

PICEANCE VLY NAD 83

AP 20-06S-095W

AP 21-20-695 Pad

AP 334-17-695 - Slot A4

Wellbore #1

Plan: Design #1 13Jul10 kjs

Standard Planning Report - Geographic

11 April, 2011

Williams
Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well AP 334-17-695 - Slot A4
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 334-17-695	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 13Jul10 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 334-17-695 - Slot A4			
Well Position	+N/-S	0.0 usft	Northing:	1,623,251.60 usft
	+E/-W	0.0 usft	Easting:	2,288,343.40 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	7/13/2010	10.462	65.788	52,374

Design	Design #1 13Jul10 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	41.61

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	
177.1	2.00	90.00	177.1	0.0	1.0	3.50	3.50	0.00	90.000	
318.7	6.04	41.41	318.3	5.6	8.4	3.50	2.86	-34.34	-66.161	
6,924.9	6.04	41.41	6,887.8	527.3	468.5	0.00	0.00	0.00	0.000	
7,327.8	0.00	0.00	7,290.0	543.2	482.5	1.50	-1.50	0.00	180.000	
9,577.8	0.00	0.00	9,540.0	543.2	482.5	0.00	0.00	0.00	0.000	TD / PBHL AP 334-17

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Site:	AP 21-20-695 Pad	North Reference:	True
Well:	AP 334-17-695	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 13Jul10 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	1,623,251.60	2,288,343.40	39° 31' 2.913 N	108° 1' 22.462 W
120.0	0.00	0.00	120.0	0.0	0.0	1,623,251.60	2,288,343.40	39° 31' 2.913 N	108° 1' 22.462 W
Start Build 3.50									
177.1	2.00	90.00	177.1	0.0	1.0	1,623,251.57	2,288,344.40	39° 31' 2.913 N	108° 1' 22.450 W
Begin 3.5°/100 Build & Turn									
318.7	6.04	41.41	318.3	5.6	8.4	1,623,256.95	2,288,351.95	39° 31' 2.968 N	108° 1' 22.355 W
Hold 6.04 Inclination									
1,058.0	6.04	41.41	1,053.5	64.0	59.9	1,623,313.89	2,288,405.04	39° 31' 3.545 N	108° 1' 21.698 W
9 5/8"									
3,774.6	6.04	41.41	3,755.0	278.5	249.1	1,623,523.08	2,288,600.11	39° 31' 5.665 N	108° 1' 19.284 W
Top of "G" Sand									
3,875.1	6.04	41.41	3,855.0	286.5	256.1	1,623,530.82	2,288,607.33	39° 31' 5.744 N	108° 1' 19.195 W
Base of "G" Sand									
5,996.9	6.04	41.41	5,965.0	454.0	403.9	1,623,694.21	2,288,759.69	39° 31' 7.400 N	108° 1' 17.309 W
Mesaverde									
6,924.9	6.04	41.41	6,887.8	527.3	468.5	1,623,765.67	2,288,826.32	39° 31' 8.124 N	108° 1' 16.484 W
Start Drop -1.50									
7,327.8	0.00	0.00	7,290.0	543.2	482.5	1,623,781.20	2,288,840.80	39° 31' 8.282 N	108° 1' 16.305 W
Vertical									
7,427.8	0.00	0.00	7,390.0	543.2	482.5	1,623,781.20	2,288,840.80	39° 31' 8.282 N	108° 1' 16.305 W
Top Gas - Approx. Top Gas									
8,617.8	0.00	0.00	8,580.0	543.2	482.5	1,623,781.20	2,288,840.80	39° 31' 8.282 N	108° 1' 16.305 W
Cameo Coals									
9,427.8	0.00	0.00	9,390.0	543.2	482.5	1,623,781.20	2,288,840.80	39° 31' 8.282 N	108° 1' 16.305 W
Rollins SS									
9,577.8	0.00	0.00	9,540.0	543.2	482.5	1,623,781.20	2,288,840.80	39° 31' 8.282 N	108° 1' 16.305 W
TD at 9577.8 - 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) Af	0.00	0.00	7,390.0	543.2	482.5	1,623,781.20	2,288,840.80	39° 31' 8.282 N	108° 1' 16.305 W
- plan hits target center									
- Circle (radius 25.0)									
TD / PBHL AP 334-17-6	0.00	0.00	9,540.0	543.2	482.5	1,623,781.20	2,288,840.80	39° 31' 8.282 N	108° 1' 16.305 W
- plan hits target center									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,058.0	1,053.5	9 5/8"	9.625	12.250	

