

PICEANCE VLY NAD 83

AP 20-06S-095W

AP 21-20-695 Pad

AP 521-20-695 - Slot B3

Wellbore #1

Plan: Plan #2 16Aug11 kjs

Standard Planning Report - Geographic

22 August, 2011

Williams

Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well AP 521-20-695 - Slot B3
Company:	PICEANCE VLY NAD 83	TVD Reference:	KELLY BUSHING @ 6935.0usft (Nabors 574 (26' RKB) kjs)
Project:	AP 20-06S-095W	MD Reference:	KELLY BUSHING @ 6935.0usft (Nabors 574 (26' RKB) kjs)
Site:	AP 21-20-695 Pad	North Reference:	True
Well:	AP 521-20-695	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 16Aug11 kjs		

Project	AP 20-06S-095W, Garfield County, CO, 20-06S-095W		
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	AP 21-20-695 Pad			
Site Position:		Northing:	1,623,258.80 usft	Latitude: 39° 31' 2.984 N
From:	Map	Easting:	2,288,342.20 usft	Longitude: 108° 1' 22.480 W
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in	Grid Convergence: -1.591 °

Well	AP 521-20-695 - Slot B3			
Well Position	+N/-S	0.0 usft	Northing:	1,623,242.40 usft
	+E/-W	0.0 usft	Easting:	2,288,335.00 usft
Position Uncertainty	0.0 usft		Wellhead Elevation:	Ground Level: 6,909.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2005-10	7/16/2010	10.461	65.788	52,373

Design	Plan #2 16Aug11 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	224.09

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	
180.0	0.00	0.00	180.0	0.0	0.0	0.00	0.00	0.00	0.000	
480.0	6.00	210.00	479.5	-13.6	-7.8	2.00	2.00	0.00	210.000	
906.2	12.02	224.51	900.2	-64.6	-50.1	1.50	1.41	3.40	27.953	
6,441.7	12.02	224.51	6,314.2	-887.0	-858.5	0.00	0.00	0.00	0.000	
7,243.3	0.00	0.00	7,110.0	-946.8	-917.3	1.50	-1.50	0.00	180.000	
9,493.3	0.00	0.00	9,360.0	-946.8	-917.3	0.00	0.00	0.00	0.000	

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Database: Compass R5000 WIN AUTH
Company: PICEANCE VLY NAD 83

Project: AP 20-06S-095W

Site: AP 21-20-695 Pad
Well: AP 521-20-695
Wellbore: Wellbore #1
Design: Plan #2 16Aug11 kjs

Local Co-ordinate Reference: Well AP 521-20-695 - Slot B3
TVD Reference: KELLY BUSHING @ 6935.0usft (Nabors 574 (26' RKB) kjs)
MD Reference: KELLY BUSHING @ 6935.0usft (Nabors 574 (26' RKB) kjs)
North Reference: True
Survey Calculation Method: Minimum Curvature

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	1,623,242.40	2,288,335.00	39° 31' 2.820 N	108° 1' 22.566 W
180.0	0.00	0.00	180.0	0.0	0.0	1,623,242.40	2,288,335.00	39° 31' 2.820 N	108° 1' 22.566 W
Start Build 2.00									
480.0	6.00	210.00	479.5	-13.6	-7.8	1,623,229.03	2,288,326.78	39° 31' 2.685 N	108° 1' 22.666 W
Begin 1.5°/100 Build & Turn									
906.2	12.02	224.51	900.2	-64.6	-50.1	1,623,179.23	2,288,283.08	39° 31' 2.181 N	108° 1' 23.206 W
Hold 12.02 Inclination									
1,049.0	12.02	224.51	1,039.9	-85.8	-71.0	1,623,158.59	2,288,261.64	39° 31' 1.972 N	108° 1' 23.472 W
9 5/8"									
3,784.1	12.02	224.51	3,715.0	-492.2	-470.4	1,622,763.50	2,287,851.09	39° 30' 57.955 N	108° 1' 28.569 W
Top of "G" Sand									
3,886.3	12.02	224.51	3,815.0	-507.4	-485.4	1,622,748.73	2,287,835.75	39° 30' 57.805 N	108° 1' 28.760 W
Base of "G" Sand									
5,977.2	12.02	224.51	5,860.0	-818.0	-790.7	1,622,446.70	2,287,521.90	39° 30' 54.735 N	108° 1' 32.656 W
Mesaverde									
6,441.7	12.02	224.51	6,314.2	-887.0	-858.5	1,622,379.61	2,287,452.19	39° 30' 54.053 N	108° 1' 33.521 W
Start Drop -1.50									
7,243.3	0.00	0.00	7,110.0	-946.8	-917.3	1,622,321.50	2,287,391.80	39° 30' 53.462 N	108° 1' 34.271 W
Vertical									
7,343.3	0.00	0.00	7,210.0	-946.8	-917.3	1,622,321.50	2,287,391.80	39° 30' 53.462 N	108° 1' 34.271 W
Top Gas - Approx. Top Gas - Top Gas (25' Radius) AP 521-20-695									
8,683.3	0.00	0.00	8,550.0	-946.8	-917.3	1,622,321.50	2,287,391.80	39° 30' 53.462 N	108° 1' 34.271 W
Cameo Coals									
9,343.3	0.00	0.00	9,210.0	-946.8	-917.3	1,622,321.50	2,287,391.80	39° 30' 53.462 N	108° 1' 34.271 W
Rollins SS									
9,493.3	0.00	0.00	9,360.0	-946.8	-917.3	1,622,321.50	2,287,391.80	39° 30' 53.462 N	108° 1' 34.271 W
TD at 9493.3 - TD - TD / PBHL AP 521-20-695									

