

## 1 General

### 1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

### 1.2 Well/Wellbore Information

Well	RWF 523-4	Wellbore No.	00
Wellbore Legal Name	RWF 523-4	Common Wellbore Name	RWF 523-4
Project	RU 04-07S-094W	Site	RMV 108-4 Pad
Vertical Section Azimuth	216.40 (°)	North reference	True
Origin N/S		Origin E/W	
Spud date	12/27/2013	UWI	RWF 523-4
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	12/27/2013	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

5885

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 (°)
12/27/2013	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/27/2013	NORMAL	73.0	0.97	221.92	73.00	-0.46	-0.41	0.62	1.33	1.33	0.00	221.92
	NORMAL	102.0	2.38	226.85	101.98	-1.05	-1.02	1.45	4.88	4.88	17.00	8.30
	NORMAL	133.0	2.90	219.02	132.95	-2.10	-1.98	2.87	2.04	1.68	-25.26	321.30
	NORMAL	164.0	3.26	222.71	163.91	-3.36	-3.07	4.53	1.33	1.16	11.90	30.69
	NORMAL	194.0	3.87	219.20	193.85	-4.77	-4.29	6.39	2.16	2.03	-11.70	338.56
	NORMAL	224.0	4.75	213.13	223.76	-6.60	-5.61	8.64	3.30	2.93	-20.23	329.55
	NORMAL	254.0	5.19	214.10	253.65	-8.76	-7.05	11.23	1.49	1.47	3.23	11.30
	NORMAL	284.0	5.98	212.87	283.51	-11.20	-8.66	14.15	2.66	2.63	-4.10	350.77
	NORMAL	314.0	6.51	217.27	313.33	-13.86	-10.53	17.41	2.38	1.77	14.67	44.29
	NORMAL	344.0	7.39	216.39	343.11	-16.77	-12.71	21.04	2.95	2.93	-2.93	352.66
	NORMAL	375.0	8.80	215.33	373.80	-20.31	-15.26	25.40	4.57	4.55	-3.42	353.43
	NORMAL	404.0	10.03	216.47	402.41	-24.15	-18.05	30.15	4.29	4.24	3.93	9.18
	NORMAL	435.0	11.09	216.83	432.88	-28.71	-21.44	35.83	3.43	3.42	1.16	3.74
	NORMAL	465.0	12.23	218.76	462.26	-33.49	-25.16	41.89	4.02	3.80	6.43	19.84
	NORMAL	496.0	13.11	217.35	492.51	-38.85	-29.35	48.69	3.01	2.84	-4.55	339.95
12/28/2013	NORMAL	526.0	13.40	217.35	521.71	-44.32	-33.52	55.56	0.96	0.96	0.00	0.00
	NORMAL	556.0	15.13	217.27	550.78	-50.20	-38.00	62.95	5.77	5.77	-0.27	359.31
	NORMAL	587.0	15.84	215.07	580.66	-56.88	-42.88	71.23	2.97	2.29	-7.10	319.34
	NORMAL	617.0	16.72	215.77	609.46	-63.73	-47.76	79.64	3.01	2.93	2.33	12.91
	NORMAL	647.0	17.86	215.51	638.10	-70.98	-52.95	88.55	3.81	3.80	-0.87	356.00

