

1 General

1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

1.2 Well/Wellbore Information

Well	PA 311-27	Wellbore No.	OH
Wellbore Legal Name	PA 311-27	Common Wellbore Name	PA 311-27
Project	PA 27-06S-095W	Site	DOE 1-W-27 Pad
Vertical Section Azimuth	341.56 (°)	North reference	
Origin N/S		Origin E/W	
Spud date	8/21/2013	UWI	PA 311-27
Active datum	KB @5,866.0ft (above Mean Sea Level)		

2 Survey Name

2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	MOSTAR
Date Started	8/21/2013	Ended	
Tool Name	MWD	Engineer	MARK FARON

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 (°/100usft)	Build Rate (°/100usft)	Turn (°/100usft)	Tface (°)
8/21/2013	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/21/2013	NORMAL	106.0	1.14	313.51	105.99	0.73	-0.76	0.93	1.08	1.08	0.00	313.51
	NORMAL	136.0	1.58	326.78	135.98	1.28	-1.21	1.59	1.79	1.47	44.23	42.35
	NORMAL	167.0	2.02	324.40	166.97	2.08	-1.76	2.53	1.44	1.42	-7.68	349.17
	NORMAL	197.0	2.55	342.95	196.95	3.15	-2.26	3.70	3.01	1.77	61.83	63.88
	NORMAL	227.0	3.43	354.90	226.91	4.68	-2.54	5.24	3.58	2.93	39.83	41.38
	NORMAL	257.0	3.96	354.99	256.84	6.61	-2.71	7.12	1.77	1.77	0.30	0.67
	NORMAL	288.0	4.13	355.43	287.77	8.78	-2.89	9.25	0.56	0.55	1.42	10.57
	NORMAL	318.0	5.01	353.50	317.67	11.16	-3.13	11.58	2.98	2.93	-6.43	349.12
	NORMAL	348.0	5.72	346.46	347.54	13.92	-3.62	14.35	3.22	2.37	-23.47	313.63
	NORMAL	378.0	7.57	346.82	377.34	17.30	-4.42	17.81	6.17	6.17	1.20	1.47
	NORMAL	408.0	8.45	345.15	407.04	21.35	-5.44	21.97	3.03	2.93	-5.57	344.36
	NORMAL	439.0	9.24	345.32	437.67	25.96	-6.65	26.73	2.55	2.55	0.55	1.98
	NORMAL	481.0	10.46	342.38	479.05	32.86	-8.66	33.91	3.14	2.90	-7.00	336.14
	NORMAL	511.0	11.03	341.51	508.53	38.17	-10.40	39.50	1.98	1.90	-2.90	343.69
	NORMAL	602.0	14.20	342.12	597.32	57.06	-16.59	59.37	3.49	3.48	0.67	2.70
	NORMAL	692.0	17.14	339.13	683.97	79.96	-24.70	83.67	3.39	3.27	-3.32	343.20
8/22/2013	NORMAL	783.0	18.73	337.02	770.54	105.94	-35.18	111.63	1.89	1.75	-2.32	336.77
	NORMAL	873.0	19.87	339.92	855.49	133.61	-46.08	141.33	1.65	1.27	3.22	41.43
	NORMAL	963.0	18.46	342.74	940.50	161.59	-55.56	170.86	1.87	-1.57	3.13	148.04
	NORMAL	1,059.0	15.08	344.67	1,032.40	188.15	-63.37	198.54	3.57	-3.52	2.01	171.57

