

1 General

1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

1.2 Well/Wellbore Information

Well	PA 413-12	Wellbore No.	OH
Wellbore Legal Name	PA 413-12	Common Wellbore Name	PA 413-12
Project	PA 12-07S-095W	Site	PA 23-12 Pad
Vertical Section Azimuth	227.41 (°)	North reference	
Origin N/S		Origin EW	
Spud date	9/10/2013	UWI	PA 413-12
Active datum	KB @6,533.0ft (above Mean Sea Level)		

2 Survey Name

2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	MOSTAR
Date Started	9/10/2013	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

Date	Type	MD (ft)	Inc. (°)	Azi. (°)	TVD (ft)	N/S (ft)	EW (ft)	V. sec. (ft)	DLS (°/100usft)	Build Rate (°/100usft)	Turn (°/100usft)	Tface (°)
9/10/2013	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/10/2013	NORMAL	148.0	0.57	229.15	148.00	-0.48	-0.56	0.74	0.39	0.39	0.00	229.15
	NORMAL	239.0	1.76	257.36	238.98	-1.08	-2.26	2.40	1.41	1.31	31.00	40.30
	NORMAL	329.0	3.03	233.98	328.90	-2.78	-5.54	5.96	1.75	1.41	-25.98	310.36
	NORMAL	420.0	5.54	225.90	419.64	-7.26	-10.64	12.74	2.83	2.76	-8.88	342.42
	NORMAL	510.0	9.05	225.46	508.90	-15.25	-18.80	24.16	3.90	3.90	-0.49	358.87
	NORMAL	600.0	11.65	226.69	597.43	-26.45	-30.46	40.33	2.90	2.89	1.37	5.46
	NORMAL	691.0	14.46	227.66	686.06	-40.40	-45.55	60.88	3.10	3.09	1.07	4.93
	NORMAL	782.0	15.52	226.43	773.97	-56.45	-62.77	84.41	1.22	1.16	-1.35	342.70
	NORMAL	873.0	16.09	224.85	861.53	-73.78	-80.48	109.18	0.78	0.63	-1.74	322.19
	NORMAL	905.0	16.31	223.88	892.26	-80.16	-86.73	118.10	1.09	0.69	-3.03	308.64
	NORMAL	985.0	16.70	223.35	968.96	-96.62	-102.40	140.78	0.52	0.49	-0.66	338.64
9/11/2013	NORMAL	1,080.0	15.12	227.22	1,060.32	-114.96	-120.87	166.78	2.00	-1.66	4.07	147.97
	NORMAL	1,176.0	12.88	229.85	1,153.46	-130.37	-138.24	190.00	2.43	-2.33	2.74	165.42
	NORMAL	1,272.0	12.84	228.89	1,247.06	-144.28	-154.45	211.35	0.23	-0.04	-1.00	258.93
	NORMAL	1,367.0	12.31	229.77	1,339.78	-157.76	-170.14	232.02	0.59	-0.56	0.93	160.55
	NORMAL	1,462.0	12.00	230.03	1,432.65	-170.64	-185.44	252.01	0.33	-0.33	0.27	170.11
	NORMAL	1,558.0	11.87	231.08	1,526.57	-183.26	-200.77	271.83	0.26	-0.14	1.09	121.42
	NORMAL	1,653.0	13.45	226.60	1,619.26	-196.99	-216.40	292.63	1.96	1.66	-4.72	325.94
	NORMAL	1,749.0	13.58	225.72	1,712.61	-212.53	-232.58	315.06	0.25	0.14	-0.92	301.87
	NORMAL	1,845.0	13.32	224.32	1,805.97	-228.31	-248.38	337.37	0.43	-0.27	-1.46	230.72

