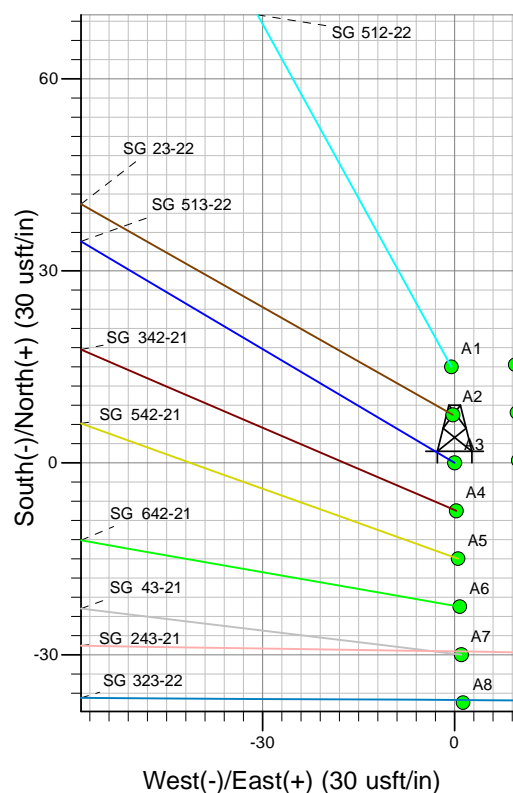
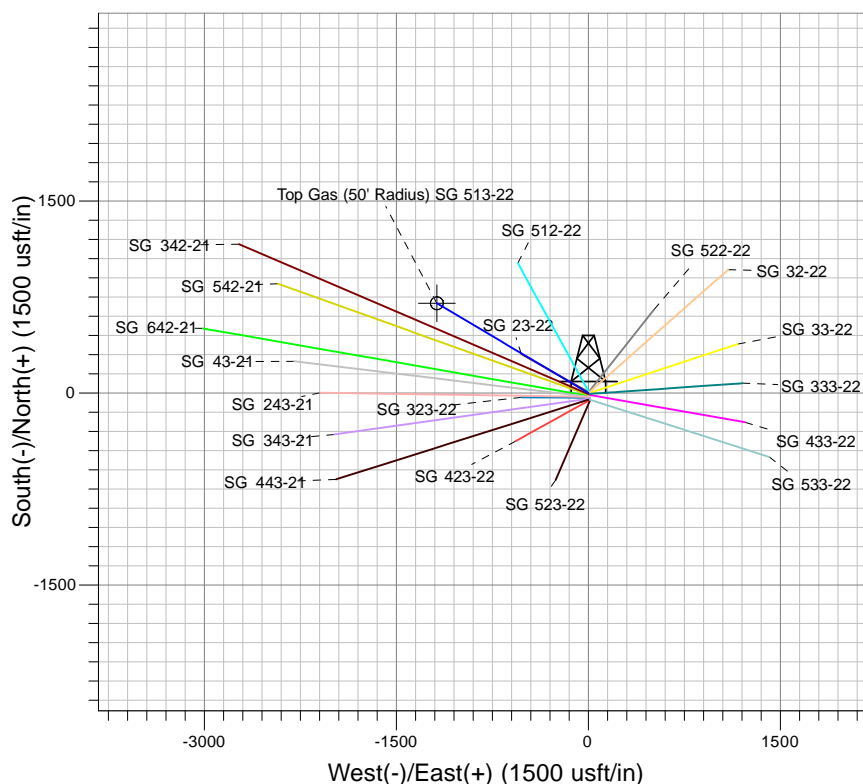
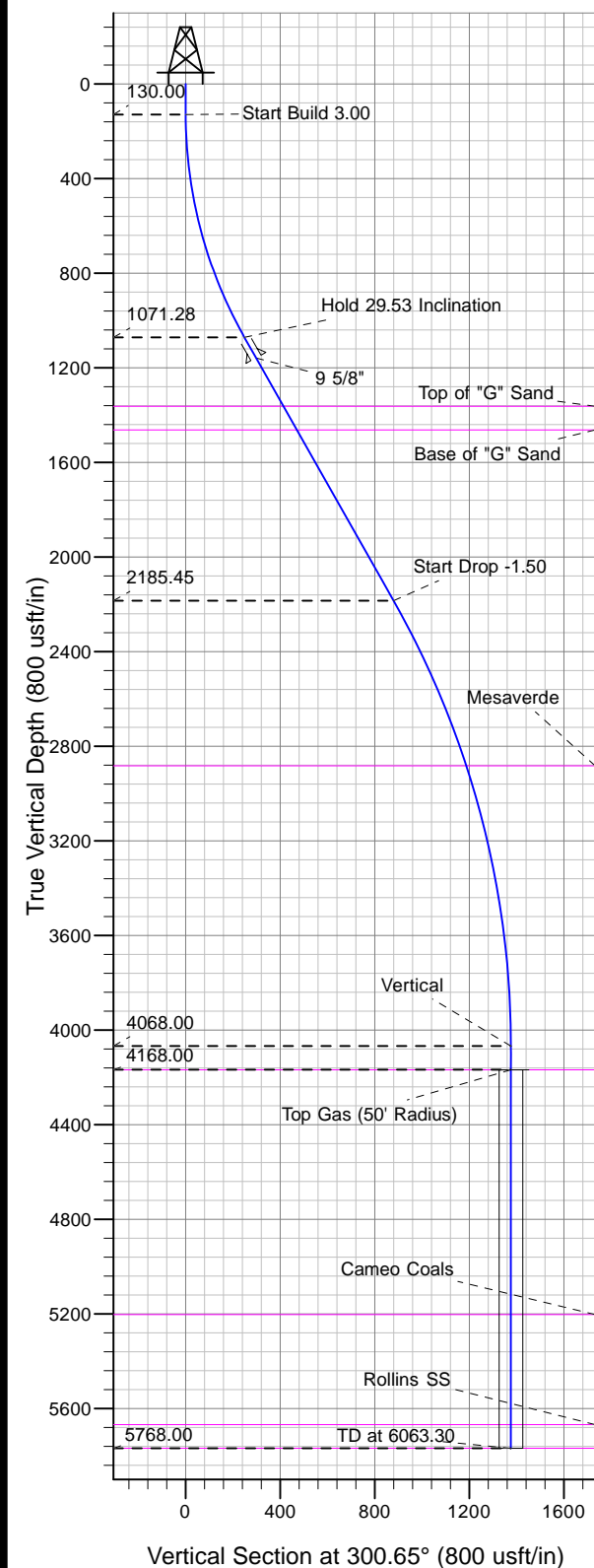




