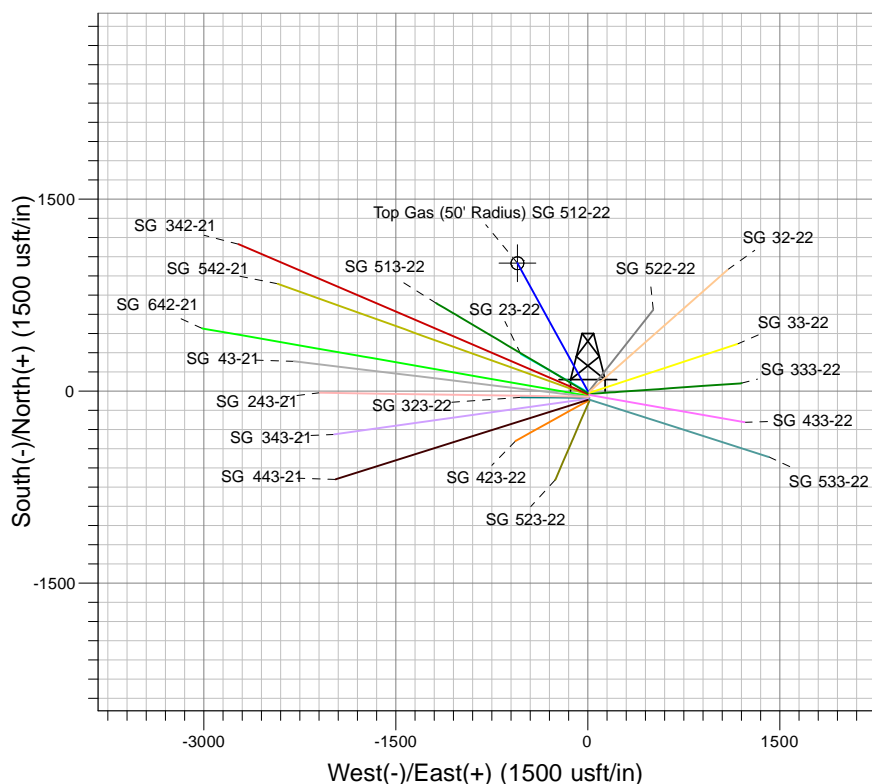
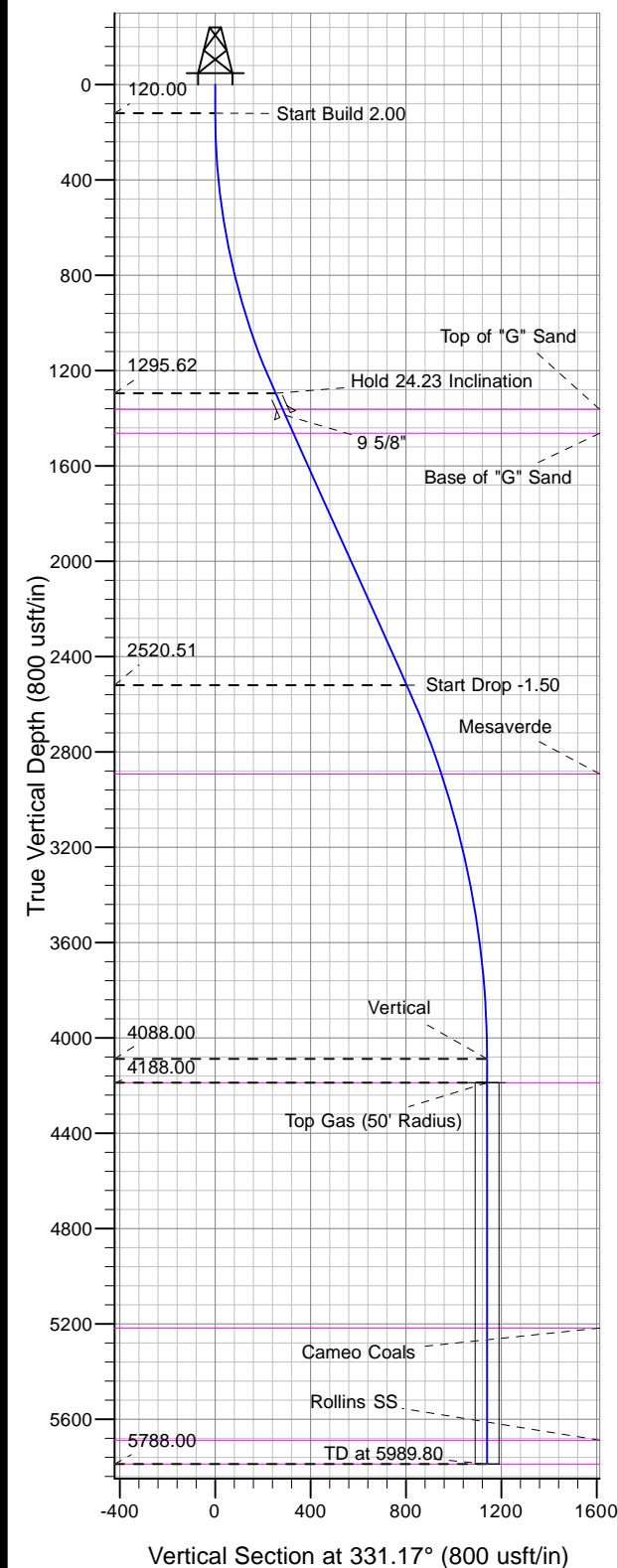




