



PICEANCE HL NAD 83

BC 30-01N-098W

BCU 33-30-198 Pad

BCU 542-30-198 - Slot B03

Wellbore #1

Plan: Design #1 09May13 kjs

Standard Planning Report - Geographic

01 August, 2013



IBM Global Services
Planning Report - Geographic

Database:	COMPASS-PICEANCE	Local Co-ordinate Reference:	Well BCU 542-30-198 - Slot B03
Company:	PICEANCE HL NAD 83	TVD Reference:	KELLY BUSHING @ 6759.00usft (Cyclone 29 (21' RKB) kjs)
Project:	BC 30-01N-098W	MD Reference:	KELLY BUSHING @ 6759.00usft (Cyclone 29 (21' RKB) kjs)
Site:	BCU 33-30-198 Pad	North Reference:	True
Well:	BCU 542-30-198	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 09May13 kjs		

Project	BC 30-01N-098W		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site	BCU 33-30-198 Pad			
Site Position:		Northing:	1,811,400.30 usft	Latitude: 40.02472
From:	Map	Easting:	2,178,828.40 usft	Longitude: -108.43243
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence: -1.85 °

Well	BCU 542-30-198 - Slot B03			
Well Position	+N/-S	0.00 usft	Northing:	1,811,443.80 usft
	+E/-W	0.00 usft	Easting:	2,178,816.90 usft
Position Uncertainty	0.00 usft		Wellhead Elevation:	
			Ground Level:	6,738.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/9/2013	10.37	66.04	52,282

Design	Design #1 09May13 kjs			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	77.11

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
0.00	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	
715.61	11.91	77.11	711.33	13.76	60.14	2.00	2.00	0.00	77.11	
7,398.76	11.91	77.11	7,250.56	321.48	1,404.87	0.00	0.00	0.00	0.00	
8,192.91	0.00	0.00	8,039.00	339.83	1,485.06	1.50	-1.50	0.00	180.00	
8,292.91	0.00	0.00	8,139.00	339.83	1,485.06	0.00	0.00	0.00	0.00	Top Gas (50' Radius)
10,932.91	0.00	0.00	10,779.00	339.83	1,485.06	0.00	0.00	0.00	0.00	