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 (°)
8/22/2013	NORMAL	1,154.0	15.25	343.70	1,124.10	212.06	-70.15	223.36	0.32	0.18	-1.02	303.35
	NORMAL	1,249.0	16.75	344.05	1,215.41	237.22	-77.41	249.52	1.58	1.58	0.37	3.85
	NORMAL	1,345.0	18.59	344.76	1,306.88	265.28	-85.24	278.63	1.93	1.92	0.74	7.02
	NORMAL	1,440.0	20.40	343.97	1,396.43	295.81	-93.79	310.29	1.93	1.91	-0.83	351.34
	NORMAL	1,535.0	19.60	340.36	1,485.70	326.73	-103.72	342.76	1.55	-0.84	-3.80	235.37
8/23/2013	NORMAL	1,630.0	19.39	338.08	1,575.26	356.37	-114.96	374.44	0.83	-0.22	-2.40	253.50
	NORMAL	1,726.0	18.29	340.98	1,666.12	385.40	-125.82	405.41	1.50	-1.15	3.02	140.96
	NORMAL	1,821.0	15.16	337.46	1,757.09	410.97	-135.44	432.71	3.46	-3.29	-3.71	196.25
	NORMAL	1,916.0	16.48	336.85	1,848.49	434.83	-145.50	458.53	1.40	1.39	-0.64	352.53
	NORMAL	2,012.0	15.69	344.58	1,940.74	459.87	-154.31	485.07	2.38	-0.82	8.05	113.93
8/24/2013	NORMAL	2,108.0	16.70	343.44	2,032.93	485.61	-161.69	511.82	1.10	1.05	-1.19	341.98
	NORMAL	2,203.0	18.15	345.55	2,123.57	513.02	-169.28	540.22	1.66	1.53	2.22	24.56
	NORMAL	2,298.0	19.65	346.95	2,213.45	542.91	-176.58	570.89	1.65	1.58	1.47	17.48
	NORMAL	2,393.0	19.12	343.79	2,303.06	573.41	-184.53	602.34	1.24	-0.56	-3.33	241.71
	NORMAL	2,487.0	19.47	340.54	2,391.79	602.97	-194.04	633.39	1.20	0.37	-3.46	286.51
8/26/2013	NORMAL	2,582.0	19.30	339.31	2,481.40	632.58	-204.86	664.90	0.47	-0.18	-1.29	246.81
	NORMAL	2,677.0	19.12	340.27	2,571.11	661.91	-215.66	696.15	0.38	-0.19	1.01	120.13
	NORMAL	2,773.0	16.22	340.27	2,662.57	689.34	-225.50	725.27	3.02	-3.02	0.00	180.00
	NORMAL	2,797.0	16.13	340.19	2,685.62	695.63	-227.76	731.96	0.39	-0.38	-0.33	193.87
	NORMAL	2,867.0	16.70	339.75	2,752.77	714.22	-234.54	751.73	0.83	0.81	-0.63	347.48
8/27/2013	NORMAL	2,962.0	17.06	338.17	2,843.68	739.98	-244.44	779.29	0.61	0.38	-1.66	307.36
	NORMAL	3,057.0	16.48	336.58	2,934.64	765.26	-254.98	806.62	0.78	-0.61	-1.67	217.58
	NORMAL	3,153.0	15.74	338.96	3,026.87	789.91	-265.07	833.19	1.03	-0.77	2.48	139.39
	NORMAL	3,248.0	15.60	344.41	3,118.34	814.24	-273.13	858.83	1.56	-0.15	5.74	98.05
	NORMAL	3,343.0	17.01	340.98	3,209.52	839.68	-281.09	885.48	1.80	1.48	-3.61	324.01
8/28/2013	NORMAL	3,439.0	17.41	340.54	3,301.22	866.50	-290.45	913.88	0.44	0.42	-0.46	341.76
	NORMAL	3,534.0	18.42	341.69	3,391.62	894.15	-299.90	943.10	1.13	1.06	1.21	19.85
	NORMAL	3,630.0	17.80	340.89	3,482.86	922.41	-309.47	972.94	0.70	-0.65	-0.83	201.48
