

I General

1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

1.2 Well Information

Well	SP 514-13	Wellbore No.	
Well Name	SP 514-13	Common Name	SP 514-13
Project	PA 13-07S-095W	Site	SP 13-13 Pad
Vertical Section Azimuth	161.62 (°)	North Reference	True
Origin N/S		Origin E/W	
Spud Date	8/10/2011	UWI	SP 514-13
Active Datum	KB @8,010.0ft (above Mean Sea Level)		

2 Survey Name

2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	
Date Started	8/11/2011	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

7775

Date	Type	MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLS (°/100ft)	Buld Rate (°/100ft)	Turn (°/100ft)	TFace (°)
8/11/2011	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/11/2011	NORMAL	72.0	0.79	124.19	72.00	-0.28	0.41	0.39	1.10	1.10	0.00	124.19
	NORMAL	165.0	4.05	158.02	164.90	-3.69	2.17	4.18	3.68	3.51	36.38	41.20
	NORMAL	255.0	5.37	159.79	254.60	-10.59	4.82	11.56	1.48	1.47	1.97	7.17
	NORMAL	347.0	7.30	165.59	346.03	-20.29	7.76	21.70	2.21	2.10	6.30	21.24
	NORMAL	425.0	10.09	159.82	423.13	-31.50	11.35	33.47	3.74	3.58	-7.40	339.77
	NORMAL	515.0	11.71	158.44	511.50	-47.40	17.42	50.47	1.82	1.80	-1.53	350.17
	NORMAL	607.0	12.36	160.43	601.48	-65.36	24.15	69.64	0.84	0.71	2.16	33.53
	NORMAL	698.0	13.36	163.41	690.20	-84.61	30.42	89.89	1.32	1.10	3.27	35.0'
	NORMAL	788.0	14.12	162.45	777.62	-105.04	36.70	111.26	0.88	0.84	-1.07	342.83
	NORMAL	879.0	13.10	161.92	866.07	-125.43	43.24	132.67	1.13	-1.12	-0.58	186.7'
	NORMAL	970.0	13.53	161.80	954.62	-145.35	49.77	153.63	0.47	0.47	-0.13	356.26
	NORMAL	1,061.0	14.29	161.72	1,042.95	-166.12	56.62	175.50	0.84	0.84	-0.09	358.5'
	NORMAL	1,155.0	13.76	161.10	1,134.15	-187.72	63.88	198.28	0.59	-0.56	-0.66	195.53
	NORMAL	1,250.0	12.84	168.89	1,226.61	-208.77	69.57	220.05	2.12	-0.97	8.20	120.93
	NORMAL	1,344.0	12.87	164.38	1,318.25	-229.10	74.40	240.87	1.07	0.03	-4.80	269.5'
	NORMAL	1,439.0	13.44	159.71	1,410.76	-249.64	81.08	262.47	1.27	0.60	-4.92	295.92
	NORMAL	1,531.0	14.51	159.81	1,500.04	-270.49	88.77	284.68	1.16	1.16	0.11	1.34
8/13/2011	NORMAL	1,725.0	14.42	159.81	1,687.89	-315.97	105.49	333.11	0.05	-0.05	0.00	180.00
	NORMAL	1,819.0	13.63	158.14	1,779.09	-337.23	113.66	355.87	0.94	-0.84	-1.78	206.32
	NORMAL	1,914.0	13.72	156.56	1,871.39	-357.96	122.30	378.26	0.40	0.09	-1.66	282.78