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Project:	BC 30-01N-098W	MD Reference:	KELLY BUSHING @ 6759.00usft (Cyclone 29 (21' RKB) kjs)
Site:	BCU 33-30-198 Pad	North Reference:	True
Well:	BCU 542-30-198	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 09May13 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	
0.00	0.00	0.00	0.00	0.00	0.00	1,811,443.80	2,178,816.90	40.02484	-108.43247	
120.00	0.00	0.00	120.00	0.00	0.00	1,811,443.80	2,178,816.90	40.02484	-108.43247	
Start Build 2.00										
500.00	7.60	77.11	498.89	5.61	24.53	1,811,448.62	2,178,841.60	40.02486	-108.43238	
715.61	11.91	77.11	711.33	13.76	60.14	1,811,455.62	2,178,877.45	40.02488	-108.43226	
Hold 11.91 Inclination										
743.89	11.91	77.11	739.00	15.06	65.83	1,811,456.74	2,178,883.18	40.02488	-108.43224	
Green River Fm										
948.29	11.91	77.11	939.00	24.48	106.96	1,811,464.81	2,178,924.59	40.02491	-108.43209	
A Groove										
1,000.00	11.91	77.11	989.59	26.86	117.36	1,811,466.86	2,178,935.07	40.02491	-108.43205	
1,152.69	11.91	77.11	1,139.00	33.89	148.09	1,811,472.89	2,178,966.00	40.02493	-108.43194	
B Groove										
1,500.00	11.91	77.11	1,478.83	49.88	217.97	1,811,486.62	2,179,036.36	40.02498	-108.43169	
1,561.50	11.91	77.11	1,539.00	52.71	230.34	1,811,489.05	2,179,048.82	40.02499	-108.43165	
Dissolution Surface										
2,000.00	11.91	77.11	1,968.06	72.90	318.57	1,811,506.39	2,179,137.66	40.02504	-108.43133	
2,343.34	11.91	77.11	2,304.00	88.71	387.66	1,811,519.96	2,179,207.22	40.02508	-108.43109	
Garden Gulch										
2,500.00	11.91	77.11	2,457.29	95.92	419.18	1,811,526.15	2,179,238.96	40.02510	-108.43098	
2,537.52	11.91	77.11	2,494.00	97.65	426.73	1,811,527.63	2,179,246.56	40.02511	-108.43095	
Orange Marker										
2,777.69	11.91	77.11	2,729.00	108.71	475.05	1,811,537.12	2,179,295.21	40.02514	-108.43078	
Wasatch										
3,000.00	11.91	77.11	2,946.52	118.95	519.79	1,811,545.91	2,179,340.25	40.02517	-108.43062	
3,288.69	11.91	77.11	3,229.00	132.24	577.88	1,811,557.32	2,179,398.74	40.02520	-108.43041	
9 5/8"										
3,500.00	11.91	77.11	3,435.76	141.97	620.39	1,811,565.68	2,179,441.55	40.02523	-108.43026	
4,000.00	11.91	77.11	3,924.99	164.99	721.00	1,811,585.44	2,179,542.85	40.02529	-108.42990	
4,500.00	11.91	77.11	4,414.22	188.01	821.61	1,811,605.20	2,179,644.14	40.02536	-108.42954	
4,780.83	11.91	77.11	4,689.00	200.94	878.11	1,811,616.30	2,179,701.04	40.02539	-108.42934	
Top of "G" Sand										
5,000.00	11.91	77.11	4,903.45	211.03	922.21	1,811,624.97	2,179,745.44	40.02542	-108.42918	
5,143.64	11.91	77.11	5,044.00	217.65	951.11	1,811,630.64	2,179,774.54	40.02544	-108.42908	
Fort Union										
5,500.00	11.91	77.11	5,392.69	234.06	1,022.82	1,811,644.73	2,179,846.74	40.02548	-108.42882	
6,000.00	11.91	77.11	5,881.92	257.08	1,123.42	1,811,664.49	2,179,948.04	40.02555	-108.42846	
6,500.00	11.91	77.11	6,371.15	280.10	1,224.03	1,811,684.26	2,180,049.33	40.02561	-108.42810	
6,508.02	11.91	77.11	6,379.00	280.47	1,225.65	1,811,684.57	2,180,050.96	40.02561	-108.42810	
Ohio Creek										
6,702.20	11.91	77.11	6,569.00	289.41	1,264.72	1,811,692.25	2,180,090.30	40.02564	-108.42796	
Mesaverde										
7,000.00	11.91	77.11	6,860.38	303.12	1,324.64	1,811,704.02	2,180,150.63	40.02567	-108.42774	
7,398.76	11.91	77.11	7,250.56	321.48	1,404.87	1,811,719.78	2,180,231.42	40.02572	-108.42746	
Start Drop -1.50										
7,500.00	10.39	77.11	7,349.88	325.85	1,423.96	1,811,723.53	2,180,250.64	40.02574	-108.42739	
8,000.00	2.89	77.11	7,846.17	338.75	1,480.31	1,811,734.60	2,180,307.37	40.02577	-108.42719	
8,192.91	0.00	0.00	8,039.00	339.83	1,485.06	1,811,735.53	2,180,312.15	40.02577	-108.42717	
Vertical										
8,292.91	0.00	0.00	8,139.00	339.83	1,485.06	1,811,735.53	2,180,312.15	40.02577	-108.42717	
Top Gas - Approx. Top Gas										

