

## 1 General

### 1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

### 1.2 Well/Wellbore Information

Well	RU 331-5	Wellbore No.	00
Wellbore Legal Name	RU 331-5	Common Wellbore Name	RU 331-5
Project	RU 05-07S-093W	Site	RU 23-5 Pad
Vertical Section Azimuth	111.98 (°)	North reference	True
Origin N/S		Origin E/W	
Spud date	11/9/2013	UWI	RU 331-5
Active datum	KB @7,627.0ft (above Mean Sea Level)		

## 2 Survey Name

### 2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	SCIENTIFIC
Date Started	11/9/2013	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 (°)
11/9/2013	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/9/2013	NORMAL	88.0	0.44	47.20	88.00	0.23	0.25	0.14	0.50	0.50	0.00	47.20
	NORMAL	178.0	1.41	169.45	177.99	-0.62	0.70	0.89	1.87	1.08	135.83	135.00
	NORMAL	270.0	2.64	155.30	269.93	-3.66	1.80	3.04	1.43	1.34	-15.38	330.70
	NORMAL	360.0	4.40	143.53	359.76	-8.32	4.72	7.49	2.10	1.96	-13.08	331.73
11/10/2013	NORMAL	452.0	5.89	134.12	451.39	-14.45	10.20	14.87	1.86	1.62	-10.23	325.73
	NORMAL	544.0	6.77	126.30	542.83	-20.94	17.96	24.49	1.34	0.96	-8.50	311.65
	NORMAL	635.0	7.57	116.28	633.12	-26.77	27.66	35.67	1.63	0.88	-11.01	297.57
	NORMAL	707.0	7.03	103.82	704.54	-29.93	36.19	44.76	2.32	-0.75	-17.31	245.06
	NORMAL	800.0	7.56	103.47	796.79	-32.71	47.67	56.44	0.57	0.57	-0.38	355.03
	NORMAL	892.0	6.42	116.03	888.11	-36.38	58.18	67.56	2.07	-1.24	13.65	132.84
	NORMAL	984.0	6.73	121.56	979.50	-41.46	67.39	78.01	0.77	0.34	6.01	66.68
	NORMAL	1,075.0	6.70	111.16	1,069.88	-46.16	76.88	88.57	1.33	-0.03	-11.43	263.43
11/11/2013	NORMAL	1,168.0	7.56	103.20	1,162.17	-49.52	87.90	100.05	1.41	0.92	-8.56	307.04
	NORMAL	1,263.0	7.67	103.70	1,256.33	-52.45	100.14	112.50	0.14	0.12	0.53	31.31
	NORMAL	1,358.0	7.71	103.65	1,350.47	-55.45	112.50	125.07	0.04	0.04	-0.05	350.48
	NORMAL	1,453.0	7.59	104.59	1,444.63	-58.54	124.76	137.60	0.18	-0.13	0.99	134.27
11/12/2013	NORMAL	1,548.0	7.41	103.36	1,538.82	-61.53	136.79	149.88	0.25	-0.19	-1.29	221.12
	NORMAL	1,643.0	6.77	113.13	1,633.09	-65.15	147.90	161.54	1.43	-0.67	10.28	122.75
	NORMAL	1,738.0	7.07	113.13	1,727.40	-69.64	158.43	172.98	0.32	0.32	0.00	0.00
	NORMAL	1,833.0	7.12	109.89	1,821.67	-73.94	169.34	184.71	0.42	0.05	-3.41	275.51

