

PICEANCE VLY NAD 83

PA 29-06S-095W

DOE 3-W-29 Pad

PA 523-29 - Slot A1

Wellbore #1

Plan: Plan #1 05Feb09 kjs

Standard Planning Report - Geographic

07 August, 2009

Williams Production RMT Company

Planning Report - Geographic

Database:	EDMDB_COMPASS	Local Co-ordinate Reference:	Well PA 523-29 - Slot A1
Company:	PICEANCE VLY NAD 83	TVD Reference:	WELL @ 5702.0ft (Nabors 577 (26') kjs)
Project:	PA 29-06S-095W	MD Reference:	WELL @ 5702.0ft (Nabors 577 (26') kjs)
Site:	DOE 3-W-29 Pad	North Reference:	True
Well:	PA 523-29	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 05Feb09 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 ft
From:	Map	Easting:	2,287,962.20 ft
Position Uncertainty:	0.0 ft	Slot Radius:	in
		Latitude:	39° 29' 23.965 N
		Longitude:	108° 1' 23.779 W
		Grid Convergence:	-1.59 °

Well	PA 523-29 - Slot A1		
Well Position	+N/-S	0.0 ft	Northing:
	+E/-W	0.0 ft	Easting:
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft
		Latitude:	39° 29' 23.583 N
		Longitude:	108° 1' 22.973 W
		Ground Level:	5,676.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2000	12/31/2004	11.47	65.98	53,090

Design	Plan #1 05Feb09 kjs			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	357.74

Plan Sections										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(ft)	(ft)	Rate	Rate	Rate	(°)	
(ft)			(ft)			(°/100ft)	(°/100ft)	(°/100ft)		
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
120.0	0.00	0.00	120.0	0.0	0.0	0.00	0.00	0.00	0.00	
262.9	5.00	10.00	262.7	6.1	1.1	3.50	3.50	0.00	10.00	
767.5	22.51	357.54	751.0	125.3	0.8	3.50	3.47	-2.47	-15.80	
4,300.1	22.51	357.54	4,014.4	1,476.7	-57.2	0.00	0.00	0.00	0.00	
5,801.1	0.00	0.00	5,477.0	1,767.5	-69.7	1.50	-1.50	0.00	180.00	Top Gas (25' Radius)
7,951.1	0.00	0.00	7,627.0	1,767.5	-69.7	0.00	0.00	0.00	0.00	TD / PBHL PA 523-29

Williams Production RMT Company

Planning Report - Geographic

Database:	EDMDB_COMPASS	Local Co-ordinate Reference:	Well PA 523-29 - Slot A1
Company:	PICEANCE VLY NAD 83	TVD Reference:	WELL @ 5702.0ft (Nabors 577 (26') kjs)
Project:	PA 29-06S-095W	MD Reference:	WELL @ 5702.0ft (Nabors 577 (26') kjs)
Site:	DOE 3-W-29 Pad	North Reference:	True
Well:	PA 523-29	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 05Feb09 kjs		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	1,613,206.60	2,288,024.30	39° 29' 23.583 N	108° 1' 22.973 W
120.0	0.00	0.00	120.0	0.0	0.0	1,613,206.60	2,288,024.30	39° 29' 23.583 N	108° 1' 22.973 W
262.9	5.00	10.00	262.7	6.1	1.1	1,613,212.70	2,288,025.55	39° 29' 23.644 N	108° 1' 22.959 W
767.5	22.51	357.54	751.0	125.3	0.8	1,613,331.79	2,288,028.53	39° 29' 24.821 N	108° 1' 22.964 W
2,078.4	22.51	357.54	1,962.0	626.8	-20.8	1,613,833.66	2,288,020.95	39° 29' 29.777 N	108° 1' 23.238 W
Top of "G" Sand									
2,186.7	22.51	357.54	2,062.0	668.2	-22.5	1,613,875.10	2,288,020.32	39° 29' 30.187 N	108° 1' 23.261 W
Base of "G" Sand									
2,294.9	22.51	357.54	2,162.0	709.6	-24.3	1,613,916.54	2,288,019.70	39° 29' 30.596 N	108° 1' 23.283 W
9 5/8"									
4,300.1	22.51	357.54	4,014.4	1,476.7	-57.2	1,614,684.24	2,288,008.10	39° 29' 38.177 N	108° 1' 23.703 W
4,394.5	21.10	357.54	4,102.0	1,511.7	-58.7	1,614,719.27	2,288,007.57	39° 29' 38.523 N	108° 1' 23.722 W
Mesaverde									
5,801.1	0.00	0.00	5,477.0	1,767.5	-69.7	1,614,975.30	2,288,003.70	39° 29' 41.052 N	108° 1' 23.862 W
Approx. Top Gas									
7,231.1	0.00	0.00	6,907.0	1,767.5	-69.7	1,614,975.30	2,288,003.70	39° 29' 41.052 N	108° 1' 23.862 W
Cameo Coals									
7,801.1	0.00	0.00	7,477.0	1,767.5	-69.7	1,614,975.30	2,288,003.70	39° 29' 41.052 N	108° 1' 23.862 W
Rollins SS									
7,951.1	0.00	0.00	7,627.0	1,767.5	-69.7	1,614,975.30	2,288,003.70	39° 29' 41.052 N	108° 1' 23.862 W
TD									

Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
TD / PBHL PA 523-29 - plan hits target - Point	0.00	0.00	7,627.0	1,767.5	-69.7	1,614,975.30	2,288,003.70	39° 29' 41.052 N	108° 1' 23.862 W
Top Gas (25' Radius) P/ - plan hits target - Circle (radius 25.0)	0.00	0.00	5,477.0	1,767.5	-69.7	1,614,975.30	2,288,003.70	39° 29' 41.052 N	108° 1' 23.862 W

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
2,294.9	2,162.0	9 5/8"	9.625	12.250	

Williams Production RMT Company

Planning Report - Geographic

Database:	EDMDB_COMPASS	Local Co-ordinate Reference:	Well PA 523-29 - Slot A1
Company:	PICEANCE VLY NAD 83	TVD Reference:	WELL @ 5702.0ft (Nabors 577 (26') kjs)
Project:	PA 29-06S-095W	MD Reference:	WELL @ 5702.0ft (Nabors 577 (26') kjs)
Site:	DOE 3-W-29 Pad	North Reference:	True
Well:	PA 523-29	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 05Feb09 kjs		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,078.4	1,962.00	Top of "G" Sand				
2,186.7	2,062.00	Base of "G" Sand				
4,394.5	4,102.00	Mesaverde				
5,801.1	5,477.00	Approx. Top Gas				
7,231.1	6,907.00	Cameo Coals				
7,801.1	7,477.00	Rollins SS				
7,951.1	7,627.00	TD				

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
120.0	120.0	0.0	0.0	Start Build 3.50
262.9	262.7	6.1	1.1	Begin 3.5°/100 Build & Turn
767.5	751.0	125.3	0.8	Hold 22.51 Inclination
4,300.1	4,014.4	1,476.7	-57.2	Start Drop -1.50
5,801.1	5,477.0	1,767.5	-69.7	Top Gas
7,951.1	7,627.0	1,767.5	-69.7	TD at 7951.1