

1 General

1.1 Customer Information

Company	PICEANCE HL
Representative	Eric Kolstad
Address	1515 Arapahoe St., Suite 1000 Denver, CO 80202

1.2 Well Information

Well	RG 321-23-298	Wellbore No.	
Well Name	FEDERAL RG 321-23-298	Common Name	RG 321-23-298
Project	RG 14-02S-098W	Site	RG 24-14-298 Pad
Vertical Section Azimuth	194.95 (°)	North Reference	
Origin N/S		Origin E/W	
Spud Date	5/20/2012	UWI	RG 321-23-298
Active Datum	KB @6,707.0ft (above Mean Sea Level)		

2 Survey Name

2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	
Date Started	5/20/2012	Ended	
Tool Name	MWD	Engineer	

2.1.1 Tie On Point

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)
0.0	0.00	0.00	0.00	0.00	0.00

2.1.2 Survey Stations

Date	Type	MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLS (°/100ft)	Build Rate (°/100ft)	Turn (°/100ft)	TFace (°)
5/20/2012	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/20/2012	NORMAL	259.0	3.78	247.48	258.81	-3.27	-7.89	5.20	1.46	1.46	0.00	247.48
	NORMAL	352.0	5.12	235.12	351.53	-6.82	-14.13	10.23	1.76	1.44	-13.29	318.14
5/21/2012	NORMAL	444.0	6.20	210.95	443.09	-13.43	-20.05	18.15	2.82	1.17	-26.27	282.02
	NORMAL	536.0	7.83	196.24	534.41	-23.71	-24.36	29.19	2.62	1.77	-15.99	304.76
	NORMAL	628.0	8.47	189.19	625.48	-36.41	-27.19	42.19	1.29	0.70	-7.66	299.11
	NORMAL	720.0	8.26	173.44	716.52	-49.67	-27.52	55.09	2.49	-0.23	-17.12	257.00
	NORMAL	813.0	8.53	184.75	808.53	-63.18	-27.33	68.09	1.80	0.29	12.16	86.34
	NORMAL	908.0	8.45	189.53	902.49	-77.08	-29.07	81.97	0.75	-0.08	5.03	98.83
	NORMAL	1,003.0	7.75	195.17	996.54	-90.15	-31.90	95.33	1.11	-0.74	5.94	134.14
	NORMAL	1,066.0	8.18	198.08	1,058.93	-98.51	-34.40	104.05	0.94	0.68	4.62	44.61
	NORMAL	1,160.0	7.84	197.64	1,152.01	-110.98	-38.42	117.13	0.37	-0.36	-0.47	190.00
	NORMAL	1,255.0	8.09	200.28	1,246.10	-123.42	-42.70	130.26	0.47	0.26	2.78	56.96
	NORMAL	1,339.0	8.53	197.47	1,329.22	-134.91	-46.62	142.37	0.71	0.52	-3.35	315.90
	NORMAL	1,444.0	8.79	197.03	1,433.02	-150.01	-51.31	158.17	0.26	0.25	-0.42	345.49
	NORMAL	1,538.0	8.18	195.01	1,525.99	-163.33	-55.14	172.03	0.72	-0.65	-2.15	205.04
	NORMAL	1,633.0	7.74	192.55	1,620.07	-176.11	-58.28	185.18	0.59	-0.46	-2.59	216.53
	NORMAL	1,726.0	8.00	191.84	1,712.20	-188.55	-60.97	197.90	0.30	0.28	-0.76	339.15
	NORMAL	1,820.0	8.00	193.78	1,805.28	-201.31	-63.87	210.97	0.29	0.00	2.06	90.96
	NORMAL	1,915.0	7.74	193.87	1,899.39	-213.94	-66.98	223.98	0.27	-0.27	0.09	177.33

