

1 General

1.1 Customer Information

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

1.2 Well/Wellbore Information

Well	RG 531-23-298	Wellbore No.	00
Wellbore Legal Name	RG 531-23-298	Common Wellbore Name	RG 531-23-298
Project	RG 14-02S-098WV	Site	RG 24-14-298 Pad
Vertical Section Azimuth	139.25 (°)	North reference	
Origin N/S		Origin E/W	
Spud date	9/27/2013	UWI	RG 531-23-298
Active datum	KB @6,707.0ft (above Mean Sea Level)		

2 Survey Name

2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	SDI
Date Started	9/27/2013	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 (°/100usft)	Build Rate (°/100usft)	Turn (°/100usft)	Tface (°)
9/27/2013	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/27/2013	NORMAL	246.0	4.11	151.81	245.79	-7.77	4.17	8.61	1.67	1.67	0.00	151.81
	NORMAL	338.0	5.73	146.20	337.45	-14.50	8.28	16.39	1.83	1.76	-6.10	340.65
	NORMAL	430.0	7.10	140.22	428.87	-22.68	14.47	26.63	1.65	1.49	-6.50	331.01
	NORMAL	523.0	8.94	138.50	520.96	-32.51	22.94	39.60	2.00	1.98	-1.85	351.72
	NORMAL	615.0	11.08	136.81	611.55	-44.31	33.73	55.59	2.35	2.33	-1.84	351.35
	NORMAL	707.0	12.65	136.35	701.58	-58.05	46.73	74.48	1.71	1.71	-0.50	356.33
	NORMAL	799.0	14.57	134.60	791.00	-73.46	61.93	96.08	2.13	2.09	-1.90	347.04
	NORMAL	892.0	17.12	135.84	880.46	-91.50	79.79	121.40	2.77	2.74	1.33	8.16
	NORMAL	984.0	18.94	136.84	967.94	-112.11	99.44	149.84	2.01	1.98	1.09	10.13
	NORMAL	1,079.0	19.40	135.41	1,057.67	-134.59	121.07	180.99	0.69	0.48	-1.51	313.73
	NORMAL	1,173.0	20.33	135.27	1,146.07	-157.31	143.52	212.85	0.99	0.99	-0.15	357.01
	NORMAL	1,268.0	20.49	135.15	1,235.11	-180.82	166.86	245.90	0.17	0.17	-0.13	345.29
	NORMAL	1,363.0	20.40	139.54	1,324.13	-205.21	189.33	279.05	1.62	-0.09	4.62	95.41
	NORMAL	1,457.0	20.52	145.47	1,412.21	-231.25	209.30	311.81	2.21	0.13	6.31	89.47
	NORMAL	1,552.0	20.81	144.73	1,501.10	-258.74	228.48	345.16	0.41	0.31	-0.78	317.65
	NORMAL	1,647.0	20.96	143.73	1,589.86	-286.22	248.28	378.90	0.41	0.16	-1.05	292.35
	NORMAL	1,742.0	19.28	142.62	1,679.06	-312.39	267.86	411.50	1.81	-1.77	-1.17	192.28
9/28/2013	NORMAL	1,837.0	19.29	142.30	1,768.73	-337.26	286.97	442.82	0.11	0.01	-0.34	275.25
	NORMAL	1,932.0	19.64	138.51	1,858.30	-361.64	307.15	474.46	1.38	0.37	-3.99	283.70
	NORMAL	2,026.0	19.99	138.88	1,946.74	-385.58	328.18	506.32	0.40	0.37	0.39	19.89