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 (°)
9/11/2013	NORMAL	1,940.0	13.10	225.20	1,898.46	-243.72	-263.66	359.05	0.31	-0.23	0.93	138.00
	NORMAL	2,035.0	12.92	225.11	1,991.02	-258.81	-278.82	380.42	0.19	-0.19	-0.09	186.38
	NORMAL	2,131.0	12.70	224.49	2,084.63	-273.91	-293.82	401.68	0.27	-0.23	-0.65	211.70
	NORMAL	2,227.0	12.48	223.79	2,178.32	-288.92	-308.40	422.58	0.28	-0.23	-0.73	214.40
	NORMAL	2,323.0	12.79	228.36	2,272.00	-303.47	-323.52	443.55	1.09	0.32	4.76	75.01
	NORMAL	2,418.0	12.97	226.95	2,364.61	-317.74	-339.17	464.73	0.38	0.19	-1.48	299.11
	NORMAL	2,513.0	12.75	225.81	2,457.23	-332.32	-354.47	485.87	0.35	-0.23	-1.20	228.52
	NORMAL	2,609.0	13.19	230.73	2,550.78	-346.64	-370.55	507.39	1.24	0.46	5.13	70.68
	NORMAL	2,704.0	12.44	229.06	2,643.42	-360.21	-386.67	528.44	0.88	-0.79	-1.76	205.47
9/12/2013	NORMAL	2,800.0	12.92	226.51	2,737.07	-374.37	-402.27	549.51	0.77	0.50	-2.66	309.37
	NORMAL	2,895.0	13.98	228.71	2,829.47	-389.25	-418.59	571.60	1.24	1.12	2.32	26.84
	NORMAL	2,990.0	13.67	229.15	2,921.72	-404.16	-435.71	594.29	0.34	-0.33	0.46	161.48
	NORMAL	3,086.0	13.63	227.13	3,015.01	-419.28	-452.58	616.94	0.50	-0.04	-2.10	264.22
	NORMAL	3,182.0	13.71	226.78	3,108.29	-434.77	-469.16	639.63	0.12	0.08	-0.36	313.87
	NORMAL	3,277.0	13.49	225.81	3,200.62	-450.20	-485.31	661.96	0.33	-0.23	-1.02	225.56
	NORMAL	3,373.0	13.32	226.16	3,294.01	-465.66	-501.31	684.21	0.20	-0.18	0.36	154.65
	NORMAL	3,468.0	13.32	224.49	3,386.45	-481.05	-516.88	706.08	0.40	0.00	-1.76	269.19
	NORMAL	3,564.0	13.45	228.45	3,479.85	-496.35	-532.98	728.29	0.96	0.14	4.13	83.86
	NORMAL	3,659.0	12.97	228.98	3,572.33	-510.67	-549.29	749.99	0.52	-0.51	0.56	166.10
	NORMAL	3,755.0	12.44	230.38	3,665.98	-524.34	-565.39	771.09	0.64	-0.55	1.46	150.53
	NORMAL	3,850.0	11.91	230.12	3,758.85	-537.15	-580.79	791.10	0.56	-0.56	-0.27	185.78
	NORMAL	3,946.0	12.62	228.62	3,852.65	-550.43	-596.26	811.48	0.81	0.74	-1.56	335.10
	NORMAL	4,042.0	13.67	226.78	3,946.14	-565.13	-612.40	833.31	1.18	1.09	-1.92	337.37
	NORMAL	4,137.0	13.23	225.37	4,038.53	-580.46	-628.32	855.40	0.58	-0.46	-1.48	216.02
	NORMAL	4,232.0	12.79	225.81	4,131.09	-595.42	-643.59	876.77	0.47	-0.46	0.46	167.53
	NORMAL	4,328.0	13.54	227.31	4,224.57	-610.45	-659.47	898.63	0.86	0.78	1.56	25.22
	NORMAL	4,422.0	13.14	228.01	4,316.04	-625.06	-675.50	920.32	0.46	-0.43	0.74	158.35
	NORMAL	4,518.0	13.06	229.33	4,409.54	-639.43	-691.84	942.07	0.32	-0.08	1.38	105.61
	NORMAL	4,613.0	12.79	229.68	4,502.13	-653.23	-708.00	963.31	0.30	-0.28	0.37	164.00
	NORMAL	4,708.0	12.26	228.54	4,594.87	-666.71	-723.57	983.90	0.62	-0.56	-1.20	204.45
	NORMAL	4,804.0	13.19	229.41	4,688.51	-680.58	-739.53	1,005.04	0.99	0.97	0.91	12.07
	NORMAL	4,899.0	13.01	229.50	4,781.04	-694.58	-755.89	1,026.56	0.19	-0.19	0.09	173.58
	NORMAL	4,995.0	12.88	228.54	4,874.60	-708.68	-772.13	1,048.05	0.26	-0.14	-1.00	238.38
	NORMAL	5,090.0	10.95	227.66	4,967.55	-721.77	-786.73	1,067.66	2.04	-2.03	-0.93	184.95
	NORMAL	5,184.0	10.59	227.04	5,059.89	-733.67	-799.65	1,085.23	0.40	-0.38	-0.66	197.54
	NORMAL	5,279.0	9.85	226.51	5,153.38	-745.21	-811.94	1,102.08	0.79	-0.78	-0.56	186.98
	NORMAL	5,375.0	9.49	227.31	5,248.02	-756.23	-823.71	1,118.21	0.40	-0.38	0.83	159.92
9/13/2013	NORMAL	5,471.0	8.22	224.41	5,342.88	-766.50	-834.33	1,132.98	1.40	-1.32	-3.02	197.94
	NORMAL	5,566.0	7.25	225.81	5,437.01	-775.53	-843.38	1,145.75	1.04	-1.02	1.47	169.70
	NORMAL	5,662.0	6.24	230.38	5,532.35	-783.08	-851.75	1,157.02	1.19	-1.05	4.76	154.27
	NORMAL	5,757.0	5.36	232.67	5,626.86	-789.06	-859.25	1,166.59	0.96	-0.93	2.41	166.40
	NORMAL	5,853.0	4.35	231.44	5,722.51	-794.05	-865.66	1,174.69	1.06	-1.05	-1.28	185.27
	NORMAL	5,949.0	2.24	223.17	5,818.35	-797.69	-869.79	1,180.19	2.25	-2.20	-8.61	188.59
9/14/2013	NORMAL	6,045.0	1.14	172.11	5,914.31	-800.00	-870.95	1,182.61	1.84	-1.15	-53.19	210.21
	NORMAL	6,140.0	1.36	169.03	6,009.29	-802.05	-870.60	1,183.73	0.24	0.23	-3.24	341.47
	NORMAL	6,236.0	0.48	80.35	6,105.28	-803.10	-869.99	1,183.99	1.49	-0.92	-92.38	199.58
	NORMAL	6,331.0	1.45	45.64	6,200.26	-802.19	-868.74	1,182.46	1.15	1.02	-36.54	310.77
	NORMAL	6,427.0	1.14	41.50	6,296.24	-800.63	-867.24	1,180.29	0.34	-0.32	-4.31	194.73
	NORMAL	6,522.0	0.61	22.70	6,391.23	-799.45	-866.42	1,178.90	0.63	-0.56	-19.79	199.26
	NORMAL	6,618.0	0.22	268.70	6,487.23	-798.98	-866.40	1,178.57	0.76	-0.41	-118.75	196.03
	NORMAL	6,713.0	0.66	54.07	6,582.23	-798.67	-866.14	1,178.16	0.90	0.46	153.02	153.82
	NORMAL	6,809.0	2.15	39.39	6,678.20	-796.95	-864.55	1,175.83	1.58	1.55	-15.29	339.01
	NORMAL	6,904.0	2.15	31.40	6,773.13	-794.05	-862.49	1,172.35	0.32	0.00	-8.41	266.01
	NORMAL	7,000.0	1.71	20.76	6,869.07	-791.18	-861.05	1,169.34	0.59	-0.46	-11.08	213.92
	NORMAL	7,095.0	2.15	39.48	6,964.02	-788.48	-859.41	1,166.31	0.80	0.46	19.71	64.68
	NORMAL	7,191.0	1.27	49.06	7,059.98	-786.39	-857.46	1,163.46	0.96	-0.92	9.98	166.75

