

# **PICEANCE HL NAD 83**

**RG 23-01S-098W**

**RGU 43-23-198 Pad**

**RGU 33-23-198 - Slot A5**

**Wellbore #1**

**Plan: Design #3 18Nov14 mab**

## **Standard Planning Report - Geographic**

**18 November, 2014**

**WPX**  
Planning Report - Geographic

<b>Database:</b>	COMPASS-PICEANCE	<b>Local Co-ordinate Reference:</b>	Well RGU 33-23-198 - Slot A5
<b>Company:</b>	PICEANCE HL NAD 83	<b>TVD Reference:</b>	KB @ 6592.00usft (Aztec 1000)
<b>Project:</b>	RG 23-01S-098W	<b>MD Reference:</b>	KB @ 6592.00usft (Aztec 1000)
<b>Site:</b>	RGU 43-23-198 Pad	<b>North Reference:</b>	True
<b>Well:</b>	RGU 33-23-198	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #3 18Nov14 mab		

<b>Project</b>	RG 23-01S-098W, Rio Blanco County, CO		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Central Zone		

Site		RGU 43-23-198 Pad			
Site Position:		Northing:	1,781,556.00000 usft	Latitude:	39.94469
From:	Map	Easting:	2,199,927.00000 usft	Longitude:	-108.35379
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	-1.80 °

Well	RGU 33-23-198 - Slot A5					
Well Position	+N/-S	0.00 usft	Northing:	1,781,577.00000 usft	Latitude:	39.94475
	+E/-W	0.00 usft	Easting:	2,199,968.10000 usft	Longitude:	-108.35364
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	6,567.00 usft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	6/27/2012	10.44	66.01	52,337

<b>Design</b>	Design #3 18Nov14 mab				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00	
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (bearing)</b>	
	0.00	0.00	0.00	317.96	

<b>Plan Sections</b>										
Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
120.00	0.00	0.00	120.00	0.00	0.00	0.00	0.00	0.00	0.00	
658.15	16.14	317.96	651.05	55.94	-50.43	3.00	3.00	0.00	317.96	
6,618.02	16.14	317.96	6,375.89	1,286.73	-1,160.15	0.00	0.00	0.00	0.00	
7,694.31	0.00	0.00	7,438.00	1,398.61	-1,261.01	1.50	-1.50	0.00	180.00	
7,994.31	0.00	0.00	7,738.00	1,398.61	-1,261.01	0.00	0.00	0.00	0.00	Mesaverde (50' Radiu
12,824.31	0.00	0.00	12,568.00	1,398.61	-1,261.01	0.00	0.00	0.00	0.00	