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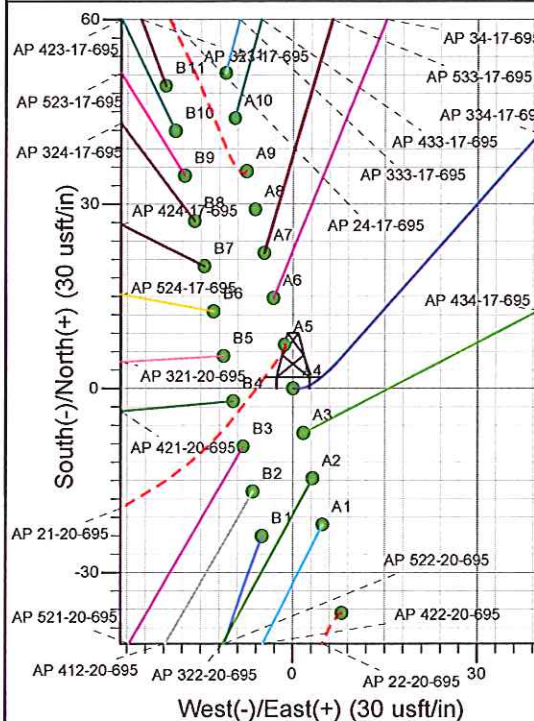
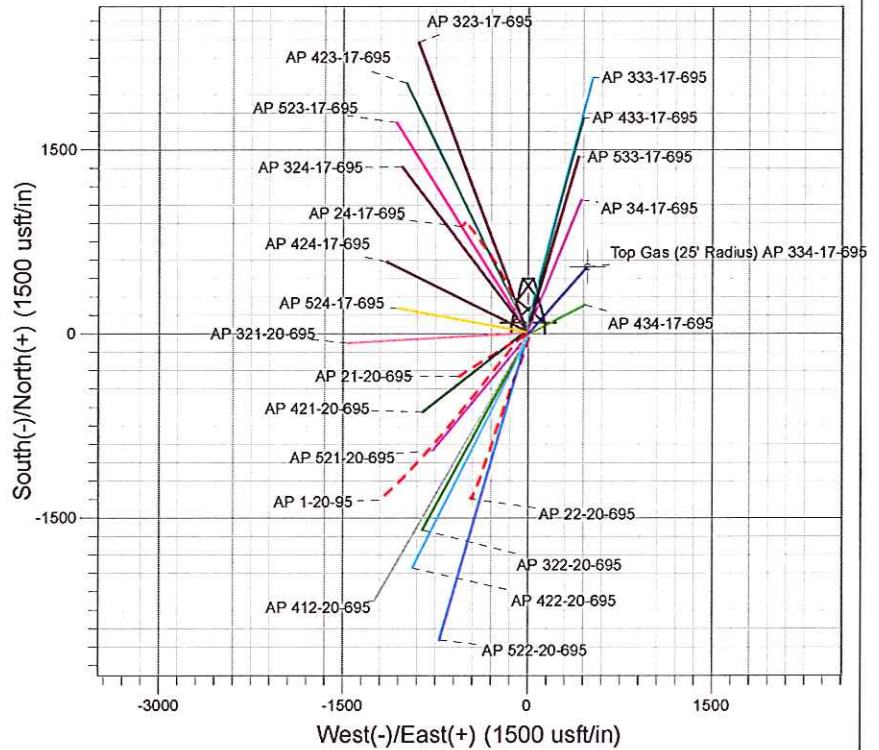
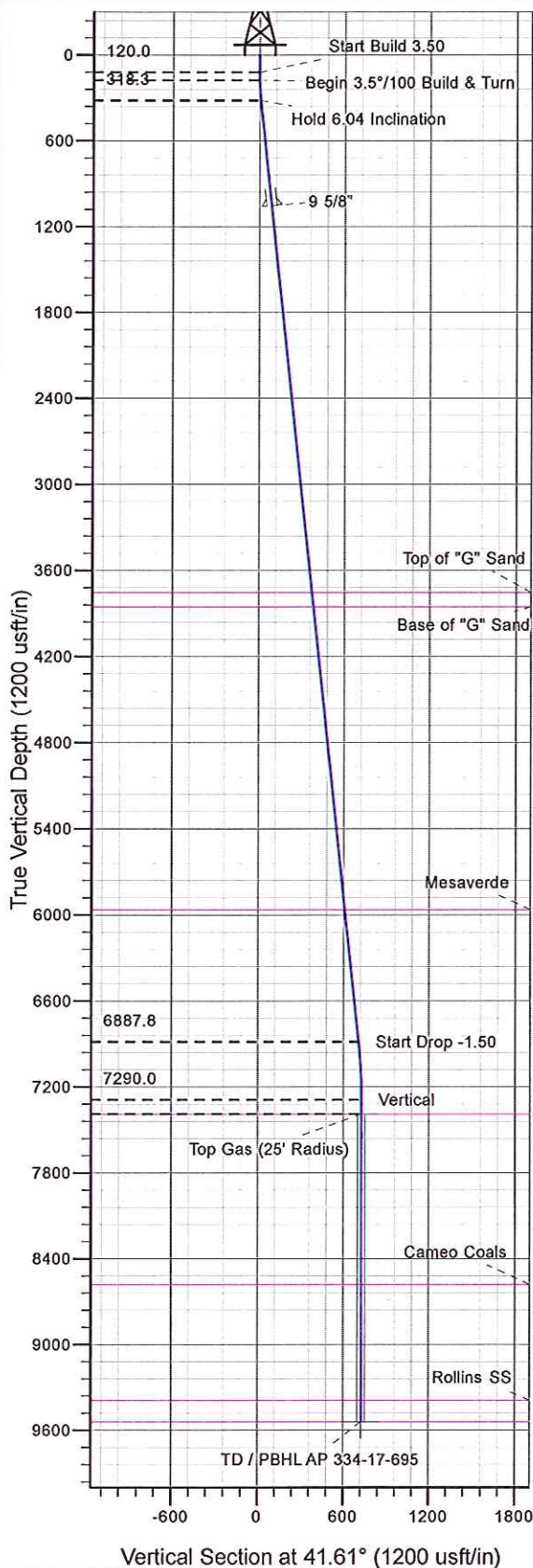
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Project:	AP 20-06S-095W	MD Reference:	KELLY BUSHING @ 6935.0usft (Nabors 574 (26' RKB) kjs)
Site:	AP 21-20-695 Pad	North Reference:	True
Well:	AP 334-17-695	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 13Jul10 kjs		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,774.6	3,755.0	Top of "G" Sand		0.000		
3,875.1	3,855.0	Base of "G" Sand		0.000		
5,996.9	5,965.0	Mesaverde		0.000		
7,427.8	7,390.0	Approx. Top Gas		0.000		
8,617.8	8,580.0	Cameo Coals		0.000		
9,427.8	9,390.0	Rollins SS		0.000		
9,577.8	9,540.0	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 3.50	
177.1	177.1	0.0	1.0	Begin 3.5°/100 Build & Turn	
318.7	318.3	5.6	8.4	Hold 6.04 Inclination	
6,924.9	6,887.8	527.3	468.5	Start Drop -1.50	
7,327.8	7,290.0	543.2	482.5	Vertical	
7,427.8	7,390.0	543.2	482.5	Top Gas	
9,577.8	9,540.0	543.2	482.5	TD at 9577.8	



