

# Deviation Summary

PICEANCE VLY

## 1 General

### 1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

### 1.2 Well/Wellbore Information

Well	GM 443-12	Wellbore No.	00
Wellbore Legal Name	GM 443-12	Common Wellbore Name	GM 443-12
Project	GV 12-07S-096W	Site	GM 21-12 Pad
Vertical Section Azimuth	139.73 (°)	North reference	True
Origin N/S		Origin E/W	
Spud date	10/22/2014	UWI	GM 443-12
Active datum	KB @5,151.0ft (above Mean Sea Level)		

## 2 Survey Name

### 2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	
Date Started	10/22/2014	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 (°)
10/22/2014	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	NORMAL	105.0	1.14	90.44	104.99	0.25	1.15	0.56	1.16	0.57	55.37	69.41
	NORMAL	135.0	0.97	98.79	134.99	0.20	1.70	0.94	0.76	-0.57	27.83	142.00
	NORMAL	165.0	1.50	111.62	164.98	0.02	2.32	1.48	1.98	1.77	42.77	34.07
	NORMAL	195.0	1.85	130.96	194.97	-0.44	3.05	2.31	2.20	1.17	64.47	68.15
	NORMAL	225.0	2.82	145.20	224.94	-1.36	3.84	3.52	3.74	3.23	47.47	38.13
	NORMAL	255.0	3.43	154.25	254.90	-2.78	4.65	5.12	2.61	2.03	30.17	43.54
	NORMAL	285.0	5.10	153.72	284.81	-4.78	5.63	7.29	5.57	5.57	-1.77	358.38
	NORMAL	316.0	6.86	157.59	315.64	-7.73	6.94	10.39	5.82	5.68	12.48	14.83
	NORMAL	347.0	8.09	160.22	346.38	-11.49	8.39	14.19	4.12	3.97	8.48	16.85
	NORMAL	377.0	9.41	158.03	376.03	-15.76	10.02	18.50	4.54	4.40	-7.30	344.75
	NORMAL	407.0	10.82	154.95	405.56	-20.58	12.13	23.54	5.03	4.70	-10.27	337.49
	NORMAL	437.0	12.14	151.96	434.96	-25.92	14.80	29.34	4.83	4.40	-9.97	334.26
	NORMAL	467.0	13.64	146.07	464.21	-31.64	18.26	35.94	6.64	5.00	-19.63	315.89
	NORMAL	497.0	15.13	141.86	493.27	-37.65	22.65	43.37	6.07	4.97	-14.03	322.88
	NORMAL	527.0	16.19	135.88	522.15	-43.73	27.98	51.46	6.43	3.53	-19.93	300.39
	NORMAL	589.0	17.14	135.46	581.55	-56.45	40.41	69.19	1.54	1.53	-0.68	352.57
10/22/2014	NORMAL	75.0	0.97	73.83	75.00	0.18	0.61	0.26	1.29	1.29	0.00	73.83
10/23/2014	NORMAL	679.0	20.84	139.32	666.64	-78.05	60.15	98.44	4.34	4.11	4.29	20.59
	NORMAL	770.0	26.33	138.80	750.01	-105.53	84.02	134.83	6.04	6.03	-0.57	357.59
	NORMAL	860.0	32.66	138.10	828.30	-138.66	113.41	179.11	7.04	7.03	-0.78	356.58



