

TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Departure	Annotation
120.00	120.00	0.00	0.00	0.00	0.00	0.00	0.00	Start Build 3.00
887.53	909.86	23.70	351.40	159.20	-24.08	161.01	161.01	Hold 23.70 Inclination
2607.70	2788.40	23.70	351.40	905.67	-136.96	915.96	915.96	Start Turn -2.00
3759.00	3973.19	0.00	0.00	1144.47	-173.07	1157.48	1157.48	Vertical
3859.00	4073.19	0.00	0.00	1144.47	-173.07	1157.48	1157.48	Top Gas
5759.00	5973.19	0.00	0.00	1144.47	-173.07	1157.48	1157.48	TD at 5973.19



PICEANCE VLY NAD 83

GV 14-07S-096W

GM 34-14 Pad

GM 333-14 - Slot A06

Wellbore #1

Plan: Design #1 23Apr13 kjs

Standard Planning Report - Geographic

18 September, 2013



IBM Global Services
Planning Report - Geographic

Database:	COMPASS-PICEANCE	Local Co-ordinate Reference:	Well GM 333-14 - Slot A06
Company:	PICEANCE VLY NAD 83	TVD Reference:	KELLY BUSHING @ 5199.00usft (Nabors rig (26' RKB) kjs)
Project:	GV 14-07S-096W	MD Reference:	KELLY BUSHING @ 5199.00usft (Nabors rig (26' RKB) kjs)
Site:	GM 34-14 Pad	North Reference:	True
Well:	GM 333-14	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 23Apr13 kjs		

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

Well	GM 333-14 - Slot A06			
Well Position	+N/-S	0.00 usft	Northing:	1,592,872.40 usft
	+E/-W	0.00 usft	Easting:	2,272,819.10 usft
Position Uncertainty	0.00 usft		Wellhead Elevation:	
			Ground Level:	5,173.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2005-10	4/23/2013	10.11	65.64	52,065

Design	Design #1 23Apr13 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	351.40

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	
909.86	23.70	351.40	887.53	159.20	-24.08	3.00	3.00	0.00	351.40	
2,788.40	23.70	351.40	2,607.70	905.67	-136.96	0.00	0.00	0.00	0.00	
3,973.19	0.00	0.00	3,759.00	1,144.47	-173.07	2.00	-2.00	0.00	180.00	
4,073.19	0.00	0.00	3,859.00	1,144.47	-173.07	0.00	0.00	0.00	0.00	Top Gas (50' Radius)
5,973.19	0.00	0.00	5,759.00	1,144.47	-173.07	0.00	0.00	0.00	0.00	



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Site:	GM 34-14 Pad	North Reference:	True
Well:	GM 333-14	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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	1,592,872.40	2,272,819.10	39.43291	-108.07486	
120.00	0.00	0.00	120.00	0.00	0.00	1,592,872.40	2,272,819.10	39.43291	-108.07486	
Start Build 3.00										
500.00	11.40	351.40	497.50	37.26	-5.63	1,592,909.79	2,272,814.53	39.43301	-108.07488	
909.86	23.70	351.40	887.53	159.20	-24.08	1,593,032.21	2,272,799.55	39.43335	-108.07495	
Hold 23.70 Inclination										
993.36	23.70	351.40	964.00	192.39	-29.09	1,593,065.52	2,272,795.47	39.43344	-108.07497	
Top of "G" Sand										
1,000.00	23.70	351.40	970.08	195.02	-29.49	1,593,068.17	2,272,795.15	39.43344	-108.07497	
1,032.68	23.70	351.40	1,000.00	208.01	-31.46	1,593,081.20	2,272,793.55	39.43348	-108.07497	
9 5/8"										
1,102.57	23.70	351.40	1,064.00	235.78	-35.66	1,593,109.08	2,272,790.14	39.43356	-108.07499	
Base of "G" Sand										
1,500.00	23.70	351.40	1,427.92	393.70	-59.54	1,593,267.61	2,272,770.75	39.43399	-108.07507	
2,000.00	23.70	351.40	1,885.77	592.39	-89.58	1,593,467.05	2,272,746.35	39.43454	-108.07518	
2,500.00	23.70	351.40	2,343.62	791.07	-119.63	1,593,666.50	2,272,721.95	39.43508	-108.07529	
2,788.40	23.70	351.40	2,607.70	905.67	-136.96	1,593,781.54	2,272,707.87	39.43540	-108.07535	
Start Drop -2.00										
2,908.87	21.29	351.40	2,719.00	951.23	-143.85	1,593,827.27	2,272,702.28	39.43552	-108.07537	
Mesaverde										
3,000.00	19.46	351.40	2,804.42	982.60	-148.59	1,593,858.76	2,272,698.42	39.43561	-108.07539	
3,500.00	9.46	351.40	3,287.96	1,105.92	-167.24	1,593,982.56	2,272,683.28	39.43595	-108.07546	
3,973.19	0.00	0.00	3,759.00	1,144.47	-173.07	1,594,021.26	2,272,678.54	39.43605	-108.07548	
Vertical										
4,000.00	0.00	0.00	3,785.81	1,144.47	-173.07	1,594,021.26	2,272,678.54	39.43605	-108.07548	
4,073.19	0.00	0.00	3,859.00	1,144.47	-173.07	1,594,021.26	2,272,678.54	39.43605	-108.07548	
Top Gas - Approx. Top Gas										
4,500.00	0.00	0.00	4,285.81	1,144.47	-173.07	1,594,021.26	2,272,678.54	39.43605	-108.07548	
5,000.00	0.00	0.00	4,785.81	1,144.47	-173.07	1,594,021.26	2,272,678.54	39.43605	-108.07548	
5,403.19	0.00	0.00	5,189.00	1,144.47	-173.07	1,594,021.26	2,272,678.54	39.43605	-108.07548	
Cameo Coals										
5,500.00	0.00	0.00	5,285.81	1,144.47	-173.07	1,594,021.26	2,272,678.54	39.43605	-108.07548	
5,873.19	0.00	0.00	5,659.00	1,144.47	-173.07	1,594,021.26	2,272,678.54	39.43605	-108.07548	
Rollins SS										
5,973.19	0.00	0.00	5,759.00	1,144.47	-173.07	1,594,021.26	2,272,678.54	39.43605	-108.07548	
TD at 5973.19 - 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) GI - plan hits target center - Circle (radius 50.00)	0.00	0.00	3,859.00	1,144.47	-173.07	1,594,021.26	2,272,678.54	39.43605	-108.07548	



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Well:	GM 333-14	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 23Apr13 kjs		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,032.68	1,000.00	9 5/8"	9.625	12.250	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
993.36	964.00	Top of "G" Sand				
1,102.57	1,064.00	Base of "G" Sand				
2,908.87	2,719.00	Mesaverde				
4,073.19	3,859.00	Approx. Top Gas				
5,403.19	5,189.00	Cameo Coals				
5,873.19	5,659.00	Rollins SS				
5,973.19	5,759.00	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 3.00	
909.86	887.53	159.20	-24.08	Hold 23.70 Inclination	
2,788.40	2,607.70	905.67	-136.96	Start Drop -2.00	
3,973.19	3,759.00	1,144.47	-173.07	Vertical	
4,073.19	3,859.00	1,144.47	-173.07	Top Gas	
5,973.19	5,759.00	1,144.47	-173.07	TD at 5973.19	