

Deviation Summary

PICEANCE VLY

1 General

1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

1.2 Well/Wellbore Information

Well	PA 541-21	Wellbore No.	OH
Wellbore Legal Name	PA 541-21	Common Wellbore Name	PA 541-21
Project	PA 21-06S-095W	Site	PA 22-21 Pad
Vertical Section Azimuth	69.46 (°)	North reference	True
Origin N/S		Origin E/W	
Spud date	1/26/2014	UWI	PA 541-21
Active datum	KB @6,056.0ft (above Mean Sea Level)		

2 Survey Name

2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	MOSTAR
Date Started	1/26/2014	Ended	2/4/2014
Tool Name	MWD	Engineer	

2.1.1 Tie On Point

MD (ft)	Inc. (°)	Azi. (°)	TVD (ft)	N/S (ft)	E/W (ft)
		30.85			

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 (°)
1/26/2014	NORMAL	103.0	0.18	30.85	103.00	0.14	0.08	0.13	0.17	0.17	0.00	30.85
	NORMAL	132.1	1.32	89.82	132.13	0.18	0.44	0.48	4.25	3.91	202.42	66.13
	NORMAL	162.0	1.67	73.30	161.99	0.31	1.20	1.23	1.85	1.17	-55.31	300.63
	NORMAL	193.0	1.41	73.56	192.98	0.54	2.00	2.06	0.84	-0.84	0.84	178.59
	NORMAL	223.0	1.85	61.44	222.96	0.88	2.78	2.91	1.86	1.47	-40.40	315.76
	NORMAL	253.0	2.99	63.11	252.94	1.46	3.90	4.17	3.81	3.80	5.57	4.37
	NORMAL	283.0	3.87	65.57	282.88	2.24	5.52	5.96	2.97	2.93	8.20	10.72
	NORMAL	314.0	4.75	69.70	313.79	3.12	7.68	8.28	3.01	2.84	13.32	21.50
	NORMAL	344.0	6.16	69.43	343.66	4.11	10.35	11.14	4.70	4.70	-0.90	358.82
	NORMAL	374.0	7.39	67.68	373.45	5.41	13.64	14.67	4.16	4.10	-5.83	349.60
	NORMAL	405.0	8.45	68.55	404.15	7.00	17.61	18.94	3.44	3.42	2.81	6.88
	NORMAL	436.0	9.15	72.16	434.79	8.59	22.07	23.68	2.88	2.26	11.65	40.07
	NORMAL	466.0	8.97	72.95	464.41	10.00	26.58	28.40	0.73	-0.60	2.63	145.74
	NORMAL	496.0	9.77	71.89	494.01	11.48	31.24	33.28	2.73	2.67	-3.53	347.30
	NORMAL	526.0	10.73	72.33	523.53	13.12	36.32	38.61	3.21	3.20	1.47	4.88
	NORMAL	557.0	12.05	69.79	553.92	15.11	42.10	44.73	4.55	4.26	-8.19	337.94
	NORMAL	587.0	12.84	70.05	583.22	17.33	48.18	51.19	2.64	2.63	0.87	4.18
	NORMAL	617.0	13.64	70.93	612.42	19.63	54.65	58.06	2.75	2.67	2.93	14.57
	NORMAL	648.0	14.25	70.05	642.51	22.12	61.69	65.53	2.08	1.97	-2.84	340.40
	NORMAL	678.0	15.04	67.94	671.53	24.84	68.77	73.12	3.18	2.63	-7.03	324.95
	NORMAL	708.0	16.10	65.74	700.43	28.02	76.17	81.16	4.04	3.53	-7.33	329.82