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Project:	BC 30-01N-098W	MD Reference:	KELLY BUSHING @ 6759.00usft (Cyclone 29 (21' RKB) kjs)
Site:	BCU 33-30-198 Pad	North Reference:	True
Well:	BCU 542-30-198	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 09May13 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	
8,500.00	0.00	0.00	8,346.09	339.83	1,485.06	1,811,735.53	2,180,312.15	40.02577	-108.42717	
9,000.00	0.00	0.00	8,846.09	339.83	1,485.06	1,811,735.53	2,180,312.15	40.02577	-108.42717	
9,222.91	0.00	0.00	9,069.00	339.83	1,485.06	1,811,735.53	2,180,312.15	40.02577	-108.42717	
Cameo Coals										
9,500.00	0.00	0.00	9,346.09	339.83	1,485.06	1,811,735.53	2,180,312.15	40.02577	-108.42717	
9,812.91	0.00	0.00	9,659.00	339.83	1,485.06	1,811,735.53	2,180,312.15	40.02577	-108.42717	
Rollins SS										
9,892.91	0.00	0.00	9,739.00	339.83	1,485.06	1,811,735.53	2,180,312.15	40.02577	-108.42717	
Cozzette										
10,000.00	0.00	0.00	9,846.09	339.83	1,485.06	1,811,735.53	2,180,312.15	40.02577	-108.42717	
10,092.91	0.00	0.00	9,939.00	339.83	1,485.06	1,811,735.53	2,180,312.15	40.02577	-108.42717	
Corcoran										
10,500.00	0.00	0.00	10,346.09	339.83	1,485.06	1,811,735.53	2,180,312.15	40.02577	-108.42717	
10,522.91	0.00	0.00	10,369.00	339.83	1,485.06	1,811,735.53	2,180,312.15	40.02577	-108.42717	
Upper Sego										
10,682.91	0.00	0.00	10,529.00	339.83	1,485.06	1,811,735.53	2,180,312.15	40.02577	-108.42717	
Lower Sego										
10,932.91	0.00	0.00	10,779.00	339.83	1,485.06	1,811,735.53	2,180,312.15	40.02577	-108.42717	
TD at 10932.91 - TD										

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 (50' Radius) BC - plan hits target center - Circle (radius 50.00)	0.00	0.00	8,139.00	339.83	1,485.06	1,811,735.53	2,180,312.15	40.02577	-108.42717	

Casing Points							Casing Diameter (in)	Hole Diameter (in)
Measured Depth (usft)	Vertical Depth (usft)	Name						
3,288.69	3,229.00	9 5/8"					9.625	12.250



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Project:	BC 30-01N-098W	MD Reference:	KELLY BUSHING @ 6759.00usft (Cyclone 29 (21' RKB) kjs)
Site:	BCU 33-30-198 Pad	North Reference:	True
Well:	BCU 542-30-198	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 09May13 kjs		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
743.89	739.00	Green River Fm				
948.29	939.00	A Groove				
1,152.69	1,139.00	B Groove				
1,561.50	1,539.00	Dissolution Surface				
2,343.34	2,304.00	Garden Gulch				
2,537.52	2,494.00	Orange Marker				
2,777.69	2,729.00	Wasatch				
4,780.83	4,689.00	Top of "G" Sand				
5,143.64	5,044.00	Fort Union				
6,508.02	6,379.00	Ohio Creek				
6,702.20	6,569.00	Mesaverde				
8,292.91	8,139.00	Approx. Top Gas				
9,222.91	9,069.00	Cameo Coals				
9,812.91	9,659.00	Rollins SS				
9,892.91	9,739.00	Cozzette				
10,092.91	9,939.00	Corcoran				
10,522.91	10,369.00	Upper Sego				
10,682.91	10,529.00	Lower Sego				
10,932.91	10,779.00	TD		0.00		

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 2.00
715.61	711.33	13.76	60.14	Hold 11.91 Inclination
7,398.76	7,250.56	321.48	1,404.87	Start Drop -1.50
8,192.91	8,039.00	339.83	1,485.06	Vertical
8,292.91	8,139.00	339.83	1,485.06	Top Gas
10,932.91	10,779.00	339.83	1,485.06	TD at 10932.91