## 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 (°)
10/23/2014	NORMAL	950.0	37.49	137.22	901.94	-176.86	148.25	230.78	5.40	5.37	-0.98	353.66
	NORMAL	1,045.0	42.37	137.04	974.77	-221.53	189.73	291.67	5.14	5.14	-0.19	358.57
	NORMAL	1,139.0	45.58	137.57	1,042.40	-269.50	233.97	356.87	3.44	3.41	0.56	6.73
	NORMAL	1,235.0	47.65	137.74	1,108.34	-321.07	280.97	426.59	2.16	2.16	0.18	3.47
	NORMAL	1,330.0	47.65	138.10	1,172.34	-373.18	328.02	496.76	0.28	0.00	0.38	90.12
	NORMAL	1,426.0	48.53	138.45	1,236.46	-426.50	375.56	568.18	0.96	0.92	0.36	16.61
	NORMAL	1,521.0	50.55	138.80	1,298.11	-480.74	423.34	640.45	2.14	2.13	0.37	7.62
	NORMAL	1,617.0	49.63	138.80	1,359.70	-536.14	471.84	714.07	0.96	-0.96	0.00	180.00
	NORMAL	1,712.0	48.00	138.62	1,422.25	-589.86	519.02	785.56	1.72	-1.72	-0.19	184.69
10/26/2014	NORMAL	1,747.0	48.22	138.80	1,445.62	-609.44	536.21	811.61	0.74	0.63	0.51	31.40
	NORMAL	1,808.0	48.84	138.45	1,486.02	-643.74	566.42	857.31	1.10	1.02	-0.57	336.96
	NORMAL	1,903.0	50.02	137.57	1,547.81	-697.37	614.70	929.43	1.43	1.24	-0.93	330.18
	NORMAL	1,999.0	50.37	138.62	1,609.26	-752.26	663.95	1,003.15	0.92	0.36	1.09	66.88
	NORMAL	2,094.0	50.11	139.15	1,670.02	-807.28	711.98	1,076.17	0.51	-0.27	0.56	122.71
	NORMAL	2,190.0	50.37	138.45	1,731.42	-862.80	760.59	1,149.96	0.62	0.27	-0.73	295.56
	NORMAL	2,285.0	49.45	139.85	1,792.60	-917.77	808.13	1,222.63	1.49	-0.97	1.47	131.11
	NORMAL	2,381.0	48.88	140.38	1,855.38	-973.50	854.70	1,295.26	0.73	-0.59	0.55	145.05
	NORMAL	2,476.0	49.54	139.50	1,917.44	-1,028.55	900.99	1,367.19	0.99	0.69	-0.93	314.44
	NORMAL	2,571.0	49.41	140.03	1,979.17	-1,083.68	947.64	1,439.40	0.45	-0.14	0.56	108.06
	NORMAL	2,666.0	48.31	142.49	2,041.67	-1,139.46	992.41	1,510.91	2.27	-1.16	2.59	121.50
	NORMAL	2,761.0	48.70	143.54	2,104.62	-1,196.30	1,035.22	1,581.94	0.92	0.41	1.11	63.97
	NORMAL	2,856.0	48.13	142.84	2,167.67	-1,253.19	1,077.79	1,652.87	0.81	-0.60	-0.74	222.34
	NORMAL	2,952.0	48.13	142.49	2,231.75	-1,310.03	1,121.15	1,724.26	0.27	0.00	-0.36	269.88
	NORMAL	3,047.0	48.44	141.61	2,294.86	-1,365.95	1,164.76	1,795.12	0.76	0.33	-0.93	294.97
	NORMAL	3,142.0	47.78	140.91	2,358.40	-1,421.11	1,209.01	1,865.81	0.89	-0.69	-0.74	218.06
	NORMAL	3,237.0	48.18	140.20	2,421.99	-1,475.61	1,253.85	1,936.38	0.70	0.42	-0.75	306.94
	NORMAL	3,332.0	48.09	139.50	2,485.39	-1,529.69	1,299.47	2,007.13	0.56	-0.09	-0.74	259.97
	NORMAL	3,427.0	47.74	139.15	2,549.06	-1,583.16	1,345.42	2,077.63	0.46	-0.37	-0.37	216.46
	NORMAL	3,523.0	46.15	139.15	2,614.60	-1,636.22	1,391.30	2,147.77	1.66	-1.66	0.00	180.00
10/27/2014	NORMAL	3,618.0	44.84	139.32	2,681.19	-1,687.54	1,435.54	2,215.52	1.38	-1.38	0.18	174.77
	NORMAL	3,714.0	43.56	140.03	2,750.01	-1,738.56	1,478.85	2,282.45	1.43	-1.33	0.74	159.11
	NORMAL	3,809.0	41.80	139.85	2,819.85	-1,787.85	1,520.30	2,346.84	1.86	-1.85	-0.19	183.90
	NORMAL	3,905.0	39.43	141.26	2,892.72	-1,836.09	1,560.01	2,409.32	2.65	-2.47	1.47	159.36
	NORMAL	4,000.0	38.42	142.14	2,966.63	-1,882.92	1,597.01	2,468.98	1.21	-1.06	0.93	151.64
	NORMAL	4,095.0	37.45	141.79	3,041.55	-1,928.93	1,632.99	2,527.33	1.05	-1.02	-0.37	192.37
	NORMAL	4,190.0	34.55	140.55	3,118.40	-1,972.43	1,667.98	2,583.15	3.15	-3.05	-1.31	193.61
	NORMAL	4,286.0	33.54	138.97	3,197.95	-2,013.46	1,702.69	2,636.89	1.40	-1.05	-1.65	220.56
	NORMAL	4,382.0	32.40	136.69	3,278.49	-2,052.18	1,737.74	2,689.09	1.76	-1.19	-2.38	226.47
	NORMAL	4,477.0	30.73	135.81	3,359.43	-2,088.11	1,772.12	2,738.73	1.82	-1.76	-0.93	195.05
	NORMAL	4,572.0	28.35	136.51	3,442.08	-2,121.88	1,804.57	2,785.47	2.53	-2.51	0.74	172.05
	NORMAL	4,667.0	26.29	137.92	3,526.48	-2,153.87	1,834.20	2,829.02	2.27	-2.17	1.48	163.19
	NORMAL	4,763.0	25.41	138.45	3,612.87	-2,185.06	1,862.11	2,870.87	0.95	-0.92	0.55	165.52
	NORMAL	4,857.0	24.04	139.32	3,698.25	-2,214.68	1,887.97	2,910.18	1.51	-1.46	0.93	165.52
	NORMAL	4,954.0	22.42	138.80	3,787.39	-2,243.58	1,913.03	2,948.43	1.68	-1.67	-0.54	186.98
	NORMAL	5,049.0	20.70	138.97	3,875.74	-2,269.88	1,935.99	2,983.34	1.81	-1.81	0.18	178.00
	NORMAL	5,144.0	19.69	137.74	3,964.89	-2,294.39	1,957.77	3,016.12	1.15	-1.06	-1.29	202.23
	NORMAL	5,239.0	17.71	137.04	4,054.88	-2,316.81	1,978.38	3,046.55	2.10	-2.08	-0.74	186.14
	NORMAL	5,333.0	15.25	139.50	4,145.01	-2,336.68	1,996.16	3,073.20	2.72	-2.62	2.62	165.34
	NORMAL	5,429.0	12.00	140.03	4,238.29	-2,353.93	2,010.77	3,095.81	3.39	-3.39	0.55	178.06
10/28/2014	NORMAL	5,524.0	10.42	143.90	4,331.48	-2,368.44	2,022.18	3,114.26	1.84	-1.66	4.07	156.43
	NORMAL	5,619.0	8.40	148.11	4,425.20	-2,381.28	2,030.91	3,129.69	2.24	-2.13	4.43	163.25
	NORMAL	5,714.0	6.55	152.33	4,519.39	-2,391.97	2,037.09	3,141.84	2.03	-1.95	4.44	165.56
	NORMAL	5,809.0	4.56	148.47	4,613.94	-2,399.99	2,041.58	3,150.87	2.13	-2.09	-4.06	188.72
	NORMAL	5,904.0	2.86	150.05	4,708.74	-2,405.26	2,044.74	3,156.93	1.79	-1.79	1.66	177.35
	NORMAL	6,000.0	0.57	117.88	4,804.69	-2,407.56	2,046.36	3,159.73	2.50	-2.39	-33.51	187.28
	NORMAL	6,095.0	1.85	7.49	4,899.67	-2,406.26	2,046.98	3,159.14	2.23	1.35	-116.20	235.00