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)	Buld Rate (°/100usft)	Turn (°/100usft)	Tface (°)
1/26/2014	NORMAL	738.0	16.72	65.21	729.21	31.53	83.88	89.61	2.13	2.07	-1.77	346.17
	NORMAL	768.0	17.16	65.21	757.91	35.20	91.82	98.33	1.47	1.47	0.00	0.00
	NORMAL	799.0	18.30	66.45	787.43	39.06	100.43	107.75	3.87	3.68	4.00	18.92
1/26/2014	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/27/2014	NORMAL	870.0	20.26	69.87	854.45	47.75	122.19	131.18	3.18	2.76	4.82	31.57
	NORMAL	960.0	22.68	67.94	938.20	59.63	152.91	164.11	2.80	2.69	-2.14	342.83
	NORMAL	1,055.0	24.61	73.74	1,025.23	72.05	188.88	202.15	3.18	2.03	6.11	53.00
	NORMAL	1,151.0	27.60	74.36	1,111.43	83.64	229.50	244.25	3.13	3.11	0.65	5.49
	NORMAL	1,246.0	30.59	74.53	1,194.43	96.03	274.00	290.27	3.15	3.15	0.18	1.66
	NORMAL	1,341.0	31.96	71.89	1,275.63	110.29	321.19	339.47	2.04	1.44	-2.78	313.85
	NORMAL	1,436.0	33.98	70.40	1,355.33	127.01	370.11	391.14	2.29	2.13	-1.57	337.50
	NORMAL	1,532.0	36.88	69.17	1,433.54	146.26	422.32	446.79	3.11	3.02	-1.28	345.68
	NORMAL	1,626.0	39.65	68.12	1,507.34	167.47	476.52	504.99	3.03	2.95	-1.12	346.37
1/29/2014	NORMAL	1,741.0	40.53	66.09	1,595.32	196.29	544.73	578.97	1.37	0.77	-1.77	303.17
	NORMAL	1,836.0	40.84	65.48	1,667.36	221.69	601.21	640.78	0.53	0.33	-0.64	307.71
	NORMAL	1,931.0	40.35	66.97	1,739.50	246.62	657.78	702.49	1.14	-0.52	1.57	117.38
	NORMAL	2,027.0	39.65	67.85	1,813.04	270.32	714.75	764.16	0.94	-0.73	0.92	141.40
	NORMAL	2,122.0	39.16	69.26	1,886.45	292.37	770.87	824.45	1.07	-0.52	1.48	119.24
	NORMAL	2,217.0	40.84	67.41	1,959.22	314.93	827.61	885.50	2.17	1.77	-1.95	324.00
	NORMAL	2,313.0	40.09	68.29	2,032.26	338.42	885.31	947.77	0.98	-0.78	0.92	143.05
	NORMAL	2,408.0	37.80	70.05	2,106.14	359.68	941.11	1,007.48	2.68	-2.41	1.85	154.90
	NORMAL	2,503.0	37.85	70.93	2,181.18	379.13	996.02	1,065.72	0.57	0.05	0.93	85.05
	NORMAL	2,599.0	37.58	69.08	2,257.13	399.21	1,051.20	1,124.44	1.21	-0.28	-1.93	255.85
	NORMAL	2,694.0	37.41	71.10	2,332.50	418.90	1,105.57	1,182.26	1.31	-0.18	2.13	98.67
	NORMAL	2,789.0	38.33	70.75	2,407.49	437.96	1,160.68	1,240.56	0.99	0.97	-0.37	346.72
	NORMAL	2,885.0	39.91	71.54	2,481.97	457.53	1,218.00	1,301.10	1.73	1.65	0.82	17.82
	NORMAL	2,980.0	40.00	70.40	2,554.80	477.42	1,275.67	1,362.08	0.78	0.09	-1.20	276.57
	NORMAL	3,075.0	40.26	69.70	2,627.43	498.31	1,333.23	1,423.31	0.55	0.27	-0.74	299.69
