

1 General

1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

1.2 Well/Wellbore Information

Well	RWF 332-4	Wellbore No.	00
Wellbore Legal Name	RWF 332-4	Common Wellbore Name	RWF 332-4
Project	RU 04-07S-094W	Site	RMV 108-4 Pad
Vertical Section Azimuth	198.99 (°)	North reference	True
Origin N/S		Origin E/W	
Spud date	12/2/2013	UWI	RWF 332-4
Active datum	KB @5,820.0ft (above Mean Sea Level)		

2 Survey Name

2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	
Date Started	12/2/2013	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 (°)
12/2/2013	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/2/2013	NORMAL	103.0	0.35	26.10	103.00	0.28	0.14	-0.31	0.34	0.34	0.00	26.10
	NORMAL	134.0	0.35	283.89	134.00	0.39	0.09	-0.40	1.76	0.00	-329.71	218.90
	NORMAL	163.0	0.88	238.62	163.00	0.30	-0.19	-0.22	2.35	1.83	-156.10	293.31
	NORMAL	194.0	1.67	237.92	193.99	-0.07	-0.77	0.32	2.55	2.55	-2.26	358.52
	NORMAL	224.0	2.55	227.72	223.97	-0.75	-1.64	1.24	3.18	2.93	-34.00	331.74
	NORMAL	254.0	3.34	219.29	253.93	-1.87	-2.69	2.65	3.00	2.63	-28.10	327.01
	NORMAL	284.0	4.05	211.55	283.87	-3.45	-3.79	4.50	2.89	2.37	-25.80	321.01
	NORMAL	314.0	5.10	214.54	313.77	-5.46	-5.10	6.82	3.59	3.50	9.97	14.29
	NORMAL	344.0	6.07	209.09	343.63	-7.94	-6.63	9.67	3.68	3.23	-18.17	328.60
	NORMAL	374.0	6.86	201.45	373.44	-10.99	-8.06	13.02	3.89	2.63	-25.47	308.72
	NORMAL	404.0	7.92	201.71	403.19	-14.58	-9.48	16.87	3.54	3.53	0.87	1.94
12/3/2013	NORMAL	434.0	8.89	199.60	432.87	-18.69	-11.02	21.25	3.39	3.23	-7.03	341.32
	NORMAL	465.0	9.68	198.02	463.46	-23.42	-12.63	26.26	2.68	2.55	-5.10	341.33
	NORMAL	495.0	10.21	196.96	493.01	-28.36	-14.18	31.43	1.87	1.77	-3.53	340.42
	NORMAL	525.0	10.73	196.70	522.51	-33.58	-15.76	36.88	1.74	1.73	-0.87	354.68
	NORMAL	556.0	11.00	197.31	552.95	-39.17	-17.47	42.72	0.95	0.87	1.97	23.37
	NORMAL	617.0	11.79	195.82	612.75	-50.72	-20.90	54.76	1.38	1.30	-2.44	338.83
	NORMAL	657.0	12.84	198.59	651.83	-58.87	-23.43	63.29	3.01	2.63	6.93	30.72
	NORMAL	687.0	13.28	198.68	681.06	-65.29	-25.60	70.07	1.47	1.47	0.30	2.69
	NORMAL	776.0	14.92	198.62	767.37	-85.83	-32.53	91.75	1.84	1.84	-0.07	359.46

