

## 1 General

### 1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

### 1.2 Well Information

Well	GM 324-23	Wellbore No.	
Well Name	GM 324-23	Common Name	GM 324-23
Project	GV 27-06S-096W	Site	MV 23-27 Pad
Vertical Section Azimuth	67.87 (°)	North Reference	True
Origin N/S		Origin E/W	
Spud Date	5/4/2011	UWI	GM 324-23
Active Datum	KB @5,794.0ft (above Mean Sea Level)		

## 2 Survey Name

### 2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	SCIENTIFIC
Started	5/4/2011	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)	DLeg (°/100ft)	Build (°/100ft)	Turn (°/100ft)	TFace (°)
5/4/2011	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/4/2011	NORMAL	49.0	0.35	216.30	49.00	-0.12	-0.09	-0.13	0.71	0.71	0.00	216.30
	NORMAL	78.0	0.62	136.41	78.00	-0.31	-0.03	-0.15	2.26	0.93	-275.48	248.44
	NORMAL	109.0	0.88	96.06	109.00	-0.45	0.32	0.13	1.85	0.84	-130.16	275.08
	NORMAL	140.0	1.67	100.28	139.99	-0.56	1.00	0.72	2.56	2.55	13.61	8.89
	NORMAL	171.0	2.46	85.96	170.97	-0.59	2.11	1.73	3.02	2.55	-46.19	319.56
	NORMAL	202.0	3.78	75.67	201.92	-0.29	3.76	3.38	4.61	4.26	-33.19	331.82
	NORMAL	232.0	4.84	80.86	231.84	0.15	5.97	5.59	3.76	3.53	17.30	22.80
	NORMAL	262.0	5.98	84.20	261.70	0.51	8.77	8.32	3.94	3.80	11.13	17.11
	NORMAL	293.0	7.21	83.14	292.50	0.91	12.31	11.75	3.99	3.97	-3.42	353.82
	NORMAL	323.0	7.57	84.38	322.25	1.33	16.15	15.46	1.31	1.20	4.13	24.51
	NORMAL	354.0	7.92	88.95	352.97	1.57	20.32	19.41	2.28	1.13	14.74	62.67
	NORMAL	384.0	9.24	85.78	382.63	1.78	24.78	23.63	4.67	4.40	-10.57	338.72
	NORMAL	414.0	10.47	85.96	412.19	2.15	29.91	28.51	4.10	4.10	0.60	1.52
	NORMAL	445.0	11.26	83.50	442.63	2.69	35.72	34.11	2.95	2.55	-7.94	328.38
	NORMAL	478.0	12.58	82.35	474.92	3.53	42.49	40.69	4.06	4.00	-3.48	349.24
	NORMAL	507.0	13.55	82.71	503.17	4.39	48.99	47.03	3.36	3.34	1.24	4.97
	NORMAL	535.0	14.25	82.53	530.35	5.25	55.66	53.53	2.50	2.50	-0.64	356.38
	NORMAL	582.0	15.56	79.58	575.76	7.14	67.59	65.30	3.22	2.79	-6.28	328.49
	NORMAL	612.0	16.97	77.82	604.56	8.79	75.83	73.56	4.98	4.70	-5.87	339.88
	NORMAL	643.0	18.03	77.12	634.13	10.82	84.93	82.75	3.49	3.42	-2.26	348.43