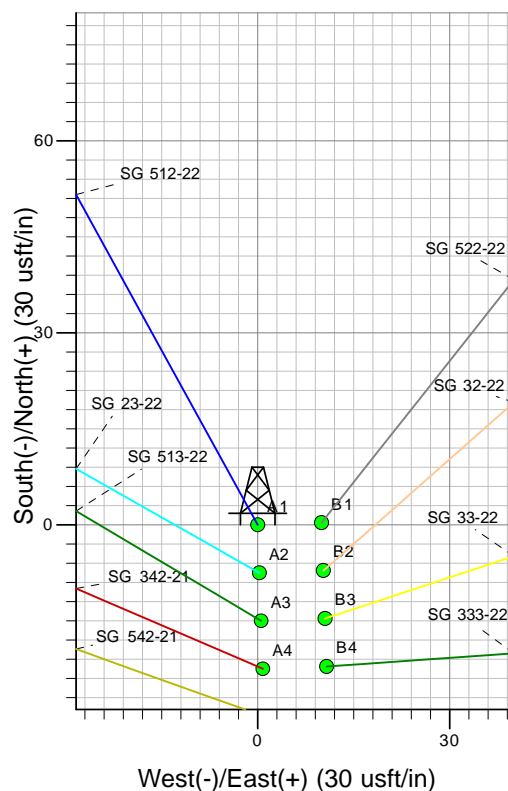
Well Name: SG 512-22
 Surface Location: SG 23-22 Pad
 North American Datum 1983 , US State Plane 1983, Colorado Central Zone
 Ground Elevation: 5666.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	1588957.64	2265705.18	39.42161	-108.09964	A1

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



Project: SG 22-07S-096W
 Site: SG 23-22 Pad
 Well: SG 512-22
 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	V/Sect	Departure	Annotation
120.00	120.00	0.00	0.00	0.00	0.00	0.00	0.00	Start Build 2.00
1295.62	1331.40	24.23	331.17	221.06	-121.67	252.33	252.33	Hold 24.23 Inclination
2520.51	2674.60	24.23	331.17	703.95	-387.45	803.54	803.54	Start Drop -1.50
4088.00	4289.80	0.00	0.00	998.70	-549.68	1139.98	1139.98	Vertical
4188.00	4389.80	0.00	0.00	998.70	-549.68	1139.98	1139.98	Top Gas
5788.00	5989.80	0.00	0.00	998.70	-549.68	1139.98	1139.98	TD at 5989.80



