

1 General

1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

1.2 Well/Wellbore Information

Well	RU 321-5	Wellbore No.	00
Wellbore Legal Name	RU 321-5	Common Wellbore Name	RU 321-5
Project	RU 05-07S-093W	Site	RU 23-5 Pad
Vertical Section Azimuth	235.89 (°)	North reference	True
Origin N/S		Origin E/W	
Spud date	10/21/2013	UWI	RU 321-5
Active datum	KB @7,627.0ft (above Mean Sea Level)		

2 Survey Name

2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	
Date Started	10/21/2013	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 (°)
10/21/2013	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/21/2013	NORMAL	88.0	0.18	237.92	88.00	-0.07	-0.12	0.14	0.20	0.20	0.00	237.92
	NORMAL	184.0	0.97	264.46	183.99	-0.23	-1.05	1.00	0.85	0.82	27.65	32.22
	NORMAL	269.0	2.11	249.17	268.96	-0.86	-3.23	3.16	1.41	1.34	-17.99	332.43
	NORMAL	360.0	3.87	247.59	359.84	-2.62	-7.64	7.80	1.94	1.93	-1.74	356.53
	NORMAL	452.0	4.75	223.33	451.58	-6.58	-13.12	14.55	2.18	0.96	-26.37	283.33
	NORMAL	524.0	5.24	235.90	523.31	-10.59	-17.89	20.75	1.66	0.68	17.46	72.23
	NORMAL	615.0	5.98	234.87	613.87	-15.65	-25.21	29.65	0.82	0.81	-1.13	351.74
	NORMAL	707.0	5.80	234.17	705.39	-21.13	-32.90	39.09	0.21	-0.20	-0.76	201.41
	NORMAL	800.0	4.63	237.74	798.00	-25.88	-39.88	47.53	1.30	-1.26	3.84	166.27
	NORMAL	892.0	5.11	236.04	889.67	-30.15	-46.42	55.34	0.54	0.52	-1.85	342.42
	NORMAL	984.0	5.98	235.93	981.24	-35.13	-53.79	64.23	0.95	0.95	-0.12	359.25
	NORMAL	1,078.0	6.23	228.61	1,074.71	-41.24	-61.67	74.19	0.87	0.27	-7.79	284.14
	NORMAL	1,118.0	7.21	228.81	1,114.43	-44.33	-65.19	78.83	2.45	2.45	0.50	1.47
10/22/2013	NORMAL	1,267.0	7.45	229.08	1,262.22	-56.81	-79.52	97.70	0.16	0.16	0.18	8.30
	NORMAL	1,362.0	5.94	242.00	1,356.57	-63.16	-88.52	108.71	2.24	-1.59	13.60	141.37
	NORMAL	1,457.0	6.10	240.55	1,451.05	-67.95	-97.25	118.63	0.23	0.17	-1.53	315.73
	NORMAL	1,552.0	4.57	236.45	1,545.63	-72.52	-104.80	127.44	1.66	-1.61	-4.32	191.96
	NORMAL	1,647.0	4.31	233.73	1,640.35	-76.72	-110.84	134.79	0.35	-0.27	-2.86	217.65
	NORMAL	1,742.0	4.67	231.86	1,735.06	-81.22	-116.76	142.22	0.41	0.38	-1.97	336.94
	NORMAL	1,837.0	4.11	239.84	1,829.78	-85.32	-122.74	149.47	0.87	-0.59	8.40	136.45