	NORMAL	3,170.0	40.04	69.00	2,700.05	519.91	1,390.54	1,484.56	0.53	-0.23	-0.74	243.75
	NORMAL	3,266.0	40.26	68.47	2,773.42	542.36	1,448.23	1,546.46	0.42	0.23	-0.55	302.57
	NORMAL	3,361.0	40.31	68.03	2,845.89	565.13	1,505.28	1,607.87	0.30	0.05	-0.46	279.80
	NORMAL	3,456.0	40.48	68.03	2,918.25	588.16	1,562.38	1,669.41	0.18	0.18	0.00	0.00
	NORMAL	3,551.0	40.70	68.29	2,990.39	611.15	1,619.75	1,731.21	0.29	0.23	0.27	37.66
	NORMAL	3,646.0	40.04	69.00	3,062.77	633.56	1,677.06	1,792.73	0.85	-0.69	0.75	145.40
	NORMAL	3,742.0	39.34	70.84	3,136.64	654.62	1,734.63	1,854.04	1.42	-0.73	1.92	121.49
	NORMAL	3,837.0	39.52	70.67	3,210.02	674.50	1,791.60	1,914.36	0.22	0.19	-0.18	328.98
	NORMAL	3,932.0	39.16	70.22	3,283.49	694.66	1,848.35	1,974.57	0.48	-0.38	-0.47	218.22
	NORMAL	4,028.0	38.73	69.87	3,358.16	715.25	1,905.07	2,034.91	0.50	-0.45	-0.36	206.96
	NORMAL	4,123.0	39.43	70.05	3,431.90	735.77	1,961.33	2,094.80	0.75	0.74	0.19	9.28
	NORMAL	4,218.0	39.03	69.26	3,505.49	756.66	2,017.66	2,154.88	0.67	-0.42	-0.83	231.01
	NORMAL	4,314.0	38.95	69.17	3,580.11	778.10	2,074.13	2,215.28	0.10	-0.08	-0.09	215.26
	NORMAL	4,409.0	38.77	69.26	3,654.08	799.25	2,129.86	2,274.88	0.20	-0.19	0.09	162.62
	NORMAL	4,504.0	37.80	68.55	3,728.65	820.43	2,184.77	2,333.74	1.12	-1.02	-0.75	204.12
	NORMAL	4,600.0	38.99	68.47	3,803.89	842.27	2,240.25	2,393.35	1.24	1.24	-0.08	357.58
	NORMAL	4,695.0	38.95	67.85	3,877.75	864.50	2,295.71	2,453.08	0.41	-0.04	-0.65	263.90
	NORMAL	4,790.0	39.60	69.79	3,951.29	886.22	2,351.78	2,513.21	1.46	0.68	2.04	62.86
	NORMAL	4,885.0	39.12	70.14	4,024.74	906.86	2,408.38	2,573.46	0.56	-0.51	0.37	155.32
1/30/2014	NORMAL	4,980.0	38.29	70.31	4,098.88	926.96	2,464.28	2,632.85	0.88	-0.87	0.18	172.77
	NORMAL	5,075.0	38.64	69.79	4,173.26	947.12	2,519.83	2,691.94	0.50	0.37	-0.55	317.05
	NORMAL	5,170.0	38.90	69.26	4,247.33	967.93	2,575.56	2,751.43	0.44	0.27	-0.56	307.87
	NORMAL	5,266.0	39.43	69.17	4,321.76	989.44	2,632.24	2,812.06	0.56	0.55	-0.09	353.84
	NORMAL	5,361.0	37.89	70.05	4,395.94	1,010.13	2,687.86	2,871.40	1.72	-1.62	0.93	160.70
	NORMAL	5,457.0	36.66	69.43	4,472.33	1,030.26	2,742.41	2,929.54	1.34	-1.28	-0.65	196.73
	NORMAL	5,553.0	35.34	69.61	4,550.00	1,050.00	2,795.27	2,985.97	1.38	-1.38	0.19	175.49
	NORMAL	5,648.0	34.33	69.87	4,627.97	1,068.79	2,846.17	3,040.23	1.07	-1.06	0.27	171.74
	NORMAL	5,744.0	32.84	70.93	4,707.94	1,086.61	2,896.20	3,093.33	1.67	-1.55	1.10	158.96

