

# **PICEANCE HL NAD 83**

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

**RGU 43-23-198 Pad**

**RGU 334-23-198 - Slot A9**

**Wellbore #1**

**Plan: Design #4 14Nov14 mab**

## **Standard Planning Report - Geographic**

**17 November, 2014**

**WPX**  
Planning Report - Geographic

<b>Database:</b>	COMPASS-PICEANCE	<b>Local Co-ordinate Reference:</b>	Well RGU 334-23-198 - Slot A9
<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 334-23-198	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #4 14Nov14 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 334-23-198 - Slot A9					
Well Position	+N/-S	0.00 usft	Northing:	1,781,557.80000 usft	Latitude:	39.94469
	+E/-W	0.00 usft	Easting:	2,199,945.00000 usft	Longitude:	-108.35372
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	10/27/2014	10.13	65.95	52,102

<b>Design</b>	Design #4 14Nov14 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	256.32	

<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	
220.00	3.00	292.00	219.95	0.98	-2.43	3.00	3.00	0.00	292.00	
270.00	3.00	292.00	269.89	1.96	-4.85	0.00	0.00	0.00	0.00	
546.76	10.54	255.99	544.60	-1.46	-36.19	3.00	2.73	-13.01	-48.15	
7,025.66	10.54	255.99	6,914.14	-288.41	-1,186.31	0.00	0.00	0.00	0.00	
7,728.48	0.00	0.00	7,613.00	-304.02	-1,248.87	1.50	-1.50	0.00	180.00	
12,663.48	0.00	0.00	12,548.00	-304.02	-1,248.87	0.00	0.00	0.00	0.00	TD / PBHL RGU 334-

**WPX**  
Planning Report - Geographic

<b>Database:</b>	COMPASS-PICEANCE	<b>Local Co-ordinate Reference:</b>	Well RGU 334-23-198 - Slot A9
<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 334-23-198	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #4 14Nov14 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	1,781,557.80000	2,199,945.00000	39.94469	-108.35372	
120.00	0.00	0.00	120.00	0.00	0.00	1,781,557.80000	2,199,945.00000	39.94469	-108.35372	
Start Build 3.00°/100										
200.00	2.40	292.00	199.98	0.63	-1.55	1,781,558.47604	2,199,943.46719	39.94470	-108.35373	
220.00	3.00	292.00	219.95	0.98	-2.43	1,781,558.85623	2,199,942.60518	39.94470	-108.35373	
Hold 3.00° Inc, 292.00° Az										
270.00	3.00	292.00	269.89	1.96	-4.85	1,781,559.91221	2,199,940.21091	39.94470	-108.35374	
Begin Build & Turn 3.00°/100										
400.00	6.31	264.55	399.45	2.56	-15.12	1,781,560.83054	2,199,929.96504	39.94470	-108.35378	
546.76	10.54	255.99	544.60	-1.46	-36.19	1,781,557.47614	2,199,908.78415	39.94469	-108.35385	
Hold 10.54° Inc, 255.99° Az										
600.00	10.54	255.99	596.94	-3.82	-45.64	1,781,555.41611	2,199,899.26366	39.94468	-108.35388	
800.00	10.54	255.99	793.57	-12.68	-81.14	1,781,547.67747	2,199,863.49926	39.94466	-108.35401	
1,000.00	10.54	255.99	990.19	-21.54	-116.65	1,781,539.93883	2,199,827.73486	39.94463	-108.35414	
1,200.00	10.54	255.99	1,186.81	-30.39	-152.15	1,781,532.20018	2,199,791.97046	39.94461	-108.35426	
1,226.63	10.54	255.99	1,213.00	-31.57	-156.88	1,781,531.16960	2,199,787.20757	39.94461	-108.35428	
Green River Fm										
1,400.00	10.54	255.99	1,383.44	-39.25	-187.65	1,781,524.46154	2,199,756.20606	39.94459	-108.35439	
1,419.90	10.54	255.99	1,403.00	-40.13	-191.19	1,781,523.69166	2,199,752.64803	39.94458	-108.35440	
A Groove										
1,600.00	10.54	255.99	1,580.06	-48.11	-223.16	1,781,516.72291	2,199,720.44166	39.94456	-108.35452	
1,613.16	10.54	255.99	1,593.00	-48.69	-225.49	1,781,516.21373	2,199,718.08850	39.94456	-108.35453	
B Groove										
1,800.00	10.54	255.99	1,776.69	-56.97	-258.66	1,781,508.98427	2,199,684.67727	39.94454	-108.35464	
1,923.40	10.54	255.99	1,898.00	-62.43	-280.57	1,781,504.20968	2,199,662.61135	39.94452	-108.35472	
Dissolution Surface										
2,000.00	10.54	255.99	1,973.31	-65.83	-294.16	1,781,501.24562	2,199,648.91287	39.94451	-108.35477	
2,200.00	10.54	255.99	2,169.94	-74.68	-329.67	1,781,493.50698	2,199,613.14847	39.94449	-108.35490	
2,400.00	10.54	255.99	2,366.56	-83.54	-365.17	1,781,485.76834	2,199,577.38407	39.94446	-108.35502	
2,600.00	10.54	255.99	2,563.18	-92.40	-400.68	1,781,478.02970	2,199,541.61967	39.94444	-108.35515	
2,800.00	10.54	255.99	2,759.81	-101.26	-436.18	1,781,470.29105	2,199,505.85528	39.94442	-108.35528	
3,000.00	10.54	255.99	2,956.43	-110.12	-471.68	1,781,462.55241	2,199,470.09088	39.94439	-108.35540	
3,047.37	10.54	255.99	3,003.00	-112.21	-480.09	1,781,460.71958	2,199,461.62039	39.94439	-108.35543	
Garden Gulch										
3,200.00	10.54	255.99	3,153.06	-118.97	-507.19	1,781,454.81377	2,199,434.32648	39.94437	-108.35553	
3,220.29	10.54	255.99	3,173.00	-119.87	-510.79	1,781,454.02880	2,199,430.69870	39.94436	-108.35554	
Orange Marker										
3,400.00	10.54	255.99	3,349.68	-127.83	-542.69	1,781,447.07513	2,199,398.56208	39.94434	-108.35566	
3,444.06	10.54	255.99	3,393.00	-129.78	-550.51	1,781,445.37014	2,199,390.68240	39.94434	-108.35568	
Wasatch										
3,600.00	10.54	255.99	3,546.30	-136.69	-578.19	1,781,439.33649	2,199,362.79768	39.94432	-108.35578	
3,800.00	10.54	255.99	3,742.93	-145.55	-613.70	1,781,431.59784	2,199,327.03328	39.94429	-108.35591	
3,952.65	10.54	255.99	3,893.00	-152.31	-640.80	1,781,425.69136	2,199,299.73626	39.94428	-108.35601	
9 5/8"										
4,000.00	10.54	255.99	3,939.55	-154.41	-649.20	1,781,423.85920	2,199,291.26889	39.94427	-108.35604	
4,200.00	10.54	255.99	4,136.18	-163.26	-684.71	1,781,416.12056	2,199,255.50449	39.94425	-108.35616	
4,400.00	10.54	255.99	4,332.80	-172.12	-720.21	1,781,408.38192	2,199,219.74009	39.94422	-108.35629	
4,600.00	10.54	255.99	4,529.42	-180.98	-755.71	1,781,400.64327	2,199,183.97569	39.94420	-108.35642	
4,800.00	10.54	255.99	4,726.05	-189.84	-791.22	1,781,392.90463	2,199,148.21129	39.94417	-108.35654	
5,000.00	10.54	255.99	4,922.67	-198.70	-826.72	1,781,385.16599	2,199,112.44690	39.94415	-108.35667	
5,200.00	10.54	255.99	5,119.30	-207.56	-862.22	1,781,377.42735	2,199,076.68250	39.94412	-108.35680	
5,400.00	10.54	255.99	5,315.92	-216.41	-897.73	1,781,369.68870	2,199,040.91810	39.94410	-108.35692	
5,600.00	10.54	255.99	5,512.54	-225.27	-933.23	1,781,361.95006	2,199,005.15370	39.94408	-108.35705	