2.1.2 Survey Stations (Continued)

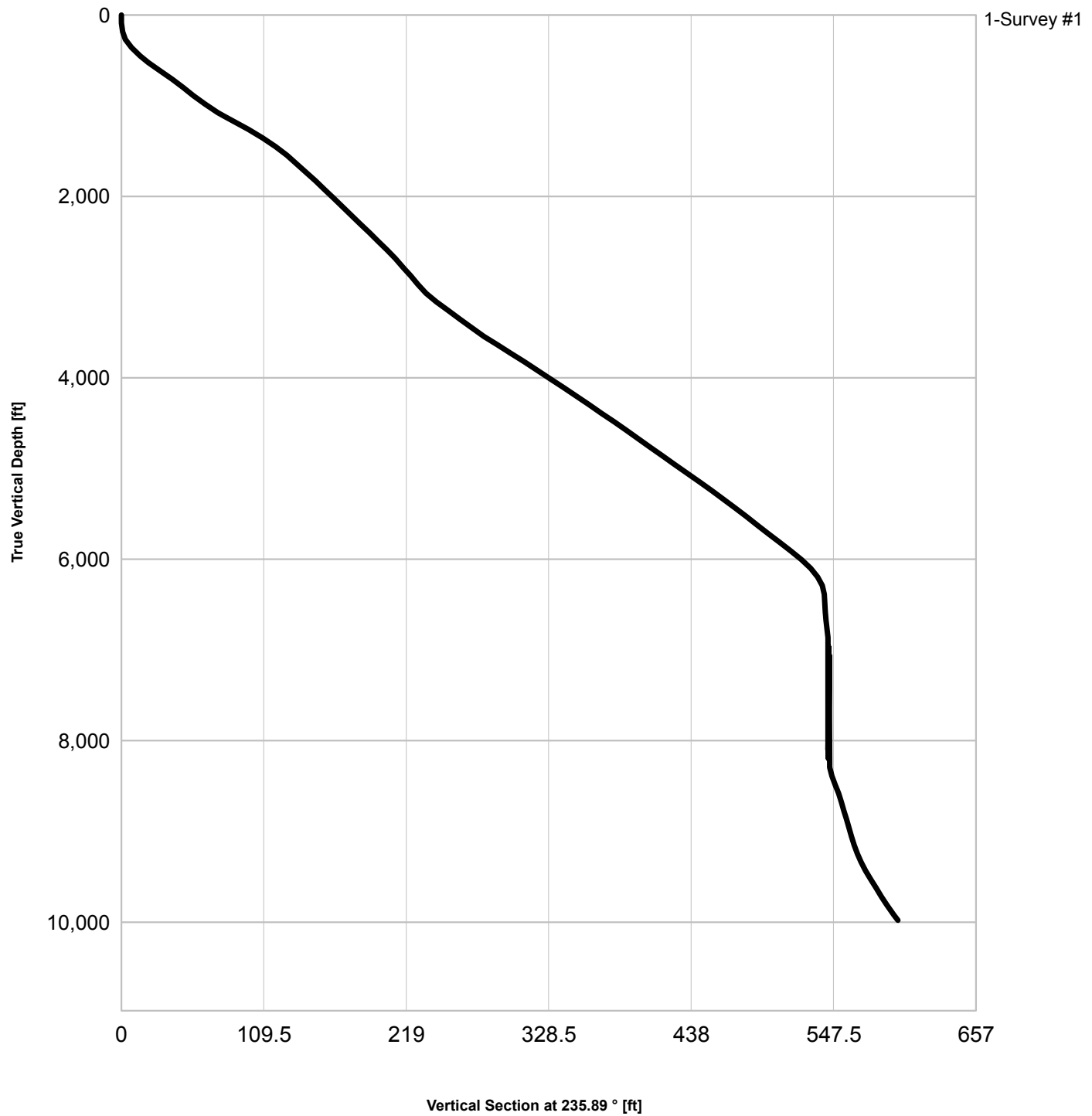
Date	Type	MD (ft)	Inc. (°)	Azi. (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. sec. (ft)	DLS (°/100usft)	Build Rate (°/100usft)	Turn (°/100usft)	Tface (°)
10/22/2013	NORMAL	1,932.0	4.14	239.81	1,924.53	-88.76	-128.65	156.29	0.03	0.03	-0.03	355.87
	NORMAL	2,028.0	4.13	239.44	2,020.28	-92.26	-134.62	163.20	0.03	-0.01	-0.39	249.27
	NORMAL	2,124.0	4.30	241.70	2,116.02	-95.72	-140.77	170.23	0.25	0.18	2.35	45.47
	NORMAL	2,219.0	4.04	236.98	2,210.77	-99.23	-146.71	177.12	0.45	-0.27	-4.97	230.52
10/23/2013	NORMAL	2,313.0	4.11	234.40	2,304.54	-103.00	-152.22	183.80	0.21	0.07	-2.74	289.61
	NORMAL	2,409.0	4.22	235.93	2,400.28	-106.98	-157.95	190.77	0.16	0.11	1.59	46.06
	NORMAL	2,505.0	4.04	235.05	2,496.03	-110.90	-163.64	197.68	0.20	-0.19	-0.92	198.96
	NORMAL	2,599.0	3.96	234.70	2,589.80	-114.67	-169.01	204.24	0.09	-0.09	-0.37	196.80
	NORMAL	2,695.0	3.69	234.52	2,685.59	-118.38	-174.23	210.64	0.28	-0.28	-0.19	182.46
	NORMAL	2,791.0	3.45	235.39	2,781.40	-121.81	-179.12	216.62	0.26	-0.25	0.91	167.71
	NORMAL	2,886.0	3.61	234.96	2,876.22	-125.15	-183.92	222.46	0.17	0.17	-0.45	350.39
	NORMAL	2,981.0	3.10	235.82	2,971.06	-128.31	-188.50	228.02	0.54	-0.54	0.91	174.79
	NORMAL	3,077.0	4.27	231.98	3,066.86	-131.97	-193.46	234.19	1.24	1.22	-4.00	346.17
	NORMAL	3,173.0	5.45	235.31	3,162.51	-136.77	-200.02	242.31	1.26	1.23	3.47	15.11
	NORMAL	3,268.0	5.45	236.45	3,257.09	-141.83	-207.49	251.33	0.11	0.00	1.20	90.57
	NORMAL	3,363.0	5.46	238.31	3,351.66	-146.70	-215.10	260.36	0.19	0.01	1.96	87.69
	NORMAL	3,458.0	5.28	236.28	3,446.24	-151.50	-222.58	269.25	0.28	-0.19	-2.14	225.54
