

PICEANCE VLY NAD 83

PA 29-06S-095W

DOE 3-W-29 Pad

PA 313-29 - Slot B6

Wellbore #1

Plan: Plan #2 30Mar10 kjs

Standard Planning Report - Geographic

30 March, 2010

Williams
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well PA 313-29 - Slot B6
Company:	PICEANCE VLY NAD 83	TVD Reference:	WELL @ 5702.0usft (Nabors 577 (26') kjs)
Project:	PA 29-06S-095W	MD Reference:	WELL @ 5702.0usft (Nabors 577 (26') kjs)
Site:	DOE 3-W-29 Pad	North Reference:	True
Well:	PA 313-29	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 30Mar10 kjs		

Project	PA 29-06S-095W, 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		DOE 3-W-29 Pad			
Site Position:		Northing:	1,613,247.00 usft	Latitude:	39° 29' 23.965 N
From:	Map	Easting:	2,287,962.20 usft	Longitude:	108° 1' 23.779 W
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in	Grid Convergence:	-1.591 °

Well	PA 313-29 - Slot B6					
Well Position	+N/-S	0.0 usft	Northing:	1,613,218.60 usft	Latitude:	39° 29' 23.691 N
	+E/-W	0.0 usft	Easting:	2,287,987.40 usft	Longitude:	108° 1' 23.448 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	5,676.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/3/2009	10.666	65.794	52,486

Design	Plan #2 30Mar10 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	310.09

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	
358.1	5.00	285.00	357.8	2.7	-10.0	2.10	2.10	0.00	285.000	
1,435.0	27.02	310.77	1,387.3	176.8	-243.7	2.10	2.04	2.39	30.904	
4,517.4	27.02	310.77	4,133.2	1,091.3	-1,304.3	0.00	0.00	0.00	0.000	
5,785.5	8.00	310.77	5,337.0	1,339.3	-1,592.0	1.50	-1.50	0.00	179.999	Top Gas (25' Radius)
6,318.9	0.00	0.00	5,868.6	1,363.6	-1,620.1	1.50	-1.50	0.00	180.000	
7,937.3	0.00	0.00	7,487.0	1,363.6	-1,620.1	0.00	0.00	0.00	0.000	

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Wellbore:	Wellbore #1		
Design:	Plan #2 30Mar10 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	1,613,218.60	2,287,987.40	39° 29' 23.691 N	108° 1' 23.448 W	
120.0	0.00	0.00	120.0	0.0	0.0	1,613,218.60	2,287,987.40	39° 29' 23.691 N	108° 1' 23.448 W	
Start Build 2.10										
358.1	5.00	285.00	357.8	2.7	-10.0	1,613,221.56	2,287,977.45	39° 29' 23.718 N	108° 1' 23.576 W	
Begin 2.1°/100 Build & Turn										
1,435.0	27.02	310.77	1,387.3	176.8	-243.7	1,613,402.14	2,287,748.73	39° 29' 25.439 N	108° 1' 26.556 W	
Hold 27.02 Inclination										
2,091.4	27.02	310.77	1,972.0	371.6	-469.5	1,613,603.04	2,287,528.39	39° 29' 27.364 N	108° 1' 29.437 W	
Top of "G" Sand										
2,203.6	27.02	310.77	2,072.0	404.9	-508.2	1,613,637.40	2,287,490.70	39° 29' 27.693 N	108° 1' 29.930 W	
Base of "G" Sand										
2,315.9	27.02	310.77	2,172.0	438.2	-546.8	1,613,671.76	2,287,453.02	39° 29' 28.022 N	108° 1' 30.422 W	
9 5/8"										
4,398.2	27.02	310.77	4,027.0	1,055.9	-1,263.3	1,614,309.16	2,286,753.97	39° 29' 34.127 N	108° 1' 39.562 W	
Mesaverde										
4,517.4	27.02	310.77	4,133.2	1,091.3	-1,304.3	1,614,345.65	2,286,713.95	39° 29' 34.477 N	108° 1' 40.086 W	
Begin 1.5°/100 Drop										
5,785.5	8.00	310.77	5,337.0	1,339.3	-1,592.0	1,614,601.54	2,286,433.30	39° 29' 36.928 N	108° 1' 43.755 W	
Top Gas - Approx. Top Gas										
6,318.9	0.00	0.00	5,868.6	1,363.6	-1,620.1	1,614,626.59	2,286,405.84	39° 29' 37.167 N	108° 1' 44.114 W	
Vertical										
7,232.3	0.00	0.00	6,782.0	1,363.6	-1,620.1	1,614,626.59	2,286,405.84	39° 29' 37.167 N	108° 1' 44.114 W	
Cameo Coals										
7,787.3	0.00	0.00	7,337.0	1,363.6	-1,620.1	1,614,626.59	2,286,405.84	39° 29' 37.167 N	108° 1' 44.114 W	
Rollins SS										
7,937.2	0.00	0.00	7,486.9	1,363.6	-1,620.1	1,614,626.59	2,286,405.84	39° 29' 37.167 N	108° 1' 44.114 W	
TD										
7,937.3	0.00	0.00	7,487.0	1,363.6	-1,620.1	1,614,626.59	2,286,405.84	39° 29' 37.167 N	108° 1' 44.114 W	

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 (25' Radius) P#	0.00	0.00	5,337.0	1,353.3	-1,608.6	1,614,616.00	2,286,417.10	39° 29' 37.066 N	108° 1' 43.967 W	
- plan misses target center by 21.6usft at 5787.0usft MD (5338.5 TVD, 1339.4 N, -1592.1 E)										
- Circle (radius 25.0)										
TD / PBHL PA 313-29	0.00	0.00	7,487.0	1,353.3	-1,608.6	1,614,616.00	2,286,417.10	39° 29' 37.066 N	108° 1' 43.967 W	
- plan misses target center by 15.5usft at 7937.3usft MD (7487.0 TVD, 1363.6 N, -1620.1 E)										
- Point										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
2,315.9	2,172.0	9 5/8"	9.625	12.250	

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Project:	PA 29-06S-095W	MD Reference:	WELL @ 5702.0usft (Nabors 577 (26') kjs)
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Well:	PA 313-29	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 30Mar10 kjs		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,091.4	1,972.0	Top of "G" Sand				
2,203.6	2,072.0	Base of "G" Sand				
4,398.2	4,027.0	Mesaverde				
5,785.5	5,337.0	Approx. Top Gas				
7,232.3	6,782.0	Cameo Coals				
7,787.3	7,337.0	Rollins SS				
7,937.2	7,486.9	TD		0.000		

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 2.10	
358.1	357.8	2.7	-10.0	Begin 2.1°/100 Build & Turn	
1,435.0	1,387.3	176.8	-243.7	Hold 27.02 Inclination	
4,517.4	4,133.2	1,091.3	-1,304.3	Begin 1.5°/100 Drop	
5,785.5	5,337.0	1,339.3	-1,592.0	Top Gas	
6,318.9	5,868.6	1,363.6	-1,620.1	Vertical	
7,937.3	7,487.0	1,363.6	-1,620.1	TD at 7937.3	