

1 General

1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

1.2 Well/Wellbore Information

Well	RWF 331-4	Wellbore No.	00
Wellbore Legal Name	RWF 331-4	Common Wellbore Name	RWF 331-4
Project	RU 04-07S-094W	Site	RMV 108-4 Pad
Vertical Section Azimuth	242.39 (°)	North reference	True
Origin N/S		Origin EW	
Spud date	11/2/2013	UWI	RWF 331-4
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	11/2/2013	Ended	
Tool Name	MWD	Engineer	

2.1.1 Tie On Point

MD (ft)	Inc. (°)	Azi. (°)	TVD (ft)	N/S (ft)	EW (ft)
0.0	0.00	0.00	0.00	0.00	0.00

2.1.2 Survey Stations

5962

Date	Type	MD (ft)	Inc. (°)	Azi. (°)	TVD (ft)	N/S (ft)	EW (ft)	V. sec. (ft)	DLS (°/100usft)	Buld Rate (°/100usft)	Turn (°/100usft)	Tface (°)
11/2/2013	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/2/2013	NORMAL	103.0	0.97	259.19	103.00	-0.16	-0.86	0.83	0.94	0.94	0.00	259.19
	NORMAL	133.0	1.85	275.98	132.99	-0.16	-1.59	1.48	3.21	2.93	55.97	33.70
	NORMAL	164.0	2.38	276.06	163.96	-0.04	-2.73	2.43	1.71	1.71	0.26	0.36
	NORMAL	195.0	3.34	270.88	194.93	0.04	-4.27	3.76	3.20	3.10	-16.71	342.33
	NORMAL	225.0	4.40	267.28	224.86	0.00	-6.29	5.58	3.62	3.53	-12.00	345.29
	NORMAL	255.0	5.54	269.65	254.74	-0.06	-8.89	7.91	3.86	3.80	7.90	11.39
	NORMAL	286.0	6.60	266.04	285.57	-0.20	-12.16	10.87	3.63	3.42	-11.65	338.39
	NORMAL	316.0	8.18	265.08	315.32	-0.50	-16.01	14.42	5.28	5.27	-3.20	355.06
	NORMAL	346.0	10.12	263.58	344.94	-0.98	-20.76	18.84	6.51	6.47	-5.00	352.25
	NORMAL	359.0	10.42	261.97	357.73	-1.27	-23.05	21.02	3.19	2.31	-12.38	315.47
	NORMAL	390.0	11.12	258.37	388.18	-2.26	-28.76	26.53	3.13	2.26	-11.61	314.36
	NORMAL	420.0	11.43	257.40	417.60	-3.49	-34.49	32.18	1.21	1.03	-3.23	328.07
	NORMAL	451.0	11.87	253.71	447.97	-5.06	-40.55	38.28	2.79	1.42	-11.90	298.75
	NORMAL	481.0	12.31	249.58	477.30	-7.04	-46.51	44.48	3.23	1.47	-13.77	294.93
	NORMAL	512.0	12.57	245.10	507.57	-9.61	-52.67	51.12	3.22	0.84	-14.45	282.88
11/3/2013	NORMAL	542.0	13.23	241.14	536.82	-12.64	-58.63	57.82	3.68	2.20	-13.20	304.80
	NORMAL	602.0	14.15	238.95	595.11	-19.74	-70.93	72.00	1.76	1.53	-3.65	329.54
	NORMAL	693.0	15.16	235.15	683.15	-32.28	-90.23	94.91	1.53	1.11	-4.18	314.56
	NORMAL	784.0	14.24	236.75	771.17	-45.21	-109.35	117.85	1.10	-1.01	1.76	156.96
	NORMAL	875.0	14.73	238.33	859.28	-57.43	-128.56	140.53	0.69	0.54	1.74	39.65

