



PICEANCE VLY NAD 83

SG 28-07S-096W

SG 43-28 Pad

SG 242-28 - Slot B5

Wellbore #1

Plan: Design #1 19Nov13 kjs

Standard Planning Report - Geographic

30 January, 2014



IBM Global Services
Planning Report - Geographic

Database:	COMPASS-PICEANCE	Local Co-ordinate Reference:	Well SG 242-28 - Slot B5
Company:	PICEANCE VLY NAD 83	TVD Reference:	KELLY BUSHING @ 5145.00usft (Nabors (26' RKB) kjs)
Project:	SG 28-07S-096W	MD Reference:	KELLY BUSHING @ 5145.00usft (Nabors (26' RKB) kjs)
Site:	SG 43-28 Pad	North Reference:	True
Well:	SG 242-28	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 19Nov13 kjs		

Project	SG 28-07S-096W, Garfield County, CO, 28-07S-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 43-28 Pad			
Site Position:		Northing:	1,583,837.93 usft	Latitude: 39.40738
From: Map		Easting:	2,263,416.18 usft	Longitude: -108.10722
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence: -1.64 °

Well	SG 242-28 - Slot B5					
Well Position	+N/-S	0.41 usft	Northing:	1,583,860.24 usft	Latitude:	39.40744
	+E/-W	0.09 usft	Easting:	2,263,465.54 usft	Longitude:	-108.10705
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	5,119.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/19/2013	10.08	65.58	51,949

Design	Design #1 19Nov13 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	0.41	0.09	8.23

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	0.41	0.09	0.00	0.00	0.00	0.00	
120.00	0.00	0.00	120.00	0.41	0.09	0.00	0.00	0.00	0.00	
1,134.99	40.60	8.23	1,052.15	341.67	49.48	4.00	4.00	0.00	8.23	
2,565.29	40.60	8.23	2,138.16	1,262.87	182.80	0.00	0.00	0.00	0.00	
4,095.27	10.00	8.23	3,505.00	1,902.30	275.34	2.00	-2.00	0.00	180.00	Top Gas (50' Radius)
4,595.27	0.00	0.00	4,002.47	1,945.37	281.57	2.00	-2.00	-1.65	180.00	
5,697.80	0.00	0.00	5,105.00	1,945.37	281.57	0.00	0.00	0.00	0.00	

