

1 General

1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

1.2 Well Information

Well	NR 512-3	Wellbore No.	
Well Name	NR 512-3	Common Name	NR 512-3
Project	RU 03-06S-094W	Site	NR 23-3 Pad
Vertical Section Azimuth	308.48 (°)	North Reference	True
Origin N/S		Origin E/W	
Spud Date	11/5/2011	UWI	NR 512-3
Active Datum	KB @6,743.9ft (above Mean Sea Level)		

2 Survey Name

2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	SCIENTIFIC
Date Started	11/5/2011	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 (°/100ft)	Build Rate (°/100ft)	Turn (°/100ft)	TFace (°)
11/5/2011	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/5/2011	NORMAL	84.0	0.70	307.44	84.00	0.31	-0.41	0.51	0.83	0.83	0.00	307.44
	NORMAL	112.0	1.50	305.68	111.99	0.63	-0.84	1.05	2.86	2.86	-6.29	356.70
	NORMAL	142.0	1.94	321.06	141.98	1.25	-1.48	1.94	2.11	1.47	51.27	54.23
	NORMAL	171.0	2.46	321.06	170.96	2.12	-2.18	3.02	1.79	1.79	0.00	0.00
	NORMAL	204.0	3.17	317.20	203.92	3.34	-3.24	4.62	2.23	2.15	-11.70	343.12
	NORMAL	234.0	4.22	311.66	233.85	4.68	-4.63	6.54	3.69	3.50	-18.47	338.44
	NORMAL	262.0	4.75	308.50	261.77	6.09	-6.31	8.73	2.09	1.89	-11.29	333.42
	NORMAL	295.0	6.07	306.30	294.62	7.97	-8.78	11.84	4.05	4.00	-6.67	349.97
	NORMAL	325.0	6.69	308.41	324.44	10.00	-11.43	15.17	2.21	2.07	7.03	21.77
	NORMAL	354.0	7.83	307.79	353.20	12.26	-14.32	18.83	3.94	3.93	-2.14	355.76
	NORMAL	400.0	9.29	303.92	398.69	16.25	-19.87	25.67	3.41	3.17	-8.41	336.55
11/6/2011	NORMAL	429.0	10.38	304.69	427.26	19.04	-23.97	30.61	3.79	3.76	2.66	7.26
	NORMAL	520.0	11.30	307.61	516.64	29.15	-37.77	47.70	1.18	1.01	3.21	32.27
	NORMAL	611.0	11.36	308.36	605.87	40.15	-51.86	65.58	0.17	0.07	0.82	68.21
	NORMAL	701.0	12.34	308.62	693.95	51.66	-66.32	84.06	1.09	1.09	0.29	3.25
	NORMAL	792.0	13.01	307.77	782.73	64.00	-82.02	104.03	0.76	0.74	-0.93	344.03
	NORMAL	883.0	13.41	307.18	871.32	76.65	-98.52	124.82	0.46	0.44	-0.65	341.09
	NORMAL	973.0	12.65	311.87	959.00	89.54	-114.18	145.09	1.45	-0.84	5.21	127.98
	NORMAL	1,064.0	13.54	312.96	1,047.64	103.45	-129.39	165.66	1.01	0.98	1.20	16.04
	NORMAL	1,159.0	12.30	309.87	1,140.23	117.51	-145.30	186.86	1.49	-1.31	-3.25	207.63