2.1.2 Survey Stations (Continued)

Date	Type	MD (ft)	Inc. (°)	Azi. (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. sec. (ft)	DLS (%/100usft)	Build Rate (%/100usft)	Turn (%/100usft)	Tface (°)	
9/28/2013	NORMAL	2,121.0	19.77	138.82	2,036.07	-409.90	349.44	538.63	0.23	-0.23	-0.06	185.27	
	NORMAL	2,216.0	19.30	138.16	2,125.61	-433.69	370.49	570.39	0.55	-0.49	-0.69	204.84	
	NORMAL	2,310.0	18.45	137.03	2,214.55	-456.15	390.99	600.78	0.98	-0.90	-1.20	202.74	
	NORMAL	2,405.0	18.83	137.93	2,304.57	-478.53	411.51	631.13	0.50	0.40	0.95	37.55	
	NORMAL	2,500.0	17.85	136.86	2,394.74	-500.53	431.74	661.01	1.09	-1.03	-1.13	198.45	
	NORMAL	2,594.0	18.42	138.99	2,484.07	-522.25	451.33	690.25	0.93	0.61	2.27	50.33	
	NORMAL	2,689.0	19.42	140.37	2,573.94	-545.74	471.26	721.05	1.15	1.05	1.45	24.76	
	NORMAL	2,784.0	19.19	140.57	2,663.60	-569.97	491.25	752.45	0.25	-0.24	0.21	164.06	
	NORMAL	2,879.0	18.29	138.81	2,753.56	-593.25	510.98	782.97	1.12	-0.95	-1.85	211.31	
	NORMAL	2,973.0	19.04	139.70	2,842.62	-616.04	530.61	813.05	0.85	0.80	0.95	21.22	
	NORMAL	3,068.0	19.84	141.24	2,932.20	-640.43	550.73	844.66	1.00	0.84	1.62	33.37	
	NORMAL	3,163.0	18.67	140.70	3,021.89	-664.77	570.45	875.97	1.25	-1.23	-0.57	188.40	
	NORMAL	3,257.0	19.41	140.49	3,110.74	-688.46	589.92	906.63	0.79	0.79	-0.22	354.61	
	NORMAL	3,352.0	19.45	139.29	3,200.33	-712.63	610.28	938.23	0.42	0.04	-1.26	275.16	
	NORMAL	3,395.0	19.15	139.26	3,240.92	-723.40	619.55	952.44	0.70	-0.70	-0.07	181.88	
	NORMAL	3,460.0	19.15	139.26	3,302.32	-739.56	633.47	973.76	0.00	0.00	0.00	0.00	
	11/8/2013	NORMAL	3,548.0	18.11	137.36	3,385.90	-759.91	652.04	1,001.87	0.79	-0.68	-1.24	209.37
	NORMAL	3,643.0	18.91	137.80	3,475.99	-782.17	672.38	1,031.45	0.85	0.84	0.46	10.11	
	NORMAL	3,738.0	19.35	138.94	3,565.74	-805.45	693.06	1,062.58	0.61	0.46	1.20	40.87	
	NORMAL	3,833.0	18.03	134.55	3,655.73	-827.63	713.88	1,092.97	2.03	-1.39	-4.62	224.76	
	NORMAL	3,927.0	15.56	134.37	3,745.72	-846.65	733.26	1,120.04	2.63	-2.63	-0.19	181.12	
	NORMAL	4,022.0	15.39	138.59	3,837.28	-866.02	750.71	1,145.34	1.20	-0.18	4.44	100.62	
	NORMAL	4,116.0	16.44	143.07	3,927.67	-885.01	766.95	1,171.08	1.72	1.12	4.77	51.65	
	NORMAL	4,211.0	18.20	139.03	4,018.37	-906.96	784.76	1,199.34	2.24	1.85	-4.25	323.71	
	NORMAL	4,308.0	18.73	140.00	4,108.48	-929.84	804.29	1,229.42	0.64	0.56	1.02	30.56	
	NORMAL	4,401.0	19.96	142.55	4,198.11	-954.40	823.95	1,260.87	1.57	1.29	2.68	35.69	
	NORMAL	4,495.0	20.66	139.73	4,286.27	-979.79	844.43	1,293.47	1.28	0.74	-3.00	304.24	
	NORMAL	4,590.0	19.61	135.95	4,375.47	-1,004.04	866.35	1,326.14	1.76	-1.11	-3.98	229.33	