PICEANCE VLY NAD 83

SG 22-07S-096W

SG 23-22 Pad

SG 512-22 - Slot A1

Wellbore #1

Plan: Design #1 15Mar13 kjs

Standard Planning Report - Geographic

03 October, 2013



IBM Global Services
Planning Report - Geographic

Database:	COMPASS-PICEANCE	Local Co-ordinate Reference:	Well SG 512-22 - Slot A1
Company:	PICEANCE VLY NAD 83	TVD Reference:	KELLY BUSHING @ 5688.00usft (Cyclone 17 (22' RKB) kjs)
Project:	SG 22-07S-096W	MD Reference:	KELLY BUSHING @ 5688.00usft (Cyclone 17 (22' RKB) kjs)
Site:	SG 23-22 Pad	North Reference:	True
Well:	SG 512-22	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 15Mar13 kjs		

Project	SG 22-07S-096W		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		Using geodetic scale factor

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

Well	SG 512-22 - Slot A1		
Well Position	+N/-S	0.00 usft	Northing: 1,588,957.64 usft
	+E/-W	0.00 usft	Easting: 2,265,705.18 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	Latitude: 39.42161
			Longitude: -108.09964
			Ground Level: 5,666.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2005-10	3/15/2013	10.13	65.63	52,062

Design	Design #1 15Mar13 kjs			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	331.17

Plan Sections										
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	
120.00	0.00	0.00	120.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,331.40	24.23	331.17	1,295.62	221.06	-121.67	2.00	2.00	0.00	331.17	
2,674.60	24.23	331.17	2,520.51	703.95	-387.45	0.00	0.00	0.00	0.00	
4,289.80	0.00	0.00	4,088.00	998.70	-549.68	1.50	-1.50	0.00	180.00	
4,389.80	0.00	0.00	4,188.00	998.70	-549.68	0.00	0.00	0.00	0.00	Top Gas (50' Radius)
5,989.80	0.00	0.00	5,788.00	998.70	-549.68	0.00	0.00	0.00	0.00	