Well Name: SG 513-22  
 Surface Location: SG 23-22 Pad  
 North American Datum 1983 , US State Plane 1983, Colorado Central Zone  
 Ground Elevation: 5666.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	1588942.64	2265705.28	39.42157	-108.09964	A3

KELLY BUSHING @ 5688.00usft (Cyclone 17 (22' RKB) kjs)



Project: SG 22-07S-096W  
 Site: SG 23-22 Pad  
 Well: SG 513-22  
 Design #1 15Mar13 kjs

Azimuths to True North  
 Magnetic North: 10.13°  
 Magnetic Field  
 Strength: 52062.2snT  
 Dip Angle: 65.63°  
 Date: 3/15/2013  
 Model: IGRF2005-10

#### ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Departure	Annotation
130.00	130.00	0.00	0.00	0.00	0.00	0.00	0.00	Start Build 3.00
1071.28	1114.27	29.53	300.65	126.48	-213.40	248.06	248.06	Hold 29.53 Inclination
2185.45	2394.76	29.53	300.65	448.25	-756.30	879.16	879.16	Start Drop -1.50
4068.00	4363.30	0.00	0.00	701.20	-1183.10	1375.28	1375.28	Vertical
4168.00	4463.30	0.00	0.00	701.20	-1183.10	1375.28	1375.28	Top Gas
5768.00	6063.30	0.00	0.00	701.20	-1183.10	1375.28	1375.28	TD at 6063.30



