

# Deviation Summary

PICEANCE VLY

## 1 General

### 1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

### 1.2 Well/Wellbore Information

Well	GM 412-21	Wellbore No.	
Wellbore Legal Name	GM 412-21	Common Wellbore Name	GM 412-21
Project	GV 20-06S-096W	Site	GM 442-20 Pad
Vertical Section Azimuth	102.03 (°)	North reference	
Origin N/S		Origin E/W	
Spud date	9/20/2014	UWI	GM 412-21
Active datum	KB @5,596.0ft (above Mean Sea Level)		

## 2 Survey Name

### 2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	
Date Started	9/20/2014	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

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 (°)
9/20/2014	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/20/2014	NORMAL	73.0	0.79	292.06	73.00	0.19	-0.47	-0.50	1.08	1.08	0.00	292.06
	NORMAL	164.0	1.58	102.57	163.99	0.15	0.18	0.14	2.60	0.87	187.37	173.67
	NORMAL	255.0	5.28	99.32	254.81	-0.80	5.53	5.58	4.07	4.07	-3.57	355.37
	NORMAL	345.0	7.65	101.87	344.23	-2.70	15.49	15.71	2.65	2.63	2.83	8.18
	NORMAL	436.0	9.33	103.80	434.23	-5.71	28.58	29.14	1.87	1.85	2.12	10.58
	NORMAL	526.0	11.61	103.01	522.73	-9.49	44.49	45.49	2.54	2.53	-0.88	356.01
	NORMAL	617.0	15.04	102.22	611.26	-14.05	64.96	66.46	3.77	3.77	-0.87	356.58
	NORMAL	688.0	17.75	102.54	679.37	-18.35	84.53	86.49	3.82	3.82	0.45	2.06
	NORMAL	719.0	18.95	102.72	708.79	-20.48	94.05	96.25	3.88	3.87	0.58	2.79
	NORMAL	779.0	20.58	100.61	765.26	-24.57	113.92	116.54	2.97	2.72	-3.52	335.36
	NORMAL	869.0	22.95	100.45	848.84	-30.67	146.73	149.90	2.63	2.63	-0.18	358.49
9/21/2014	NORMAL	960.0	24.91	101.38	932.01	-37.67	182.97	186.80	2.19	2.15	1.02	11.32
	NORMAL	1,054.0	26.20	102.71	1,016.81	-46.14	222.62	227.35	1.50	1.37	1.41	24.58
9/22/2014	NORMAL	1,147.0	27.52	101.37	1,099.78	-54.89	263.71	269.36	1.56	1.42	-1.44	334.76
	NORMAL	1,242.0	26.92	101.22	1,184.26	-63.40	306.32	312.81	0.64	-0.63	-0.16	186.46
	NORMAL	1,336.0	25.63	101.54	1,268.54	-71.61	347.12	354.42	1.38	-1.37	0.34	173.88
	NORMAL	1,430.0	26.29	100.22	1,353.06	-79.37	387.52	395.56	0.93	0.70	-1.40	318.20
	NORMAL	1,524.0	26.56	102.55	1,437.24	-87.63	428.52	437.38	1.14	0.29	2.48	76.45
	NORMAL	1,618.0	26.95	102.54	1,521.18	-96.82	469.83	479.69	0.41	0.41	-0.01	359.33
	NORMAL	1,713.0	26.19	100.56	1,606.14	-105.34	511.45	522.18	1.23	-0.80	-2.08	228.48