## 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 (°)
12/28/2013	NORMAL	677.0	18.91	216.21	666.57	-78.65	-58.50	98.01	3.58	3.50	2.33	12.21
	NORMAL	707.0	19.88	217.97	694.87	-86.59	-64.51	107.97	3.77	3.23	5.87	31.90
	NORMAL	755.0	21.06	217.74	739.83	-99.84	-74.81	124.75	2.46	2.46	-0.48	355.99
	NORMAL	785.0	22.02	217.83	767.74	-108.55	-81.55	135.77	3.20	3.20	0.30	2.01
	NORMAL	815.0	23.47	217.74	795.40	-117.72	-88.66	147.36	4.83	4.83	-0.30	358.58
	NORMAL	845.0	24.57	216.78	822.81	-127.44	-96.05	159.57	3.89	3.67	-3.20	340.00
	NORMAL	876.0	25.80	216.07	850.86	-138.05	-103.88	172.76	4.09	3.97	-2.29	345.88
	NORMAL	906.0	26.99	215.19	877.73	-148.89	-111.65	186.10	4.18	3.97	-2.93	341.41
	NORMAL	936.0	27.87	215.02	904.36	-160.20	-119.60	199.91	2.94	2.93	-0.57	354.84
	NORMAL	966.0	28.57	214.58	930.79	-171.85	-127.69	214.09	2.43	2.33	-1.47	343.25
	NORMAL	998.0	29.89	214.89	958.72	-184.69	-136.60	229.71	4.15	4.13	0.97	6.88
	NORMAL	1,030.0	31.34	214.14	986.26	-198.12	-145.83	246.00	4.69	4.53	-2.34	344.92
	NORMAL	1,062.0	32.57	214.13	1,013.41	-212.13	-155.33	262.92	3.84	3.84	-0.03	359.75
	NORMAL	1,094.0	33.80	214.05	1,040.19	-226.64	-165.15	280.42	3.85	3.84	-0.25	357.93
	NORMAL	1,126.0	34.77	214.40	1,066.63	-241.54	-175.29	298.44	3.09	3.03	1.09	11.63
	NORMAL	1,157.0	35.96	215.02	1,091.91	-256.29	-185.51	316.37	4.01	3.84	2.00	17.03
	NORMAL	1,253.0	38.07	215.81	1,168.56	-303.38	-219.00	374.15	2.25	2.20	0.82	13.02
	NORMAL	1,353.0	39.16	218.53	1,246.70	-353.09	-256.71	436.54	2.02	1.09	2.72	58.36
	NORMAL	1,443.0	40.31	219.32	1,315.91	-397.84	-292.86	494.01	1.40	1.28	0.88	24.01
	NORMAL	1,539.0	39.60	217.57	1,389.50	-446.12	-331.20	555.62	1.38	-0.74	-1.82	237.05
12/29/2013	NORMAL	1,634.0	40.35	217.66	1,462.30	-494.47	-368.45	616.64	0.79	0.79	0.09	4.44
	NORMAL	1,729.0	40.13	216.43	1,534.82	-543.45	-405.42	678.00	0.87	-0.23	-1.29	254.05
	NORMAL	1,825.0	41.23	216.95	1,607.62	-593.62	-442.81	740.57	1.20	1.15	0.54	17.32
	NORMAL	1,921.0	39.82	214.93	1,680.59	-644.11	-479.43	802.94	2.01	-1.47	-2.10	222.19
	NORMAL	2,016.0	40.44	215.11	1,753.23	-694.25	-514.57	864.15	0.66	0.65	0.19	10.67
	NORMAL	2,112.0	39.52	214.49	1,826.79	-744.90	-549.77	925.81	1.04	-0.96	-0.65	203.18
	NORMAL	2,207.0	38.33	213.96	1,900.70	-794.25	-583.35	985.46	1.30	-1.25	-0.56	195.43
	NORMAL	2,302.0	39.08	215.46	1,974.83	-843.08	-617.18	1,044.83	1.26	0.79	1.58	51.94
	NORMAL	2,397.0	37.98	215.90	2,049.15	-891.15	-651.69	1,104.00	1.19	-1.16	0.46	166.18
