

1 General

1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

1.2 Well/Wellbore Information

Well	RWF 442-4	Wellbore No.	00
Wellbore Legal Name	RWF 442-4	Common Wellbore Name	RWF 442-4
Project	RU 04-07S-094W	Site	RMV 108-4 Pad
Vertical Section Azimuth	159.46 (°)	North reference	True
Origin N/S		Origin E/W	
Spud date	10/12/2013	UWI	RWF 442-4
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	10/12/2013	Ended	
Tool Name	MWD	Engineer	

2.1.1 Tie On Point

MD (ft)	Inc. (°)	Azl. (°)	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

5266

Date	Type	MD (ft)	Inc. (°)	Azl. (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. sec. (ft)	DLS (°/100usft)	Build Rate (°/100usft)	Turn (°/100usft)	Tface (°)
10/12/2013	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/12/2013	NORMAL	103.0	0.97	161.02	103.00	-0.82	0.28	0.87	0.94	0.94	0.00	161.02
	NORMAL	134.0	1.41	171.39	133.99	-1.45	0.43	1.51	1.57	1.42	33.45	313.33
	NORMAL	164.0	1.67	164.09	163.98	-2.24	0.60	2.30	1.08	0.87	-24.33	319.28
	NORMAL	195.0	2.38	162.69	194.96	-3.28	0.92	3.40	2.30	2.29	-4.52	355.31
	NORMAL	225.0	3.17	161.46	224.92	-4.67	1.37	4.85	2.64	2.63	-4.10	355.07
	NORMAL	255.0	3.78	152.58	254.87	-6.33	2.08	6.66	2.71	2.03	-29.60	314.09
	NORMAL	286.0	4.40	159.26	285.79	-8.35	2.98	8.86	2.52	2.00	21.55	40.90
	NORMAL	317.0	5.45	154.25	316.67	-10.79	4.04	11.52	3.66	3.39	-16.16	335.22
10/13/2013	NORMAL	347.0	6.16	159.52	346.52	-13.58	5.22	14.55	2.96	2.37	17.57	39.54
	NORMAL	377.0	7.30	158.99	376.31	-16.86	6.47	18.06	3.81	3.80	-1.77	356.62
	NORMAL	407.0	7.65	160.40	406.06	-20.53	7.82	21.96	1.32	1.17	4.70	28.36
	NORMAL	438.0	8.36	158.82	436.76	-24.57	9.33	26.28	2.40	2.29	-5.10	342.00
	NORMAL	468.0	9.15	158.73	466.41	-28.83	10.98	30.85	2.63	2.63	-0.30	358.96
	NORMAL	498.0	9.85	161.81	496.00	-33.49	12.65	35.80	2.89	2.34	10.27	37.45
	NORMAL	529.0	10.03	161.81	526.53	-38.57	14.32	41.14	0.58	0.58	0.00	0.00
	NORMAL	559.0	10.29	159.70	556.06	-43.57	16.06	46.43	1.51	0.87	-7.03	303.89
	NORMAL	620.0	11.61	160.66	615.95	-54.47	19.98	58.02	2.18	2.16	1.57	8.34
	NORMAL	710.0	13.28	160.93	703.83	-72.79	26.36	77.41	1.86	1.86	0.30	2.13
	NORMAL	801.0	14.25	157.24	792.22	-92.99	34.11	99.05	1.44	1.07	-4.05	316.05
	NORMAL	872.0	14.84	157.48	860.94	-109.45	40.97	116.87	0.84	0.83	0.34	5.95

