

1 General

1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

1.2 Well Information

Well	PA 21-27	Wellbore No.	OH
Well Name	PA 21-27	Common Name	PA 21-27
Project	PA 27-06S-095W	Site	DOE 1-W-27 Pad
Vertical Section Azimuth	20.17 (°)	North Reference	
Origin N/S		Origin E/W	
Spud Date	9/2/2013	UWI	PA 21-27
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	9/2/2013	Ended	9/12/2013
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 (°)
9/2/2013	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/2/2013	NORMAL	77.0	0.26	44.38	77.00	0.12	0.12	0.16	0.34	0.34	0.00	44.38
	NORMAL	107.0	0.88	29.44	107.00	0.37	0.28	0.45	2.11	2.07	-49.80	338.98
	NORMAL	138.0	0.79	24.70	137.99	0.78	0.49	0.90	0.37	-0.29	-15.29	215.15
	NORMAL	168.0	1.41	43.51	167.99	1.23	0.83	1.44	2.36	2.07	62.70	39.85
	NORMAL	198.0	2.02	38.85	197.98	1.91	1.42	2.28	2.08	2.03	-15.53	344.79
	NORMAL	229.0	2.55	30.67	228.95	2.93	2.11	3.48	2.00	1.71	-26.39	324.26
	NORMAL	259.0	3.34	30.32	258.91	4.26	2.89	4.99	2.63	2.63	-1.17	358.52
	NORMAL	289.0	4.49	31.99	288.84	6.01	3.96	7.00	3.85	3.83	5.57	6.50
	NORMAL	319.0	5.54	23.73	318.73	8.33	5.16	9.60	4.24	3.50	-27.53	321.32
	NORMAL	349.0	6.07	28.65	348.57	11.05	6.50	12.61	2.42	1.77	16.40	45.66
	NORMAL	379.0	7.04	27.95	378.38	14.06	8.13	16.00	3.24	3.23	-2.33	354.94
	NORMAL	409.0	7.65	25.49	408.13	17.49	9.85	19.81	2.29	2.03	-8.20	331.50
9/3/2013	NORMAL	440.0	8.53	22.15	438.82	21.48	11.60	24.16	3.22	2.84	-10.77	330.23
	NORMAL	471.0	9.59	18.81	469.43	26.06	13.30	29.04	3.82	3.42	-10.77	331.95
	NORMAL	501.0	10.38	18.46	498.98	30.99	14.96	34.24	2.64	2.63	-1.17	355.43
	NORMAL	531.0	11.35	17.75	528.44	36.36	16.72	39.89	3.26	3.23	-2.37	351.80
	NORMAL	561.0	12.23	18.72	557.81	42.18	18.64	46.02	3.01	2.93	3.23	13.17
	NORMAL	592.0	13.37	21.18	588.04	48.63	20.99	52.89	4.08	3.68	7.94	26.75
	NORMAL	622.0	13.90	19.78	617.19	55.26	23.46	59.96	2.08	1.77	-4.67	327.41
	NORMAL	652.0	14.96	20.13	646.24	62.29	26.01	67.43	3.55	3.53	1.17	4.87