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 (°)
12/3/2013	NORMAL	867.0	17.30	199.97	854.79	-109.65	-40.90	116.99	2.65	2.62	1.48	9.59
	NORMAL	958.0	18.59	199.20	941.36	-136.07	-50.29	145.03	1.44	1.42	-0.85	349.21
	NORMAL	1,053.0	17.75	197.37	1,031.63	-164.19	-59.59	174.65	1.07	-0.88	-1.93	213.32
	NORMAL	1,085.0	17.98	196.91	1,062.08	-173.57	-62.48	184.46	0.84	0.72	-1.44	328.25
12/5/2013	NORMAL	1,158.0	18.77	196.13	1,131.36	-195.64	-69.02	207.45	1.13	1.08	-1.07	342.34
	NORMAL	1,259.0	19.12	194.99	1,226.89	-227.22	-77.82	240.18	0.50	0.35	-1.13	312.86
	NORMAL	1,354.0	18.29	197.63	1,316.87	-256.46	-86.36	270.60	1.25	-0.87	2.78	135.68
	NORMAL	1,450.0	18.24	197.10	1,408.04	-285.18	-95.34	300.68	0.18	-0.05	-0.55	253.00
	NORMAL	1,545.0	18.42	194.90	1,498.22	-313.89	-103.57	330.51	0.75	0.19	-2.32	283.54
	NORMAL	1,640.0	18.90	198.15	1,588.23	-343.02	-112.22	360.87	1.21	0.51	3.42	66.77
	NORMAL	1,736.0	19.43	197.27	1,678.91	-373.04	-121.80	392.37	0.63	0.55	-0.92	330.99
	NORMAL	1,832.0	18.99	199.91	1,769.56	-402.97	-131.86	423.95	1.01	-0.46	2.75	118.11
	NORMAL	1,927.0	20.04	199.74	1,859.10	-432.83	-142.62	455.68	1.11	1.11	-0.18	356.82
	NORMAL	2,023.0	21.41	198.68	1,948.89	-464.91	-153.79	489.65	1.48	1.43	-1.10	344.19
	NORMAL	2,118.0	20.84	199.38	2,037.51	-497.28	-164.95	523.89	0.66	-0.60	0.74	156.45
	NORMAL	2,213.0	19.39	200.00	2,126.71	-528.04	-175.96	556.56	1.54	-1.53	0.65	171.93
	NORMAL	2,308.0	19.16	198.86	2,216.38	-557.61	-186.39	587.92	0.46	-0.24	-1.20	238.03
	NORMAL	2,403.0	18.59	200.70	2,306.28	-586.53	-196.78	618.64	0.87	-0.60	1.94	134.63
12/6/2013	NORMAL	2,499.0	18.55	201.58	2,397.28	-615.04	-207.81	649.19	0.29	-0.04	0.92	98.54
	NORMAL	2,595.0	17.45	201.85	2,488.58	-642.61	-218.78	678.82	1.15	-1.15	0.28	175.79
	NORMAL	2,690.0	17.19	200.88	2,579.27	-668.94	-229.08	707.08	0.41	-0.27	-1.02	227.54
	NORMAL	2,786.0	17.54	199.74	2,670.90	-695.81	-239.03	735.72	0.51	0.36	-1.19	315.26
	NORMAL	2,881.0	17.76	199.21	2,761.42	-722.97	-248.63	764.53	0.29	0.23	-0.56	323.60
	NORMAL	2,976.0	17.80	199.82	2,851.89	-750.31	-258.32	793.53	0.20	0.04	0.64	78.17
	NORMAL	3,071.0	17.93	198.94	2,942.31	-777.80	-267.99	822.68	0.32	0.14	-0.93	295.29
	NORMAL	3,167.0	17.76	198.15	3,033.69	-805.69	-277.35	852.09	0.31	-0.18	-0.82	234.55
	NORMAL	3,262.0	17.85	197.71	3,124.14	-833.33	-286.29	881.14	0.17	0.09	-0.46	303.57
	NORMAL	3,357.0	17.76	198.94	3,214.59	-860.91	-295.42	910.18	0.41	-0.09	1.29	104.04