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 (°)
11/3/2013	NORMAL	966.0	15.39	237.28	947.16	-70.03	-148.56	164.10	0.78	0.73	-1.15	337.03
	NORMAL	1,061.0	15.39	238.36	1,038.75	-83.45	-169.90	189.23	0.30	0.00	1.14	90.52
	NORMAL	1,097.0	15.34	241.05	1,073.46	-88.26	-178.14	198.76	1.98	-0.14	7.47	95.31
11/4/2013	NORMAL	1,157.0	14.86	245.10	1,131.39	-95.35	-192.06	214.38	1.93	-0.80	6.75	116.41
	NORMAL	1,253.0	15.34	245.89	1,224.08	-105.72	-214.82	239.35	0.54	0.50	0.82	23.59
	NORMAL	1,349.0	15.08	245.10	1,316.72	-116.16	-237.73	264.50	0.35	-0.27	-0.82	218.18
	NORMAL	1,444.0	15.43	244.13	1,408.37	-126.88	-260.31	289.47	0.46	0.37	-1.02	323.43
	NORMAL	1,540.0	15.30	243.16	1,500.94	-138.17	-283.11	314.90	0.30	-0.14	-1.01	242.70
	NORMAL	1,635.0	14.99	243.16	1,592.64	-149.38	-305.25	339.72	0.33	-0.33	0.00	180.00
	NORMAL	1,730.0	15.03	242.90	1,684.40	-160.53	-327.18	364.32	0.08	0.04	-0.27	300.59
	NORMAL	1,825.0	14.95	243.96	1,776.17	-171.52	-349.16	388.89	0.30	-0.08	1.12	106.78
	NORMAL	1,920.0	15.47	239.65	1,867.84	-183.31	-371.10	413.79	1.31	0.55	-4.54	292.61
	NORMAL	2,016.0	14.95	236.48	1,960.48	-196.61	-392.47	438.90	1.02	-0.54	-3.30	236.46
	NORMAL	2,112.0	15.03	237.63	2,053.21	-210.12	-413.31	463.62	0.32	0.08	1.20	75.50
	NORMAL	2,207.0	15.12	241.76	2,144.95	-222.57	-434.63	488.29	1.13	0.09	4.35	87.21
	NORMAL	2,303.0	15.08	241.76	2,237.63	-234.41	-456.66	513.29	0.04	-0.04	0.00	180.00
	NORMAL	2,398.0	15.30	240.26	2,329.31	-246.47	-478.43	538.18	0.47	0.23	-1.58	298.51
	NORMAL	2,493.0	15.47	240.26	2,420.91	-258.98	-500.32	563.36	0.18	0.18	0.00	0.00
	NORMAL	2,588.0	15.43	238.59	2,512.48	-271.85	-522.10	588.64	0.47	-0.04	-1.76	264.06
	NORMAL	2,684.0	14.99	241.05	2,605.11	-284.51	-543.87	613.79	0.81	-0.46	2.56	125.47
	NORMAL	2,779.0	15.03	240.26	2,696.87	-296.57	-565.31	638.38	0.22	0.04	-0.83	280.68
11/5/2013	NORMAL	2,874.0	14.68	244.83	2,788.70	-307.80	-586.90	662.72	1.29	-0.37	4.81	108.83
	NORMAL	2,970.0	14.95	243.78	2,881.51	-318.44	-609.02	687.25	0.40	0.28	-1.09	314.65
	NORMAL	3,066.0	15.16	243.16	2,974.22	-329.58	-631.33	712.18	0.28	0.22	-0.65	322.22
	NORMAL	3,161.0	15.25	242.02	3,065.89	-341.05	-653.45	737.10	0.33	0.09	-1.20	286.20
	NORMAL	3,257.0	15.52	241.32	3,158.45	-353.14	-675.87	762.56	0.34	0.28	-0.73	325.14
	NORMAL	3,352.0	14.95	241.23	3,250.11	-365.14	-697.76	787.52	0.60	-0.60	-0.09	182.33
	NORMAL	3,447.0	14.99	240.62	3,341.89	-377.06	-719.21	812.05	0.17	0.04	-0.64	283.95