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 (")
9/22/2014	NORMAL	1,807.0	26.46	101.11	1,690.40	-113.18	552.40	563.85	0.39	0.29	0.59	42.34
	NORMAL	1,901.0	26.94	103.31	1,774.38	-122.12	593.67	606.08	1.17	0.51	2.34	65.09
	NORMAL	1,997.0	25.24	103.85	1,860.59	-132.02	634.71	648.28	1.79	-1.77	0.56	172.29
	NORMAL	2,091.0	26.20	104.84	1,945.28	-142.14	674.23	689.04	1.12	1.02	1.05	24.56
	NORMAL	2,185.0	26.88	104.02	2,029.37	-152.60	714.90	731.01	0.82	0.72	-0.87	331.32
	NORMAL	2,278.0	26.14	103.53	2,112.59	-162.48	755.22	772.50	0.83	-0.80	-0.53	196.25
	NORMAL	2,374.0	26.40	102.19	2,198.68	-171.94	796.64	814.98	0.67	0.27	-1.40	293.07
	NORMAL	2,468.0	27.28	99.95	2,282.55	-180.07	838.29	857.41	1.43	0.94	-2.38	310.02
	NORMAL	2,562.0	26.14	100.69	2,366.52	-187.64	879.85	899.64	1.26	-1.21	0.79	164.06
	NORMAL	2,654.0	26.47	100.52	2,448.99	-195.14	919.93	940.39	0.37	0.36	-0.18	347.06
	NORMAL	2,748.0	25.04	100.33	2,533.65	-202.53	960.10	981.22	1.52	-1.52	-0.20	183.22
	NORMAL	2,844.0	24.32	101.20	2,620.88	-210.02	999.47	1,021.30	0.84	-0.75	0.91	153.62
	NORMAL	2,937.0	24.04	102.17	2,705.72	-217.73	1,036.78	1,059.39	0.52	-0.30	1.04	125.62
	NORMAL	3,031.0	24.67	103.50	2,791.36	-226.34	1,074.57	1,098.15	0.89	0.67	1.41	41.65
	NORMAL	3,125.0	24.21	101.30	2,876.94	-234.70	1,112.55	1,137.03	1.08	-0.49	-2.34	242.19
	NORMAL	3,220.0	23.17	102.99	2,963.93	-242.72	1,149.86	1,175.20	1.31	-1.09	1.78	147.63
	NORMAL	3,313.0	23.05	102.99	3,049.47	-250.92	1,185.43	1,211.69	0.13	-0.13	0.00	180.00
	NORMAL	3,407.0	22.95	103.51	3,136.00	-259.34	1,221.18	1,248.41	0.24	-0.11	0.55	116.44
	NORMAL	3,501.0	21.95	101.57	3,222.87	-267.15	1,256.21	1,284.30	1.32	-1.06	-2.06	215.64
	NORMAL	3,595.0	21.36	102.96	3,310.24	-274.51	1,290.11	1,318.99	0.83	-0.63	1.48	139.64
	NORMAL	3,688.0	19.60	99.17	3,397.36	-280.80	1,322.01	1,351.51	2.37	-1.89	-4.08	215.23
	NORMAL	3,781.0	19.64	97.34	3,484.96	-285.28	1,352.91	1,382.66	0.66	0.04	-1.97	272.86
	NORMAL	3,876.0	18.63	103.15	3,574.72	-290.77	1,383.53	1,413.75	2.27	-1.06	6.12	120.66
	NORMAL	3,972.0	17.76	102.91	3,665.92	-297.53	1,412.73	1,443.72	0.91	-0.91	-0.25	184.81
	NORMAL	4,066.0	16.52	102.80	3,755.74	-303.69	1,439.74	1,471.42	1.32	-1.32	-0.12	181.45
9/23/2014	NORMAL	4,159.0	16.33	100.56	3,844.95	-309.02	1,465.49	1,497.71	0.71	-0.20	-2.41	252.23
	NORMAL	4,254.0	15.44	102.36	3,936.32	-314.17	1,490.97	1,523.71	1.07	-0.94	1.89	151.90
	NORMAL	4,346.0	14.80	103.31	4,025.14	-319.50	1,514.37	1,547.70	0.75	-0.70	1.03	159.29
	NORMAL	4,440.0	13.60	104.23	4,116.26	-324.98	1,536.76	1,570.75	1.30	-1.28	0.98	169.79
	NORMAL	4,533.0	13.42	95.27	4,206.70	-328.66	1,558.11	1,592.39	2.26	-0.19	-9.63	260.74
	NORMAL	4,626.0	13.29	97.73	4,297.19	-331.09	1,579.45	1,613.77	0.63	-0.14	2.65	104.08