	NORMAL	4,685.0	20.31	135.87	4,464.76	-1,027.33	888.91	1,358.52	0.74	0.74	-0.08	357.73	
	NORMAL	4,780.0	19.17	137.27	4,554.18	-1,050.63	910.98	1,390.57	1.30	-1.20	1.47	158.13	
	NORMAL	4,875.0	17.59	137.45	4,644.33	-1,072.66	931.27	1,420.50	1.66	-1.66	0.19	178.03	
	11/9/2013	NORMAL	4,969.0	16.44	134.99	4,734.21	-1,092.53	950.28	1,447.97	1.44	-1.22	-2.62	210.87
	NORMAL	5,064.0	15.26	132.19	4,825.60	-1,110.43	969.05	1,473.78	1.48	-1.24	-2.95	211.61	
	NORMAL	5,159.0	13.70	132.53	4,917.58	-1,126.43	986.61	1,497.36	1.64	-1.64	0.36	177.05	
	NORMAL	5,253.0	12.51	133.97	5,009.13	-1,141.02	1,002.14	1,518.55	1.31	-1.27	1.53	165.36	
	NORMAL	5,348.0	12.13	130.77	5,101.94	-1,154.69	1,017.10	1,538.67	0.82	-0.40	-3.37	239.35	
	NORMAL	5,443.0	10.46	127.69	5,195.10	-1,166.48	1,031.49	1,556.99	1.87	-1.76	-3.24	198.36	
	NORMAL	5,537.0	8.53	129.54	5,287.81	-1,176.13	1,043.62	1,572.23	2.08	-2.05	1.97	171.93	
	NORMAL	5,632.0	7.91	132.00	5,381.83	-1,184.99	1,053.91	1,585.66	0.75	-0.65	2.59	151.65	
	NORMAL	5,727.0	7.03	127.87	5,476.03	-1,192.94	1,063.35	1,597.84	1.08	-0.93	-4.35	209.35	
	NORMAL	5,822.0	6.07	131.65	5,570.41	-1,199.84	1,071.70	1,608.52	1.11	-1.01	3.98	157.68	
	NORMAL	5,916.0	4.84	127.89	5,663.98	-1,205.57	1,078.55	1,617.33	1.37	-1.31	-4.21	195.05	
	NORMAL	6,011.0	4.17	127.96	5,758.69	-1,210.14	1,084.44	1,624.64	0.71	-0.71	0.28	178.32	
	NORMAL	6,106.0	3.96	131.65	5,853.45	-1,214.45	1,089.62	1,631.28	0.35	-0.22	3.88	130.59	
	NORMAL	6,201.0	2.46	129.63	5,948.30	-1,217.93	1,093.64	1,636.55	1.58	-1.58	-2.13	183.30	
	NORMAL	6,295.0	2.64	132.88	6,042.20	-1,220.69	1,096.78	1,640.69	0.25	0.19	3.46	40.41	
	NORMAL	6,390.0	1.14	168.39	6,137.15	-1,223.10	1,098.57	1,643.69	1.93	-1.58	37.38	158.85	
	NORMAL	6,485.0	1.23	190.01	6,232.13	-1,225.03	1,098.59	1,645.16	0.48	0.09	22.76	89.56	
	NORMAL	6,580.0	0.53	295.48	6,327.13	-1,225.85	1,098.01	1,645.40	1.54	-0.74	111.02	159.57	
	NORMAL	6,674.0	0.70	304.09	6,421.12	-1,225.34	1,097.14	1,644.45	0.21	0.18	9.16	32.88	
11/10/2013	NORMAL	6,769.0	0.88	257.15	6,516.11	-1,225.18	1,095.95	1,643.55	0.68	0.19	-49.41	261.23	
	NORMAL	6,864.0	1.32	244.41	6,611.09	-1,225.81	1,094.25	1,642.92	0.53	0.46	-13.41	324.46	
	NORMAL	6,959.0	1.41	233.78	6,706.07	-1,226.98	1,092.32	1,642.54	0.28	0.09	-11.19	284.20	
	NORMAL	7,053.0	1.36	277.85	6,800.04	-1,227.51	1,090.29	1,641.61	1.11	-0.05	46.88	114.58	
	NORMAL	7,148.0	1.49	263.66	6,895.01	-1,227.49	1,087.94	1,640.07	0.39	0.14	-14.94	283.04	
	NORMAL	7,243.0	1.64	255.81	6,989.98	-1,227.96	1,085.40	1,638.76	0.28	0.16	-8.26	301.01	