## 2.1.2 Survey Stations (Continued)

Date	Type	MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Build (°/100ft)	Turn (°/100ft)	TFace (°)
5/4/2011	NORMAL	673.0	19.52	77.47	662.53	12.94	94.35	92.27	4.98	4.97	1.17	4.49
	NORMAL	701.0	20.49	77.73	688.84	15.00	103.70	101.71	3.48	3.46	0.93	5.36
	NORMAL	733.0	21.72	77.73	718.69	17.45	114.96	113.07	3.84	3.84	0.00	0.00
	NORMAL	763.0	22.69	77.73	746.47	19.85	126.04	124.24	3.23	3.23	0.00	0.00
	NORMAL	792.0	23.57	76.86	773.14	22.36	137.15	135.47	3.26	3.03	-3.00	338.38
	NORMAL	825.0	24.62	77.65	803.26	25.33	150.29	148.76	3.33	3.18	2.39	17.44
	NORMAL	854.0	25.50	77.56	829.53	27.97	162.29	160.87	3.04	3.03	-0.31	357.48
	NORMAL	883.0	26.20	76.59	855.63	30.80	174.61	173.35	2.82	2.41	-3.34	328.42
	NORMAL	915.0	26.82	76.15	884.27	34.16	188.49	187.48	2.03	1.94	-1.38	342.23
	NORMAL	946.0	27.61	75.71	911.83	37.61	202.25	201.52	2.63	2.55	-1.42	345.51
	NORMAL	975.0	27.96	74.39	937.49	41.10	215.31	214.93	2.44	1.21	-4.55	299.05
	NORMAL	1,007.0	28.40	72.46	965.70	45.41	229.79	229.97	3.16	1.38	-6.03	294.92
	NORMAL	1,039.0	29.72	70.70	993.67	50.33	244.53	245.48	4.91	4.13	-5.50	326.30
	NORMAL	1,067.0	30.78	70.79	1,017.86	54.98	257.85	259.56	3.79	3.79	0.32	2.49
	NORMAL	1,100.0	31.57	70.97	1,046.09	60.57	273.99	276.62	2.41	2.39	0.55	6.80
	NORMAL	1,132.0	32.80	70.53	1,073.17	66.19	290.08	293.65	3.91	3.84	-1.38	349.03
	NORMAL	1,162.0	33.77	69.65	1,098.25	71.80	305.56	310.10	3.61	3.23	-2.93	333.16
	NORMAL	1,193.0	34.82	70.53	1,123.86	77.75	321.98	327.55	3.75	3.39	2.84	25.64
	NORMAL	1,226.0	36.40	69.82	1,150.69	84.27	340.06	346.75	4.95	4.79	-2.15	345.05
5/6/2011	NORMAL	1,265.0	38.16	69.61	1,181.72	92.46	362.21	370.36	4.52	4.51	-0.54	355.78
	NORMAL	1,349.0	38.95	70.35	1,247.41	110.38	411.40	422.68	1.09	0.94	0.88	30.57
	NORMAL	1,444.0	38.45	67.41	1,321.56	131.77	466.80	482.05	2.01	-0.53	-3.09	253.64
	NORMAL	1,539.0	38.25	65.25	1,396.06	155.43	520.78	540.96	1.43	-0.21	-2.27	260.67
	NORMAL	1,633.0	36.93	64.73	1,470.55	179.66	572.74	598.23	1.44	-1.40	-0.55	193.31
	NORMAL	1,728.0	37.72	65.78	1,546.09	203.77	625.06	655.77	1.07	0.83	1.11	39.28
	NORMAL	1,822.0	36.57	65.28	1,621.02	227.28	676.72	712.48	1.26	-1.22	-0.53	194.51
	NORMAL	1,917.0	37.90	66.04	1,696.65	250.96	729.09	769.92	1.48	1.40	0.80	19.38
	NORMAL	2,011.0	37.98	68.37	1,770.79	273.35	782.37	827.70	1.53	0.09	2.48	87.72
	NORMAL	2,105.0	37.39	67.14	1,845.18	295.10	835.55	885.16	1.02	-0.63	-1.31	231.39