2.1.2 Survey Stations (Continued)

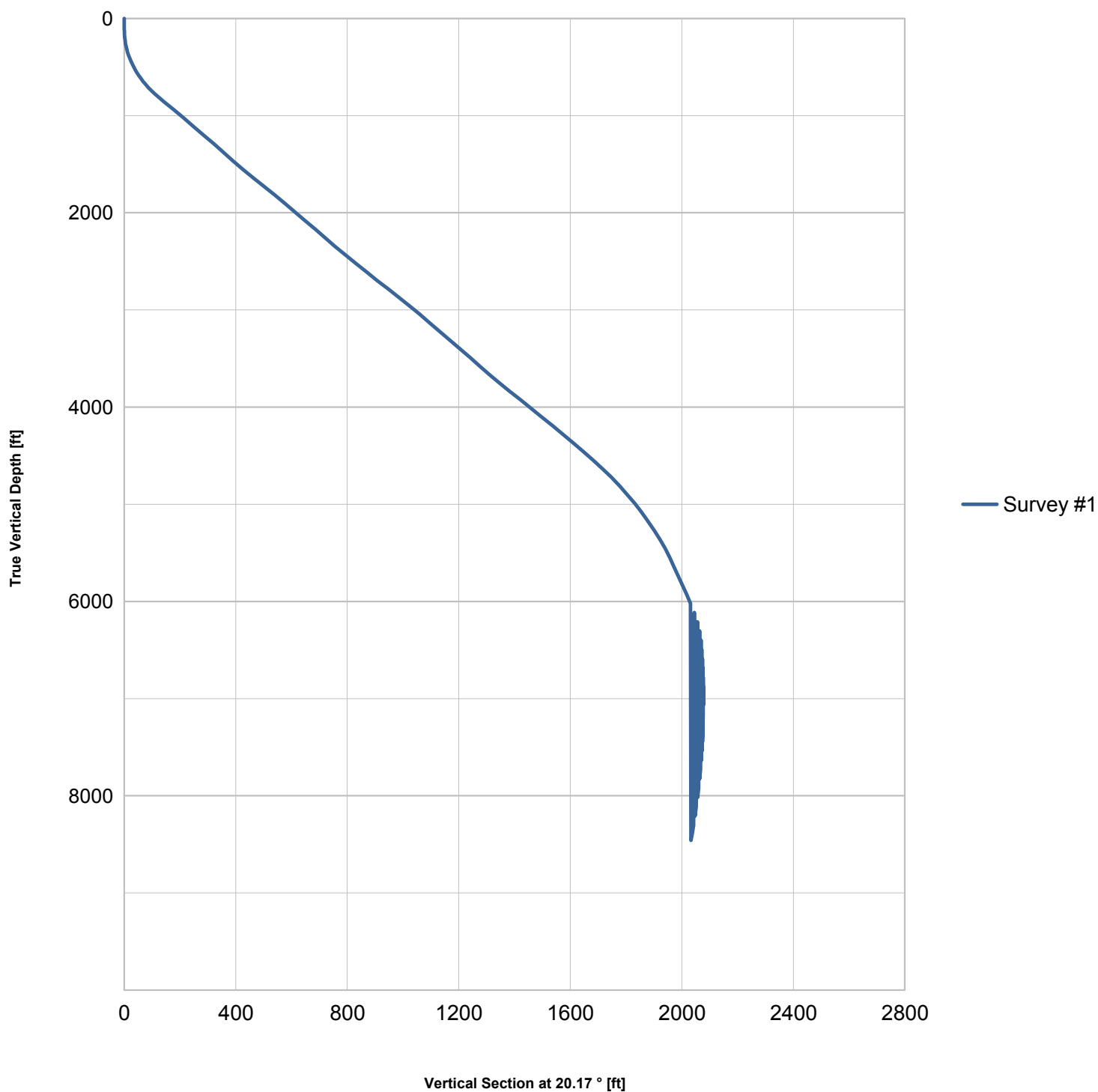
Date	Type	MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLS (°/100ft)	Build Rate (°/100ft)	Turn (°/100ft)	TFace (°)
9/3/2013	NORMAL	682.0	16.45	19.25	675.12	69.93	28.74	75.55	5.03	4.97	-2.93	350.49
	NORMAL	724.0	17.85	19.83	715.26	81.60	32.89	87.94	3.36	3.33	1.38	7.24
	NORMAL	784.0	21.58	17.80	771.73	100.77	39.38	108.17	6.32	6.22	-3.38	348.64
	NORMAL	874.0	22.59	19.47	855.13	132.82	50.21	141.99	1.32	1.12	1.86	32.64
	NORMAL	964.0	23.69	19.74	937.88	166.14	62.07	177.35	1.23	1.22	0.30	5.63
	NORMAL	1,060.0	21.27	20.88	1,026.58	200.57	74.80	214.06	2.56	-2.52	1.19	170.32
	NORMAL	1,155.0	21.98	19.39	1,114.90	233.44	86.84	249.06	0.94	0.75	-1.57	321.59
	NORMAL	1,250.0	23.12	17.89	1,202.63	267.96	98.47	285.48	1.34	1.20	-1.58	332.53
	NORMAL	1,346.0	21.50	19.91	1,291.44	302.44	110.25	321.91	1.87	-1.69	2.10	155.60
	NORMAL	1,441.0	21.06	20.79	1,379.97	334.76	122.24	356.38	0.57	-0.46	0.93	144.44
	NORMAL	1,536.0	21.54	22.11	1,468.48	366.88	134.86	390.88	0.71	0.51	1.39	45.59
	NORMAL	1,631.0	22.68	21.32	1,556.49	400.10	148.09	426.62	1.24	1.20	-0.83	345.01
9/4/2013	NORMAL	1,727.0	23.91	20.79	1,644.66	435.53	161.72	464.58	1.30	1.28	-0.55	350.09
	NORMAL	1,822.0	23.43	21.32	1,731.67	471.12	175.42	502.72	0.55	-0.51	0.56	156.34
	NORMAL	1,917.0	23.87	23.17	1,818.69	506.39	189.85	540.80	0.91	0.46	1.95	60.19
	NORMAL	2,013.0	22.07	21.94	1,907.08	540.98	204.24	578.22	1.94	-1.88	-1.28	194.37
	NORMAL	2,109.0	21.76	19.65	1,996.14	574.47	216.96	614.05	0.95	-0.32	-2.39	249.00
	NORMAL	2,204.0	23.16	20.00	2,083.93	608.61	229.27	650.34	1.48	1.47	0.37	5.62