	NORMAL	3,554.0	6.17	237.84	3,541.76	-156.70	-230.62	278.82	0.94	0.93	1.63	10.69
	NORMAL	3,649.0	6.34	238.77	3,636.19	-162.13	-239.43	289.16	0.21	0.18	0.98	31.26
	NORMAL	3,742.0	6.24	240.32	3,728.63	-167.30	-248.21	299.33	0.21	-0.11	1.67	121.26
	NORMAL	3,838.0	6.33	238.56	3,824.06	-172.64	-257.26	309.82	0.22	0.09	-1.83	294.16
	NORMAL	3,932.0	6.07	239.44	3,917.51	-177.87	-265.96	319.95	0.29	-0.28	0.94	160.36
	NORMAL	4,027.0	6.07	238.83	4,011.98	-183.03	-274.58	329.98	0.07	0.00	-0.64	269.70
	NORMAL	4,122.0	6.02	238.59	4,106.45	-188.22	-283.13	339.97	0.06	-0.05	-0.25	206.70
	NORMAL	4,217.0	5.90	239.38	4,200.93	-193.30	-291.59	349.82	0.15	-0.13	0.83	146.04
	NORMAL	4,312.0	5.89	237.13	4,295.43	-198.44	-299.88	359.57	0.24	-0.01	-2.37	266.40
	NORMAL	4,407.0	5.75	237.01	4,389.94	-203.67	-307.97	369.20	0.15	-0.15	-0.13	184.91
	NORMAL	4,502.0	5.80	235.58	4,484.46	-208.98	-315.92	378.76	0.16	0.05	-1.51	288.45
	NORMAL	4,597.0	5.63	236.03	4,578.99	-214.30	-323.74	388.22	0.19	-0.18	0.47	165.46
	NORMAL	4,692.0	5.72	236.72	4,673.52	-219.50	-331.57	397.61	0.12	0.09	0.73	37.51
	NORMAL	4,787.0	5.59	236.67	4,768.06	-224.64	-339.39	406.97	0.14	-0.14	-0.05	182.15
	NORMAL	4,883.0	5.66	236.32	4,863.60	-229.83	-347.24	416.38	0.08	0.07	-0.36	333.72
	NORMAL	4,978.0	5.63	237.14	4,958.14	-234.96	-355.05	425.73	0.09	-0.03	0.86	110.81
10/24/2013	NORMAL	5,074.0	5.80	238.18	5,053.66	-240.07	-363.13	435.28	0.21	0.18	1.08	31.87
	NORMAL	5,169.0	5.69	238.24	5,148.18	-245.08	-371.21	444.78	0.12	-0.12	0.06	176.90
	NORMAL	5,265.0	5.35	237.87	5,243.74	-249.97	-379.04	454.01	0.36	-0.35	-0.39	185.79