	NORMAL	2,200.0	38.25	67.10	1,920.22	317.75	889.22	943.41	0.91	0.91	-0.04	358.35
	NORMAL	2,294.0	37.28	66.75	1,994.53	340.31	942.18	1,000.97	1.06	-1.03	-0.37	192.32
	NORMAL	2,389.0	37.64	66.75	2,069.94	363.12	995.27	1,058.74	0.38	0.38	0.00	0.00
	NORMAL	2,483.0	37.94	67.36	2,144.23	385.57	1,048.31	1,116.33	0.51	0.32	0.65	51.49
	NORMAL	2,578.0	38.80	67.42	2,218.71	408.24	1,102.75	1,175.30	0.91	0.91	0.06	2.50
	NORMAL	2,672.0	37.81	67.71	2,292.47	430.48	1,156.60	1,233.56	1.07	-1.05	0.31	169.82
	NORMAL	2,767.0	36.84	66.85	2,368.01	452.72	1,209.74	1,291.16	1.16	-1.02	-0.91	207.92
	NORMAL	2,861.0	37.64	66.92	2,442.85	475.05	1,262.05	1,348.04	0.85	0.85	0.07	3.06
	NORMAL	2,956.0	38.43	66.31	2,517.67	498.29	1,315.78	1,406.56	0.92	0.83	-0.64	334.32
	NORMAL	3,050.0	38.34	65.87	2,591.36	521.94	1,369.14	1,464.90	0.31	-0.10	-0.47	251.60
5/7/2011	NORMAL	3,145.0	38.47	65.83	2,665.80	546.09	1,422.99	1,523.87	0.14	0.14	-0.04	349.16
	NORMAL	3,239.0	38.95	66.92	2,739.15	569.64	1,476.84	1,582.64	0.89	0.51	1.16	55.27
	NORMAL	3,334.0	37.74	66.52	2,813.66	592.93	1,530.98	1,641.56	1.30	-1.27	-0.42	191.43
	NORMAL	3,428.0	37.83	66.95	2,887.95	615.68	1,583.89	1,699.14	0.30	0.10	0.46	71.31
	NORMAL	3,522.0	37.72	66.84	2,962.25	638.28	1,636.86	1,756.72	0.14	-0.12	-0.12	211.45
	NORMAL	3,617.0	38.15	66.39	3,037.18	661.46	1,690.46	1,815.11	0.54	0.45	-0.47	327.07
	NORMAL	3,711.0	38.69	66.57	3,110.82	684.77	1,744.02	1,873.50	0.59	0.57	0.19	11.77
	NORMAL	3,806.0	37.60	66.61	3,185.53	708.08	1,797.87	1,932.16	1.15	-1.15	0.04	178.72
	NORMAL	3,900.0	37.92	67.16	3,259.85	730.68	1,850.81	1,989.72	0.49	0.34	0.59	46.68
	NORMAL	3,995.0	38.60	66.48	3,334.44	753.84	1,904.88	2,048.53	0.84	0.72	-0.72	327.97
	NORMAL	4,089.0	37.81	66.66	3,408.31	776.95	1,958.23	2,106.65	0.85	-0.84	0.19	172.05
	NORMAL	4,184.0	38.52	67.09	3,483.00	800.01	2,012.21	2,165.35	0.80	0.75	0.45	20.69
	NORMAL	4,278.0	37.37	67.09	3,557.13	822.51	2,065.45	2,223.14	1.22	-1.22	0.00	180.00
	NORMAL	4,373.0	36.32	66.40	3,633.15	844.99	2,117.79	2,280.10	1.19	-1.11	-0.73	201.23
	NORMAL	4,467.0	35.14	66.50	3,709.46	866.93	2,168.11	2,334.97	1.26	-1.26	0.11	177.21
	NORMAL	4,562.0	34.02	66.29	3,787.67	888.52	2,217.52	2,388.87	1.19	-1.18	-0.22	185.99
	NORMAL	4,656.0	31.67	66.15	3,866.64	909.07	2,264.17	2,439.83	2.50	-2.50	-0.15	181.79
	NORMAL	4,751.0	30.86	65.43	3,947.84	929.29	2,309.14	2,489.10	0.94	-0.85	-0.76	204.46