## 2.1.2 Survey Stations (Continued)

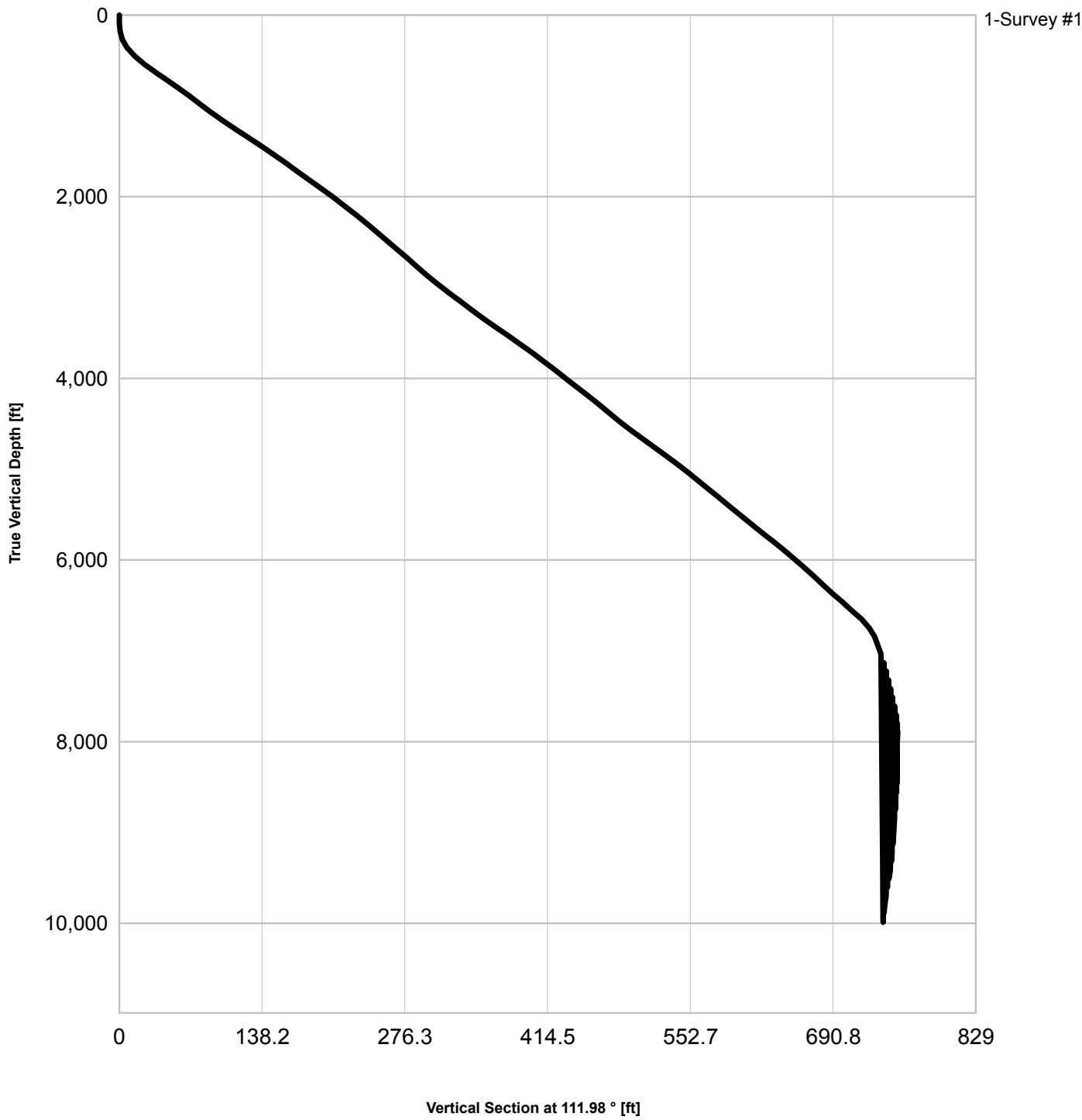
Date	Type	MD (ft)	Inc. (°)	Azi. (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. sec. (ft)	DLS (°/100usft)	Build Rate (°/100usft)	Turn (°/100usft)	Tface (°)
11/12/2013	NORMAL	1,929.0	6.93	109.49	1,916.95	-77.90	180.40	196.44	0.20	-0.20	-0.42	194.24
	NORMAL	2,024.0	6.60	110.94	2,011.29	-81.76	190.90	207.62	0.39	-0.35	1.53	153.35
	NORMAL	2,120.0	6.51	109.79	2,106.67	-85.58	201.17	218.58	0.17	-0.09	-1.20	235.00
	NORMAL	2,215.0	6.42	111.55	2,201.06	-89.35	211.18	229.27	0.23	-0.09	1.85	115.30
	NORMAL	2,310.0	6.02	111.61	2,295.50	-93.14	220.75	239.56	0.42	-0.42	0.06	179.10
	NORMAL	2,405.0	5.80	111.99	2,390.00	-96.77	229.83	249.35	0.24	-0.23	0.40	170.10
	NORMAL	2,501.0	5.98	112.25	2,485.49	-100.48	238.96	259.20	0.19	0.19	0.27	8.56
	NORMAL	2,596.0	5.89	113.13	2,579.98	-104.27	248.02	269.02	0.13	-0.09	0.93	135.12
	NORMAL	2,691.0	5.72	112.08	2,674.49	-107.96	256.89	278.63	0.21	-0.18	-1.11	211.47
	NORMAL	2,787.0	5.80	111.25	2,770.01	-111.52	265.84	288.26	0.12	0.08	-0.86	313.43
	NORMAL	2,882.0	5.54	111.99	2,864.55	-114.98	274.57	297.65	0.28	-0.27	0.78	164.66
	NORMAL	2,978.0	6.51	113.31	2,960.01	-118.86	283.87	307.72	1.02	1.01	1.38	8.79
	NORMAL	3,074.0	6.65	115.20	3,055.38	-123.38	293.89	318.71	0.27	0.15	1.97	58.06
	NORMAL	3,169.0	6.73	115.07	3,149.74	-128.09	303.91	329.76	0.09	0.08	-0.14	349.22
	NORMAL	3,264.0	6.72	117.48	3,244.08	-133.01	313.89	340.85	0.30	-0.01	2.54	93.23
	NORMAL	3,359.0	7.12	112.34	3,338.39	-137.81	324.26	352.27	0.78	0.42	-5.41	300.29
	NORMAL	3,455.0	7.12	113.13	3,433.65	-142.41	335.24	364.17	0.10	0.00	0.82	90.39