	NORMAL	2,299.0	21.14	20.27	2,171.92	642.24	241.60	686.15	2.13	-2.13	0.28	177.24
	NORMAL	2,394.0	22.33	21.06	2,260.16	675.15	254.02	721.33	1.29	1.25	0.83	14.18
	NORMAL	2,488.0	22.11	19.47	2,347.18	708.49	266.33	756.87	0.68	-0.23	-1.69	249.17
	NORMAL	2,583.0	23.43	18.68	2,434.78	743.24	278.34	793.63	1.43	1.39	-0.83	346.59
	NORMAL	2,678.0	23.60	21.94	2,521.89	778.77	291.49	831.52	1.38	0.18	3.43	84.05
	NORMAL	2,773.0	23.12	22.29	2,609.11	813.67	305.67	869.17	0.53	-0.51	0.37	164.03
	NORMAL	2,869.0	23.82	21.85	2,697.16	849.10	320.04	907.38	0.75	0.73	-0.46	345.74
	NORMAL	2,895.0	23.78	21.06	2,720.95	858.87	323.87	917.87	1.24	-0.15	-3.04	262.49
9/6/2013	NORMAL	2,962.0	25.14	21.57	2,781.94	884.71	333.96	945.61	2.05	2.03	0.76	9.06
	NORMAL	3,057.0	23.43	18.67	2,868.53	921.38	347.43	984.67	2.19	-1.80	-3.05	213.58
	NORMAL	3,153.0	23.60	17.44	2,956.56	957.79	359.30	1,022.94	0.54	0.18	-1.28	288.54
	NORMAL	3,248.0	21.89	17.27	3,044.17	992.85	370.25	1,059.63	1.80	-1.80	-0.18	182.12
	NORMAL	3,343.0	21.76	18.41	3,132.36	1,026.47	381.07	1,094.91	0.47	-0.14	1.20	107.58
	NORMAL	3,439.0	22.37	22.54	3,221.33	1,060.22	393.70	1,130.95	1.74	0.64	4.30	70.46
	NORMAL	3,534.0	22.24	22.63	3,309.22	1,093.52	407.54	1,166.98	0.14	-0.14	0.09	165.32
	NORMAL	3,630.0	22.24	21.40	3,398.08	1,127.20	421.16	1,203.29	0.48	0.00	-1.28	269.43
	NORMAL	3,725.0	21.93	21.13	3,486.11	1,160.48	434.12	1,239.00	0.34	-0.33	-0.28	198.01
	NORMAL	3,820.0	21.01	20.70	3,574.52	1,192.96	446.53	1,273.77	0.98	-0.97	-0.45	189.51
	NORMAL	3,916.0	22.07	20.52	3,663.81	1,225.95	458.94	1,309.02	1.11	1.10	-0.19	356.35
	NORMAL	4,011.0	23.43	19.73	3,751.42	1,260.45	471.57	1,345.75	1.47	1.43	-0.83	346.97