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 (°)
1/30/2014	NORMAL	5,838.0	30.99	71.98	4,787.73	1,102.43	2,943.30	3,142.99	2.05	-1.97	1.12	163.74
	NORMAL	5,934.0	29.36	70.75	4,870.72	1,117.83	2,989.03	3,191.21	1.82	-1.70	-1.28	200.24
	NORMAL	6,029.0	27.30	70.58	4,954.34	1,132.76	3,031.56	3,236.28	2.17	-2.17	-0.18	182.17
	NORMAL	6,125.0	26.02	67.94	5,040.13	1,147.99	3,071.85	3,279.34	1.82	-1.33	-2.75	221.61
	NORMAL	6,220.0	25.76	68.03	5,125.60	1,163.54	3,110.30	3,320.81	0.28	-0.27	0.09	171.45
	NORMAL	6,316.0	24.53	68.29	5,212.50	1,178.71	3,148.16	3,361.59	1.29	-1.28	0.27	174.99
2/1/2014	NORMAL	6,412.0	22.68	69.96	5,300.46	1,192.43	3,184.07	3,400.03	2.05	-1.93	1.74	160.89
	NORMAL	6,507.0	21.14	70.58	5,388.60	1,204.40	3,217.43	3,435.47	1.64	-1.62	0.65	171.74
	NORMAL	6,602.0	19.25	67.85	5,477.76	1,216.00	3,248.10	3,468.26	2.22	-1.99	-2.87	205.23
	NORMAL	6,698.0	18.37	67.41	5,568.63	1,227.78	3,276.72	3,499.19	0.93	-0.92	-0.46	188.95
	NORMAL	6,794.0	17.58	68.12	5,659.94	1,238.99	3,304.14	3,528.81	0.85	-0.82	0.74	164.84
	NORMAL	6,889.0	15.78	68.38	5,750.94	1,249.10	3,329.47	3,556.07	1.90	-1.89	0.27	177.75
	NORMAL	6,985.0	14.02	68.29	5,843.71	1,258.21	3,352.41	3,580.74	1.83	-1.83	-0.09	180.71
	NORMAL	7,080.0	12.48	68.82	5,936.18	1,266.18	3,372.67	3,602.51	1.63	-1.62	0.56	175.75
	NORMAL	7,174.0	11.60	71.81	6,028.11	1,272.80	3,391.12	3,622.11	1.15	-0.94	3.18	146.13
	NORMAL	7,270.0	11.52	71.54	6,122.16	1,278.85	3,409.38	3,641.34	0.10	-0.08	-0.28	213.94
	NORMAL	7,370.0	11.65	66.18	6,220.13	1,286.09	3,428.09	3,661.40	1.08	0.13	-5.36	274.26
	NORMAL	7,466.0	11.60	63.98	6,314.16	1,294.24	3,445.63	3,680.68	0.46	-0.05	-2.29	262.49
	NORMAL	7,561.0	10.77	65.57	6,407.36	1,302.10	3,462.30	3,699.05	0.93	-0.87	1.67	160.39
	NORMAL	7,657.0	10.46	66.45	6,501.71	1,309.29	3,478.45	3,716.70	0.36	-0.32	0.92	152.83
	NORMAL	7,752.0	9.14	64.69	6,595.32	1,315.96	3,493.18	3,732.83	1.42	-1.39	-1.85	191.92
	NORMAL	7,848.0	7.43	66.71	6,690.32	1,321.67	3,505.77	3,746.63	1.81	-1.78	2.10	171.34
	NORMAL	7,943.0	7.47	68.64	6,784.52	1,326.35	3,517.17	3,758.94	0.27	0.04	2.03	81.88
2/2/2014	NORMAL	8,039.0	6.42	69.87	6,879.81	1,330.47	3,528.02	3,770.54	1.10	-1.09	1.28	172.55
	NORMAL	8,134.0	6.15	73.04	6,974.24	1,333.78	3,537.87	3,780.93	0.46	-0.28	3.34	129.45
	NORMAL	8,230.0	4.70	72.77	7,069.81	1,336.45	3,546.55	3,789.99	1.51	-1.51	-0.28	180.87
	NORMAL	8,326.0	3.96	78.13	7,165.53	1,338.30	3,553.55	3,797.20	0.88	-0.77	5.58	153.98
	NORMAL	8,421.0	3.21	75.23	7,260.35	1,339.65	3,559.33	3,803.09	0.81	-0.79	-3.05	192.15
	NORMAL	8,516.0	2.86	57.75	7,355.22	1,341.59	3,563.91	3,808.05	1.04	-0.37	-18.40	240.70
	NORMAL	8,613.0	2.64	57.30	7,452.10	1,344.09	3,567.83	3,812.61	0.23	-0.23	-0.46	185.38
	NORMAL	8,708.0	2.24	57.13	7,547.02	1,346.28	3,571.24	3,816.56	0.42	-0.42	-0.18	180.95
	NORMAL	8,803.0	2.11	69.26	7,641.95	1,347.91	3,574.43	3,820.12	0.50	-0.14	12.77	111.77
	NORMAL	8,899.0	1.67	73.21	7,737.90	1,348.94	3,577.42	3,823.29	0.48	-0.46	4.11	165.47
	NORMAL	8,995.0	1.19	77.78	7,833.87	1,349.55	3,579.74	3,825.67	0.51	-0.50	4.76	168.91
	NORMAL	9,090.0	1.01	98.00	7,928.85	1,349.64	3,581.53	3,827.38	0.45	-0.19	21.28	124.76
	NORMAL	9,186.0	0.75	127.53	8,024.84	1,349.14	3,582.87	3,828.46	0.54	-0.27	30.76	134.04
2/3/2014	NORMAL	9,281.0	1.01	131.13	8,119.83	1,348.21	3,583.99	3,829.18	0.28	0.27	3.79	13.81
	NORMAL	9,377.0	1.32	148.98	8,215.81	1,346.71	3,585.20	3,829.78	0.49	0.32	18.59	58.65
	NORMAL	9,473.0	1.10	164.53	8,311.79	1,344.87	3,586.01	3,829.90	0.41	-0.23	16.20	131.43
	NORMAL	9,563.0	1.23	182.37	8,501.75	1,341.08	3,586.41	3,828.95	0.20	0.07	9.39	79.35
	NORMAL	9,759.0	1.36	181.85	8,597.72	1,338.91	3,586.33	3,828.11	0.14	0.14	-0.54	354.57
	NORMAL	9,854.0	1.71	189.84	8,692.69	1,336.39	3,586.06	3,826.97	0.43	0.37	8.41	35.48
	NORMAL	9,949.0	2.03	195.03	8,787.64	1,333.37	3,585.38	3,825.27	0.38	0.34	5.46	30.50
	NORMAL	10,005.0	2.03	195.03	8,843.60	1,331.45	3,584.86	3,824.12	0.00	0.00	0.00	0.00