	NORMAL	3,550.0	7.21	114.16	3,527.91	-147.16	346.09	376.02	0.17	0.09	1.08	55.50
	NORMAL	3,645.0	7.21	114.72	3,622.16	-152.10	356.95	387.93	0.07	0.00	0.59	90.28
	NORMAL	3,738.0	6.83	117.48	3,714.46	-157.09	367.15	399.26	0.55	-0.41	2.97	139.77
	NORMAL	3,834.0	6.61	116.84	3,809.80	-162.22	377.15	410.45	0.24	-0.23	-0.67	198.48
11/13/2013	NORMAL	3,928.0	6.42	117.97	3,903.20	-167.12	386.62	421.07	0.24	-0.20	1.20	146.55
	NORMAL	4,023.0	6.51	111.55	3,997.59	-171.59	396.32	431.73	0.77	0.09	-6.76	273.90
	NORMAL	4,118.0	6.42	112.87	4,091.99	-175.64	406.22	442.43	0.18	-0.09	1.39	121.85
	NORMAL	4,213.0	6.48	112.87	4,186.39	-179.78	416.05	453.10	0.06	0.06	0.00	0.00
	NORMAL	4,308.0	6.24	107.24	4,280.80	-183.40	425.92	463.61	0.70	-0.25	-5.93	246.17
	NORMAL	4,403.0	6.07	108.56	4,375.26	-186.53	435.61	473.77	0.23	-0.18	1.39	140.88
	NORMAL	4,498.0	5.92	108.78	4,469.74	-189.70	445.01	483.67	0.16	-0.16	0.23	171.40
	NORMAL	4,593.0	6.91	107.58	4,564.14	-193.01	455.10	494.26	1.05	1.04	-1.26	351.69
	NORMAL	4,688.0	7.03	107.33	4,658.44	-196.46	466.10	505.75	0.13	0.13	-0.26	345.69
	NORMAL	4,784.0	6.95	107.95	4,753.73	-200.00	477.23	517.40	0.11	-0.08	0.65	136.98
	NORMAL	4,879.0	6.77	106.54	4,848.05	-203.37	488.07	528.71	0.26	-0.19	-1.48	222.40
	NORMAL	4,974.0	6.60	109.00	4,942.40	-206.74	498.60	539.74	0.35	-0.18	2.59	121.91
	NORMAL	5,070.0	6.35	106.97	5,037.79	-210.09	508.89	550.53	0.35	-0.26	-2.11	221.47
	NORMAL	5,166.0	6.24	108.12	5,133.21	-213.26	518.93	561.03	0.17	-0.11	1.20	131.67
	NORMAL	5,261.0	6.04	110.84	5,227.67	-216.64	528.51	571.18	0.37	-0.21	2.86	125.85