## **PICEANCE VLY NAD 83**

**SG 22-07S-096W**

**SG 23-22 Pad**

**SG 513-22 - Slot A3**

**Wellbore #1**

**Plan: Design #1 15Mar13 kjs**

## **Standard Planning Report - Geographic**

**03 October, 2013**



IBM Global Services  
Planning Report - Geographic

<b>Database:</b>	COMPASS-PICEANCE	<b>Local Co-ordinate Reference:</b>	Well SG 513-22 - Slot A3
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 5688.00usft (Cyclone 17 (22' RKB) kjs)
<b>Project:</b>	SG 22-07S-096W	<b>MD Reference:</b>	KELLY BUSHING @ 5688.00usft (Cyclone 17 (22' RKB) kjs)
<b>Site:</b>	SG 23-22 Pad	<b>North Reference:</b>	True
<b>Well:</b>	SG 513-22	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 15Mar13 kjs		

<b>Project</b>	SG 22-07S-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>	SG 23-22 Pad		
<b>Site Position:</b>		<b>Northing:</b>	1,588,907.56 usft
<b>From:</b>	Map	<b>Easting:</b>	2,265,692.51 usft
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13.200 in
		<b>Latitude:</b>	39.42147
		<b>Longitude:</b>	-108.09968
		<b>Grid Convergence:</b>	-1.64 °

<b>Well</b>	SG 513-22 - Slot A3		
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b> 1,588,942.64 usft
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b> 2,265,705.28 usft
<b>Position Uncertainty</b>	0.00 usft	<b>Wellhead Elevation:</b>	<b>Latitude:</b> 39.42157
			<b>Longitude:</b> -108.09964
			<b>Ground Level:</b> 5,666.00 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	3/15/2013	10.13	65.63	52,062

<b>Design</b>	Design #1 15Mar13 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	300.65