	NORMAL	2,492.0	37.71	216.34	2,124.17	-938.23	-686.05	1,162.29	0.40	-0.28	0.46	135.18
	NORMAL	2,585.0	38.59	218.01	2,197.30	-983.99	-720.76	1,219.72	1.46	0.95	1.80	50.19
	NORMAL	2,680.0	39.16	217.74	2,271.26	-1,031.06	-757.37	1,279.33	0.63	0.60	-0.28	343.34
	NORMAL	2,775.0	39.38	217.74	2,344.81	-1,078.61	-794.17	1,339.44	0.23	0.23	0.00	0.00
	NORMAL	2,871.0	39.47	217.74	2,418.97	-1,126.82	-831.49	1,400.39	0.09	0.09	0.00	0.00
	NORMAL	2,966.0	39.60	217.13	2,492.23	-1,174.84	-868.25	1,460.86	0.43	0.14	-0.64	288.28
	NORMAL	3,061.0	39.38	216.95	2,565.55	-1,223.06	-904.64	1,521.27	0.26	-0.23	-0.19	207.42
	NORMAL	3,156.0	40.35	216.69	2,638.47	-1,271.81	-941.13	1,582.16	1.04	1.02	-0.27	350.15
	NORMAL	3,252.0	40.79	216.16	2,711.39	-1,322.05	-978.20	1,644.59	0.58	0.46	-0.55	321.72
	NORMAL	3,347.0	40.75	215.46	2,783.34	-1,372.36	-1,014.50	1,706.63	0.48	-0.04	-0.74	264.73
12/31/2013	NORMAL	3,442.0	40.53	215.02	2,855.42	-1,422.89	-1,050.20	1,768.49	0.38	-0.23	-0.46	232.32
	NORMAL	3,538.0	40.31	214.49	2,928.51	-1,474.03	-1,085.69	1,830.71	0.43	-0.23	-0.55	237.17
	NORMAL	3,633.0	40.09	213.61	3,001.07	-1,524.84	-1,120.02	1,891.97	0.64	-0.23	-0.93	248.49
	NORMAL	3,729.0	39.38	215.37	3,074.90	-1,575.42	-1,154.76	1,953.30	1.39	-0.74	1.83	122.93
	NORMAL	3,825.0	37.19	216.43	3,150.25	-1,623.60	-1,189.62	2,012.77	2.38	-2.28	1.10	163.72
	NORMAL	3,920.0	37.06	215.99	3,225.99	-1,669.86	-1,223.50	2,070.11	0.31	-0.14	-0.46	243.74
	NORMAL	4,015.0	35.21	216.16	3,302.72	-1,715.14	-1,256.48	2,126.13	1.95	-1.95	0.18	176.97
	NORMAL	4,111.0	33.76	216.87	3,381.84	-1,758.83	-1,288.82	2,180.48	1.57	-1.51	0.74	164.80
	NORMAL	4,206.0	31.87	216.34	3,461.68	-1,800.15	-1,319.52	2,231.96	2.01	-1.99	-0.56	188.42
	NORMAL	4,301.0	31.08	216.87	3,542.70	-1,839.97	-1,349.09	2,281.56	0.88	-0.83	0.56	160.92
	NORMAL	4,397.0	29.54	215.99	3,625.58	-1,878.94	-1,377.87	2,330.01	1.67	-1.60	-0.92	195.71
	NORMAL	4,492.0	27.47	214.76	3,709.06	-1,915.90	-1,404.13	2,375.33	2.26	-2.18	-1.29	195.29
	NORMAL	4,587.0	26.11	215.46	3,793.86	-1,950.93	-1,428.75	2,418.14	1.47	-1.43	0.74	167.25
	NORMAL	4,683.0	24.75	218.10	3,880.56	-1,983.95	-1,453.41	2,459.35	1.84	-1.42	2.75	141.37
	NORMAL	4,778.0	23.43	218.27	3,967.28	-2,014.43	-1,477.38	2,498.11	1.39	-1.39	0.18	177.07
	NORMAL	4,873.0	22.15	216.51	4,054.87	-2,043.65	-1,499.73	2,534.89	1.53	-1.35	-1.85	207.23
	NORMAL	4,969.0	21.27	218.10	4,144.06	-2,071.90	-1,521.24	2,570.40	1.10	-0.92	1.66	146.98

