013.47	1,593,762.18	2,271,803.99	39.43527	-108.07855	
Start Drop -2.00										
3,000.00	32.90	309.89	2,502.72	972.16	-1,163.30	1,593,891.58	2,271,657.77	39.43562	-108.07908	
3,228.13	28.33	309.89	2,699.00	1,046.64	-1,252.43	1,593,968.56	2,271,570.80	39.43582	-108.07939	
Mesaverde										
3,500.00	22.90	309.89	2,944.06	1,121.98	-1,342.58	1,594,046.42	2,271,482.82	39.43603	-108.07971	
4,000.00	12.90	309.89	3,419.26	1,220.39	-1,460.34	1,594,148.12	2,271,367.90	39.43630	-108.08013	
4,394.85	5.00	309.89	3,809.00	1,259.74	-1,507.43	1,594,188.79	2,271,321.95	39.43641	-108.08029	
Top Gas - Approx. Top Gas										
4,500.00	2.90	309.89	3,913.89	1,264.38	-1,512.98	1,594,193.59	2,271,316.53	39.43642	-108.08031	
4,644.85	0.00	0.00	4,058.68	1,266.73	-1,515.79	1,594,196.01	2,271,313.78	39.43642	-108.08032	
Vertical										
5,000.00	0.00	0.00	4,413.83	1,266.73	-1,515.79	1,594,196.01	2,271,313.78	39.43642	-108.08032	
5,500.00	0.00	0.00	4,913.83	1,266.73	-1,515.79	1,594,196.01	2,271,313.78	39.43642	-108.08032	
5,720.17	0.00	0.00	5,134.00	1,266.73	-1,515.79	1,594,196.01	2,271,313.78	39.43642	-108.08032	
Cameo Coals										
6,000.00	0.00	0.00	5,413.83	1,266.73	-1,515.79	1,594,196.01	2,271,313.78	39.43642	-108.08032	
6,195.17	0.00	0.00	5,609.00	1,266.73	-1,515.79	1,594,196.01	2,271,313.78	39.43642	-108.08032	
Rollins SS										
6,295.17	0.00	0.00	5,709.00	1,266.73	-1,515.79	1,594,196.01	2,271,313.78	39.43642	-108.08032	
TD at 6295.17										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
- hit/miss target										
- Shape										
Top Gas (50' Radius) GM	0.00	0.00	3,809.00	1,259.74	-1,507.43	1,594,188.79	2,271,321.95	39.43641	-108.08029	
- plan hits target center										
- Circle (radius 50.00)										



**IBM Global Services**  
Planning Report - Geographic

<b>Database:</b>	COMPASS-PICEANCE	<b>Local Co-ordinate Reference:</b>	Well GM 323-14 - Slot A10
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 5199.00usft (Nabors rig (26' RKB) kjs)
<b>Project:</b>	GV 14-07S-096W	<b>MD Reference:</b>	KELLY BUSHING @ 5199.00usft (Nabors rig (26' RKB) kjs)
<b>Site:</b>	GM 34-14 Pad	<b>North Reference:</b>	True
<b>Well:</b>	GM 323-14	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 23Apr13 kjs		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,208.00	1,108.65	9 5/8"	9.625	12.250	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,004.07	949.00	Top of "G" Sand				
1,130.68	1,049.00	Base of "G" Sand				
3,228.13	2,699.00	Mesaverde				
4,394.85	3,809.00	Approx. Top Gas				
5,720.17	5,134.00	Cameo Coals				
6,195.17	5,609.00	Rollins SS				
6,295.17	5,709.00	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 Build 4.00	
1,107.81	1,031.35	209.89	-251.16	Hold 39.51 Inclination	
2,669.24	2,235.98	846.94	-1,013.47	Start Drop -2.00	
4,394.85	3,809.00	1,259.74	-1,507.43	Top Gas	
4,644.85	4,058.68	1,266.73	-1,515.79	Vertical	
6,295.17	5,709.00	1,266.73	-1,515.79	TD at 6295.17	