	NORMAL	4,722.0	11.26	97.62	4,390.99	-333.82	1,599.68	1,634.12	2.11	-2.11	-0.11	180.61
	NORMAL	4,817.0	11.00	92.67	4,484.20	-335.47	1,617.92	1,652.31	1.04	-0.27	-5.21	252.36
	NORMAL	4,911.0	9.64	93.48	4,576.68	-336.37	1,634.74	1,668.94	1.45	-1.45	0.86	174.31
	NORMAL	5,005.0	8.75	94.25	4,669.47	-337.37	1,649.72	1,683.81	0.96	-0.95	0.82	172.51
	NORMAL	5,099.0	8.24	95.83	4,762.44	-338.59	1,663.56	1,697.59	0.60	-0.54	1.68	156.19
9/24/2014	NORMAL	5,194.0	8.00	95.77	4,856.49	-339.94	1,676.91	1,710.93	0.25	-0.25	-0.06	181.99
	NORMAL	5,288.0	6.41	102.81	4,949.74	-341.76	1,688.53	1,722.68	1.93	-1.69	7.49	154.42
	NORMAL	5,382.0	5.80	98.76	5,043.21	-343.65	1,698.34	1,732.67	0.79	-0.65	-4.31	213.22
	NORMAL	5,477.0	5.80	98.76	5,137.72	-345.11	1,707.83	1,742.25	0.00	0.00	0.00	0.00
	NORMAL	5,571.0	4.40	104.40	5,231.35	-346.73	1,716.02	1,750.60	1.58	-1.49	6.00	163.09
	NORMAL	5,665.0	4.32	111.47	5,325.08	-348.93	1,722.81	1,757.69	0.58	-0.09	7.52	101.98
9/25/2014	NORMAL	5,759.0	4.22	108.23	5,418.82	-351.30	1,729.39	1,764.63	0.28	-0.11	-3.45	245.87
	NORMAL	5,852.0	3.23	107.17	5,511.62	-353.15	1,735.14	1,770.64	1.07	-1.06	-1.14	183.45
	NORMAL	5,947.0	1.73	120.54	5,606.53	-354.67	1,738.93	1,774.66	1.68	-1.58	14.07	165.50
	NORMAL	6,040.0	1.58	114.50	5,699.49	-355.91	1,741.31	1,777.25	0.25	-0.16	-6.49	226.32
	NORMAL	6,134.0	0.79	150.24	5,793.47	-357.01	1,742.81	1,778.94	1.11	-0.84	38.02	153.82
	NORMAL	6,228.0	0.89	192.30	5,887.46	-358.29	1,742.97	1,779.37	0.65	0.11	44.74	102.23
	NORMAL	6,321.0	1.70	229.03	5,980.44	-359.90	1,741.78	1,778.54	1.21	0.87	39.49	65.07
	NORMAL	6,416.0	1.49	219.26	6,075.40	-361.78	1,739.93	1,777.12	0.36	-0.22	-10.28	227.51
	NORMAL	6,510.0	1.53	232.84	6,169.37	-363.48	1,738.16	1,775.74	0.38	0.04	14.45	90.44
	NORMAL	6,603.0	1.76	236.29	6,262.33	-365.02	1,735.98	1,773.94	0.27	0.25	3.71	25.03
	NORMAL	6,698.0	1.68	225.08	6,357.29	-366.82	1,733.78	1,772.16	0.36	-0.08	-11.80	251.06
	NORMAL	6,792.0	1.58	224.73	6,451.25	-368.71	1,731.89	1,770.71	0.11	-0.11	-0.37	185.51
	NORMAL	6,886.0	1.28	221.68	6,545.22	-370.42	1,730.28	1,769.49	0.33	-0.32	-3.24	192.72
	NORMAL	6,980.0	1.32	245.45	6,639.20	-371.65	1,728.60	1,768.10	0.57	0.04	25.29	97.70

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 (")
9/25/2014	NORMAL	7,075.0	1.49	240.70	6,734.17	-372.71	1,726.53	1,766.29	0.22	0.18	-5.00	323.20
	NORMAL	7,170.0	1.88	240.29	6,829.13	-374.09	1,724.10	1,764.20	0.41	0.41	-0.43	358.02
	NORMAL	7,264.0	1.74	251.22	6,923.08	-375.31	1,721.41	1,761.83	0.40	-0.15	11.63	117.48
	NORMAL	7,289.0	1.58	255.51	6,948.07	-375.52	1,720.71	1,761.19	0.81	-0.64	17.16	144.29
	NORMAL	7,354.0	1.58	255.51	7,013.04	-375.97	✓ 1,718.98	✓ 1,759.59	0.00	0.00	0.00	0.00