**WPX**  
Planning Report - Geographic

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<b>Company:</b>	PICEANCE HL NAD 83	<b>TVD Reference:</b>	KB @ 6592.00usft (Aztec 1000)
<b>Project:</b>	RG 23-01S-098W	<b>MD Reference:</b>	KB @ 6592.00usft (Aztec 1000)
<b>Site:</b>	RGU 43-23-198 Pad	<b>North Reference:</b>	True
<b>Well:</b>	RGU 33-23-198	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #3 18Nov14 mab		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	1,781,577.00000	2,199,968.10000	39.94475	-108.35364
120.00	0.00	0.00	120.00	0.00	0.00	1,781,577.00000	2,199,968.10000	39.94475	-108.35364
Start Build 3.00°/100									
200.00	2.40	317.96	199.98	1.24	-1.12	1,781,578.27883	2,199,967.01781	39.94475	-108.35365
400.00	8.40	317.96	399.00	15.22	-13.72	1,781,592.63995	2,199,954.86505	39.94479	-108.35369
600.00	14.40	317.96	594.96	44.56	-40.18	1,781,622.80286	2,199,929.34040	39.94487	-108.35378
658.15	16.14	317.96	651.05	55.94	-50.43	1,781,634.49422	2,199,919.44686	39.94490	-108.35382
Hold 16.14° Inc, 317.96° Az									
800.00	16.14	317.96	787.31	85.23	-76.85	1,781,664.60376	2,199,893.96735	39.94498	-108.35392
1,000.00	16.14	317.96	979.43	126.53	-114.09	1,781,707.05558	2,199,858.04349	39.94510	-108.35405
1,200.00	16.14	317.96	1,171.54	167.84	-151.33	1,781,749.50740	2,199,822.11963	39.94521	-108.35418
1,232.75	16.14	317.96	1,203.00	174.60	-157.42	1,781,756.45955	2,199,816.23653	39.94523	-108.35420
Green River Fm									
1,400.00	16.14	317.96	1,363.65	209.14	-188.57	1,781,791.95921	2,199,786.19576	39.94532	-108.35431
1,435.76	16.14	317.96	1,398.00	216.52	-195.22	1,781,799.54936	2,199,779.77277	39.94534	-108.35434
A Groove									
1,600.00	16.14	317.96	1,555.76	250.44	-225.81	1,781,834.41103	2,199,750.27190	39.94544	-108.35445
1,633.56	16.14	317.96	1,588.00	257.37	-232.05	1,781,841.53431	2,199,744.24398	39.94545	-108.35447
B Groove									
1,800.00	16.14	317.96	1,747.88	291.75	-263.04	1,781,876.86285	2,199,714.34803	39.94555	-108.35458
1,951.08	16.14	317.96	1,893.00	322.95	-291.18	1,781,908.93120	2,199,687.21093	39.94563	-108.35468
Dissolution Surface									
2,000.00	16.14	317.96	1,939.99	333.05	-300.28	1,781,919.31465	2,199,678.42417	39.94566	-108.35471
2,200.00	16.14	317.96	2,132.10	374.35	-337.52	1,781,961.76647	2,199,642.50031	39.94578	-108.35485
2,400.00	16.14	317.96	2,324.22	415.65	-374.76	1,782,004.21828	2,199,606.57644	39.94589	-108.35498
2,600.00	16.14	317.96	2,516.33	456.96	-412.00	1,782,046.67010	2,199,570.65258	39.94600	-108.35511
2,800.00	16.14	317.96	2,708.44	498.26	-449.24	1,782,089.12192	2,199,534.72873	39.94612	-108.35524
3,000.00	16.14	317.96	2,900.55	539.56	-486.48	1,782,131.57373	2,199,498.80486	39.94623	-108.35538
3,096.24	16.14	317.96	2,993.00	559.44	-504.40	1,782,152.00195	2,199,481.51796	39.94628	-108.35544
Garden Gulch									
3,200.00	16.14	317.96	3,092.67	580.86	-523.72	1,782,174.02555	2,199,462.88100	39.94634	-108.35551
3,273.22	16.14	317.96	3,163.00	595.99	-537.35	1,782,189.56743	2,199,449.72904	39.94638	-108.35556
Orange Marker									
3,400.00	16.14	317.96	3,284.78	622.17	-560.96	1,782,216.47737	2,199,426.95713	39.94646	-108.35564
3,502.25	16.14	317.96	3,383.00	643.28	-580.00	1,782,238.18158	2,199,408.59045	39.94651	-108.35571
Wasatch									
3,600.00	16.14	317.96	3,476.89	663.47	-598.20	1,782,258.92918	2,199,391.03327	39.94657	-108.35577
3,800.00	16.14	317.96	3,669.00	704.77	-635.44	1,782,301.38100	2,199,355.10941	39.94668	-108.35591
4,000.00	16.14	317.96	3,861.12	746.07	-672.68	1,782,343.83281	2,199,319.18554	39.94680	-108.35604
4,022.78	16.14	317.96	3,883.00	750.78	-676.92	1,782,348.66828	2,199,315.09364	39.94681	-108.35606
9 5/8"									
4,200.00	16.14	317.96	4,053.23	787.38	-709.92	1,782,386.28462	2,199,283.26168	39.94691	-108.35617
4,400.00	16.14	317.96	4,245.34	828.68	-747.16	1,782,428.73644	2,199,247.33782	39.94702	-108.35631
4,600.00	16.14	317.96	4,437.46	869.98	-784.40	1,782,471.18825	2,199,211.41395	39.94714	-108.35644
4,800.00	16.14	317.96	4,629.57	911.28	-821.64	1,782,513.64007	2,199,175.49009	39.94725	-108.35657
5,000.00	16.14	317.96	4,821.68	952.59	-858.87	1,782,556.09189	2,199,139.56624	39.94736	-108.35670
5,200.00	16.14	317.96	5,013.79	993.89	-896.11	1,782,598.54370	2,199,103.64237	39.94748	-108.35684
5,400.00	16.14	317.96	5,205.91	1,035.19	-933.35	1,782,640.99552	2,199,067.71851	39.94759	-108.35697
5,600.00	16.14	317.96	5,398.02	1,076.50	-970.59	1,782,683.44734	2,199,031.79464	39.94770	-108.35710
5,800.00	16.14	317.96	5,590.13	1,117.80	-1,007.83	1,782,725.89914	2,198,995.87078	39.94782	-108.35724
5,912.30	16.14	317.96	5,698.00	1,140.99	-1,028.74	1,782,749.73501	2,198,975.70023	39.94788	-108.35731
Top of "G" Sand									
6,000.00	16.14	317.96	5,782.25	1,159.10	-1,045.07	1,782,768.35096	2,198,959.94692	39.94793	-108.35737

