

1 General

1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

1.2 Well Information

Well	GM 412-23	Wellbore No.	
Well Name	GM 412-23	Common Name	GM 412-23
Project	GV 23-06S-096W	Site	MV 10-23 Pad
Vertical Section Azimuth	334.87 (°)	North Reference	True
Origin N/S		Origin E/W	
Spud Date	7/17/2011	UWI	GM 412-23
Active Datum	KB @6,002.0ft (above Mean Sea Level)		

2 Survey Name

2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	
Started	7/17/2011	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)	Bulld (°/100ft)	Turn (°/100ft)	TFace (°)
7/17/2011	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/17/2011	NORMAL	85.0	0.09	63.90	85.00	0.03	0.06	0.00	0.11	0.11	0.00	63.90
	NORMAL	177.0	1.76	320.19	176.99	1.15	-0.78	1.37	1.94	1.82	-112.73	253.48
	NORMAL	268.0	3.17	326.69	267.90	4.32	-3.06	5.21	1.58	1.55	7.14	14.47
	NORMAL	360.0	6.07	335.48	359.59	10.88	-6.47	12.60	3.24	3.15	9.55	18.13
	NORMAL	451.0	7.83	335.48	449.92	20.89	-11.04	23.61	1.93	1.93	0.00	0.00
	NORMAL	543.0	10.47	335.30	540.74	34.19	-17.14	38.23	2.87	2.87	-0.20	359.29
	NORMAL	619.0	12.05	333.47	615.28	47.56	-23.57	53.07	2.13	2.08	-2.41	346.36
	NORMAL	714.0	15.39	335.58	707.55	67.92	-33.21	75.60	3.55	3.52	2.22	9.55
	NORMAL	810.0	16.36	332.15	799.89	91.47	-44.79	101.84	1.41	1.01	-3.57	314.29
	NORMAL	874.0	18.91	333.20	860.88	108.70	-53.68	121.21	4.02	3.98	1.64	7.61
7/18/2011	NORMAL	973.0	20.49	331.58	954.08	138.26	-69.16	154.55	1.69	1.60	-1.64	340.17
	NORMAL	1,069.0	19.17	332.32	1,044.39	167.00	-84.48	187.07	1.40	-1.38	0.77	169.58
	NORMAL	1,164.0	17.70	335.38	1,134.51	193.94	-97.74	217.10	1.85	-1.55	3.22	148.09
	NORMAL	1,260.0	18.10	335.32	1,225.87	220.76	-110.05	246.60	0.42	0.42	-0.06	357.33
	NORMAL	1,356.0	17.49	334.74	1,317.27	247.36	-122.43	275.94	0.66	-0.64	-0.60	195.93
	NORMAL	1,451.0	17.03	337.08	1,408.00	273.08	-133.94	304.12	0.88	-0.48	2.46	124.64
	NORMAL	1,547.0	17.15	336.81	1,499.76	299.04	-144.99	332.31	0.15	0.12	-0.28	326.40
	NORMAL	1,642.0	16.86	338.21	1,590.60	324.71	-155.62	360.06	0.53	-0.31	1.47	125.98
	NORMAL	1,738.0	16.78	338.83	1,682.50	350.56	-165.79	387.78	0.20	-0.08	0.65	114.33
	NORMAL	1,834.0	16.99	340.60	1,774.36	376.71	-175.46	415.56	0.58	0.22	1.84	68.63