	NORMAL	3,453.0	17.41	200.70	3,306.10	-888.19	-305.25	939.18	0.66	-0.36	1.83	124.19
	NORMAL	3,548.0	17.06	198.94	3,396.84	-914.67	-314.80	967.32	0.66	-0.37	-1.85	235.29
12/7/2013	NORMAL	3,644.0	16.61	199.03	3,488.72	-940.96	-323.84	995.13	0.47	-0.47	0.09	176.73
	NORMAL	3,740.0	17.41	200.88	3,580.52	-967.35	-333.43	1,023.20	1.01	0.83	1.93	34.97
	NORMAL	3,835.0	17.36	200.53	3,671.19	-993.90	-343.47	1,051.57	0.12	-0.05	-0.37	244.28
	NORMAL	3,930.0	17.23	200.26	3,761.89	-1,020.37	-353.31	1,079.81	0.16	-0.14	-0.28	211.56
	NORMAL	4,026.0	17.54	199.91	3,853.50	-1,047.31	-363.16	1,108.49	0.34	0.32	-0.36	341.19
	NORMAL	4,124.0	16.18	200.00	3,947.29	-1,074.03	-372.86	1,136.90	1.39	-1.39	0.09	178.94
	NORMAL	4,216.0	14.90	199.30	4,035.93	-1,097.24	-381.16	1,161.55	1.41	-1.39	-0.76	188.00
	NORMAL	4,311.0	13.54	200.35	4,128.01	-1,119.19	-389.06	1,184.88	1.46	-1.43	1.11	169.77
	NORMAL	4,407.0	12.62	198.77	4,221.52	-1,139.66	-396.34	1,206.61	1.03	-0.96	-1.65	200.47
	NORMAL	4,502.0	11.03	202.11	4,314.50	-1,157.91	-403.10	1,228.06	1.82	-1.67	3.52	158.34
	NORMAL	4,598.0	9.76	200.53	4,408.93	-1,174.04	-409.41	1,243.36	1.36	-1.32	-1.65	191.88
	NORMAL	4,693.0	8.57	198.15	4,502.71	-1,188.30	-414.44	1,258.49	1.31	-1.25	-2.51	196.50
12/8/2013	NORMAL	4,788.0	6.95	198.24	4,596.84	-1,200.49	-418.45	1,271.32	1.71	-1.71	0.09	179.61
	NORMAL	4,884.0	5.41	195.25	4,692.28	-1,210.37	-421.46	1,281.64	1.64	-1.60	-3.11	190.32
	NORMAL	4,979.0	4.13	191.47	4,786.95	-1,218.05	-423.31	1,289.50	1.39	-1.35	-3.98	191.92
	NORMAL	5,074.0	2.68	184.44	4,881.78	-1,223.61	-424.17	1,295.04	1.59	-1.53	-7.40	192.57
	NORMAL	5,170.0	2.11	171.44	4,977.70	-1,227.60	-424.08	1,298.78	0.82	-0.59	-13.54	217.25
	NORMAL	5,265.0	2.07	166.78	5,072.63	-1,231.00	-423.42	1,301.78	0.18	-0.04	-4.91	254.43
	NORMAL	5,361.0	1.50	160.45	5,168.59	-1,233.87	-422.61	1,304.23	0.63	-0.59	-6.59	195.94
	NORMAL	5,456.0	0.92	148.85	5,263.57	-1,235.69	-421.80	1,305.70	0.66	-0.61	-12.21	197.17
	NORMAL	5,551.0	0.75	159.31	5,358.56	-1,236.93	-421.18	1,306.66	0.24	-0.18	11.01	143.27
	NORMAL	5,647.0	0.53	176.27	5,454.55	-1,237.96	-420.93	1,307.56	0.30	-0.23	17.67	147.54
	NORMAL	5,742.0	0.48	191.56	5,549.55	-1,238.79	-420.98	1,308.36	0.15	-0.05	16.09	117.89
12/9/2013	NORMAL	5,837.0	0.66	190.86	5,644.54	-1,239.71	-421.17	1,309.29	0.19	0.19	-0.74	357.43
	NORMAL	5,933.0	0.70	210.11	5,740.53	-1,240.77	-421.56	1,310.42	0.24	0.04	20.05	89.79
	NORMAL	6,029.0	0.86	224.96	5,836.53	-1,241.79	-422.38	1,311.65	0.28	0.19	15.47	56.26