	NORMAL	4,107.0	23.56	19.99	3,839.46	1,296.45	484.57	1,384.02	0.17	0.14	0.27	38.69
	NORMAL	4,202.0	23.39	18.94	3,926.60	1,332.12	497.19	1,421.86	0.48	-0.18	-1.11	247.40
9/7/2013	NORMAL	4,298.0	23.25	18.06	4,014.76	1,368.16	509.24	1,459.85	0.39	-0.15	-0.92	247.70
	NORMAL	4,393.0	23.65	17.27	4,101.91	1,404.18	520.71	1,497.62	0.54	0.42	-0.83	321.47
	NORMAL	4,489.0	23.08	20.78	4,190.04	1,440.17	533.11	1,535.67	1.57	-0.59	3.66	113.87
	NORMAL	4,584.0	22.86	19.64	4,277.51	1,474.96	545.92	1,572.74	0.52	-0.23	-1.20	243.16
	NORMAL	4,679.0	22.86	18.50	4,365.05	1,509.83	557.97	1,609.63	0.47	0.00	-1.20	269.47
	NORMAL	4,775.0	21.63	22.19	4,453.91	1,543.90	570.57	1,645.96	1.94	-1.28	3.84	133.06
	NORMAL	4,870.0	20.88	21.31	4,542.45	1,575.89	583.34	1,680.38	0.86	-0.79	-0.93	202.63
	NORMAL	4,965.0	20.79	21.57	4,631.23	1,607.34	595.69	1,714.16	0.14	-0.09	0.27	134.34
	NORMAL	5,060.0	19.03	18.32	4,720.55	1,637.72	606.76	1,746.50	2.19	-1.85	-3.42	210.64
	NORMAL	5,155.0	18.07	16.39	4,810.62	1,666.56	615.78	1,776.69	1.20	-1.01	-2.03	211.69
	NORMAL	5,250.0	16.35	20.08	4,901.36	1,693.26	624.53	1,804.76	2.14	-1.81	3.88	149.35
	NORMAL	5,346.0	16.48	20.43	4,993.45	1,718.71	633.92	1,831.89	0.17	0.14	0.36	37.43
	NORMAL	5,441.0	14.07	19.99	5,085.09	1,742.19	642.58	1,856.92	2.54	-2.54	-0.46	182.54
	NORMAL	5,536.0	13.19	21.05	5,177.41	1,763.16	650.42	1,879.30	0.96	-0.93	1.12	164.67
	NORMAL	5,632.0	12.97	20.26	5,270.92	1,783.49	658.08	1,901.03	0.30	-0.23	-0.82	218.72
9/8/2013	NORMAL	5,727.0	12.26	20.26	5,363.63	1,802.95	665.27	1,921.77	0.75	-0.75	0.00	180.00
	NORMAL	5,822.0	10.68	18.85	5,456.73	1,820.75	671.60	1,940.66	1.69	-1.66	-1.48	189.37