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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 334-23-198	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #4 14Nov14 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	
5,773.38	10.54	255.99	5,683.00	-232.95	-964.01	1,781,355.24133	2,198,974.14909	39.94405	-108.35716	
Top of "G" Sand										
5,800.00	10.54	255.99	5,709.17	-234.13	-968.74	1,781,354.21142	2,198,969.38930	39.94405	-108.35718	
6,000.00	10.54	255.99	5,905.79	-242.99	-1,004.24	1,781,346.47278	2,198,933.62491	39.94403	-108.35730	
6,144.65	10.54	255.99	6,048.00	-249.39	-1,029.92	1,781,340.87583	2,198,907.75840	39.94401	-108.35739	
Fort Union										
6,200.00	10.54	255.99	6,102.42	-251.85	-1,039.74	1,781,338.73414	2,198,897.86051	39.94400	-108.35743	
6,400.00	10.54	255.99	6,299.04	-260.70	-1,075.25	1,781,330.99549	2,198,862.09611	39.94398	-108.35756	
6,600.00	10.54	255.99	6,495.66	-269.56	-1,110.75	1,781,323.25685	2,198,826.33171	39.94395	-108.35768	
6,800.00	10.54	255.99	6,692.29	-278.42	-1,146.25	1,781,315.51821	2,198,790.56731	39.94393	-108.35781	
7,000.00	10.54	255.99	6,888.91	-287.28	-1,181.76	1,781,307.77957	2,198,754.80291	39.94390	-108.35794	
7,025.66	10.54	255.99	6,914.14	-288.41	-1,186.31	1,781,306.78655	2,198,750.21365	39.94390	-108.35795	
Start Drop -1.50°/100										
7,200.00	7.93	255.99	7,086.20	-295.19	-1,213.46	1,781,300.87030	2,198,722.87151	39.94388	-108.35805	
7,400.00	4.93	255.99	7,284.93	-300.61	-1,235.18	1,781,296.13611	2,198,700.99228	39.94387	-108.35813	
7,553.42	2.63	255.99	7,438.00	-303.05	-1,244.98	1,781,293.99920	2,198,691.11650	39.94386	-108.35816	
Ohio Creek										
7,600.00	1.93	255.99	7,484.54	-303.50	-1,246.77	1,781,293.60788	2,198,689.30800	39.94386	-108.35817	
7,728.48	0.00	0.00	7,613.00	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
Vertical										
7,800.00	0.00	0.00	7,684.52	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
7,828.48	0.00	0.00	7,713.00	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
Mesaverde - Mesaverde										
8,000.00	0.00	0.00	7,884.52	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
8,200.00	0.00	0.00	8,084.52	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
8,400.00	0.00	0.00	8,284.52	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
8,600.00	0.00	0.00	8,484.52	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
8,800.00	0.00	0.00	8,684.52	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
9,000.00	0.00	0.00	8,884.52	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
9,200.00	0.00	0.00	9,084.52	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
9,253.48	0.00	0.00	9,138.00	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
Approx. Top Gas										
9,400.00	0.00	0.00	9,284.52	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
9,600.00	0.00	0.00	9,484.52	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
9,800.00	0.00	0.00	9,684.52	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
10,000.00	0.00	0.00	9,884.52	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
10,200.00	0.00	0.00	10,084.52	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
10,400.00	0.00	0.00	10,284.52	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
10,600.00	0.00	0.00	10,484.52	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
10,800.00	0.00	0.00	10,684.52	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
10,868.48	0.00	0.00	10,753.00	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
Cameo Coals										
11,000.00	0.00	0.00	10,884.52	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
11,200.00	0.00	0.00	11,084.52	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
11,400.00	0.00	0.00	11,284.52	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
11,443.48	0.00	0.00	11,328.00	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
Rollins SS										
11,573.48	0.00	0.00	11,458.00	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
Cozzette										
11,600.00	0.00	0.00	11,484.52	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
11,798.48	0.00	0.00	11,683.00	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
Corcoran										
11,800.00	0.00	0.00	11,684.52	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	