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 (°)
8/13/2011	NORMAL	2,008.0	12.66	157.61	1,962.91	-377.71	130.66	399.64	1.16	-1.13	1.12	167.77
	NORMAL	2,103.0	12.75	160.34	2,055.59	-397.21	138.15	420.51	0.64	0.09	2.87	82.81
	NORMAL	2,197.0	13.28	161.92	2,147.17	-417.24	145.00	441.68	0.68	0.56	1.68	34.65
	NORMAL	2,292.0	13.54	166.32	2,239.59	-438.42	151.01	463.67	1.11	0.27	4.63	77.85
	NORMAL	2,386.0	14.42	167.72	2,330.80	-460.55	156.10	486.28	1.00	0.94	1.49	21.70
	NORMAL	2,481.0	14.16	167.46	2,422.86	-483.45	161.14	509.60	0.28	-0.27	-0.27	193.74
	NORMAL	2,575.0	14.33	165.88	2,513.97	-505.95	166.48	532.64	0.45	0.18	-1.68	292.85
	NORMAL	2,670.0	13.98	162.10	2,606.09	-528.28	172.87	555.84	1.04	-0.37	-3.98	247.44
	NORMAL	2,764.0	12.93	164.21	2,697.51	-549.20	179.22	577.70	1.23	-1.12	2.24	155.96
8/14/2011	NORMAL	2,859.0	12.31	164.65	2,790.21	-569.19	184.80	598.43	0.66	-0.65	0.46	171.40
	NORMAL	2,953.0	12.93	168.07	2,881.94	-589.15	189.62	618.88	1.03	0.66	3.64	51.99
	NORMAL	3,048.0	13.81	170.32	2,974.37	-610.72	193.73	640.65	1.08	0.93	2.37	31.69
	NORMAL	3,142.0	13.77	167.96	3,066.66	-632.72	197.95	662.86	0.60	-0.04	-2.51	264.79
	NORMAL	3,237.0	14.15	162.51	3,157.86	-654.86	203.80	685.71	1.44	0.40	-5.74	283.46
	NORMAL	3,331.0	13.81	158.35	3,249.07	-676.25	211.39	708.40	1.13	-0.36	-4.43	249.30
	NORMAL	3,426.0	13.19	158.55	3,341.45	-696.87	219.53	730.54	0.65	-0.65	0.21	175.79
	NORMAL	3,520.0	14.32	161.13	3,432.75	-717.85	227.22	752.88	1.37	1.20	2.74	29.75
	NORMAL	3,615.0	14.16	158.32	3,524.83	-739.77	235.31	776.23	0.75	-0.17	-2.96	255.6'
	NORMAL	3,710.0	13.63	153.66	3,617.06	-760.60	244.57	798.92	1.30	-0.56	-4.91	242.4'
	NORMAL	3,804.0	12.79	154.27	3,708.57	-779.90	254.00	820.20	0.91	-0.89	0.65	170.87
	NORMAL	3,899.0	12.49	158.40	3,801.27	-798.92	262.35	840.89	1.00	-0.32	4.35	110.37
	NORMAL	3,993.0	13.01	161.57	3,892.95	-818.41	269.43	861.62	0.93	0.55	3.37	54.93
	NORMAL	4,088.0	13.10	162.98	3,985.50	-838.85	275.97	883.08	0.35	0.09	1.48	74.9'
	NORMAL	4,182.0	13.44	160.44	4,076.99	-859.33	282.74	904.65	0.72	0.36	-2.70	299.0'
	NORMAL	4,277.0	13.76	160.80	4,169.32	-880.41	290.15	926.98	0.35	0.34	0.38	14.99
	NORMAL	4,371.0	13.88	159.94	4,260.60	-901.55	297.70	949.43	0.25	0.13	-0.91	299.87
	NORMAL	4,466.0	13.65	159.74	4,352.87	-922.77	305.49	972.02	0.25	-0.24	-0.21	191.59
	NORMAL	4,560.0	13.64	159.02	4,444.22	-943.53	313.30	994.18	0.18	-0.01	-0.77	266.28
	NORMAL	4,655.0	13.10	162.45	4,536.65	-964.25	320.55	1,016.14	1.01	-0.57	3.61	125.9'