2.1.2 Survey Stations (Continued)

Date	Type	MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLS (%/100ft)	Build Rate (%/100ft)	Turn (%/100ft)	TFace (°)
5/21/2012	NORMAL	2,010.0	8.18	195.01	1,993.47	-226.68	-70.26	237.13	0.49	0.46	1.20	20.30
	NORMAL	2,103.0	7.29	192.25	2,085.63	-238.84	-73.23	249.64	1.04	-0.96	-2.97	201.29
	NORMAL	2,197.0	7.30	191.67	2,178.87	-250.51	-75.70	261.56	0.08	0.01	-0.62	277.44
	NORMAL	2,292.0	7.12	190.35	2,273.12	-262.21	-77.98	273.46	0.26	-0.19	-1.39	221.97
5/22/2012	NORMAL	2,386.0	7.30	190.00	2,366.37	-273.83	-80.06	285.21	0.20	0.19	-0.37	346.11
	NORMAL	2,482.0	6.68	197.47	2,461.66	-285.16	-82.80	296.87	1.14	-0.65	7.78	127.96
	NORMAL	2,576.0	6.51	196.94	2,555.04	-295.47	-85.99	307.65	0.19	-0.18	-0.56	199.44
	NORMAL	2,671.0	6.24	195.98	2,649.45	-305.59	-88.98	318.20	0.31	-0.28	-1.01	201.07
	NORMAL	2,764.0	6.51	195.01	2,741.88	-315.54	-91.74	328.52	0.31	0.29	-1.04	337.77
	NORMAL	2,858.0	6.16	195.80	2,835.30	-325.54	-94.49	338.90	0.38	-0.37	0.84	166.41
	NORMAL	2,953.0	6.24	191.67	2,929.75	-335.50	-96.93	349.15	0.48	0.08	-4.35	278.11
	NORMAL	3,048.0	6.24	194.22	3,024.18	-345.56	-99.24	359.46	0.29	0.00	2.68	91.27
	NORMAL	3,142.0	5.80	191.58	3,117.66	-355.16	-101.45	369.31	0.55	-0.47	-2.81	210.87
	NORMAL	3,237.0	6.14	197.25	3,212.15	-364.72	-103.92	379.18	0.72	0.36	5.97	62.87
5/24/2012	NORMAL	3,332.0	5.89	195.33	3,306.63	-374.27	-106.71	389.13	0.34	-0.26	-2.02	217.87
	NORMAL	3,442.0	5.03	190.63	3,416.13	-384.46	-109.09	399.59	0.88	-0.78	-4.27	205.15
	NORMAL	3,505.0	3.61	201.78	3,478.95	-389.01	-110.34	404.31	2.61	-2.25	17.70	154.88
	NORMAL	3,599.0	5.36	184.11	3,572.66	-396.14	-111.75	411.56	2.35	1.86	-18.80	312.67
	NORMAL	3,694.0	7.12	180.16	3,667.09	-406.45	-112.09	421.61	1.91	1.85	-4.16	344.32
	NORMAL	3,788.0	6.57	184.12	3,760.43	-417.64	-112.49	432.53	0.77	-0.59	4.21	141.32
	NORMAL	3,882.0	6.48	185.72	3,853.82	-428.29	-113.40	443.04	0.22	-0.10	1.70	117.13
	NORMAL	3,977.0	6.86	193.78	3,948.18	-439.13	-115.29	454.01	1.06	0.40	8.48	71.94
	NORMAL	4,070.0	4.13	191.37	4,040.74	-447.81	-117.27	462.90	2.95	-2.94	-2.59	183.63
	NORMAL	4,164.0	5.10	187.10	4,134.43	-455.27	-118.46	470.42	1.09	1.03	-4.54	338.36
	NORMAL	4,259.0	6.77	209.69	4,228.93	-464.33	-121.75	480.02	2.99	1.76	23.78	66.03
	NORMAL	4,354.0	6.68	205.73	4,323.28	-474.17	-126.93	490.87	0.50	-0.09	-4.17	257.05
	NORMAL	4,449.0	6.30	209.68	4,417.67	-483.68	-131.91	501.33	0.62	-0.40	4.16	132.35
	NORMAL	4,544.0	6.86	205.91	4,512.05	-493.31	-136.97	511.95	0.74	0.59	-3.97	320.47