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<b>Project:</b>	RG 23-01S-098W	<b>MD Reference:</b>	KB @ 6592.00usft (Aztec 1000)
<b>Site:</b>	RGU 43-23-198 Pad	<b>North Reference:</b>	True
<b>Well:</b>	RGU 33-23-198	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #3 18Nov14 mab		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
6,200.00	16.14	317.96	5,974.36	1,200.40	-1,082.31	1,782,810.80278	2,198,924.02305	39.94804	-108.35750	
6,287.08	16.14	317.96	6,058.00	1,218.39	-1,098.52	1,782,829.28544	2,198,908.38253	39.94809	-108.35756	
Fort Union										
6,400.00	16.14	317.96	6,166.47	1,241.71	-1,119.55	1,782,853.25459	2,198,888.09919	39.94816	-108.35763	
6,600.00	16.14	317.96	6,358.58	1,283.01	-1,156.79	1,782,895.70641	2,198,852.17533	39.94827	-108.35777	
6,618.02	16.14	317.96	6,375.89	1,286.73	-1,160.15	1,782,899.53100	2,198,848.93885	39.94828	-108.35778	
Start Drop -1.50°/100										
6,800.00	13.41	317.96	6,551.84	1,321.20	-1,191.23	1,782,934.96553	2,198,818.95321	39.94837	-108.35789	
7,000.00	10.41	317.96	6,747.50	1,351.87	-1,218.88	1,782,966.48179	2,198,792.28330	39.94846	-108.35799	
7,200.00	7.41	317.96	6,945.07	1,374.88	-1,239.63	1,782,990.13768	2,198,772.26506	39.94852	-108.35806	
7,400.00	4.41	317.96	7,143.98	1,390.19	-1,253.43	1,783,005.86835	2,198,758.95334	39.94856	-108.35811	
7,600.00	1.41	317.96	7,343.70	1,397.74	-1,260.24	1,783,013.63068	2,198,752.38465	39.94858	-108.35814	
7,694.31	0.00	0.00	7,438.00	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
Vertical										
7,724.31	0.00	0.00	7,468.00	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
Ohio Creek										
7,800.00	0.00	0.00	7,543.69	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
7,994.31	0.00	0.00	7,738.00	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
Mesaverde - Mesaverde										
8,000.00	0.00	0.00	7,743.69	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
8,200.00	0.00	0.00	7,943.69	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
8,400.00	0.00	0.00	8,143.69	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
8,600.00	0.00	0.00	8,343.69	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
8,800.00	0.00	0.00	8,543.69	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
9,000.00	0.00	0.00	8,743.69	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
9,044.31	0.00	0.00	8,788.00	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
Approx. Top Gas										
9,200.00	0.00	0.00	8,943.69	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
9,400.00	0.00	0.00	9,143.69	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
9,600.00	0.00	0.00	9,343.69	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
9,800.00	0.00	0.00	9,543.69	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
10,000.00	0.00	0.00	9,743.69	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
10,200.00	0.00	0.00	9,943.69	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
10,400.00	0.00	0.00	10,143.69	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
10,600.00	0.00	0.00	10,343.69	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
10,800.00	0.00	0.00	10,543.69	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
11,000.00	0.00	0.00	10,743.69	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
11,024.31	0.00	0.00	10,768.00	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
Cameo Coals										
11,200.00	0.00	0.00	10,943.69	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
11,400.00	0.00	0.00	11,143.69	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
11,599.31	0.00	0.00	11,343.00	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
Rollins SS										
11,600.00	0.00	0.00	11,343.69	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
11,724.31	0.00	0.00	11,468.00	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
Cozzette										
11,800.00	0.00	0.00	11,543.69	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
11,949.31	0.00	0.00	11,693.00	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
Corcoran										
12,000.00	0.00	0.00	11,743.69	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
12,200.00	0.00	0.00	11,943.69	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
12,344.31	0.00	0.00	12,088.00	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814	
Upper Segro										