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 (°)
7/18/2011	NORMAL	1,927.0	17.10	339.32	1,863.27	402.32	-184.80	442.72	0.42	0.12	-1.38	285.73
	NORMAL	2,023.0	18.47	336.28	1,954.69	429.45	-195.90	471.99	1.72	1.43	-3.17	324.42
	NORMAL	2,118.0	17.84	332.47	2,044.96	456.13	-208.68	501.58	1.41	-0.66	-4.01	240.24
	NORMAL	2,214.0	17.97	333.97	2,136.31	482.48	-221.98	531.08	0.50	0.14	1.56	74.97
	NORMAL	2,310.0	19.51	333.53	2,227.22	510.13	-235.62	561.91	1.61	1.60	-0.46	354.55
	NORMAL	2,405.0	18.47	333.30	2,317.05	537.78	-249.45	592.81	1.10	-1.09	-0.24	184.01
	NORMAL	2,500.0	18.76	335.05	2,407.08	565.07	-262.66	623.13	0.66	0.31	1.84	63.40
	NORMAL	2,594.0	19.78	335.28	2,495.81	593.23	-275.69	654.15	1.09	1.09	0.24	4.36
	NORMAL	2,689.0	19.13	334.31	2,585.39	621.86	-289.16	685.79	0.76	-0.68	-1.02	205.97
	NORMAL	2,784.0	19.19	334.44	2,675.12	649.97	-302.64	716.97	0.08	0.06	0.14	35.48
	NORMAL	2,880.0	19.19	333.95	2,765.79	678.38	-316.38	748.53	0.17	0.00	-0.51	269.77
	NORMAL	2,975.0	18.04	333.32	2,855.82	705.55	-329.84	778.84	1.23	-1.21	-0.66	189.62
	NORMAL	3,069.0	18.49	335.18	2,945.08	732.08	-342.63	808.30	0.78	0.48	1.98	53.22
	NORMAL	3,161.0	17.71	334.00	3,032.53	757.90	-354.89	836.88	0.94	-0.85	-1.28	204.61
	NORMAL	3,257.0	18.55	335.57	3,123.76	784.93	-367.61	866.75	1.01	0.88	1.64	30.93
	NORMAL	3,352.0	19.10	335.47	3,213.68	812.83	-380.31	897.40	0.58	0.58	-0.11	356.60
7/19/2011	NORMAL	3,447.0	19.34	335.27	3,303.38	841.26	-393.34	928.67	0.26	0.25	-0.21	344.56
	NORMAL	3,543.0	19.06	335.73	3,394.05	869.98	-406.44	960.24	0.33	-0.29	0.48	151.84
	NORMAL	3,638.0	19.52	336.83	3,483.71	898.72	-419.06	991.61	0.62	0.48	1.16	38.83
	NORMAL	3,734.0	19.52	337.03	3,574.19	928.23	-431.63	1,023.67	0.07	0.00	0.21	90.09
	NORMAL	3,829.0	18.95	335.03	3,663.89	956.83	-444.33	1,054.96	0.92	-0.60	-2.11	228.20
	NORMAL	3,924.0	19.25	334.52	3,753.66	984.95	-457.58	1,086.04	0.36	0.32	-0.54	330.67
	NORMAL	4,019.0	17.88	334.01	3,843.72	1,012.19	-470.71	1,116.28	1.45	-1.44	-0.54	186.52
	NORMAL	4,114.0	17.42	333.99	3,934.24	1,038.08	-483.34	1,145.09	0.48	-0.48	-0.02	180.75
	NORMAL	4,210.0	17.50	335.49	4,025.82	1,064.13	-495.63	1,173.89	0.48	0.08	1.56	80.64
	NORMAL	4,305.0	17.42	337.09	4,116.44	1,090.23	-507.09	1,202.38	0.51	-0.08	1.68	100.22
	NORMAL	4,398.0	17.07	337.42	4,205.26	1,115.65	-517.75	1,229.93	0.39	-0.38	0.35	164.54
	NORMAL	4,494.0	15.99	338.09	4,297.29	1,140.93	-528.09	1,257.20	1.14	-1.13	0.70	170.31
	NORMAL	4,588.0	15.48	337.25	4,387.77	1,164.51	-537.78	1,282.66	0.59	-0.54	-0.89	203.66
	NORMAL	4,684.0	14.95	337.60	4,480.41	1,187.77	-547.45	1,307.83	0.56	-0.55	0.36	170.34
	NORMAL	4,779.0	14.15	337.03	4,572.36	1,209.79	-556.65	1,331.68	0.86	-0.84	-0.60	189.87
	NORMAL	4,875.0	13.19	337.00	4,665.64	1,230.68	-565.51	1,354.35	1.00	-1.00	-0.03	180.41