	NORMAL	5,361.0	5.35	237.93	5,339.32	-254.72	-386.63	462.96	0.01	0.00	0.06	90.03
	NORMAL	5,456.0	5.34	237.56	5,433.91	-259.44	-394.11	471.80	0.04	-0.01	-0.39	253.64
	NORMAL	5,552.0	5.18	236.74	5,529.50	-264.22	-401.50	480.60	0.18	-0.17	-0.85	204.76
	NORMAL	5,646.0	5.10	235.75	5,623.13	-268.90	-408.51	489.02	0.13	-0.09	-1.05	227.46
	NORMAL	5,742.0	5.11	235.38	5,718.75	-273.73	-415.55	497.56	0.04	0.01	-0.39	286.71
	NORMAL	5,838.0	5.31	234.56	5,814.35	-278.73	-422.69	506.28	0.22	0.21	-0.85	339.17
	NORMAL	5,933.0	5.01	238.65	5,908.96	-283.44	-429.81	514.82	0.50	-0.32	4.31	131.22
	NORMAL	6,028.0	4.74	239.30	6,003.62	-287.60	-436.73	522.88	0.29	-0.28	0.68	168.76
	NORMAL	6,124.0	3.81	243.94	6,099.35	-291.03	-443.01	530.00	1.03	-0.97	4.83	161.90
10/25/2013	NORMAL	6,219.0	2.55	238.83	6,194.21	-293.51	-447.65	535.23	1.36	-1.33	-5.38	190.14
	NORMAL	6,315.0	1.82	251.53	6,290.14	-295.10	-450.92	538.83	0.91	-0.76	13.23	152.68
	NORMAL	6,411.0	0.87	307.51	6,386.11	-295.14	-452.95	540.53	1.58	-0.99	58.31	151.59
	NORMAL	6,506.0	0.44	306.77	6,481.11	-294.48	-453.81	540.88	0.45	-0.45	-0.78	180.76
	NORMAL	6,602.0	0.60	295.98	6,577.10	-294.04	-454.56	541.25	0.19	0.17	-11.24	323.06
	NORMAL	6,698.0	0.35	284.97	6,673.10	-293.74	-455.29	541.69	0.28	-0.26	-11.47	194.61
	NORMAL	6,794.0	0.70	219.58	6,769.10	-294.12	-455.95	542.45	0.67	0.36	-68.11	264.75
	NORMAL	6,889.0	0.53	171.59	6,864.09	-295.00	-456.26	543.19	0.55	-0.18	-50.52	228.76
	NORMAL	6,984.0	0.88	169.67	6,959.08	-296.15	-456.06	543.68	0.37	0.37	-2.02	355.18
	NORMAL	7,079.0	1.02	170.36	7,054.07	-297.70	-455.79	544.32	0.15	0.15	0.73	5.02
	NORMAL	7,175.0	0.53	98.13	7,150.06	-298.61	-455.21	544.35	1.04	-0.51	-75.24	210.46

