

PICEANCE VLY NAD 83

RU 09-07S-094W

SR 33-9 Pad

SR 544-9 - Slot A8

Wellbore #1

Plan: Plan #2 07Jun10 kjs

Standard Planning Report - Geographic

12 July, 2010

Williams
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well SR 544-9 - Slot A8
Company:	PICEANCE VLY NAD 83	TVD Reference:	KELLY BUSHING @ 7027.0usft (H&P (24' RKB) kjs)
Project:	RU 09-07S-094W	MD Reference:	KELLY BUSHING @ 7027.0usft (H&P (24' RKB) kjs)
Site:	SR 33-9 Pad	North Reference:	True
Well:	SR 544-9	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 07Jun10 kjs		

Project	RU 09-07S-094W, Garfield County, CO		
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		SR 33-9 Pad			
Site Position:		Northing:	1,597,935.60 usft	Latitude:	39° 27' 2.817 N
From:	Map	Easting:	2,325,884.60 usft	Longitude:	107° 53' 15.083 W
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in	Grid Convergence:	-1.506 °

Well	SR 544-9 - Slot A8					
Well Position	+N/-S	0.0 usft	Northing:	1,597,920.40 usft	Latitude:	39° 27' 2.662 N
	+E/-W	0.0 usft	Easting:	2,325,865.70 usft	Longitude:	107° 53' 15.319 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	7,003.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2005-10	2/9/2009	10.579	65.796	52,493

Design	Plan #2 07Jun10 kjs			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	111.46

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
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.000	
120.0	0.00	0.00	120.0	0.0	0.0	0.00	0.00	0.00	0.000	
354.5	8.21	111.46	353.7	-6.1	15.6	3.50	3.50	0.00	111.458	
6,008.4	8.21	111.46	5,949.7	-301.4	766.8	0.00	0.00	0.00	0.000	
6,555.6	0.00	0.00	6,495.0	-315.7	803.2	1.50	-1.50	0.00	180.000	
6,655.6	0.00	0.00	6,595.0	-315.7	803.2	0.00	0.00	0.00	0.000	Top Gas (25' Radius)
9,175.6	0.00	0.00	9,115.0	-315.7	803.2	0.00	0.00	0.00	0.000	

Williams
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well SR 544-9 - Slot A8
Company:	PICEANCE VLY NAD 83	TVD Reference:	KELLY BUSHING @ 7027.0usft (H&P (24' RKB) kjs)
Project:	RU 09-07S-094W	MD Reference:	KELLY BUSHING @ 7027.0usft (H&P (24' RKB) kjs)
Site:	SR 33-9 Pad	North Reference:	True
Well:	SR 544-9	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 07Jun10 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	
0.0	0.00	0.00	0.0	0.0	0.0	1,597,920.40	2,325,865.70	39° 27' 2.662 N	107° 53' 15.319 W	
120.0	0.00	0.00	120.0	0.0	0.0	1,597,920.40	2,325,865.70	39° 27' 2.662 N	107° 53' 15.319 W	
Start Build 3.50										
354.5	8.21	111.46	353.7	-6.1	15.6	1,597,913.85	2,325,881.14	39° 27' 2.601 N	107° 53' 15.120 W	
Hold 8.21 Inclination										
1,108.5	8.21	111.46	1,100.0	-45.5	115.8	1,597,871.86	2,325,980.25	39° 27' 2.212 N	107° 53' 13.843 W	
9 5/8"										
3,245.4	8.21	111.46	3,215.0	-157.1	399.7	1,597,752.84	2,326,261.12	39° 27' 1.109 N	107° 53' 10.224 W	
Top of "G" Sand										
3,346.4	8.21	111.46	3,315.0	-162.4	413.1	1,597,747.22	2,326,274.40	39° 27' 1.057 N	107° 53' 10.053 W	
Base of "G" Sand										
5,695.5	8.21	111.46	5,640.0	-285.1	725.2	1,597,616.39	2,326,583.15	39° 26' 59.844 N	107° 53' 6.074 W	
Mesaverde										
6,008.4	8.21	111.46	5,949.7	-301.4	766.8	1,597,598.96	2,326,624.28	39° 26' 59.683 N	107° 53' 5.544 W	
Start Drop -1.50										
6,555.6	0.00	0.00	6,495.0	-315.7	803.2	1,597,583.70	2,326,660.30	39° 26' 59.541 N	107° 53' 5.080 W	
Vertical										
6,655.6	0.00	0.00	6,595.0	-315.7	803.2	1,597,583.70	2,326,660.30	39° 26' 59.541 N	107° 53' 5.080 W	
Top Gas - Approx. Top Gas										
8,120.6	0.00	0.00	8,060.0	-315.7	803.2	1,597,583.70	2,326,660.30	39° 26' 59.541 N	107° 53' 5.080 W	
Cameo Coals										
8,820.6	0.00	0.00	8,760.0	-315.7	803.2	1,597,583.70	2,326,660.30	39° 26' 59.541 N	107° 53' 5.080 W	
Coal D										
8,930.6	0.00	0.00	8,870.0	-315.7	803.2	1,597,583.70	2,326,660.30	39° 26' 59.541 N	107° 53' 5.080 W	
Base L. Cameo Pay										
9,055.6	0.00	0.00	8,995.0	-315.7	803.2	1,597,583.70	2,326,660.30	39° 26' 59.541 N	107° 53' 5.080 W	
Rollins SS										
9,175.6	0.00	0.00	9,115.0	-315.7	803.2	1,597,583.70	2,326,660.30	39° 26' 59.541 N	107° 53' 5.080 W	
TD at 9175.6 - 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 (25' Radius) SF	0.00	0.00	6,595.0	-315.7	803.2	1,597,583.70	2,326,660.30	39° 26' 59.541 N	107° 53' 5.080 W	
- plan hits target center										
- Circle (radius 25.0)										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,108.5	1,100.0	9 5/8"	9.625	12.250	

Williams
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well SR 544-9 - Slot A8
Company:	PICEANCE VLY NAD 83	TVD Reference:	KELLY BUSHING @ 7027.0usft (H&P (24' RKB) kjs)
Project:	RU 09-07S-094W	MD Reference:	KELLY BUSHING @ 7027.0usft (H&P (24' RKB) kjs)
Site:	SR 33-9 Pad	North Reference:	True
Well:	SR 544-9	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 07Jun10 kjs		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,245.4	3,215.0	Top of "G" Sand				
3,346.4	3,315.0	Base of "G" Sand				
5,695.5	5,640.0	Mesaverde				
6,655.6	6,595.0	Approx. Top Gas				
8,120.6	8,060.0	Cameo Coals				
8,820.6	8,760.0	Coal D				
8,930.6	8,870.0	Base L. Cameo Pay				
9,055.6	8,995.0	Rollins SS				
9,175.6	9,115.0	TD				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
120.0	120.0	0.0	0.0	Start Build 3.50	
354.5	353.7	-6.1	15.6	Hold 8.21 Inclination	
6,008.4	5,949.7	-301.4	766.8	Start Drop -1.50	
6,555.6	6,495.0	-315.7	803.2	Vertical	
6,655.6	6,595.0	-315.7	803.2	Top Gas	
9,175.6	9,115.0	-315.7	803.2	TD at 9175.6	