**WPX**  
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<b>Company:</b>	PICEANCE HL NAD 83	<b>TVD Reference:</b>	KB @ 6592.00usft (Aztec 1000)
<b>Project:</b>	RG 23-01S-098W	<b>MD Reference:</b>	KB @ 6592.00usft (Aztec 1000)
<b>Site:</b>	RGU 43-23-198 Pad	<b>North Reference:</b>	True
<b>Well:</b>	RGU 33-23-198	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #3 18Nov14 mab		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
12,400.00	0.00	0.00	12,143.69	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814
12,574.31	0.00	0.00	12,318.00	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814
Lower Sego									
12,600.00	0.00	0.00	12,343.69	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814
12,800.00	0.00	0.00	12,543.69	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814
12,824.31	0.00	0.00	12,568.00	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814
TD at 12824.31 - TD									

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (bearing)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Mesaverde (50' Radius) - plan hits target center - Circle (radius 50.00)	0.00	0.00	7,738.00	1,398.61	-1,261.01	1,783,014.51944	2,198,751.63256	39.94859	-108.35814

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
4,022.78	3,883.00	9 5/8"	9.625	13.500	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (bearing)	
1,232.75	1,203.00	Green River Fm				
1,435.76	1,398.00	A Groove				
1,633.56	1,588.00	B Groove				
1,951.08	1,893.00	Dissolution Surface				
3,096.24	2,993.00	Garden Gulch				
3,273.22	3,163.00	Orange Marker				
3,502.25	3,383.00	Wasatch				
5,912.30	5,698.00	Top of "G" Sand				
6,287.08	6,058.00	Fort Union				
7,724.31	7,468.00	Ohio Creek				
7,994.31	7,738.00	Mesaverde				
9,044.31	8,788.00	Approx. Top Gas				
11,024.31	10,768.00	Cameo Coals				
11,599.31	11,343.00	Rollins SS				
11,724.31	11,468.00	Cozzette				
11,949.31	11,693.00	Corcoran				
12,344.31	12,088.00	Upper Sego				
12,574.31	12,318.00	Lower Sego				
12,824.31	12,568.00	TD				

**WPX**  
Planning Report - Geographic

<b>Database:</b>	COMPASS-PICEANCE	<b>Local Co-ordinate Reference:</b>	Well RGU 33-23-198 - Slot A5
<b>Company:</b>	PICEANCE HL NAD 83	<b>TVD Reference:</b>	KB @ 6592.00usft (Aztec 1000)
<b>Project:</b>	RG 23-01S-098W	<b>MD Reference:</b>	KB @ 6592.00usft (Aztec 1000)
<b>Site:</b>	RGU 43-23-198 Pad	<b>North Reference:</b>	True
<b>Well:</b>	RGU 33-23-198	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #3 18Nov14 mab		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
120.00	120.00	0.00	0.00	Start Build 3.00°/100
658.15	651.05	55.94	-50.43	Hold 16.14° Inc, 317.96° Az
6,618.02	6,375.89	1,286.73	-1,160.15	Start Drop -1.50°/100
7,694.31	7,438.00	1,398.61	-1,261.01	Vertical
7,994.31	7,738.00	1,398.61	-1,261.01	Mesaverde
12,824.31	12,568.00	1,398.61	-1,261.01	TD at 12824.31