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 (°)
9/8/2013	NORMAL	5,917.0	9.01	16.91	5,550.33	1,836.20	676.61	1,956.89	1.79	-1.76	-2.04	190.28
	NORMAL	6,012.0	9.58	18.15	5,644.08	1,850.83	681.24	1,972.22	0.64	0.60	1.31	19.97
	NORMAL	6,108.0	8.79	18.59	5,738.85	1,865.37	686.07	1,987.53	0.83	-0.82	0.46	175.14
	NORMAL	6,202.0	9.14	18.06	5,831.70	1,879.28	690.67	2,002.17	0.38	0.37	-0.56	346.46
	NORMAL	6,297.0	9.01	26.67	5,925.51	1,893.10	696.35	2,017.11	1.43	-0.14	9.06	99.71
	NORMAL	6,392.0	8.26	25.00	6,019.44	1,905.93	702.57	2,031.30	0.83	-0.79	-1.76	197.66
	NORMAL	6,488.0	7.74	23.95	6,114.50	1,918.09	708.11	2,044.62	0.56	-0.54	-1.09	195.18
	NORMAL	6,584.0	5.76	27.11	6,209.83	1,928.28	712.93	2,055.85	2.10	-2.06	3.29	170.94
9/9/2013	NORMAL	6,678.0	3.82	27.90	6,303.50	1,935.25	716.54	2,063.64	2.06	-2.06	0.84	178.45
	NORMAL	6,773.0	2.29	47.77	6,398.36	1,939.32	719.43	2,068.46	1.94	-1.61	20.92	154.96
	NORMAL	6,869.0	1.93	49.96	6,494.30	1,941.65	722.09	2,071.56	0.38	-0.38	2.28	168.47
	NORMAL	6,964.0	1.32	41.52	6,589.26	1,943.50	724.04	2,073.97	0.69	-0.64	-8.88	197.24
	NORMAL	7,059.0	0.92	29.57	6,684.24	1,944.98	725.14	2,075.74	0.49	-0.42	-12.58	204.40
	NORMAL	7,154.0	0.66	15.60	6,779.23	1,946.17	725.66	2,077.04	0.34	-0.27	-14.71	209.68
	NORMAL	7,250.0	0.44	352.66	6,875.23	1,947.07	725.77	2,077.91	0.32	-0.23	-23.90	213.94
	NORMAL	7,344.0	0.18	256.68	6,969.23	1,947.40	725.58	2,078.15	0.52	-0.28	-102.11	201.32
	NORMAL	7,439.0	0.66	224.51	7,064.22	1,946.97	725.05	2,077.57	0.54	0.51	-33.86	317.14
	NORMAL	7,534.0	0.40	258.79	7,159.22	1,946.52	724.34	2,076.90	0.42	-0.27	36.08	145.64
	NORMAL	7,630.0	0.97	248.95	7,255.21	1,946.16	723.25	2,076.19	0.60	0.59	-10.25	343.39
	NORMAL	7,725.0	0.44	169.23	7,350.21	1,945.51	722.57	2,075.35	1.04	-0.56	-83.92	205.90
	NORMAL	7,820.0	1.10	173.80	7,445.20	1,944.25	722.74	2,074.22	0.70	0.69	4.81	7.60
	NORMAL	7,915.0	1.36	183.21	7,540.18	1,942.22	722.77	2,072.32	0.35	0.27	9.91	42.61
	NORMAL	8,011.0	1.71	193.14	7,636.14	1,939.68	722.38	2,069.81	0.46	0.36	10.34	42.27
9/10/2013	NORMAL	8,106.0	1.71	198.41	7,731.10	1,936.96	721.61	2,066.99	0.17	0.00	5.55	92.63
	NORMAL	8,201.0	1.85	208.34	7,826.05	1,934.26	720.44	2,064.05	0.36	0.15	10.45	70.60
	NORMAL	8,297.0	2.15	204.04	7,922.00	1,931.26	718.97	2,060.72	0.35	0.31	-4.48	331.27
	NORMAL	8,392.0	2.55	205.62	8,016.92	1,927.72	717.33	2,056.84	0.43	0.42	1.66	9.99
	NORMAL	8,487.0	3.25	210.10	8,111.79	1,923.49	715.06	2,052.08	0.77	0.74	4.72	20.19
	NORMAL	8,583.0	2.99	216.60	8,207.65	1,919.12	712.21	2,047.00	0.46	-0.27	6.77	129.53
	NORMAL	8,678.0	3.25	219.06	8,302.51	1,915.04	709.03	2,042.08	0.31	0.27	2.59	28.48
	NORMAL	8,773.0	3.65	222.32	8,397.34	1,910.72	705.30	2,036.73	0.47	0.42	3.43	27.76
	NORMAL	8,835.0	3.65	222.32	8,459.21	1,907.80	702.64	2,033.07	0.00	0.00	0.00	0.00

3 Charts

3.1 Vertical Section View



3.2 Plan View