2.1.2 Survey Stations (Continued)

Date	Type	MD (ft)	Inc. (°)	Azi. (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. sec. (ft)	DLS (°/100usft)	Build Rate (°/100usft)	Turn (°/100usft)	Tface (°)
11/10/2013	NORMAL	7,338.0	1.76	247.93	7,084.94	-1,228.84	1,082.73	1,637.69	0.28	0.13	-8.29	293.20
	NORMAL	7,433.0	1.14	245.03	7,179.91	-1,229.79	1,080.52	1,636.96	0.66	-0.65	-3.05	185.30
	NORMAL	7,528.0	1.32	216.90	7,274.89	-1,231.06	1,079.00	1,636.94	0.66	0.19	-29.61	272.22
	NORMAL	7,622.0	1.32	182.98	7,368.86	-1,233.01	1,078.30	1,637.95	0.82	0.00	-36.09	253.04
	NORMAL	7,717.0	0.79	147.03	7,463.85	-1,234.65	1,078.60	1,639.39	0.87	-0.56	-37.84	214.28
	NORMAL	7,812.0	0.88	162.06	7,558.84	-1,235.89	1,079.18	1,640.71	0.25	0.09	15.82	75.29
	NORMAL	7,907.0	0.97	189.48	7,653.83	-1,237.38	1,079.27	1,641.90	0.47	0.09	28.86	92.43
	NORMAL	8,001.0	1.32	206.62	7,747.81	-1,239.13	1,078.65	1,642.83	0.52	0.37	18.23	53.16
	NORMAL	8,096.0	1.49	212.15	7,842.78	-1,241.16	1,077.51	1,643.61	0.23	0.18	5.82	41.36
	NORMAL	8,191.0	0.26	171.81	7,937.77	-1,242.42	1,076.88	1,644.16	1.37	-1.29	-42.46	187.42
	NORMAL	8,286.0	0.44	123.82	8,032.77	-1,242.83	1,077.21	1,644.69	0.35	0.19	-50.52	276.02
	NORMAL	8,380.0	0.62	172.25	8,126.76	-1,243.54	1,077.58	1,645.46	0.49	0.19	51.52	93.53
	NORMAL	8,475.0	0.70	37.34	8,221.76	-1,243.59	1,078.00	1,645.78	1.28	0.08	-142.01	203.99
11/11/2013	NORMAL	8,570.0	0.09	315.43	8,316.76	-1,243.07	1,078.30	1,645.58	0.73	-0.64	-86.22	187.39
	NORMAL	8,664.0	0.88	239.23	8,410.75	-1,243.39	1,077.63	1,645.38	0.92	0.84	-81.06	277.99
	NORMAL	8,759.0	0.88	25.91	8,505.75	-1,243.11	1,077.32	1,644.97	1.77	0.00	154.40	163.34
	NORMAL	8,853.0	0.79	38.31	8,599.74	-1,241.95	1,078.04	1,644.56	0.21	-0.10	13.19	122.59
	NORMAL	8,948.0	2.02	37.96	8,694.71	-1,240.11	1,079.48	1,644.11	1.29	1.29	-0.37	359.43
	NORMAL	9,043.0	1.49	37.25	8,789.66	-1,237.81	1,081.25	1,643.52	0.56	-0.56	-0.75	181.99
	NORMAL	9,137.0	2.37	56.15	8,883.61	-1,235.76	1,083.61	1,643.50	1.14	0.94	20.11	45.57