Well Name: AP 334-17-695
 Surface Location: AP 21-20-695 Pad
 North American Datum 1983 , US State Plane 1983 , Colorado Central Zone
 Ground Elevation: 6909.0
 +N/-S 0.0 +E/-W 0.0 Northing 1623251.60 Easting 2288343.40 Latitude 39° 31' 2.913 N Longitude 108° 1' 22.462 W Slot A4
 KELLY BUSHING @ 6935.0usft (Nabors 574 (26' RKB) kjs)



Project: AP 20-06S-095W
 Site: AP 21-20-695 Pad
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Azimuths to True North
 Magnetic North: 10.46°
 Magnetic Field
 Strength: 52373.9snT
 Dip Angle: 65.79°
 Date: 7/13/2010
 Model: IGRF2005-10

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation
120.0	120.0	0.00	0.00	0.0	0.0	0.0	0.0	Start Build 3.50
177.1	177.1	2.00	90.00	0.0	1.0	0.7	1.0	Begin 3.5°/100 Build & Turn
318.3	318.7	6.04	41.41	5.6	8.4	9.8	10.6	Hold 6.04 Inclination
6887.8	6924.9	6.04	41.41	527.3	468.5	705.3	706.2	Start Drop -1.50
7290.0	7327.8	0.00	0.00	543.2	482.5	726.6	727.4	Vertical
7390.0	7427.8	0.00	0.00	543.2	482.5	726.6	727.4	Top Gas
9540.0	9577.8	0.00	0.00	543.2	482.5	726.6	727.4	TD at 9577.8