**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 334-23-198	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #4 14Nov14 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	
12,000.00	0.00	0.00	11,884.52	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
12,183.48	0.00	0.00	12,068.00	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
Upper Sego										
12,200.00	0.00	0.00	12,084.52	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
12,400.00	0.00	0.00	12,284.52	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
12,413.48	0.00	0.00	12,298.00	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
Lower Sego										
12,600.00	0.00	0.00	12,484.52	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
12,663.48	0.00	0.00	12,548.00	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
TD at 12663.48 - 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	7,713.00	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	
TD / PBHL RGU 334-23- - plan hits target center - Point	0.00	0.00	12,548.00	-304.02	-1,248.87	1,781,293.15096	2,198,687.19631	39.94386	-108.35818	

Casing Points						
Measured Depth (usft)	Vertical Depth (usft)	Name			Casing Diameter (in)	Hole Diameter (in)
3,952.65	3,893.00	9 5/8"			9.625	13.500

**WPX**  
Planning Report - Geographic

<b>Database:</b>	COMPASS-PICEANCE	<b>Local Co-ordinate Reference:</b>	Well RGU 334-23-198 - Slot A9
<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 334-23-198	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #4 14Nov14 mab		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (bearing)	
1,226.63	1,213.00	Green River Fm				
1,419.90	1,403.00	A Groove				
1,613.16	1,593.00	B Groove				
1,923.40	1,898.00	Dissolution Surface				
3,047.37	3,003.00	Garden Gulch				
3,220.29	3,173.00	Orange Marker				
3,444.06	3,393.00	Wasatch				
5,773.38	5,683.00	Top of "G" Sand				
6,144.65	6,048.00	Fort Union				
7,553.42	7,438.00	Ohio Creek				
7,828.48	7,713.00	Mesaverde				
9,253.48	9,138.00	Approx. Top Gas				
10,868.48	10,753.00	Cameo Coals				
11,443.48	11,328.00	Rollins SS				
11,573.48	11,458.00	Cozzette				
11,798.48	11,683.00	Corcoran				
12,183.48	12,068.00	Upper Sego				
12,413.48	12,298.00	Lower Sego				
12,663.48	12,548.00	TD				

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
220.00	219.95	0.98	-2.43	Hold 3.00° Inc, 292.00° Az
270.00	269.89	1.96	-4.85	Begin Build & Turn 3.00°/100
546.76	544.60	-1.46	-36.19	Hold 10.54° Inc, 255.99° Az
7,025.66	6,914.14	-288.41	-1,186.31	Start Drop -1.50°/100
7,728.48	7,613.00	-304.02	-1,248.87	Vertical
7,828.48	7,713.00	-304.02	-1,248.87	Mesaverde
12,663.48	12,548.00	-304.02	-1,248.87	TD at 12663.48