	NORMAL	9,231.0	1.32	71.18	8,977.56	-1,234.32	1,086.25	1,644.14	1.22	-1.12	15.99	162.64
	NORMAL	9,326.0	3.25	42.88	9,072.48	-1,232.00	1,089.12	1,644.25	2.29	2.03	-29.79	315.03
11/12/2013	NORMAL	9,421.0	2.29	33.47	9,167.37	-1,228.44	1,091.99	1,643.43	1.11	-1.01	-9.91	200.70
	NORMAL	9,516.0	2.29	35.49	9,262.30	-1,225.31	1,094.14	1,642.47	0.08	0.00	2.13	91.01
	NORMAL	9,610.0	1.06	24.86	9,356.26	-1,222.99	1,095.60	1,641.66	1.34	-1.31	-11.31	188.90
	NORMAL	9,705.0	1.06	75.40	9,451.24	-1,221.97	1,096.82	1,641.68	0.95	0.00	53.20	115.27
	NORMAL	9,800.0	0.35	131.91	9,546.24	-1,221.95	1,097.89	1,642.36	0.96	-0.75	59.48	161.39
	NORMAL	9,895.0	0.35	214.88	9,641.23	-1,222.38	1,097.94	1,642.72	0.49	0.00	87.34	131.48
	NORMAL	9,989.0	0.83	262.91	9,735.23	-1,222.70	1,097.10	1,642.41	0.69	0.51	51.10	71.62
	NORMAL	10,084.0	1.31	258.46	9,830.21	-1,223.00	1,095.35	1,641.50	0.51	0.51	-4.68	347.95
	NORMAL	10,179.0	1.74	249.24	9,925.18	-1,223.73	1,092.94	1,640.48	0.52	0.45	-9.71	325.63
	NORMAL	10,273.0	1.41	321.31	10,019.15	-1,223.33	1,090.88	1,638.83	1.99	-0.35	76.67	134.22
	NORMAL	10,368.0	2.07	291.08	10,114.11	-1,221.80	1,088.55	1,636.15	1.17	0.69	-31.82	289.97
	NORMAL	10,462.0	2.09	288.44	10,208.05	-1,220.65	1,085.34	1,633.19	0.10	0.02	-2.81	280.47
	NORMAL	10,557.0	2.11	274.29	10,302.99	-1,219.97	1,081.95	1,630.46	0.54	0.02	-14.89	265.13
	NORMAL	10,652.0	2.15	270.06	10,397.92	-1,219.84	1,078.42	1,628.06	0.17	0.04	-4.45	282.15
	NORMAL	10,746.0	2.33	271.42	10,491.85	-1,219.79	1,074.75	1,625.62	0.20	0.19	1.45	17.13
	NORMAL	10,841.0	2.26	262.88	10,586.77	-1,219.97	1,070.96	1,623.29	0.37	-0.07	-8.99	254.19
	NORMAL	10,936.0	2.45	254.34	10,681.69	-1,220.75	1,067.15	1,621.39	0.42	0.20	-8.99	294.12
	NORMAL	11,031.0	3.01	245.06	10,776.59	-1,222.35	1,062.93	1,619.85	0.75	0.59	-9.77	317.02
	NORMAL	11,086.0	3.08	242.56	10,831.51	-1,223.64	1,060.31	1,619.12	0.27	0.13	-4.55	296.54
	NORMAL	11,135.0	3.08	242.56	10,880.44	-1,224.86	1,057.97	1,618.51	0.00	0.00	0.00	0.00