Database:	COMPASS-PICEANCE	Local Co-ordinate Reference:	Well SG 512-22 - Slot A1
Company:	PICEANCE VLY NAD 83	TVD Reference:	KELLY BUSHING @ 5688.00usft (Cyclone 17 (22' RKB) kjs)
Project:	SG 22-07S-096W	MD Reference:	KELLY BUSHING @ 5688.00usft (Cyclone 17 (22' RKB) kjs)
Site:	SG 23-22 Pad	North Reference:	True
Well:	SG 512-22	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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	1,588,957.64	2,265,705.18	39.42161	-108.09964
120.00	0.00	0.00	120.00	0.00	0.00	1,588,957.64	2,265,705.18	39.42161	-108.09964
Start Build 2.00									
500.00	7.60	331.17	498.89	22.05	-12.13	1,588,980.02	2,265,693.68	39.42167	-108.09969
1,000.00	17.60	331.17	986.23	117.48	-64.66	1,589,076.91	2,265,643.91	39.42193	-108.09987
1,331.40	24.23	331.17	1,295.62	221.06	-121.67	1,589,182.08	2,265,589.89	39.42222	-108.10007
Hold 24.23 Inclination									
1,405.29	24.23	331.17	1,363.00	247.62	-136.29	1,589,209.05	2,265,576.04	39.42229	-108.10013
Top of "G" Sand									
1,432.00	24.23	331.17	1,387.36	257.23	-141.58	1,589,218.80	2,265,571.03	39.42232	-108.10014
9 5/8"									
1,500.00	24.23	331.17	1,449.37	281.67	-155.03	1,589,243.62	2,265,558.28	39.42238	-108.10019
1,514.95	24.23	331.17	1,463.00	287.05	-157.99	1,589,249.07	2,265,555.48	39.42240	-108.10020
Base of "G" Sand									
2,000.00	24.23	331.17	1,905.33	461.43	-253.97	1,589,426.12	2,265,464.53	39.42288	-108.10054
2,500.00	24.23	331.17	2,361.29	641.18	-352.91	1,589,608.62	2,265,370.78	39.42337	-108.10089
2,674.60	24.23	331.17	2,520.51	703.95	-387.45	1,589,672.35	2,265,338.04	39.42354	-108.10101
Start Drop -1.50									
3,000.00	19.35	331.17	2,822.57	809.73	-445.67	1,589,779.75	2,265,282.88	39.42383	-108.10122
3,074.39	18.23	331.17	2,893.00	830.72	-457.23	1,589,801.06	2,265,271.93	39.42389	-108.10126
Mesaverde									
3,500.00	11.85	331.17	3,303.82	927.42	-510.45	1,589,899.24	2,265,221.50	39.42416	-108.10145
4,000.00	4.35	331.17	3,798.48	989.07	-544.38	1,589,961.83	2,265,189.34	39.42432	-108.10157
4,289.80	0.00	0.00	4,088.00	998.70	-549.68	1,589,971.61	2,265,184.32	39.42435	-108.10159
Vertical									
4,389.80	0.00	0.00	4,188.00	998.70	-549.68	1,589,971.61	2,265,184.32	39.42435	-108.10159
Top Gas - Approx. Top Gas									
4,500.00	0.00	0.00	4,298.20	998.70	-549.68	1,589,971.61	2,265,184.32	39.42435	-108.10159
5,000.00	0.00	0.00	4,798.20	998.70	-549.68	1,589,971.61	2,265,184.32	39.42435	-108.10159
5,419.80	0.00	0.00	5,218.00	998.70	-549.68	1,589,971.61	2,265,184.32	39.42435	-108.10159
Cameo Coals									
5,500.00	0.00	0.00	5,298.20	998.70	-549.68	1,589,971.61	2,265,184.32	39.42435	-108.10159
5,889.80	0.00	0.00	5,688.00	998.70	-549.68	1,589,971.61	2,265,184.32	39.42435	-108.10159
Rollins SS									
5,989.80	0.00	0.00	5,788.00	998.70	-549.68	1,589,971.61	2,265,184.32	39.42435	-108.10159
TD at 5989.80 - 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	4,188.00	998.70	-549.68	1,589,971.61	2,265,184.32	39.42435	-108.10159	

Database:	COMPASS-PICEANCE	Local Co-ordinate Reference:	Well SG 512-22 - Slot A1
Company:	PICEANCE VLY NAD 83	TVD Reference:	KELLY BUSHING @ 5688.00usft (Cyclone 17 (22' RKB) kjs)
Project:	SG 22-07S-096W	MD Reference:	KELLY BUSHING @ 5688.00usft (Cyclone 17 (22' RKB) kjs)
Site:	SG 23-22 Pad	North Reference:	True
Well:	SG 512-22	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 15Mar13 kjs		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,432.00	1,387.36	9 5/8"	9.625	12.250	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,405.29	1,363.00	Top of "G" Sand				
1,514.95	1,463.00	Base of "G" Sand				
3,074.39	2,893.00	Mesaverde				
4,389.80	4,188.00	Approx. Top Gas				
5,419.80	5,218.00	Cameo Coals				
5,889.80	5,688.00	Rollins SS				
5,989.80	5,788.00	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 2.00	
1,331.40	1,295.62	221.06	-121.67	Hold 24.23 Inclination	
2,674.60	2,520.51	703.95	-387.45	Start Drop -1.50	
4,289.80	4,088.00	998.70	-549.68	Vertical	
4,389.80	4,188.00	998.70	-549.68	Top Gas	
5,989.80	5,788.00	998.70	-549.68	TD at 5989.80	