	NORMAL	3,543.0	15.12	239.39	3,434.59	-389.53	-740.80	836.97	0.36	0.14	-1.28	291.55
	NORMAL	3,638.0	14.64	243.96	3,526.41	-401.11	-762.25	861.34	1.33	-0.51	4.81	114.44
	NORMAL	3,734.0	14.11	243.25	3,619.40	-411.70	-783.60	885.17	0.58	-0.55	-0.74	198.05
	NORMAL	3,829.0	13.98	243.78	3,711.57	-421.98	-804.24	908.22	0.19	-0.14	0.56	135.56
	NORMAL	3,924.0	14.20	243.08	3,803.71	-432.33	-824.92	931.34	0.29	0.23	-0.74	321.90
	NORMAL	4,019.0	14.55	243.60	3,895.73	-442.91	-846.00	954.93	0.39	0.37	0.55	20.50
	NORMAL	4,115.0	15.08	243.78	3,988.54	-453.79	-868.00	979.47	0.55	0.55	0.19	5.05
	NORMAL	4,210.0	15.39	244.66	4,080.20	-464.65	-890.48	1,004.42	0.41	0.33	0.93	37.15
	NORMAL	4,305.0	15.43	245.27	4,171.79	-475.33	-913.35	1,029.63	0.18	0.04	0.64	76.43
11/6/2013	NORMAL	4,401.0	13.85	240.97	4,264.67	-486.25	-935.00	1,053.88	2.00	-1.65	-4.48	212.46
	NORMAL	4,496.0	12.62	242.11	4,357.15	-498.62	-954.12	1,075.62	1.32	-1.29	1.20	168.57
	NORMAL	4,591.0	11.74	244.22	4,450.01	-505.68	-971.99	1,095.66	1.04	-0.93	2.22	154.19
	NORMAL	4,687.0	10.24	243.16	4,544.24	-513.78	-988.40	1,113.96	1.58	-1.56	-1.10	187.15
	NORMAL	4,782.0	8.26	242.90	4,638.00	-520.70	-1,002.01	1,129.23	2.08	-2.08	-0.27	181.08
	NORMAL	4,878.0	7.12	246.86	4,733.14	-526.18	-1,013.62	1,142.05	1.31	-1.19	4.13	157.02
	NORMAL	4,973.0	5.89	243.96	4,827.53	-530.63	-1,023.42	1,152.80	1.34	-1.29	-3.05	193.52
	NORMAL	5,068.0	4.84	244.66	4,922.11	-534.49	-1,031.42	1,161.67	1.11	-1.11	0.74	176.78
	NORMAL	5,164.0	3.87	234.73	5,017.83	-538.09	-1,037.73	1,168.93	1.28	-1.01	-10.34	212.98
	NORMAL	5,258.0	2.68	232.44	5,111.68	-541.27	-1,042.06	1,174.24	1.27	-1.27	-2.44	185.13
	NORMAL	5,353.0	1.23	199.75	5,206.62	-543.58	-1,044.16	1,177.18	1.87	-1.53	-34.41	202.00
11/7/2013	NORMAL	5,448.0	0.92	112.73	5,301.61	-544.83	-1,043.80	1,177.44	1.58	-0.33	-91.60	217.86
	NORMAL	5,544.0	0.97	128.64	5,397.60	-545.64	-1,042.46	1,176.62	0.28	0.05	16.57	87.23
	NORMAL	5,639.0	0.66	159.23	5,492.59	-546.65	-1,041.64	1,176.36	0.55	-0.33	32.20	140.11
	NORMAL	5,734.0	0.61	150.62	5,587.58	-547.61	-1,041.19	1,176.41	0.11	-0.05	-9.06	238.09
	NORMAL	5,830.0	0.79	125.65	5,683.58	-548.44	-1,040.41	1,176.10	0.36	0.19	-26.01	287.66
	NORMAL	5,926.0	0.70	189.90	5,779.57	-549.40	-1,039.97	1,176.16	0.83	-0.09	66.93	127.62
	NORMAL	6,021.0	1.41	250.81	5,874.56	-550.36	-1,041.17	1,177.67	1.30	0.75	64.12	90.67
	NORMAL	6,117.0	1.71	252.92	5,970.52	-551.16	-1,043.66	1,180.25	0.32	0.31	2.20	11.90