## 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 (°)
10/28/2014	NORMAL	6,190.0	1.76	356.24	4,994.62	-2,403.28	2,047.08	3,156.93	0.38	-0.09	-11.84	250.17
	NORMAL	6,284.0	1.27	347.27	5,088.59	-2,400.83	2,046.76	3,154.85	0.58	-0.52	-9.54	201.39
	NORMAL	6,379.0	0.92	336.20	5,183.57	-2,399.10	2,046.22	3,153.19	0.43	-0.37	-11.65	205.70
	NORMAL	6,474.0	1.19	350.61	5,278.56	-2,397.43	2,045.75	3,151.61	0.40	0.28	15.17	51.85
	NORMAL	6,570.0	0.92	327.76	5,374.54	-2,395.80	2,045.17	3,149.99	0.52	-0.28	-23.80	226.23
	NORMAL	6,665.0	0.79	297.53	5,469.53	-2,394.85	2,044.19	3,148.63	0.49	-0.14	-31.82	239.17
	NORMAL	6,761.0	0.83	252.00	5,565.52	-2,394.76	2,042.94	3,147.75	0.65	0.04	-47.43	250.60
10/29/2014	NORMAL	6,856.0	1.36	225.81	5,660.51	-2,395.75	2,041.48	3,147.57	0.75	0.56	-27.57	303.04
	NORMAL	6,951.0	1.45	235.65	5,755.48	-2,397.22	2,039.68	3,147.52	0.27	0.09	10.36	74.51
	NORMAL	7,046.0	1.54	244.44	5,850.45	-2,398.45	2,037.53	3,147.07	0.26	0.09	9.25	73.00
	NORMAL	7,142.0	2.68	266.77	5,946.38	-2,399.13	2,034.13	3,145.39	1.44	1.19	23.26	47.30
	NORMAL	7,238.0	2.77	267.12	6,042.27	-2,399.37	2,029.57	3,142.63	0.10	0.09	0.36	10.65
	NORMAL	7,333.0	2.59	259.03	6,137.17	-2,399.90	2,025.17	3,140.19	0.44	-0.19	-8.52	240.55
	NORMAL	7,375.0	2.59	255.87	6,179.13	-2,400.31	2,023.32	3,139.31	0.34	0.00	-7.52	268.42
	NORMAL	7,430.0	2.59	255.87	6,234.07	-2,400.92	2,020.91	3,138.21	0.00	0.00	0.00	0.00