	NORMAL	4,749.0	13.37	162.62	4,628.15	-984.78	327.01	1,037.66	0.29	0.29	0.18	8.29
	NORMAL	4,844.0	13.63	161.92	4,720.53	-1,005.90	333.77	1,059.83	0.32	0.27	-0.74	327.5'
	NORMAL	4,938.0	13.62	160.51	4,811.88	-1,026.87	340.90	1,081.97	0.35	-0.01	-1.50	267.59
	NORMAL	5,033.0	13.90	159.12	4,904.15	-1,048.07	348.70	1,104.56	0.46	0.29	-1.46	309.58
	NORMAL	5,127.0	13.85	160.04	4,995.41	-1,069.20	356.56	1,127.08	0.24	-0.05	0.98	103.22
	NORMAL	5,222.0	14.22	160.47	5,087.58	-1,090.88	364.34	1,150.11	0.40	0.39	0.45	15.95
8/15/2011	NORMAL	3,993.0	13.01	161.57	3,892.95	-818.41	269.43	861.62	0.93	0.55	3.37	54.93
	NORMAL	4,088.0	13.10	162.98	3,985.50	-838.85	275.97	883.08	0.35	0.09	1.48	74.9'
	NORMAL	4,182.0	13.44	160.44	4,076.99	-859.33	282.74	904.65	0.72	0.36	-2.70	299.0'
	NORMAL	4,277.0	13.76	160.80	4,169.32	-880.41	290.15	926.98	0.35	0.34	0.38	14.99
	NORMAL	4,371.0	13.88	159.94	4,260.60	-901.55	297.70	949.43	0.25	0.13	-0.91	299.87
	NORMAL	4,466.0	13.65	159.74	4,352.87	-922.77	305.49	972.02	0.25	-0.24	-0.21	191.59
	NORMAL	4,560.0	13.64	159.02	4,444.22	-943.53	313.30	994.18	0.18	-0.01	-0.77	266.28
	NORMAL	4,655.0	13.10	162.45	4,536.65	-964.25	320.55	1,016.14	1.01	-0.57	3.61	125.9'
	NORMAL	4,749.0	13.37	162.62	4,628.15	-984.78	327.01	1,037.66	0.29	0.29	0.18	8.29
	NORMAL	4,844.0	13.63	161.92	4,720.53	-1,005.90	333.77	1,059.83	0.32	0.27	-0.74	327.5'
	NORMAL	4,938.0	13.62	160.51	4,811.88	-1,026.87	340.90	1,081.97	0.35	-0.01	-1.50	267.59
	NORMAL	5,033.0	13.90	159.12	4,904.15	-1,048.07	348.70	1,104.56	0.46	0.29	-1.46	309.58
	NORMAL	5,127.0	13.85	160.04	4,995.41	-1,069.20	356.56	1,127.08	0.24	-0.05	0.98	103.22
	NORMAL	5,222.0	14.22	160.47	5,087.58	-1,090.88	364.34	1,150.11	0.40	0.39	0.45	15.95
	NORMAL	5,316.0	13.72	161.04	5,181.35	-1,100.33	373.36	1,161.92	0.10	0.09	0.19	27.24
	NORMAL	5,316.0	13.72	161.04	5,178.79	-1,112.30	371.82	1,172.80	0.55	-0.53	0.61	164.89
	NORMAL	5,411.0	13.98	161.39	5,273.59	-1,121.86	380.68	1,184.66	0.29	0.27	0.37	18.03
	NORMAL	5,505.0	12.93	161.35	5,365.01	-1,142.58	387.67	1,206.53	1.12	-1.12	-0.04	180.49
	NORMAL	5,600.0	13.04	161.29	5,457.58	-1,162.81	394.50	1,227.88	0.12	0.12	-0.06	352.98
	NORMAL	5,694.0	13.30	160.91	5,549.11	-1,183.07	401.44	1,249.30	0.29	0.28	-0.40	341.40
	NORMAL	5,789.0	13.45	160.69	5,641.53	-1,203.82	408.67	1,271.27	0.17	0.16	-0.23	341.15
	NORMAL	5,883.0	13.64	159.86	5,732.91	-1,224.54	416.10	1,293.28	0.29	0.20	-0.88	313.94