	NORMAL	4,970.0	12.05	337.81	4,758.34	1,249.84	-573.49	1,375.08	1.21	-1.20	0.85	171.57
7/20/2011	NORMAL	5,066.0	11.27	336.47	4,852.36	1,267.72	-581.02	1,394.47	0.86	-0.81	-1.40	198.49
	NORMAL	5,162.0	9.56	332.37	4,946.78	1,283.38	-588.46	1,411.81	1.94	-1.78	-4.27	201.43
	NORMAL	5,257.0	8.27	329.77	5,040.63	1,296.28	-595.56	1,426.50	1.42	-1.36	-2.74	196.06
	NORMAL	5,353.0	7.54	329.14	5,135.71	1,307.65	-602.27	1,439.64	0.77	-0.76	-0.66	186.46
	NORMAL	5,448.0	6.68	327.50	5,229.98	1,317.66	-608.43	1,451.33	0.93	-0.91	-1.73	192.47
	NORMAL	5,543.0	5.54	324.30	5,324.44	1,326.05	-614.08	1,461.31	1.25	-1.20	-3.37	195.05
	NORMAL	5,639.0	4.51	330.60	5,420.07	1,333.10	-618.64	1,469.63	1.22	-1.07	6.56	154.93
	NORMAL	5,735.0	3.14	331.80	5,515.86	1,338.70	-621.73	1,476.02	1.43	-1.43	1.25	177.25
	NORMAL	5,830.0	2.14	326.53	5,610.75	1,342.48	-623.94	1,480.38	1.08	-1.05	-5.55	191.02
	NORMAL	5,926.0	1.81	335.96	5,706.70	1,345.35	-625.55	1,483.66	0.48	-0.34	9.82	140.09
	NORMAL	6,021.0	1.50	336.51	5,801.66	1,347.87	-626.65	1,486.41	0.33	-0.33	0.58	177.34
	NORMAL	6,117.0	1.23	338.48	5,897.63	1,349.98	-627.53	1,488.69	0.29	-0.28	2.05	171.12
	NORMAL	6,212.0	1.14	344.04	5,992.61	1,351.83	-628.16	1,490.64	0.15	-0.09	5.85	130.81
	NORMAL	6,308.0	1.02	302.93	6,088.60	1,353.22	-629.14	1,492.31	0.80	-0.12	-42.82	241.02
	NORMAL	6,404.0	0.78	343.02	6,184.58	1,354.31	-630.05	1,493.68	0.68	-0.25	41.76	130.12
	NORMAL	6,499.0	0.71	297.02	6,279.58	1,355.19	-630.77	1,494.79	0.62	-0.07	-48.42	240.69
7/21/2011	NORMAL	6,594.0	0.53	267.90	6,374.57	1,355.44	-631.73	1,495.42	0.38	-0.19	-30.65	226.24
	NORMAL	6,690.0	0.88	198.47	6,470.57	1,354.73	-632.41	1,495.06	0.89	0.36	-72.32	255.00
	NORMAL	6,784.0	1.86	185.05	6,564.54	1,352.52	-632.77	1,493.22	1.09	1.04	-14.28	335.08
	NORMAL	6,879.0	1.49	179.83	6,659.50	1,349.75	-632.90	1,490.77	0.42	-0.39	-5.49	199.82
	NORMAL	6,975.0	1.32	180.62	6,755.47	1,347.40	-632.91	1,488.64	0.18	-0.18	0.82	173.89
	NORMAL	7,070.0	1.43	189.24	6,850.44	1,345.13	-633.11	1,486.68	0.25	0.12	9.07	66.35
	NORMAL	7,166.0	1.06	216.31	6,946.42	1,343.24	-633.83	1,485.27	0.71	-0.39	28.20	135.22
	NORMAL	7,260.0	0.81	238.85	7,040.41	1,342.19	-634.91	1,484.78	0.47	-0.27	23.98	135.13

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 (°)
7/21/2011	NORMAL	7,356.0	2.02	232.48	7,136.38	1,340.81	-636.84	1,484.35	1.27	1.26	-6.64	349.40
	NORMAL	7,450.0	1.31	218.92	7,230.34	1,338.97	-638.83	1,483.52	0.86	-0.76	-14.43	202.36
	NORMAL	7,545.0	1.23	158.92	7,325.32	1,337.17	-639.14	1,482.03	1.34	-0.08	-63.16	236.88
	NORMAL	7,641.0	1.58	157.40	7,421.29	1,334.99	-638.26	1,479.68	0.37	0.36	-1.58	353.16
	NORMAL	7,737.0	2.11	171.84	7,517.24	1,332.01	-637.50	1,476.67	0.73	0.55	15.04	48.62
	NORMAL	7,790.0	2.37	184.93	7,570.20	1,329.96	-637.46	1,474.78	1.08	0.49	24.70	69.70
	NORMAL	7,847.0	2.37	184.93	7,627.15	1,327.61	-637.66	1,472.74	0.00	0.00	0.00	0.00