	NORMAL	3,725.0	18.99	343.44	3,573.01	950.95	-318.63	1,002.91	1.51	1.25	2.68	35.28
	NORMAL	3,820.0	18.64	343.44	3,662.93	980.32	-327.36	1,033.53	0.37	-0.37	0.00	180.00
8/29/2013	NORMAL	3,916.0	18.24	342.82	3,754.00	1,009.38	-336.17	1,063.89	0.46	-0.42	-0.65	205.82
	NORMAL	4,011.0	18.20	342.38	3,844.24	1,037.72	-345.06	1,093.59	0.15	-0.04	-0.46	253.58
	NORMAL	4,106.0	17.54	341.24	3,934.65	1,065.42	-354.15	1,122.74	0.79	-0.69	-1.20	207.38
	NORMAL	4,202.0	19.08	344.14	4,025.79	1,094.21	-363.09	1,152.88	1.86	1.60	3.02	31.99
	NORMAL	4,297.0	18.86	344.84	4,115.63	1,123.97	-371.35	1,183.72	0.33	-0.23	0.74	134.36
8/30/2013	NORMAL	4,393.0	18.64	343.88	4,206.54	1,153.68	-379.67	1,214.54	0.39	-0.23	-1.00	234.06
	NORMAL	4,488.0	18.50	343.53	4,296.59	1,182.72	-388.16	1,244.77	0.19	-0.15	-0.37	218.36
	NORMAL	4,584.0	18.33	341.07	4,387.68	1,211.61	-397.37	1,275.09	0.83	-0.18	-2.56	256.50
	NORMAL	4,679.0	18.33	342.30	4,477.86	1,239.97	-406.76	1,304.96	0.41	0.00	1.29	90.58
	NORMAL	4,774.0	18.59	342.30	4,567.97	1,268.62	-415.91	1,335.04	0.27	0.27	0.00	0.00
8/31/2013	NORMAL	4,869.0	18.37	341.15	4,658.07	1,297.22	-425.35	1,365.15	0.45	-0.23	-1.21	238.34
	NORMAL	4,965.0	17.76	339.48	4,749.34	1,325.25	-435.37	1,394.91	0.83	-0.64	-1.74	219.54
	NORMAL	5,060.0	17.19	338.43	4,839.96	1,351.87	-445.61	1,423.41	0.69	-0.60	-1.11	208.45
	NORMAL	5,155.0	15.87	340.19	4,931.03	1,377.15	-455.17	1,450.41	1.49	-1.39	1.85	160.07
	NORMAL	5,250.0	14.55	343.70	5,022.70	1,400.82	-462.92	1,475.33	1.69	-1.39	3.69	146.78
9/1/2013	NORMAL	5,345.0	13.98	339.22	5,114.78	1,423.01	-470.34	1,498.72	1.31	-0.60	-4.72	240.53
	NORMAL	5,441.0	13.01	345.37	5,208.13	1,444.31	-477.19	1,521.09	1.80	-1.01	6.41	127.02
	NORMAL	5,536.0	12.04	345.37	5,300.87	1,464.24	-482.39	1,541.64	1.02	-1.02	0.00	180.00
	NORMAL	5,631.0	11.12	341.86	5,393.93	1,482.53	-487.74	1,560.69	1.22	-0.97	-3.69	215.74
	NORMAL	5,727.0	9.93	347.75	5,488.32	1,499.42	-492.38	1,578.18	1.67	-1.24	6.14	140.75
9/2/2013	NORMAL	5,821.0	9.10	347.22	5,581.03	1,514.59	-495.75	1,593.64	0.89	-0.88	-0.56	185.76
	NORMAL	5,917.0	7.74	342.56	5,675.99	1,528.16	-499.36	1,607.65	1.58	-1.42	-4.85	204.35
	NORMAL	6,012.0	7.34	349.59	5,770.17	1,540.23	-502.38	1,620.06	1.06	-0.42	7.40	116.90
	NORMAL	6,107.0	6.86	347.31	5,864.44	1,551.74	-504.72	1,631.71	0.59	-0.51	-2.40	209.29
	NORMAL	6,202.0	5.41	351.88	5,958.90	1,561.71	-506.60	1,641.77	1.61	-1.53	4.81	163.65
9/3/2013	NORMAL	6,297.0	4.04	347.83	6,053.57	1,569.41	-507.94	1,649.50	1.48	-1.44	-4.26	191.67