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 (°)
9/14/2013	NORMAL	7,286.0	0.92	20.76	7,154.96	-784.99	-856.40	1,161.73	0.67	-0.37	-29.79	223.48
9/15/2013	NORMAL	7,381.0	0.70	359.67	7,249.95	-783.69	-856.13	1,160.66	0.39	-0.23	-22.20	223.34
	NORMAL	7,477.0	1.05	319.06	7,345.94	-782.44	-856.71	1,160.24	0.72	0.36	-42.30	278.09
	NORMAL	7,571.0	1.32	291.55	7,439.92	-781.39	-858.28	1,160.68	0.66	0.29	-29.27	281.21
	NORMAL	7,666.0	1.76	288.26	7,534.89	-781.04	-860.76	1,162.27	0.80	0.46	-24.52	293.09
	NORMAL	7,760.0	2.11	266.59	7,628.84	-781.18	-863.93	1,164.70	0.38	0.37	-1.78	350.01
	NORMAL	7,856.0	1.76	267.56	7,724.78	-781.35	-867.16	1,167.20	0.37	-0.36	1.01	175.14
	NORMAL	7,951.0	1.85	253.67	7,819.73	-781.84	-870.09	1,169.69	0.47	0.09	-14.62	274.63
	NORMAL	8,046.0	2.46	252.62	7,914.67	-782.88	-873.51	1,172.91	0.64	0.64	-1.11	355.77
	NORMAL	8,141.0	2.64	248.66	8,009.57	-784.29	-877.49	1,176.79	0.27	0.19	-4.17	313.62
9/16/2013	NORMAL	8,218.0	2.73	248.14	8,086.49	-785.62	-880.85	1,180.16	0.12	0.12	-0.68	344.60
	NORMAL	8,263.0	2.73	248.14	8,131.44	-786.41	-882.84	1,182.16	0.00	0.00	0.00	0.00