## 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 (°)
1/1/2014	NORMAL	5,064.0	19.16	217.13	4,233.20	-2,097.90	-1,541.29	2,603.21	2.25	-2.22	-1.02	188.57
	NORMAL	5,159.0	16.79	214.32	4,323.56	-2,121.66	-1,558.44	2,632.52	2.66	-2.49	-2.96	198.77
	NORMAL	5,255.0	16.26	219.68	4,415.60	-2,143.46	-1,574.84	2,659.80	1.68	-0.55	5.58	111.73
	NORMAL	5,350.0	14.73	219.24	4,507.15	-2,163.05	-1,590.97	2,685.14	1.62	-1.61	-0.46	184.18
1/2/2014	NORMAL	5,446.0	12.75	216.69	4,600.39	-2,181.00	-1,605.02	2,707.92	2.16	-2.06	-2.66	195.77
	NORMAL	5,541.0	11.12	216.16	4,693.34	-2,196.80	-1,616.69	2,727.57	1.72	-1.72	-0.56	183.59
	NORMAL	5,636.0	9.23	218.89	4,786.84	-2,210.13	-1,626.88	2,744.34	2.05	-1.99	2.87	167.03
	NORMAL	5,732.0	8.88	220.47	4,881.64	-2,221.76	-1,636.52	2,759.43	0.45	-0.36	1.65	145.39
	NORMAL	5,827.0	7.43	220.20	4,975.68	-2,232.03	-1,645.25	2,772.87	1.53	-1.53	-0.28	181.38
	NORMAL	5,922.0	5.93	215.19	5,070.03	-2,240.73	-1,652.04	2,783.91	1.69	-1.58	-5.27	198.76
	NORMAL	6,018.0	3.87	205.18	5,165.68	-2,247.72	-1,656.28	2,792.04	2.32	-2.15	-10.43	197.61
	NORMAL	6,114.0	3.30	206.67	5,261.49	-2,253.12	-1,658.90	2,797.94	0.60	-0.59	1.55	171.46
	NORMAL	6,209.0	3.43	208.69	5,356.33	-2,258.06	-1,661.49	2,803.45	0.19	0.14	2.13	43.38
	NORMAL	6,305.0	2.24	201.84	5,452.21	-2,262.32	-1,663.57	2,808.12	1.29	-1.24	-7.14	192.49
	NORMAL	6,400.0	0.66	195.24	5,547.18	-2,264.57	-1,664.40	2,810.42	1.67	-1.66	-6.95	182.74
	NORMAL	6,496.0	0.66	155.52	5,643.17	-2,265.60	-1,664.32	2,811.21	0.47	0.00	-41.37	250.14
1/3/2014	NORMAL	6,592.0	0.44	158.15	5,739.17	-2,266.45	-1,663.95	2,811.67	0.23	-0.23	2.74	174.77
	NORMAL	6,686.0	0.44	142.16	5,833.16	-2,267.07	-1,663.59	2,811.96	0.13	0.00	-17.01	262.01
	NORMAL	6,781.0	0.44	154.20	5,928.16	-2,267.69	-1,663.21	2,812.23	0.10	0.00	12.67	96.02
	NORMAL	6,876.0	0.66	178.63	6,023.16	-2,268.56	-1,663.04	2,812.83	0.33	0.23	25.72	59.48
1/4/2014	NORMAL	6,970.0	0.70	176.26	6,117.15	-2,269.68	-1,662.99	2,813.70	0.05	0.04	-2.52	323.70
	NORMAL	7,065.0	0.53	174.76	6,212.15	-2,270.69	-1,662.91	2,814.47	0.18	-0.18	-1.58	184.66
	NORMAL	7,160.0	0.44	162.11	6,307.14	-2,271.48	-1,662.76	2,815.01	0.15	-0.09	-13.32	223.74
	NORMAL	7,255.0	0.35	140.31	6,402.14	-2,272.05	-1,662.42	2,815.29	0.18	-0.09	-22.95	228.49
	NORMAL	7,351.0	0.48	122.56	6,498.14	-2,272.49	-1,661.94	2,815.34	0.19	0.14	-18.49	306.21
1/5/2014	NORMAL	7,446.0	0.35	107.44	6,593.14	-2,272.79	-1,661.32	2,815.22	0.18	-0.14	-15.92	212.72
	NORMAL	7,541.0	0.44	94.26	6,688.13	-2,272.91	-1,660.68	2,814.93	0.13	0.09	-13.87	308.01
	NORMAL	7,636.0	0.53	86.87	6,783.13	-2,272.91	-1,659.88	2,814.45	0.12	0.09	-7.78	321.47
	NORMAL	7,730.0	0.44	54.62	6,877.13	-2,272.68	-1,659.15	2,813.83	0.30	-0.10	-34.31	236.08
	NORMAL	7,826.0	0.44	53.30	6,973.13	-2,272.24	-1,658.56	2,813.13	0.01	0.00	-1.38	269.34
	NORMAL	7,922.0	0.31	69.12	7,069.12	-2,271.93	-1,658.02	2,812.56	0.17	-0.14	16.48	149.20
	NORMAL	8,017.0	0.26	109.64	7,164.12	-2,271.91	-1,657.58	2,812.28	0.21	-0.05	42.65	123.63
	NORMAL	8,113.0	0.26	119.75	7,260.12	-2,272.09	-1,657.18	2,812.19	0.05	0.00	10.53	95.05
	NORMAL	8,209.0	0.31	126.69	7,356.12	-2,272.35	-1,656.78	2,812.17	0.06	0.05	7.23	38.12
	NORMAL	8,304.0	0.13	108.50	7,451.12	-2,272.54	-1,656.48	2,812.14	0.20	-0.19	-19.15	192.28
1/6/2014	NORMAL	8,399.0	0.18	61.47	7,546.12	-2,272.51	-1,656.24	2,811.97	0.14	0.05	-49.51	266.82
	NORMAL	8,495.0	0.18	53.21	7,642.12	-2,272.34	-1,655.99	2,811.69	0.03	0.00	-8.60	265.87
	NORMAL	8,591.0	0.13	195.68	7,738.12	-2,272.36	-1,655.90	2,811.65	0.31	-0.05	148.41	164.37
	NORMAL	8,686.0	0.26	199.20	7,833.12	-2,272.66	-1,656.00	2,811.95	0.14	0.14	3.71	7.03
	NORMAL	8,781.0	0.09	18.06	7,928.12	-2,272.80	-1,656.04	2,812.09	0.37	-0.18	188.27	179.71
	NORMAL	8,862.0	0.09	38.09	8,009.12	-2,272.69	-1,655.99	2,811.96	0.04	0.00	24.73	100.01
	NORMAL	8,907.0	0.09	38.09	8,054.12	-2,272.63	-1,655.94	2,811.89	0.00	0.00	0.00	0.00