	NORMAL	4,638.0	5.98	185.25	4,605.47	-503.24	-139.87	522.29	2.61	-0.94	-21.98	239.09
	NORMAL	4,732.0	5.63	185.25	4,698.99	-512.70	-140.74	531.66	0.37	-0.37	0.00	180.00
	NORMAL	4,826.0	5.28	192.46	4,792.56	-521.52	-142.09	540.52	0.82	-0.37	7.67	120.61
	NORMAL	4,918.0	4.40	188.68	4,884.23	-529.14	-143.54	548.26	1.02	-0.96	-4.11	198.05
	NORMAL	5,012.0	3.78	197.21	4,977.99	-535.67	-145.00	554.94	0.92	-0.66	9.07	139.74
	NORMAL	5,106.0	3.43	199.84	5,071.81	-541.27	-146.87	560.84	0.41	-0.37	2.80	156.02
	NORMAL	5,200.0	2.95	202.96	5,165.66	-546.14	-148.77	566.04	0.54	-0.51	3.32	161.67
	NORMAL	5,295.0	2.29	192.28	5,260.56	-550.25	-150.13	570.35	0.86	-0.69	-11.24	211.24
	NORMAL	5,387.0	0.53	224.63	5,352.53	-552.35	-150.82	572.56	2.03	-1.91	35.16	171.25
	NORMAL	5,482.0	0.97	218.39	5,447.52	-553.29	-151.62	573.68	0.47	0.46	-6.57	346.35
	NORMAL	5,576.0	0.99	232.61	5,541.51	-554.41	-152.76	575.05	0.26	0.02	15.13	92.43
	NORMAL	5,670.0	0.79	204.59	5,635.50	-555.49	-153.68	576.33	0.50	-0.21	-29.81	231.75
5/25/2012	NORMAL	5,764.0	0.88	199.75	5,729.49	-556.76	-154.19	577.69	0.12	0.10	-5.15	319.48
	NORMAL	5,859.0	1.06	216.72	5,824.48	-558.15	-154.96	579.23	0.35	0.19	17.86	66.60
	NORMAL	5,955.0	0.18	240.80	5,920.47	-558.93	-155.63	580.16	0.94	-0.92	25.08	175.31
	NORMAL	6,049.0	0.26	288.00	6,014.47	-558.94	-155.96	580.25	0.20	0.09	50.21	91.00
	NORMAL	6,143.0	0.44	249.33	6,108.47	-559.00	-156.50	580.45	0.31	0.19	-41.14	286.90
	NORMAL	6,238.0	0.53	261.81	6,203.46	-559.19	-157.27	580.84	0.15	0.09	13.14	55.92
	NORMAL	6,332.0	0.44	262.95	6,297.46	-559.30	-158.06	581.14	0.10	-0.10	1.21	174.45
	NORMAL	6,427.0	0.44	245.37	6,392.46	-559.50	-158.76	581.51	0.14	0.00	-18.51	261.21
	NORMAL	6,522.0	0.62	272.00	6,487.45	-559.63	-159.60	581.86	0.32	0.19	28.03	67.65
	NORMAL	6,617.0	1.58	40.88	6,582.44	-558.62	-159.26	580.80	2.13	1.01	135.66	142.65
	NORMAL	6,711.0	1.07	44.44	6,676.42	-557.02	-157.80	578.87	0.55	-0.54	3.79	172.61
	NORMAL	6,806.0	0.62	22.13	6,771.41	-555.91	-156.98	577.59	0.58	-0.47	-23.48	205.37
	NORMAL	6,899.0	1.41	73.54	6,864.39	-555.12	-155.69	576.49	1.22	0.85	55.28	76.75
	NORMAL	6,994.0	1.03	109.80	6,959.37	-555.07	-153.77	575.95	0.88	-0.40	38.17	133.57
	NORMAL	7,089.0	0.48	156.36	7,054.36	-555.73	-152.81	576.34	0.82	-0.58	49.01	153.53
	NORMAL	7,183.0	0.44	331.68	7,148.36	-555.77	-152.82	576.38	0.98	-0.04	186.51	177.76
	NORMAL	7,277.0	0.28	156.15	7,242.36	-555.66	-152.90	576.30	0.77	-0.17	-186.73	181.74