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Project:	SG 28-07S-096W	MD Reference:	KELLY BUSHING @ 5145.00usft (Nabors (26' RKB) kjs)
Site:	SG 43-28 Pad	North Reference:	True
Well:	SG 242-28	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 19Nov13 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	0.41	0.09	1,583,860.24	2,263,465.54	39.40744	-108.10705	
120.00	0.00	0.00	120.00	0.41	0.09	1,583,860.24	2,263,465.54	39.40744	-108.10705	
Start Build 4.00										
200.00	3.20	8.23	199.96	2.62	0.41	1,583,862.44	2,263,465.92	39.40745	-108.10705	
400.00	11.20	8.23	398.22	27.41	4.00	1,583,887.11	2,263,470.22	39.40752	-108.10704	
600.00	19.20	8.23	591.07	79.27	11.51	1,583,938.73	2,263,479.21	39.40766	-108.10701	
689.92	22.80	8.23	675.00	111.15	16.12	1,583,970.46	2,263,484.74	39.40775	-108.10699	
Top of "G" Sand										
800.00	27.20	8.23	774.74	157.18	22.78	1,584,016.28	2,263,492.72	39.40787	-108.10697	
800.29	27.21	8.23	775.00	157.31	22.80	1,584,016.41	2,263,492.74	39.40787	-108.10697	
Base of "G" Sand										
1,000.00	35.20	8.23	945.68	259.63	37.61	1,584,118.26	2,263,510.48	39.40816	-108.10692	
1,134.99	40.60	8.23	1,052.15	341.67	49.48	1,584,199.91	2,263,524.70	39.40838	-108.10688	
Hold 40.60 Inclination										
1,200.00	40.60	8.23	1,101.52	383.54	55.54	1,584,241.59	2,263,531.95	39.40850	-108.10685	
1,235.00	40.60	8.23	1,128.09	406.08	58.80	1,584,264.03	2,263,535.86	39.40856	-108.10684	
9 5/8"										
1,400.00	40.60	8.23	1,253.37	512.35	74.18	1,584,369.81	2,263,554.28	39.40885	-108.10679	
1,600.00	40.60	8.23	1,405.23	641.16	92.83	1,584,498.03	2,263,576.61	39.40920	-108.10672	
1,800.00	40.60	8.23	1,557.09	769.97	111.47	1,584,626.25	2,263,598.94	39.40956	-108.10666	
2,000.00	40.60	8.23	1,708.94	898.79	130.11	1,584,754.46	2,263,621.27	39.40991	-108.10659	
2,200.00	40.60	8.23	1,860.80	1,027.60	148.75	1,584,882.68	2,263,643.60	39.41026	-108.10652	
2,400.00	40.60	8.23	2,012.65	1,156.41	167.39	1,585,010.90	2,263,665.93	39.41062	-108.10646	
2,565.29	40.60	8.23	2,138.16	1,262.87	182.80	1,585,116.86	2,263,684.38	39.41091	-108.10640	
Start Drop -2.00										
2,600.00	39.91	8.23	2,164.64	1,285.06	186.01	1,585,138.96	2,263,688.23	39.41097	-108.10639	
2,600.46	39.90	8.23	2,165.00	1,285.36	186.05	1,585,139.25	2,263,688.28	39.41097	-108.10639	
Mesaverde										
2,800.00	35.91	8.23	2,322.42	1,406.64	203.61	1,585,259.97	2,263,709.31	39.41130	-108.10633	
3,000.00	31.91	8.23	2,488.38	1,517.03	219.58	1,585,369.86	2,263,728.44	39.41161	-108.10627	
3,200.00	27.91	8.23	2,661.71	1,615.70	233.86	1,585,468.07	2,263,745.55	39.41188	-108.10622	
3,400.00	23.91	8.23	2,841.58	1,702.16	246.38	1,585,554.13	2,263,760.53	39.41212	-108.10618	
3,600.00	19.91	8.23	3,027.10	1,775.99	257.06	1,585,627.62	2,263,773.33	39.41232	-108.10614	
3,800.00	15.91	8.23	3,217.37	1,836.83	265.87	1,585,688.18	2,263,783.88	39.41249	-108.10611	
4,000.00	11.91	8.23	3,411.47	1,884.39	272.75	1,585,735.52	2,263,792.12	39.41262	-108.10608	
4,095.27	10.00	8.23	3,505.00	1,902.30	275.34	1,585,753.35	2,263,795.23	39.41267	-108.10608	
Top Gas - Approx. Top Gas										
4,200.00	7.91	8.23	3,608.45	1,918.43	277.68	1,585,769.40	2,263,798.03	39.41271	-108.10607	
4,400.00	3.91	8.23	3,807.35	1,938.79	280.62	1,585,789.67	2,263,801.55	39.41277	-108.10606	
4,595.27	0.00	0.00	4,002.47	1,945.37	281.57	1,585,796.22	2,263,802.70	39.41278	-108.10605	
Vertical										
4,600.00	0.00	0.00	4,007.20	1,945.37	281.57	1,585,796.22	2,263,802.70	39.41278	-108.10605	
4,800.00	0.00	0.00	4,207.20	1,945.37	281.57	1,585,796.22	2,263,802.70	39.41278	-108.10605	
5,000.00	0.00	0.00	4,407.20	1,945.37	281.57	1,585,796.22	2,263,802.70	39.41278	-108.10605	
5,067.80	0.00	0.00	4,475.00	1,945.37	281.57	1,585,796.22	2,263,802.70	39.41278	-108.10605	
Cameo Coals										
5,200.00	0.00	0.00	4,607.20	1,945.37	281.57	1,585,796.22	2,263,802.70	39.41278	-108.10605	
5,400.00	0.00	0.00	4,807.20	1,945.37	281.57	1,585,796.22	2,263,802.70	39.41278	-108.10605	
5,597.80	0.00	0.00	5,005.00	1,945.37	281.57	1,585,796.22	2,263,802.70	39.41278	-108.10605	
Rollins SS										
5,600.00	0.00	0.00	5,007.20	1,945.37	281.57	1,585,796.22	2,263,802.70	39.41278	-108.10605	

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Wellbore:	Wellbore #1		
Design:	Design #1 19Nov13 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
5,697.80	0.00	0.00	5,105.00	1,945.37	281.57	1,585,796.22	2,263,802.70	39.41278	-108.10605
TD									

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) SC	0.00	0.00	3,505.00	1,941.52	280.80	1,585,792.40	2,263,801.81	39.41277	-108.10606
- plan misses target center by 39.01usft at 4101.43usft MD (3511.07 TVD, 1903.35 N, 275.49 E)									
- Circle (radius 50.00)									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,235.00	1,128.09	9 5/8"	9.625	12.250	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
689.92	675.00	Top of "G" Sand				
800.29	775.00	Base of "G" Sand				
2,600.46	2,165.00	Mesaverde				
4,095.27	3,505.00	Approx. Top Gas				
5,067.80	4,475.00	Cameo Coals				
5,597.80	5,005.00	Rollins SS				
5,697.80	5,105.00	TD				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
120.00	120.00	0.41	0.09	Start Build 4.00	
1,134.99	1,052.15	341.67	49.48	Hold 40.60 Inclination	
2,565.29	2,138.16	1,262.87	182.80	Start Drop -2.00	
4,095.27	3,505.00	1,902.30	275.34	Top Gas	
4,595.27	4,002.47	1,945.37	281.57	Vertical	
5,697.80	5,105.00	1,945.37	281.57	TD at 5697.80	