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 (")
10/13/2013	NORMAL	963.0	15.39	156.69	948.79	-131.30	50.21	140.58	0.65	0.60	-0.87	339.09
	NORMAL	1,058.0	16.18	157.66	1,040.21	-155.12	60.23	166.40	0.88	0.83	1.02	18.94
	NORMAL	1,125.0	16.97	157.48	1,104.43	-172.79	67.53	185.50	1.18	1.18	-0.27	356.19
10/15/2013	NORMAL	1,252.0	18.29	156.69	1,225.46	-208.21	82.51	223.93	1.06	1.04	-0.62	349.35
	NORMAL	1,348.0	17.01	159.85	1,316.94	-235.23	93.31	253.02	1.67	-1.33	3.29	144.68
	NORMAL	1,444.0	15.87	162.14	1,409.02	-260.91	102.17	280.17	1.37	-1.19	2.39	151.48
	NORMAL	1,539.0	14.64	159.15	1,500.67	-284.49	110.43	305.15	1.54	-1.29	-3.15	211.17
	NORMAL	1,634.0	14.86	159.50	1,592.54	-307.12	118.97	329.34	0.25	0.23	0.37	22.22
	NORMAL	1,729.0	15.39	157.74	1,684.25	-330.20	128.01	354.12	0.74	0.56	-1.85	318.24
	NORMAL	1,824.0	15.16	160.38	1,775.89	-353.57	136.96	379.14	0.77	-0.24	2.78	109.57
	NORMAL	1,920.0	15.56	159.20	1,868.46	-377.43	145.74	404.57	0.53	0.42	-1.23	321.43
	NORMAL	2,015.0	15.03	160.21	1,960.10	-400.93	154.44	429.63	0.62	-0.56	1.06	153.80
	NORMAL	2,111.0	15.74	160.29	2,052.66	-424.90	163.05	455.10	0.74	0.74	0.08	1.75
	NORMAL	2,207.0	16.44	160.82	2,144.90	-449.99	171.90	481.70	0.75	0.73	0.55	12.11
	NORMAL	2,302.0	15.12	159.41	2,236.32	-474.29	180.68	507.53	1.45	-1.39	-1.48	195.52
	NORMAL	2,397.0	15.65	158.89	2,327.91	-497.84	189.65	532.73	0.58	0.56	-0.55	345.16
	NORMAL	2,492.0	15.21	162.05	2,419.49	-521.65	198.10	557.99	1.00	-0.46	3.33	119.14
	NORMAL	2,588.0	15.43	160.91	2,512.08	-545.70	206.16	583.34	0.39	0.23	-1.19	305.59
	NORMAL	2,683.0	15.78	160.21	2,603.58	-569.80	214.67	608.89	0.42	0.37	-0.74	331.38
	NORMAL	2,778.0	16.13	158.62	2,694.92	-594.24	223.85	635.00	0.59	0.37	-1.67	307.92
	NORMAL	2,873.0	15.25	161.35	2,786.38	-618.37	232.66	660.69	1.21	-0.93	2.87	141.31
	NORMAL	2,969.0	15.16	160.91	2,879.02	-642.19	240.80	685.85	0.15	-0.09	-0.46	231.84
	NORMAL	3,065.0	14.81	161.44	2,971.75	-665.68	248.81	710.66	0.39	-0.36	0.65	158.87
	NORMAL	3,160.0	15.08	160.29	3,063.54	-688.83	256.85	735.16	0.42	0.28	-1.21	311.76
	NORMAL	3,252.0	15.52	158.71	3,152.28	-711.56	265.35	759.43	0.66	0.48	-1.72	315.78
	NORMAL	3,351.0	15.30	158.71	3,247.72	-736.08	274.90	785.73	0.22	-0.22	0.00	180.00
	NORMAL	3,447.0	15.43	158.36	3,340.29	-759.75	284.21	811.17	0.17	0.14	-0.36	324.33
	NORMAL	3,542.0	15.21	157.57	3,431.91	-783.01	293.63	836.26	0.32	-0.23	-0.83	223.11
	NORMAL	3,637.0	15.08	157.83	3,523.61	-805.98	303.04	861.07	0.15	-0.14	0.27	152.54
	NORMAL	3,733.0	15.52	158.10	3,616.21	-829.46	312.55	886.39	0.46	0.46	0.28	9.33
10/16/2013	NORMAL	3,828.0	14.37	158.01	3,708.00	-852.18	321.70	910.88	1.21	-1.21	-0.09	181.11
	NORMAL	3,923.0	14.29	156.78	3,800.04	-873.89	330.74	934.38	0.33	-0.08	-1.29	254.68
	NORMAL	4,018.0	13.28	160.12	3,892.30	-894.93	339.07	957.00	1.35	-1.06	3.52	143.38
	NORMAL	4,114.0	13.28	160.21	3,985.74	-915.67	346.56	979.05	0.02	0.00	0.09	90.04
	NORMAL	4,209.0	13.06	159.41	4,078.24	-935.99	354.02	1,000.70	0.30	-0.23	-0.84	219.25
	NORMAL	4,304.0	12.13	159.77	4,170.95	-955.40	361.25	1,021.41	0.98	-0.98	0.38	175.35
	NORMAL	4,400.0	11.03	162.75	4,265.00	-973.63	367.46	1,040.67	1.30	-1.15	3.10	152.92
	NORMAL	4,495.0	10.77	161.26	4,358.28	-990.72	373.01	1,058.61	0.40	-0.27	-1.57	226.57
	NORMAL	4,591.0	10.99	159.77	4,452.56	-1,007.80	379.05	1,076.73	0.37	0.23	-1.55	307.30
	NORMAL	4,686.0	10.42	164.34	4,545.91	-1,024.57	384.50	1,094.34	1.08	-0.60	4.81	126.11
	NORMAL	4,781.0	9.19	163.02	4,639.52	-1,040.10	389.04	1,110.47	1.32	-1.29	-1.39	189.71
	NORMAL	4,877.0	7.74	162.58	4,734.47	-1,053.60	393.21	1,124.58	1.51	-1.51	-0.46	182.34
	NORMAL	4,972.0	5.76	160.38	4,828.81	-1,064.19	396.73	1,135.74	2.10	-2.08	-2.32	186.35
10/17/2013	NORMAL	5,068.0	4.22	160.29	4,924.44	-1,072.06	399.54	1,144.09	1.60	-1.60	-0.09	180.25
	NORMAL	5,163.0	2.46	146.41	5,019.28	-1,077.05	401.85	1,149.57	2.03	-1.85	-14.61	197.86
	NORMAL	5,258.0	1.71	134.19	5,114.21	-1,079.73	403.99	1,152.84	0.91	-0.79	-12.86	204.65
	NORMAL	5,352.0	0.88	173.48	5,208.19	-1,081.43	405.08	1,154.80	1.24	-0.88	41.80	151.56
	NORMAL	5,448.0	0.40	111.69	5,304.19	-1,082.28	405.47	1,155.74	0.81	-0.50	-64.36	207.03
	NORMAL	5,543.0	0.48	97.28	5,399.18	-1,082.46	406.18	1,156.15	0.14	0.08	-15.17	298.52
	NORMAL	5,638.0	0.66	99.03	5,494.18	-1,082.59	407.11	1,156.61	0.19	0.19	1.84	6.40
	NORMAL	5,734.0	0.22	71.70	5,590.18	-1,082.62	407.83	1,156.89	0.50	-0.46	-28.47	192.27
	NORMAL	5,829.0	0.31	66.78	5,685.18	-1,082.46	408.24	1,156.88	0.10	0.09	-5.18	343.34
	NORMAL	5,925.0	0.31	56.32	5,781.17	-1,082.22	408.70	1,156.81	0.06	0.00	-10.90	264.77
10/18/2013	NORMAL	6,021.0	0.40	85.76	5,877.17	-1,082.05	409.25	1,156.85	0.21	0.09	30.67	78.96
	NORMAL	6,117.0	0.48	84.84	5,973.17	-1,081.99	409.98	1,157.05	0.08	0.08	-0.96	354.49
	NORMAL	6,212.0	0.48	80.66	6,068.17	-1,081.89	410.77	1,157.23	0.04	0.00	-4.40	267.91