## 2.1.2 Survey Stations (Continued)

Date	Type	MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Bulld (°/100ft)	Turn (°/100ft)	TFace (°)
5/7/2011	NORMAL	4,845.0	28.29	64.61	4,029.59	948.86	2,351.19	2,535.43	2.77	-2.73	-0.87	188.59
	NORMAL	4,940.0	26.26	63.95	4,114.02	967.75	2,390.42	2,578.88	2.16	-2.14	-0.69	188.18
	NORMAL	5,034.0	23.96	66.01	4,199.14	984.64	2,426.54	2,618.71	2.62	-2.45	2.19	160.12
	NORMAL	5,129.0	22.83	66.56	4,286.32	999.82	2,461.08	2,656.41	1.21	-1.19	0.58	169.31
	NORMAL	5,223.0	20.58	65.87	4,373.65	1,013.83	2,492.89	2,691.16	2.41	-2.39	-0.73	186.15
	NORMAL	5,318.0	18.03	68.14	4,463.31	1,026.13	2,521.78	2,722.55	2.80	-2.68	2.39	164.67
	NORMAL	5,412.0	16.37	67.54	4,553.10	1,036.61	2,547.52	2,750.35	1.78	-1.77	-0.64	185.81
	NORMAL	5,507.0	15.14	68.93	4,644.53	1,046.18	2,571.47	2,776.14	1.35	-1.29	1.46	163.61
	NORMAL	5,601.0	12.13	65.43	4,735.87	1,054.70	2,591.91	2,798.29	3.32	-3.20	-3.72	193.63
5/8/2011	NORMAL	5,696.0	11.03	65.90	4,828.94	1,062.57	2,609.29	2,817.34	1.16	-1.16	0.49	175.33
	NORMAL	5,791.0	9.58	66.13	4,922.40	1,069.48	2,624.81	2,834.33	1.53	-1.53	0.24	178.49
	NORMAL	5,885.0	8.62	66.48	5,015.22	1,075.45	2,638.42	2,849.19	1.02	-1.02	0.37	176.87
	NORMAL	5,979.0	6.81	66.91	5,108.36	1,080.45	2,650.01	2,861.80	1.93	-1.93	0.46	178.39
	NORMAL	6,074.0	5.70	71.30	5,202.80	1,084.17	2,659.66	2,872.15	1.27	-1.17	4.62	158.86
	NORMAL	6,169.0	3.52	74.75	5,297.48	1,086.45	2,666.94	2,879.75	2.31	-2.29	3.63	174.47
	NORMAL	6,263.0	1.95	59.80	5,391.37	1,088.01	2,671.11	2,884.20	1.82	-1.67	-15.90	197.09
	NORMAL	6,352.0	0.95	64.32	5,480.34	1,089.10	2,673.09	2,886.44	1.13	-1.12	5.08	175.73
	NORMAL	6,452.0	0.60	102.47	5,580.34	1,089.34	2,674.34	2,887.69	0.60	-0.35	38.15	142.22
5/9/2011	NORMAL	6,546.0	0.44	130.20	5,674.33	1,089.00	2,675.10	2,888.27	0.31	-0.17	29.50	135.80
	NORMAL	6,641.0	0.62	175.91	5,769.33	1,088.26	2,675.42	2,888.28	0.47	0.19	48.12	90.91
	NORMAL	6,735.0	0.59	178.99	5,863.32	1,087.26	2,675.46	2,887.95	0.05	-0.03	3.28	134.22
	NORMAL	6,830.0	0.85	176.32	5,958.32	1,086.07	2,675.51	2,887.55	0.28	0.27	-2.81	351.31
	NORMAL	6,924.0	0.27	21.32	6,052.31	1,085.58	2,675.64	2,887.48	1.17	-0.62	-164.89	185.95
	NORMAL	7,018.0	0.11	353.91	6,146.31	1,085.88	2,675.71	2,887.65	0.19	-0.17	-29.16	196.37
	NORMAL	7,113.0	0.09	146.38	6,241.31	1,085.91	2,675.74	2,887.70	0.20	-0.02	160.49	167.64
	NORMAL	7,207.0	0.38	259.88	6,335.31	1,085.79	2,675.48	2,887.40	0.45	0.31	120.74	124.72
	NORMAL	7,302.0	0.43	219.69	6,430.31	1,085.46	2,674.94	2,886.78	0.30	0.05	-42.31	259.48
	NORMAL	7,396.0	0.45	238.60	6,524.31	1,085.00	2,674.40	2,886.11	0.16	0.02	20.12	91.68
	NORMAL	7,491.0	0.54	240.75	6,619.30	1,084.58	2,673.69	2,885.29	0.10	0.09	2.26	12.74
	NORMAL	7,585.0	1.07	234.24	6,713.29	1,083.85	2,672.59	2,884.00	0.57	0.56	-6.93	346.94
	NORMAL	7,680.0	1.73	225.02	6,808.26	1,082.32	2,670.86	2,881.82	0.73	0.69	-9.71	336.51
	NORMAL	7,774.0	1.81	215.74	6,902.22	1,080.11	2,668.98	2,879.25	0.32	0.09	-9.87	280.92
	NORMAL	7,869.0	2.18	200.82	6,997.16	1,077.21	2,667.47	2,876.75	0.67	0.39	-15.71	297.86
	NORMAL	7,963.0	2.64	194.37	7,091.08	1,073.44	2,666.29	2,874.25	0.57	0.49	-6.86	326.23
	NORMAL	8,058.0	2.55	194.98	7,185.98	1,069.28	2,665.20	2,871.67	0.10	-0.09	0.64	163.24
5/10/2011	NORMAL	8,152.0	1.60	200.72	7,279.92	1,066.03	2,664.20	2,869.52	1.03	-1.01	6.11	170.52
	NORMAL	8,193.0	1.23	215.81	7,320.91	1,065.14	2,663.74	2,868.75	1.27	-0.90	36.80	142.17
	NORMAL	8,250.0	1.23	215.81	7,377.89	1,064.15	2,663.02	2,867.72	0.00	0.00	0.00	0.00