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 (°)
8/28/2013	NORMAL	6,392.0	2.29	334.39	6,148.42	1,574.40	-509.46	1,654.71	1.99	-1.84	-14.15	196.36
	NORMAL	6,488.0	1.41	330.61	6,244.37	1,577.15	-510.87	1,657.77	0.92	-0.92	-3.94	186.01
	NORMAL	6,583.0	1.41	8.66	6,339.35	1,579.33	-511.27	1,659.96	0.97	0.00	40.05	109.02
8/29/2013	NORMAL	6,678.0	0.92	15.08	6,434.33	1,581.22	-510.90	1,661.64	0.53	-0.52	6.76	168.28
	NORMAL	6,773.0	0.40	25.98	6,529.32	1,582.25	-510.55	1,662.51	0.56	-0.55	11.47	171.84
	NORMAL	6,869.0	0.13	217.23	6,625.32	1,582.47	-510.47	1,662.69	0.55	-0.28	-175.78	182.75
	NORMAL	6,963.0	0.48	257.39	6,719.32	1,582.30	-510.92	1,662.67	0.41	0.37	42.72	52.58
	NORMAL	7,059.0	0.92	234.63	6,815.31	1,581.76	-511.94	1,662.48	0.53	0.46	-23.71	315.99
	NORMAL	7,154.0	0.83	208.07	6,910.30	1,580.72	-512.89	1,661.79	0.43	-0.09	-27.98	244.43
	NORMAL	7,249.0	0.53	229.44	7,005.30	1,579.82	-513.54	1,661.15	0.41	-0.32	22.49	150.14
	NORMAL	7,344.0	0.70	265.04	7,100.29	1,579.49	-514.46	1,661.12	0.43	0.18	37.47	84.51
	NORMAL	7,439.0	0.26	283.32	7,195.29	1,579.49	-515.24	1,661.37	0.48	-0.46	19.24	169.80
	NORMAL	7,534.0	0.44	255.81	7,290.29	1,579.45	-515.81	1,661.51	0.25	0.19	-28.96	302.66
	NORMAL	7,629.0	1.32	225.40	7,385.27	1,578.59	-516.94	1,661.05	1.02	0.93	-32.01	316.27
8/30/2013	NORMAL	7,725.0	2.15	205.89	7,481.23	1,576.19	-518.51	1,659.28	1.05	0.86	-20.32	314.55
	NORMAL	7,820.0	1.93	196.75	7,576.17	1,573.06	-519.75	1,658.69	0.41	-0.23	-9.62	231.42
	NORMAL	7,915.0	1.89	219.34	7,671.12	1,570.31	-521.21	1,654.55	0.79	-0.04	23.78	104.29
	NORMAL	8,010.0	1.54	226.19	7,766.08	1,568.22	-523.12	1,653.17	0.43	-0.37	7.21	153.03
	NORMAL	8,106.0	2.73	223.38	7,862.01	1,565.66	-525.62	1,651.54	1.24	1.24	-2.93	353.57
	NORMAL	8,201.0	3.34	229.27	7,956.88	1,562.21	-529.27	1,649.42	0.72	0.64	6.20	30.04
	NORMAL	8,296.0	3.74	230.32	8,051.69	1,558.43	-533.76	1,647.25	0.43	0.42	1.11	9.73
	NORMAL	8,392.0	4.31	230.41	8,147.46	1,554.13	-538.95	1,644.81	0.59	0.59	0.09	0.68
8/31/2013	NORMAL	8,487.0	4.84	226.10	8,242.15	1,549.08	-544.58	1,641.80	0.66	0.56	-4.54	324.87
	NORMAL	8,582.0	5.14	225.84	8,336.80	1,543.33	-550.52	1,638.23	0.32	0.32	-0.27	355.56
	NORMAL	8,637.0	5.23	224.61	8,391.57	1,539.83	-554.05	1,636.02	0.26	0.16	-2.24	308.38
	NORMAL	8,682.0	5.23	224.61	8,436.38	1,536.91	-556.93	1,634.17	0.00	0.00	0.00	0.00