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 (°)
10/25/2013	NORMAL	7,270.0	0.44	113.50	7,245.06	-298.82	-454.44	543.83	0.17	-0.09	16.18	132.20
	NORMAL	7,366.0	0.44	139.50	7,341.06	-299.24	-453.86	543.59	0.21	0.00	27.08	103.00
10/26/2013	NORMAL	7,461.0	0.47	161.17	7,436.06	-299.89	-453.50	543.65	0.18	0.03	22.81	91.06
	NORMAL	7,556.0	0.70	162.10	7,531.05	-300.81	-453.19	543.92	0.24	0.24	0.98	2.83
	NORMAL	7,652.0	0.98	169.92	7,627.04	-302.18	-452.87	544.41	0.31	0.29	8.15	26.21
	NORMAL	7,747.0	0.29	43.48	7,722.04	-302.80	-452.56	544.51	1.24	-0.73	-133.09	191.45
	NORMAL	7,842.0	0.50	24.28	7,817.03	-302.25	-452.23	543.92	0.26	0.22	-20.21	317.93
	NORMAL	7,937.0	0.30	359.54	7,912.03	-301.62	-452.06	543.43	0.27	-0.21	-26.04	208.89
	NORMAL	8,032.0	0.14	310.74	8,007.03	-301.30	-452.15	543.32	0.25	-0.17	-51.37	206.88
	NORMAL	8,128.0	0.03	296.98	8,103.03	-301.21	-452.26	543.37	0.12	-0.11	-14.33	183.68
10/27/2013	NORMAL	8,223.0	0.35	235.93	8,198.03	-301.36	-452.52	543.67	0.35	0.34	-64.26	294.48
	NORMAL	8,319.0	0.77	220.05	8,294.03	-302.02	-453.18	544.58	0.46	0.44	-16.54	331.66
	NORMAL	8,414.0	1.32	224.72	8,389.01	-303.29	-454.36	546.27	0.59	0.58	4.92	11.14
	NORMAL	8,510.0	1.76	221.86	8,484.98	-305.17	-456.12	548.79	0.47	0.46	-2.98	348.66
	NORMAL	8,605.0	1.58	213.94	8,579.94	-307.34	-457.83	551.42	0.31	-0.19	-8.34	228.14
	NORMAL	8,700.0	1.49	196.02	8,674.90	-309.62	-458.90	553.58	0.51	-0.09	-18.86	250.51
	NORMAL	8,795.0	1.43	201.09	8,769.87	-311.91	-459.67	555.50	0.15	-0.06	5.34	117.43
	NORMAL	8,890.0	1.47	201.92	8,864.84	-314.15	-460.55	557.48	0.05	0.04	0.87	28.12
	NORMAL	8,985.0	1.46	199.94	8,959.81	-316.41	-461.42	559.47	0.05	-0.01	-2.08	257.84
	NORMAL	9,080.0	1.26	211.01	9,054.78	-318.45	-462.37	561.40	0.35	-0.21	11.65	132.73
	NORMAL	9,175.0	1.58	201.03	9,149.76	-320.56	-463.37	563.42	0.42	0.34	-10.51	317.24
	NORMAL	9,270.0	2.26	191.82	9,244.70	-323.62	-464.23	565.84	0.78	0.72	-9.69	330.94
	NORMAL	9,365.0	2.55	192.86	9,339.62	-327.51	-465.08	568.74	0.31	0.31	1.09	9.08
10/28/2013	NORMAL	9,460.0	3.08	195.67	9,434.50	-332.03	-466.24	572.23	0.58	0.56	2.96	16.00
	NORMAL	9,555.0	3.04	198.86	9,529.37	-336.87	-467.75	576.19	0.18	-0.04	3.36	104.81
	NORMAL	9,650.0	2.99	200.33	9,624.24	-341.58	-469.42	580.22	0.10	-0.05	1.55	123.62
	NORMAL	9,745.0	2.99	205.25	9,719.11	-346.14	-471.34	584.36	0.27	0.00	5.18	92.46
	NORMAL	9,839.0	3.08	207.98	9,812.98	-350.59	-473.57	588.70	0.18	0.10	2.90	59.46
	NORMAL	9,948.0	3.23	210.96	9,921.81	-355.81	-476.52	594.08	0.20	0.14	2.73	49.05
	NORMAL	10,005.0	3.23	210.96	9,978.72	-358.57	-478.17	596.99	0.00	0.00	0.00	0.00

3 Charts

3.1 Vertical Section View



3.2 Plan View