	NORMAL	5,357.0	6.31	105.74	5,323.11	-219.87	538.30	581.47	0.64	0.28	-5.31	293.66
	NORMAL	5,452.0	6.07	110.06	5,417.56	-223.01	548.05	591.68	0.55	-0.25	4.55	119.40
	NORMAL	5,548.0	6.22	110.45	5,513.00	-226.57	557.69	601.95	0.16	0.16	0.41	15.75
11/14/2013	NORMAL	5,643.0	6.20	113.96	5,607.45	-230.45	567.20	612.22	0.40	-0.02	3.69	94.76
	NORMAL	5,738.0	6.39	104.51	5,701.88	-233.86	577.00	622.59	1.11	0.20	-9.95	275.67
	NORMAL	5,834.0	6.42	102.76	5,797.28	-236.38	587.41	633.19	0.21	0.03	-1.82	277.87
	NORMAL	5,930.0	6.24	102.41	5,892.69	-238.69	597.74	643.63	0.19	-0.19	-0.36	191.93
	NORMAL	6,025.0	5.75	106.54	5,987.17	-241.15	607.34	653.46	0.69	-0.52	4.35	140.68
	NORMAL	6,120.0	5.67	107.85	6,081.70	-243.94	616.37	662.88	0.16	-0.08	1.38	122.19
	NORMAL	6,216.0	5.44	108.07	6,177.25	-246.81	625.21	672.15	0.24	-0.24	0.23	174.82
	NORMAL	6,311.0	5.19	110.15	6,271.84	-249.69	633.53	680.93	0.33	-0.26	2.19	143.41
11/15/2013	NORMAL	6,407.0	5.87	103.92	6,367.40	-252.36	642.37	690.13	0.94	0.71	-6.49	315.43
	NORMAL	6,503.0	6.16	91.20	6,462.87	-253.65	652.29	699.81	1.42	0.30	-13.25	275.90
	NORMAL	6,599.0	5.96	93.15	6,558.34	-254.03	662.41	709.34	0.30	-0.21	2.03	135.14
	NORMAL	6,694.0	5.63	95.38	6,652.85	-254.74	671.98	718.48	0.42	-0.35	2.35	146.80
	NORMAL	6,790.0	4.48	78.94	6,748.48	-254.46	680.34	726.13	1.91	-1.20	-17.13	223.56
	NORMAL	6,885.0	3.15	62.94	6,843.27	-252.57	686.31	730.96	1.78	-1.40	-16.84	210.87
	NORMAL	6,980.0	2.55	69.19	6,938.16	-250.63	690.61	734.22	0.71	-0.63	6.58	155.72
	NORMAL	7,076.0	2.20	78.59	7,034.07	-249.50	694.41	737.32	0.54	-0.36	9.79	136.57
	NORMAL	7,172.0	1.76	82.72	7,130.02	-248.95	697.68	740.15	0.48	-0.46	4.30	164.09