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 (°)
8/15/2011	NORMAL	5,978.0	12.93	162.71	5,825.37	-1,245.21	423.12	1,315.10	1.02	-0.75	3.00	138.69
	NORMAL	6,073.0	12.93	162.54	5,917.96	-1,265.50	429.46	1,336.36	0.04	0.00	-0.18	269.92
	NORMAL	6,167.0	12.92	163.52	6,009.58	-1,285.61	435.60	1,357.37	0.23	-0.01	1.04	93.09
8/16/2011	NORMAL	6,262.0	12.31	162.45	6,102.29	-1,305.45	441.67	1,378.11	0.69	-0.64	-1.13	200.44
	NORMAL	6,356.0	12.59	162.01	6,194.08	-1,324.74	447.85	1,398.38	0.31	0.30	-0.47	341.07
	NORMAL	6,451.0	11.18	160.44	6,287.04	-1,343.27	454.13	1,417.94	1.52	-1.48	-1.65	192.15
	NORMAL	6,545.0	9.67	160.78	6,379.48	-1,359.31	459.78	1,434.95	1.61	-1.61	0.36	177.83
	NORMAL	6,640.0	8.03	165.40	6,473.35	-1,373.27	464.08	1,449.55	1.88	-1.73	4.86	158.84
	NORMAL	6,734.0	6.74	162.64	6,566.57	-1,384.89	467.38	1,461.61	1.42	-1.37	-2.94	194.01
	NORMAL	6,829.0	5.19	156.30	6,661.05	-1,394.14	470.77	1,471.47	1.77	-1.63	-6.67	199.90
	NORMAL	6,923.0	3.58	154.10	6,754.78	-1,400.68	473.77	1,478.61	1.72	-1.71	-2.34	184.87
8/17/2011	NORMAL	7,018.0	3.68	154.71	6,849.59	-1,406.10	476.36	1,484.58	0.11	0.11	0.64	21.42
	NORMAL	7,112.0	2.98	168.49	6,943.43	-1,411.22	478.14	1,490.00	1.13	-0.74	14.66	137.91
	NORMAL	7,207.0	3.12	169.70	7,038.29	-1,416.19	479.09	1,495.01	0.16	0.15	1.27	25.30
	NORMAL	7,301.0	2.53	160.44	7,132.18	-1,420.66	480.25	1,499.62	0.79	-0.63	-9.85	213.16
	NORMAL	7,396.0	1.23	123.69	7,227.13	-1,423.20	481.80	1,502.52	1.80	-1.37	-38.68	205.48
	NORMAL	7,490.0	0.21	138.23	7,321.12	-1,423.89	482.75	1,503.47	1.09	-1.09	15.47	177.06
	NORMAL	7,585.0	0.21	211.43	7,416.12	-1,424.17	482.78	1,503.74	0.26	0.00	77.05	126.60
	NORMAL	7,679.0	0.40	248.97	7,510.12	-1,424.43	482.38	1,503.87	0.28	0.20	39.94	66.26
	NORMAL	7,774.0	0.26	207.10	7,605.12	-1,424.74	481.97	1,504.04	0.28	-0.15	-44.07	220.06
	NORMAL	7,868.0	0.57	80.11	7,699.12	-1,424.85	482.34	1,504.25	0.80	0.33	-135.10	217.06
	NORMAL	7,963.0	0.62	64.54	7,794.11	-1,424.55	483.27	1,504.26	0.18	0.05	-16.39	279.30
	8/18/2011	NORMAL	8,057.0	0.72	69.61	7,888.10	-1,424.13	484.28	1,504.18	0.12	0.11	5.39
NORMAL		8,152.0	0.57	10.34	7,983.10	-1,423.45	484.92	1,503.74	0.69	-0.16	-62.39	228.81
NORMAL		8,246.0	0.66	5.20	8,077.09	-1,422.45	485.06	1,502.84	0.11	0.10	-5.47	325.90
NORMAL		8,341.0	0.79	15.85	8,172.09	-1,421.28	485.28	1,501.79	0.20	0.14	11.21	51.44
NORMAL		8,436.0	0.26	326.80	8,267.08	-1,420.47	485.35	1,501.04	0.68	-0.56	-51.63	197.59
NORMAL		8,530.0	0.22	272.83	8,361.08	-1,420.28	485.05	1,500.77	0.23	-0.04	-57.41	233.72
NORMAL		8,625.0	0.62	220.54	8,456.08	-1,420.66	484.53	1,500.97	0.54	0.42	-55.04	287.99
NORMAL		8,719.0	0.97	226.26	8,550.07	-1,421.60	483.63	1,501.57	0.38	0.37	6.09	15.65
8/19/2011	NORMAL	8,814.0	1.33	239.67	8,645.05	-1,422.71	482.09	1,502.15	0.47	0.38	14.12	43.61
	NORMAL	8,908.0	1.04	207.16	8,739.03	-1,424.02	480.76	1,502.97	0.77	-0.31	-34.59	230.98
	NORMAL	9,003.0	1.07	212.13	8,834.02	-1,425.54	479.90	1,504.14	0.10	0.03	5.23	74.34
	NORMAL	9,097.0	1.49	204.46	8,927.99	-1,427.40	478.93	1,505.59	0.48	0.45	-8.16	333.94
	NORMAL	9,192.0	2.16	207.77	9,022.94	-1,430.10	477.58	1,507.74	0.71	0.71	3.48	10.60
	NORMAL	9,286.0	1.41	192.33	9,116.90	-1,432.80	476.51	1,509.96	0.94	-0.80	-16.43	205.11
	NORMAL	9,381.0	1.59	175.88	9,211.86	-1,435.26	476.35	1,512.24	0.49	0.19	-17.32	284.32
	NORMAL	9,475.0	1.93	179.94	9,305.82	-1,438.14	476.45	1,515.01	0.39	0.36	4.32	22.18
	NORMAL	9,550.0	2.20	186.00	9,380.77	-1,440.84	476.30	1,517.52	0.46	0.36	8.08	42.02
NORMAL	9,605.0	2.20	186.00	9,435.73	-1,442.94	476.08	1,519.44	0.00	0.00	0.00	0.00	