2.1.2 Survey Stations (Continued)

Date	Type	MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLS (°/100ft)	Build Rate (°/100ft)	Turn (°/100ft)	TFace (°)
11/6/2011	NORMAL	1,253.0	12.88	307.85	1,231.97	130.36	-161.26	207.35	0.77	0.62	-2.15	321.81
	NORMAL	1,347.0	12.19	308.70	1,323.73	142.99	-177.27	227.75	0.76	-0.73	0.90	165.45
	NORMAL	1,442.0	13.10	308.91	1,416.43	156.03	-193.48	248.55	0.96	0.96	0.22	2.99
	NORMAL	1,536.0	12.00	306.98	1,508.18	168.60	-209.58	268.97	1.25	-1.17	-2.05	199.93
	NORMAL	1,631.0	13.01	304.69	1,600.92	180.62	-226.26	289.51	1.18	1.06	-2.41	332.73
	NORMAL	1,725.0	12.01	308.14	1,692.69	192.68	-242.65	309.85	1.33	-1.06	3.67	144.90
	NORMAL	1,820.0	12.47	308.87	1,785.53	205.23	-258.41	329.99	0.51	0.48	0.77	18.95
	NORMAL	1,914.0	11.57	307.20	1,877.47	217.29	-273.82	349.56	1.03	-0.96	-1.78	200.31
	NORMAL	2,009.0	11.95	307.20	1,970.48	229.00	-289.24	368.92	0.40	0.40	0.00	0.00
	NORMAL	2,104.0	12.49	307.32	2,063.32	241.17	-305.25	389.02	0.57	0.57	0.13	2.75
11/7/2011	NORMAL	2,198.0	12.11	307.96	2,155.17	253.40	-321.10	409.05	0.43	-0.40	0.68	160.58
	NORMAL	2,293.0	11.92	306.74	2,248.09	265.40	-336.82	428.82	0.33	-0.20	-1.28	232.60
	NORMAL	2,363.0	12.42	307.59	2,316.51	274.32	-348.58	443.57	0.76	0.71	1.21	20.13
11/8/2011	NORMAL	2,485.0	12.52	308.70	2,435.63	290.59	-369.30	469.91	0.21	0.08	0.91	67.90
	NORMAL	2,579.0	12.52	307.15	2,527.40	303.11	-385.37	490.29	0.36	0.00	-1.65	269.24
	NORMAL	2,674.0	12.14	306.10	2,620.21	315.22	-401.65	510.56	0.46	-0.40	-1.11	210.03
	NORMAL	2,768.0	12.60	309.52	2,712.03	327.56	-417.54	530.69	0.92	0.49	3.64	59.55
	NORMAL	2,863.0	12.90	309.88	2,804.68	340.96	-433.67	551.65	0.33	0.32	0.38	15.01
	NORMAL	2,958.0	12.32	310.31	2,897.39	354.31	-449.54	572.38	0.62	-0.61	0.45	171.02
	NORMAL	3,052.0	12.08	308.03	2,989.27	366.86	-464.94	592.24	0.57	-0.26	-2.43	242.41
	NORMAL	3,147.0	12.58	311.18	3,082.08	379.80	-480.55	612.51	0.88	0.53	3.32	54.92
	NORMAL	3,241.0	12.40	309.88	3,173.85	393.01	-496.00	632.83	0.36	-0.19	-1.38	236.74
11/9/2011	NORMAL	3,336.0	11.99	308.73	3,266.71	405.72	-511.53	652.89	0.50	-0.43	-1.21	210.09
	NORMAL	3,430.0	13.03	309.60	3,358.48	418.59	-527.31	673.25	1.12	1.11	0.93	10.70
	NORMAL	3,524.0	13.11	309.46	3,450.04	432.12	-543.71	694.51	0.09	0.09	-0.15	338.34
	NORMAL	3,619.0	12.86	307.09	3,542.61	445.34	-560.46	715.85	0.62	-0.26	-2.49	243.70
	NORMAL	3,713.0	13.66	311.76	3,634.11	459.04	-577.08	737.39	1.42	0.85	4.97	55.53
	NORMAL	3,808.0	13.81	311.45	3,726.39	474.02	-593.95	759.91	0.18	0.16	-0.33	333.71