2.1.2 Survey Stations (Continued)

Date	Type	MD (ft)	Inc. (°)	Azi. (°)	TVD (ft)	N/S (ft)	EW (ft)	V. sec. (ft)	DLS (°/100usft)	Build Rate (°/100usft)	Turn (°/100usft)	Tface (°)
12/10/2013	NORMAL	6,120.0	0.97	203.95	5,927.51	-1,242.99	-423.19	1,313.05	0.38	0.10	-23.09	274.20
	NORMAL	6,215.0	0.97	212.22	6,022.50	-1,244.41	-423.94	1,314.63	0.15	0.00	8.71	94.13
	NORMAL	6,310.0	0.66	220.57	6,117.49	-1,245.50	-424.73	1,315.92	0.35	-0.33	8.79	163.18
	NORMAL	6,406.0	0.88	217.93	6,213.48	-1,246.51	-425.54	1,317.14	0.23	0.23	-2.75	349.52
	NORMAL	6,502.0	0.40	215.12	6,309.48	-1,247.36	-426.18	1,318.16	0.50	-0.50	-2.93	182.34
	NORMAL	6,598.0	0.22	267.68	6,405.48	-1,247.64	-426.56	1,318.54	0.33	-0.19	54.75	146.73
	NORMAL	6,692.0	0.53	239.20	6,499.47	-1,247.87	-427.12	1,318.94	0.38	0.33	-30.30	314.21
	NORMAL	6,788.0	0.53	228.13	6,595.47	-1,248.40	-427.83	1,319.67	0.11	0.00	-11.53	264.47
	NORMAL	6,881.0	0.61	241.13	6,688.47	-1,248.92	-428.58	1,320.41	0.16	0.09	13.98	64.87
	NORMAL	6,976.0	0.44	233.40	6,783.46	-1,249.38	-429.32	1,321.09	0.19	-0.18	-8.14	198.78
12/11/2013	NORMAL	7,071.0	0.57	199.56	6,878.46	-1,250.05	-429.77	1,321.86	0.34	0.14	-35.62	276.01
	NORMAL	7,166.0	0.75	229.35	6,973.45	-1,250.90	-430.40	1,322.87	0.40	0.19	31.36	77.75
	NORMAL	7,262.0	0.75	233.13	7,069.44	-1,251.68	-431.38	1,323.93	0.05	0.00	3.94	91.89
	NORMAL	7,357.0	0.97	232.06	7,164.43	-1,252.55	-432.51	1,325.12	0.23	0.23	-1.13	355.29
	NORMAL	7,452.0	0.88	272.86	7,259.42	-1,253.01	-433.87	1,326.00	0.68	-0.09	42.95	117.85
	NORMAL	7,548.0	0.97	262.49	7,355.41	-1,253.08	-435.41	1,326.56	0.20	0.09	-10.80	293.01
	NORMAL	7,642.0	1.27	256.07	7,449.39	-1,253.43	-437.21	1,327.49	0.35	0.32	-6.83	334.07
	NORMAL	7,737.0	1.58	248.95	7,544.36	-1,254.16	-439.46	1,328.90	0.38	0.33	-7.49	326.68
	NORMAL	7,833.0	1.27	238.58	7,640.33	-1,255.19	-441.60	1,330.57	0.42	-0.32	-10.80	214.65
	NORMAL	7,929.0	1.50	245.88	7,736.31	-1,256.25	-443.65	1,332.25	0.30	0.24	7.60	41.18
12/12/2013	NORMAL	8,024.0	1.10	259.06	7,831.28	-1,256.94	-445.69	1,333.55	0.52	-0.42	13.87	149.69
	NORMAL	8,120.0	1.05	266.09	7,927.27	-1,257.17	-447.47	1,334.36	0.15	-0.05	7.32	114.25
	NORMAL	8,169.0	1.01	269.35	7,976.26	-1,257.21	-448.35	1,334.68	0.14	-0.08	6.65	125.94
	NORMAL	8,214.0	1.01	269.35	8,021.25	-1,257.22	-449.14	1,334.94	0.00	0.00	0.00	0.00