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 (°)
11/8/2013	NORMAL	6,212.0	1.54	263.29	6,065.48	-551.73	-1,046.28	1,182.83	0.36	-0.18	10.92	125.15
	NORMAL	6,308.0	0.66	269.27	6,161.47	-551.89	-1,048.11	1,184.53	0.92	-0.92	6.23	175.55
	NORMAL	6,404.0	0.48	291.68	6,257.46	-551.75	-1,049.04	1,185.29	0.30	-0.19	23.34	139.76
	NORMAL	6,499.0	0.44	282.72	6,352.46	-551.52	-1,049.77	1,185.82	0.09	-0.04	-9.43	236.49
	NORMAL	6,594.0	0.61	267.25	6,447.45	-551.46	-1,050.63	1,186.56	0.23	0.18	-16.28	312.27
	NORMAL	6,688.0	0.79	263.91	6,541.45	-551.56	-1,051.77	1,187.62	0.20	0.19	-3.55	345.55
11/9/2013	NORMAL	6,783.0	0.97	269.71	6,636.44	-551.63	-1,053.23	1,188.94	0.21	0.19	6.11	29.25
	NORMAL	6,878.0	0.31	140.24	6,731.43	-551.83	-1,053.87	1,189.60	1.25	-0.69	-136.28	191.59
	NORMAL	6,973.0	0.48	132.60	6,826.43	-552.30	-1,053.41	1,189.41	0.19	0.18	-8.04	338.94
	NORMAL	7,069.0	0.70	152.46	6,922.43	-553.09	-1,052.84	1,189.28	0.31	0.23	20.69	53.13
	NORMAL	7,164.0	1.01	152.72	7,017.42	-554.35	-1,052.19	1,189.28	0.33	0.33	0.27	0.85
	NORMAL	7,259.0	0.75	254.94	7,112.41	-555.25	-1,052.41	1,189.89	1.45	-0.27	107.60	147.90
	NORMAL	7,354.0	0.88	249.40	7,207.40	-555.67	-1,053.69	1,191.23	0.16	0.14	-5.83	325.99
	NORMAL	7,450.0	1.19	254.77	7,303.38	-556.19	-1,055.34	1,192.93	0.34	0.32	5.59	20.07
	NORMAL	7,545.0	1.23	261.09	7,398.36	-556.61	-1,057.30	1,194.86	0.15	0.04	6.65	76.49
	NORMAL	7,639.0	1.19	264.34	7,492.34	-556.86	-1,059.27	1,196.72	0.08	-0.04	3.46	121.85
NORMAL	7,735.0	1.27	265.75	7,588.32	-557.04	-1,061.32	1,198.62	0.09	0.08	1.47	21.43	
11/10/2013	NORMAL	7,831.0	1.50	265.66	7,684.29	-557.21	-1,063.64	1,200.75	0.24	0.24	-0.09	359.41
	NORMAL	7,926.0	1.01	281.84	7,779.27	-557.14	-1,065.69	1,202.54	0.63	-0.52	17.03	152.03
	NORMAL	8,022.0	0.97	304.16	7,875.26	-556.51	-1,067.20	1,203.58	0.40	-0.04	23.25	107.01
	NORMAL	8,117.0	0.92	305.30	7,970.24	-555.61	-1,068.48	1,204.31	0.06	-0.05	1.20	159.96
	NORMAL	8,162.0	0.92	305.30	8,015.24	-555.20	-1,069.07	1,204.64	0.00	0.00	0.00	0.00