## 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 (°)
11/15/2013	NORMAL	7,266.0	1.41	91.34	7,223.98	-248.80	700.27	742.49	0.45	-0.37	9.17	149.99
	NORMAL	7,362.0	1.23	97.23	7,319.95	-248.95	702.47	744.59	0.23	-0.19	6.14	145.91
	NORMAL	7,457.0	1.14	107.03	7,414.93	-249.36	704.39	746.52	0.23	-0.09	10.32	118.79
	NORMAL	7,552.0	1.31	127.02	7,509.91	-250.29	706.16	748.51	0.48	0.18	21.04	78.50
	NORMAL	7,648.0	1.14	122.45	7,605.89	-251.46	707.84	750.51	0.20	-0.18	-4.76	207.62
11/16/2013	NORMAL	7,743.0	0.70	88.35	7,700.88	-251.95	709.22	751.97	0.72	-0.46	-35.89	215.01
	NORMAL	7,838.0	0.79	85.01	7,795.87	-251.88	710.45	753.08	0.11	0.09	-3.52	332.57
	NORMAL	7,933.0	0.26	355.36	7,890.87	-251.61	711.09	753.57	0.87	-0.56	-94.37	198.25
	NORMAL	8,028.0	0.35	277.40	7,985.87	-251.36	710.78	753.19	0.41	0.09	-82.06	241.35
	NORMAL	8,124.0	0.44	246.82	8,081.87	-251.46	710.15	752.65	0.24	0.09	-31.85	277.33
	NORMAL	8,219.0	0.86	29.25	8,176.86	-250.98	710.16	752.48	1.30	0.44	149.93	154.94
	NORMAL	8,315.0	0.67	28.16	8,272.86	-249.86	710.78	752.64	0.20	-0.20	-1.14	183.84
	NORMAL	8,411.0	0.18	50.03	8,368.85	-249.27	711.16	752.77	0.53	-0.51	22.78	172.41
	NORMAL	8,507.0	0.18	336.29	8,464.85	-249.03	711.22	752.73	0.23	0.00	-76.81	233.13
11/17/2013	NORMAL	8,601.0	0.42	262.26	8,558.85	-248.95	710.81	752.32	0.43	0.26	-78.76	260.93
	NORMAL	8,696.0	0.44	262.28	8,653.85	-249.04	710.11	751.71	0.02	0.02	0.02	0.44
	NORMAL	8,792.0	0.44	261.58	8,749.85	-249.14	709.38	751.07	0.01	0.00	-0.73	269.65
11/19/2013	NORMAL	8,886.0	0.97	222.65	8,843.82	-249.78	708.48	750.48	0.73	0.56	-41.42	297.30
	NORMAL	8,982.0	1.32	214.38	8,939.80	-251.29	707.31	749.95	0.40	0.36	-8.61	330.55
	NORMAL	9,076.0	1.16	218.35	9,033.78	-252.93	706.11	749.45	0.19	-0.17	4.22	153.74
11/20/2013	NORMAL	9,171.0	1.41	218.78	9,128.76	-254.60	704.78	748.84	0.26	0.26	0.45	2.42
	NORMAL	9,266.0	1.76	222.47	9,223.72	-256.59	703.06	747.99	0.38	0.37	3.88	18.11
	NORMAL	9,361.0	1.23	214.15	9,318.69	-258.50	701.50	747.27	0.60	-0.56	-8.76	198.15
	NORMAL	9,456.0	1.19	246.66	9,413.67	-259.74	700.02	746.36	0.71	-0.04	34.22	109.50
	NORMAL	9,551.0	1.72	238.12	9,508.64	-260.88	697.91	744.82	0.60	0.56	-8.99	333.44
	NORMAL	9,647.0	1.41	223.88	9,604.60	-262.50	695.87	743.53	0.52	-0.32	-14.83	224.47
	NORMAL	9,741.0	1.41	246.26	9,698.57	-263.79	694.01	742.30	0.58	0.00	23.81	101.19
	NORMAL	9,835.0	1.49	222.56	9,792.54	-265.16	692.12	741.06	0.64	0.09	-25.21	265.64
	NORMAL	9,931.0	1.76	216.84	9,888.51	-267.26	690.39	740.24	0.33	0.28	-5.96	326.12
	NORMAL	10,030.0	1.76	216.84	9,987.46	-269.69	688.57	739.46	0.00	0.00	0.00	0.00

3 Charts

3.1 Vertical Section View



### 3.2 Plan View