<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	
130.00	0.00	0.00	130.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,114.27	29.53	300.65	1,071.28	126.48	-213.40	3.00	3.00	0.00	300.65	
2,394.76	29.53	300.65	2,185.45	448.25	-756.30	0.00	0.00	0.00	0.00	
4,363.30	0.00	0.00	4,068.00	701.20	-1,183.10	1.50	-1.50	0.00	180.00	
4,463.30	0.00	0.00	4,168.00	701.20	-1,183.10	0.00	0.00	0.00	0.00	Top Gas (50' Radius)
6,063.30	0.00	0.00	5,768.00	701.20	-1,183.10	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 SG 513-22 - Slot A3
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 5688.00usft (Cyclone 17 (22' RKB) kjs)
<b>Project:</b>	SG 22-07S-096W	<b>MD Reference:</b>	KELLY BUSHING @ 5688.00usft (Cyclone 17 (22' RKB) kjs)
<b>Site:</b>	SG 23-22 Pad	<b>North Reference:</b>	True
<b>Well:</b>	SG 513-22	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 15Mar13 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	1,588,942.64	2,265,705.28	39.42157	-108.09964
130.00	0.00	0.00	130.00	0.00	0.00	1,588,942.64	2,265,705.28	39.42157	-108.09964
Start Build 3.00									
500.00	11.10	300.65	497.69	18.22	-30.74	1,588,961.72	2,265,675.08	39.42162	-108.09975
1,000.00	26.10	300.65	970.22	99.30	-167.54	1,589,046.68	2,265,540.66	39.42184	-108.10023
1,114.27	29.53	300.65	1,071.28	126.48	-213.40	1,589,075.16	2,265,495.60	39.42192	-108.10040
Hold 29.53 Inclination									
1,215.00	29.53	300.65	1,158.92	151.79	-256.11	1,589,101.68	2,265,453.63	39.42198	-108.10055
9 5/8"									
1,449.54	29.53	300.65	1,363.00	210.73	-355.55	1,589,163.44	2,265,355.93	39.42215	-108.10090
Top of "G" Sand									
1,500.00	29.53	300.65	1,406.90	223.41	-376.94	1,589,176.72	2,265,334.90	39.42218	-108.10098
1,564.47	29.53	300.65	1,463.00	239.61	-404.27	1,589,193.70	2,265,308.05	39.42223	-108.10107
Base of "G" Sand									
2,000.00	29.53	300.65	1,841.96	349.05	-588.93	1,589,308.37	2,265,126.61	39.42253	-108.10173
2,394.76	29.53	300.65	2,185.45	448.25	-756.30	1,589,412.31	2,264,962.15	39.42280	-108.10232
Start Drop -1.50									
2,500.00	27.95	300.65	2,277.72	474.04	-799.83	1,589,439.35	2,264,919.38	39.42287	-108.10247
3,000.00	20.45	300.65	2,733.46	578.47	-976.02	1,589,548.76	2,264,746.26	39.42316	-108.10310
3,158.42	18.07	300.65	2,883.00	605.11	-1,020.97	1,589,576.68	2,264,702.09	39.42323	-108.10325
Mesaverde									
3,500.00	12.95	300.65	3,212.03	651.67	-1,099.53	1,589,625.47	2,264,624.90	39.42336	-108.10353
4,000.00	5.45	300.65	3,705.24	692.40	-1,168.25	1,589,668.14	2,264,557.38	39.42347	-108.10378
4,363.30	0.00	0.00	4,068.00	701.20	-1,183.10	1,589,677.37	2,264,542.78	39.42349	-108.10383
Vertical									
4,463.30	0.00	0.00	4,168.00	701.20	-1,183.10	1,589,677.37	2,264,542.78	39.42349	-108.10383
Top Gas - Approx. Top Gas									
4,500.00	0.00	0.00	4,204.70	701.20	-1,183.10	1,589,677.37	2,264,542.78	39.42349	-108.10383
5,000.00	0.00	0.00	4,704.70	701.20	-1,183.10	1,589,677.37	2,264,542.78	39.42349	-108.10383
5,498.30	0.00	0.00	5,203.00	701.20	-1,183.10	1,589,677.37	2,264,542.78	39.42349	-108.10383
Cameo Coals									
5,500.00	0.00	0.00	5,204.70	701.20	-1,183.10	1,589,677.37	2,264,542.78	39.42349	-108.10383
5,963.30	0.00	0.00	5,668.00	701.20	-1,183.10	1,589,677.37	2,264,542.78	39.42349	-108.10383
Rollins SS									
6,000.00	0.00	0.00	5,704.70	701.20	-1,183.10	1,589,677.37	2,264,542.78	39.42349	-108.10383
6,063.30	0.00	0.00	5,768.00	701.20	-1,183.10	1,589,677.37	2,264,542.78	39.42349	-108.10383
TD at 6063.30 - TD									

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) SC - plan hits target center - Circle (radius 50.00)	0.00	0.00	4,168.00	701.20	-1,183.10	1,589,677.37	2,264,542.78	39.42349	-108.10383	



<b>Database:</b>	COMPASS-PICEANCE	<b>Local Co-ordinate Reference:</b>	Well SG 513-22 - Slot A3
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 5688.00usft (Cyclone 17 (22' RKB) kjs)
<b>Project:</b>	SG 22-07S-096W	<b>MD Reference:</b>	KELLY BUSHING @ 5688.00usft (Cyclone 17 (22' RKB) kjs)
<b>Site:</b>	SG 23-22 Pad	<b>North Reference:</b>	True
<b>Well:</b>	SG 513-22	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 15Mar13 kjs		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,215.00	1,158.92	9 5/8"	9.625	12.250	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,449.54	1,363.00	Top of "G" Sand				
1,564.47	1,463.00	Base of "G" Sand				
3,158.42	2,883.00	Mesaverde				
4,463.30	4,168.00	Approx. Top Gas				
5,498.30	5,203.00	Cameo Coals				
5,963.30	5,668.00	Rollins SS				
6,063.30	5,768.00	TD				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
130.00	130.00	0.00	0.00	Start Build 3.00	
1,114.27	1,071.28	126.48	-213.40	Hold 29.53 Inclination	
2,394.76	2,185.45	448.25	-756.30	Start Drop -1.50	
4,363.30	4,068.00	701.20	-1,183.10	Vertical	
4,463.30	4,168.00	701.20	-1,183.10	Top Gas	
6,063.30	5,768.00	701.20	-1,183.10	TD at 6063.30	