	NORMAL	3,902.0	13.63	308.64	3,817.71	488.36	-611.01	782.19	0.73	-0.19	-2.99	253.52
	NORMAL	3,997.0	13.10	312.30	3,910.14	502.59	-627.71	804.13	1.05	-0.56	3.85	123.84
	NORMAL	4,091.0	12.05	311.91	4,001.88	516.32	-642.90	824.55	1.12	-1.12	-0.41	184.43
	NORMAL	4,186.0	11.21	307.86	4,094.93	528.61	-657.57	843.68	1.23	-0.88	-4.26	222.21
	NORMAL	4,280.0	10.80	307.65	4,187.21	539.60	-671.75	861.63	0.44	-0.44	-0.22	185.48
	NORMAL	4,375.0	11.49	305.85	4,280.41	550.58	-686.47	879.98	0.81	0.73	-1.89	332.36
	NORMAL	4,469.0	11.30	305.52	4,372.56	561.41	-701.55	898.53	0.21	-0.20	-0.35	198.78
11/10/2011	NORMAL	4,564.0	12.19	306.25	4,465.57	572.75	-717.22	917.85	0.95	0.94	0.77	9.84
	NORMAL	4,658.0	12.68	306.58	4,557.37	584.76	-733.51	938.07	0.53	0.52	0.35	8.41
	NORMAL	4,753.0	12.63	308.18	4,650.06	597.40	-750.04	958.88	0.37	-0.05	1.68	98.90
	NORMAL	4,847.0	13.04	307.84	4,741.71	610.26	-766.50	979.76	0.44	0.44	-0.36	349.40
	NORMAL	4,942.0	12.31	308.65	4,834.39	623.16	-782.87	1,000.60	0.79	-0.77	0.85	166.71
	NORMAL	5,036.0	12.33	308.25	4,926.23	635.63	-798.58	1,020.66	0.09	0.02	-0.43	282.99
	NORMAL	5,131.0	11.56	308.80	5,019.17	647.87	-813.96	1,040.32	0.82	-0.81	0.58	171.86
	NORMAL	5,225.0	11.53	306.92	5,111.27	659.42	-828.81	1,059.13	0.40	-0.03	-2.00	264.52
	NORMAL	5,320.0	12.45	312.46	5,204.20	672.03	-843.96	1,078.84	1.55	0.97	5.83	54.09
	NORMAL	5,414.0	12.22	309.44	5,296.03	685.19	-859.12	1,098.90	0.73	-0.24	-3.21	248.91
11/11/2011	NORMAL	5,509.0	12.64	309.31	5,388.80	698.17	-874.92	1,119.34	0.44	0.44	-0.14	356.12
	NORMAL	5,603.0	11.95	309.68	5,480.65	710.90	-890.37	1,139.36	0.74	-0.73	0.39	173.67
	NORMAL	5,698.0	12.25	310.54	5,573.54	723.73	-905.60	1,159.26	0.37	0.32	0.91	31.42
	NORMAL	5,792.0	12.40	308.21	5,665.37	736.45	-921.11	1,179.32	0.55	0.16	-2.48	285.64
	NORMAL	5,887.0	12.39	309.06	5,758.16	749.18	-937.04	1,199.71	0.19	-0.01	0.89	93.55
	NORMAL	5,981.0	12.48	308.21	5,849.95	761.82	-952.85	1,219.95	0.22	0.10	-0.90	295.77
	NORMAL	6,076.0	12.36	308.84	5,942.73	774.55	-968.83	1,240.38	0.19	-0.13	0.66	131.84
	NORMAL	6,170.0	12.18	308.97	6,034.58	787.09	-984.38	1,260.36	0.19	-0.19	0.14	171.34
11/12/2011	NORMAL	6,265.0	11.43	308.82	6,127.57	799.30	-999.51	1,279.79	0.79	-0.79	-0.16	182.27
	NORMAL	6,359.0	11.84	310.89	6,219.64	811.45	-1,014.05	1,298.74	0.62	0.44	2.20	46.53
	NORMAL	6,454.0	12.59	312.49	6,312.49	824.82	-1,029.06	1,318.81	0.87	0.79	1.68	25.08
11/13/2011	NORMAL	6,548.0	12.57	311.90	6,404.23	838.57	-1,044.22	1,339.24	0.14	-0.02	-0.63	260.87