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 (")
10/19/2013	NORMAL	6,308.0	0.57	81.63	6,164.16	-1,081.75	411.64	1,157.41	0.09	0.09	1.01	6.13
	NORMAL	6,404.0	0.79	88.31	6,260.16	-1,081.66	412.77	1,157.72	0.24	0.23	6.96	23.18
	NORMAL	6,498.0	0.18	161.96	6,354.15	-1,081.78	413.47	1,158.08	0.81	-0.65	78.35	166.85
	NORMAL	6,594.0	0.18	245.81	6,450.15	-1,081.99	413.38	1,158.24	0.25	0.00	87.34	131.92
	NORMAL	6,687.0	0.22	262.86	6,543.15	-1,082.07	413.07	1,158.21	0.08	0.04	18.33	64.82
	NORMAL	6,783.0	0.40	246.34	6,639.15	-1,082.23	412.58	1,158.19	0.21	0.19	-17.21	325.17
	NORMAL	6,878.0	0.48	249.24	6,734.15	-1,082.50	411.90	1,158.21	0.09	0.08	3.05	17.01
	NORMAL	6,973.0	0.26	233.33	6,829.15	-1,082.77	411.35	1,158.27	0.25	-0.23	-16.75	197.22
	NORMAL	7,068.0	0.48	247.31	6,924.15	-1,083.05	410.81	1,158.34	0.25	0.23	14.72	29.40
	NORMAL	7,164.0	0.70	208.19	7,020.14	-1,083.73	410.17	1,158.74	0.46	0.23	-40.75	278.13
10/20/2013	NORMAL	7,259.0	0.70	216.81	7,115.13	-1,084.70	409.54	1,159.44	0.11	0.00	9.07	94.31
	NORMAL	7,354.0	0.70	209.95	7,210.13	-1,085.67	408.91	1,160.12	0.09	0.00	-7.22	266.57
	NORMAL	7,449.0	0.88	218.56	7,305.12	-1,086.74	408.16	1,160.87	0.23	0.19	9.06	37.76
	NORMAL	7,545.0	1.14	236.58	7,401.10	-1,087.85	406.91	1,161.46	0.42	0.27	18.77	59.94
	NORMAL	7,639.0	1.54	250.73	7,495.08	-1,088.78	404.93	1,161.64	0.55	0.43	15.05	46.82
	NORMAL	7,734.0	1.93	249.06	7,590.03	-1,089.77	402.23	1,161.62	0.41	0.41	-1.76	351.78
	NORMAL	7,830.0	2.50	245.37	7,685.96	-1,091.22	398.82	1,161.78	0.61	0.59	-3.84	344.10
	NORMAL	7,926.0	3.21	243.61	7,781.84	-1,093.29	394.51	1,162.20	0.75	0.74	-1.83	352.08
	NORMAL	8,022.0	4.22	242.65	7,877.64	-1,096.11	388.97	1,162.90	1.05	1.05	-1.00	356.00
	NORMAL	8,088.0	4.22	242.65	7,943.46	-1,098.34	384.65	1,163.47	0.00	0.00	0.00	0.00
	NORMAL	8,116.0	4.04	244.76	7,971.39	-1,099.23	382.84	1,163.68	0.84	-0.64	7.54	140.88
10/21/2013	NORMAL	8,161.0	4.04	244.76	8,016.28	-1,100.58	379.98	1,163.94	0.00	0.00	0.00	0.00