2.1.2 Survey Stations (Continued)

Date	Type	MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLS (%/100ft)	Build Rate (%/100ft)	Turn (%/100ft)	TFace (°)
5/25/2012	NORMAL	7,372.0	0.44	216.01	7,337.36	-556.17	-153.02	576.82	0.41	0.17	63.01	98.82
	NORMAL	7,466.0	0.88	11.05	7,431.36	-555.75	-153.09	576.44	1.37	0.47	164.94	163.30
	NORMAL	7,561.0	0.70	348.65	7,526.35	-554.47	-153.07	575.19	0.37	-0.19	-23.58	228.89
	NORMAL	7,655.0	1.61	49.95	7,620.33	-553.06	-152.17	573.59	1.50	0.97	65.21	87.03
5/26/2012	NORMAL	7,750.0	1.14	41.82	7,715.30	-551.49	-150.52	571.66	0.53	-0.49	-8.56	198.51
	NORMAL	7,845.0	0.62	29.51	7,810.29	-550.34	-149.63	570.32	0.58	-0.55	-12.96	193.90
	NORMAL	7,940.0	0.15	46.79	7,905.29	-549.81	-149.29	569.71	0.50	-0.49	18.19	174.66
	NORMAL	8,034.0	0.53	300.92	7,999.29	-549.50	-149.57	569.49	0.63	0.40	-112.63	239.95
	NORMAL	8,129.0	1.23	64.14	8,094.28	-548.83	-149.03	568.70	1.67	0.74	129.71	139.48
	NORMAL	8,224.0	0.88	66.68	8,189.27	-548.10	-147.45	567.58	0.37	-0.37	2.67	173.66
	NORMAL	8,318.0	0.44	78.03	8,283.26	-547.74	-146.43	566.97	0.49	-0.47	12.07	169.07
	NORMAL	8,415.0	0.44	195.10	8,380.26	-548.02	-146.16	567.18	0.77	0.00	120.69	148.53
5/27/2012	NORMAL	8,509.0	0.62	223.57	8,474.25	-548.74	-146.61	567.98	0.33	0.19	30.29	70.44
	NORMAL	8,603.0	0.74	171.84	8,568.25	-549.71	-146.87	568.99	0.64	0.13	-55.03	254.45
	NORMAL	8,698.0	1.14	202.83	8,663.24	-551.18	-147.15	570.49	0.67	0.42	32.62	67.99
	NORMAL	8,793.0	0.62	185.12	8,758.23	-552.57	-147.56	571.93	0.61	-0.55	-18.64	198.95
	NORMAL	8,887.0	0.90	300.48	8,852.22	-552.70	-148.24	572.23	1.38	0.30	122.72	141.03
	NORMAL	8,981.0	0.87	293.42	8,946.21	-552.04	-149.54	571.93	0.12	-0.03	-7.51	251.11
	NORMAL	9,075.0	0.47	19.88	9,040.20	-551.39	-150.06	571.44	1.02	-0.43	91.98	150.85
	NORMAL	9,169.0	0.60	248.64	9,134.20	-551.21	-150.39	571.35	1.04	0.14	-139.62	207.53
	NORMAL	9,263.0	1.41	316.30	9,228.19	-550.55	-151.64	571.04	1.39	0.86	71.98	92.81
	NORMAL	9,358.0	1.32	328.69	9,323.16	-548.77	-153.02	569.67	0.32	-0.09	13.04	113.09
	NORMAL	9,450.0	0.97	306.28	9,415.15	-547.41	-154.20	568.66	0.61	-0.38	-24.36	221.14
	NORMAL	9,544.0	0.60	89.95	9,509.14	-546.94	-154.35	568.24	1.59	-0.39	152.84	166.26
5/28/2012	NORMAL	9,638.0	0.79	166.97	9,603.14	-547.57	-153.71	568.69	0.93	0.20	81.94	118.76
	NORMAL	9,733.0	0.53	197.47	9,698.13	-548.63	-153.69	569.70	0.45	-0.27	32.11	141.10
	NORMAL	9,827.0	0.88	224.01	9,792.12	-549.56	-154.33	570.77	0.50	0.37	28.23	56.80
	NORMAL	9,921.0	0.97	229.73	9,886.11	-550.59	-155.43	572.05	0.14	0.10	6.09	48.62
	NORMAL	10,015.0	0.18	240.98	9,980.11	-551.18	-156.17	572.81	0.84	-0.84	11.97	177.47
	NORMAL	10,109.0	0.26	277.45	10,074.10	-551.22	-156.51	572.94	0.17	0.09	38.80	79.34
	NORMAL	10,204.0	0.79	254.16	10,169.10	-551.37	-157.36	573.30	0.59	0.56	-24.52	326.15
	NORMAL	10,298.0	0.44	273.67	10,263.09	-551.53	-158.34	573.71	0.43	-0.37	20.76	158.62
	NORMAL	10,393.0	0.74	251.45	10,358.09	-551.70	-159.28	574.12	0.39	0.32	-23.39	311.21
	NORMAL	10,487.0	0.88	222.52	10,452.08	-552.42	-160.35	575.09	0.45	0.15	-30.78	274.06
	NORMAL	10,581.0	0.62	232.98	10,546.07	-553.26	-161.24	576.13	0.31	-0.28	11.13	157.39
	NORMAL	10,675.0	1.29	236.46	10,640.06	-554.15	-162.53	577.32	0.72	0.71	3.70	6.69
5/30/2012	NORMAL	10,770.0	1.93	235.26	10,735.02	-555.66	-164.74	579.35	0.67	0.67	-1.26	356.38
	NORMAL	10,845.0	2.64	231.48	10,809.96	-557.45	-167.13	581.70	0.97	0.95	-5.04	346.12
	NORMAL	10,901.0	2.64	231.48	10,865.90	-559.06	-169.14	583.77	0.00	0.00	0.00	0.00