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) AF - plan hits target center - Circle (radius 25.0)	0.00	0.00	7,210.0	-946.8	-917.3	1,622,321.50	2,287,391.80	39° 30' 53.462 N	108° 1' 34.271 W
TD / PBHL AP 521-20-6 - plan hits target center - Point	0.00	0.00	9,360.0	-946.8	-917.3	1,622,321.50	2,287,391.80	39° 30' 53.462 N	108° 1' 34.271 W

Casing Points

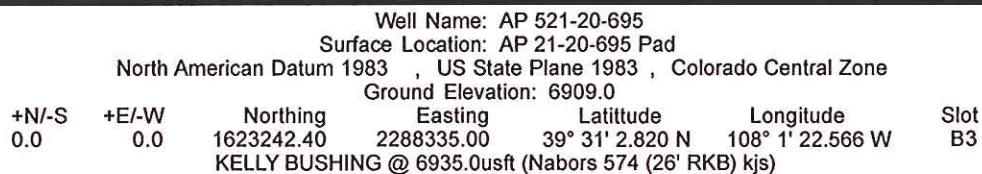
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,049.0	1,039.9	9 5/8"	9.625	12.250

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Planning Report - Geographic

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Project:	AP 20-06S-095W	MD Reference:	KELLY BUSHING @ 6935.0usft (Nabors 574 (26' RKB) kjs)
Site:	AP 21-20-695 Pad	North Reference:	True
Well:	AP 521-20-695	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 16Aug11 kjs		

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,784.1	3,715.0	Top of "G" Sand		0.000	
3,886.3	3,815.0	Base of "G" Sand		0.000	
5,977.2	5,860.0	Mesaverde		0.000	
7,343.3	7,210.0	Approx. Top Gas		0.000	
8,683.3	8,550.0	Cameo Coals		0.000	
9,343.3	9,210.0	Rollins SS		0.000	
9,493.3	9,360.0	TD		0.000	

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
180.0	180.0	0.0	0.0	Start Build 2.00
480.0	479.5	-13.6	-7.8	Begin 1.5°/100 Build & Turn
906.2	900.2	-64.6	-50.1	Hold 12.02 Inclination
6,441.7	6,314.2	-887.0	-858.5	Start Drop -1.50
7,243.3	7,110.0	-946.8	-917.3	Vertical
7,343.3	7,210.0	-946.8	-917.3	Top Gas
9,493.3	9,360.0	-946.8	-917.3	TD at 9493.3



TV	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation
180.0	180.0	0.00	0.00	0.0	0.0	0.0	0.0	Start Build 2.00
479.5	480.0	6.00	210.00	-13.6	-7.8	15.2	15.7	Begin 1.5°/100 Build & Turn
900.2	906.2	12.02	224.51	-64.6	-50.1	81.3	82.1	Hold 12.02 Inclination
6314.2	6441.7	12.02	224.51	-887.0	-858.5	1234.5	1235.3	Start Drop -1.50
7110.0	7243.3	0.00	0.00	-946.8	-917.3	1318.3	1319.1	Vertical
7210.0	7343.3	0.00	0.00	-946.8	-917.3	1318.3	1319.1	Top Gas
9360.0	9493.3	0.00	0.00	-946.8	-917.3	1318.3	1319.1	TD at 9493.3