2.1.2 Survey Stations (Continued)

Date	Type	MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLS (°/100ft)	Build Rate (°/100ft)	Turn (°/100ft)	TFace (°)
11/13/2011	NORMAL	6,644.0	12.00	311.57	6,498.03	852.17	-1,059.47	1,359.63	0.60	-0.59	-0.34	186.86
	NORMAL	6,737.0	11.26	310.58	6,589.12	864.49	-1,073.59	1,378.36	0.82	-0.80	-1.06	194.61
	NORMAL	6,831.0	10.26	309.32	6,681.47	875.77	-1,087.04	1,395.90	1.09	-1.06	-1.34	192.62
	NORMAL	6,926.0	8.62	310.98	6,775.18	885.80	-1,098.96	1,411.47	1.75	-1.73	1.75	171.39
	NORMAL	7,020.0	6.04	310.45	6,868.40	893.63	-1,108.04	1,423.46	2.75	-2.74	-0.56	181.24
	NORMAL	7,115.0	4.41	313.52	6,963.01	899.38	-1,114.50	1,432.09	1.74	-1.72	3.23	171.79
11/14/2011	NORMAL	7,209.0	3.25	314.19	7,056.79	903.73	-1,119.03	1,438.34	1.23	-1.23	0.71	178.12
	NORMAL	7,304.0	2.38	329.67	7,151.68	907.31	-1,121.96	1,442.86	1.21	-0.92	16.29	146.41
	NORMAL	7,398.0	1.93	323.68	7,245.61	910.27	-1,123.88	1,446.21	0.53	-0.48	-6.37	203.62
	NORMAL	7,493.0	1.93	329.83	7,340.56	912.94	-1,125.63	1,449.24	0.22	0.00	6.47	93.07
11/15/2011	NORMAL	7,587.0	0.68	314.46	7,434.53	914.70	-1,126.82	1,451.27	1.37	-1.33	-16.35	188.05
	NORMAL	7,682.0	0.70	288.17	7,529.53	915.28	-1,127.78	1,452.38	0.33	0.02	-27.67	260.41
	NORMAL	7,776.0	0.97	281.31	7,623.52	915.61	-1,129.10	1,453.62	0.31	0.29	-7.30	336.23
	NORMAL	7,870.0	0.59	119.49	7,717.51	915.53	-1,129.46	1,453.85	1.64	-0.40	-172.15	186.86
	NORMAL	7,965.0	0.62	164.07	7,812.51	914.80	-1,128.90	1,452.95	0.48	0.03	46.93	108.83
11/16/2011	NORMAL	8,060.0	0.78	179.24	7,907.50	913.65	-1,128.75	1,452.12	0.26	0.17	15.97	56.95
11/17/2011	NORMAL	8,155.0	0.79	209.16	8,002.49	912.44	-1,129.06	1,451.61	0.43	0.01	31.49	103.59
11/19/2011	NORMAL	8,249.0	0.26	278.41	8,096.49	911.90	-1,129.58	1,451.69	0.79	-0.56	73.67	160.79
	NORMAL	8,344.0	0.44	258.38	8,191.49	911.86	-1,130.15	1,452.11	0.23	0.19	-21.08	315.51
	NORMAL	8,438.0	0.79	227.44	8,285.48	911.35	-1,130.98	1,452.44	0.50	0.37	-32.91	300.33
	NORMAL	8,533.0	0.77	204.38	8,380.47	910.32	-1,131.73	1,452.39	0.33	-0.02	-24.27	254.87
11/20/2011	NORMAL	8,627.0	0.78	187.30	8,474.47	909.11	-1,132.07	1,451.90	0.25	0.01	-18.17	263.92
	NORMAL	8,722.0	0.79	198.73	8,569.46	907.85	-1,132.36	1,451.35	0.16	0.01	12.03	92.07
11/21/2011	NORMAL	8,816.0	0.88	134.01	8,663.45	906.74	-1,132.05	1,450.41	0.95	0.10	-68.85	242.50
	NORMAL	8,910.0	1.55	115.38	8,757.43	905.69	-1,130.39	1,448.45	0.82	0.71	-19.82	319.94
	NORMAL	9,005.0	1.06	115.64	8,852.40	904.76	-1,128.43	1,446.34	0.52	-0.52	0.27	179.44
11/22/2011	NORMAL	9,099.0	1.06	73.19	8,946.39	904.63	-1,126.82	1,445.00	0.82	0.00	-45.16	248.78
	NORMAL	9,194.0	0.43	96.83	9,041.38	904.85	-1,125.62	1,444.20	0.72	-0.66	24.88	165.49
	NORMAL	9,288.0	1.14	200.99	9,135.37	903.93	-1,125.61	1,443.62	1.40	0.76	110.81	122.67
11/29/2011	NORMAL	9,383.0	2.55	196.85	9,230.32	901.03	-1,126.56	1,442.55	1.49	1.48	-4.36	352.53
	NORMAL	9,477.0	1.85	215.48	9,324.25	897.79	-1,128.04	1,441.70	1.06	-0.74	19.82	143.44
	NORMAL	9,572.0	2.90	219.18	9,419.17	894.68	-1,130.45	1,441.65	1.12	1.11	3.89	10.16
	NORMAL	9,760.0	3.66	225.34	9,606.86	886.77	-1,137.73	1,442.43	0.45	0.40	3.28	27.98
11/30/2011	NORMAL	9,949.0	4.67	221.55	9,795.36	876.77	-1,147.12	1,443.56	0.55	0.53	-2.01	342.86
	NORMAL	9,955.0	4.17	222.17	9,801.34	876.43	-1,147.43	1,443.59	8.37	-8.33	10.33	174.85
	NORMAL	10,011.0	4.81	220.77	9,857.17	873.14	-1,150.33	1,443.81	1.16	1.14	-2.50	349.58
	NORMAL	10,071.0	4.81	220.77	9,916.96	869.33	-1,153.61	1,444.01	0.00	0.00	0.00	0.00