

## 1 General

### 1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

### 1.2 Well/Wellbore Information

Well	PA 332-27	Wellbore No.	00
Wellbore Legal Name	PA 332-27	Common Wellbore Name	PA 332-27
Project	PA 27-06S-095W	Site	DOE 2-W-27 Pad
Vertical Section Azimuth	281.25 (°)	North reference	
Origin N/S		Origin E/W	
Spud date	10/26/2014	UWI	PA 332-27
Active datum	KB @5,882.0ft (above Mean Sea Level)		

## 2 Survey Name

### 2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	
Date Started	10/26/2014	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 (°/100ft)	Build Rate (°/100ft)	Turn (°/100ft)	Tface (°)
10/26/2014	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/26/2014	NORMAL	83.0	1.41	289.16	82.99	0.34	-0.96	1.01	1.70	1.70	0.00	289.16
	NORMAL	175.0	1.41	270.97	174.96	0.73	-3.17	3.25	0.48	0.00	-19.77	260.91
	NORMAL	268.0	2.29	290.74	267.92	1.40	-6.05	6.20	1.16	0.95	21.26	46.11
	NORMAL	360.0	4.57	279.84	359.75	2.68	-11.38	11.68	2.57	2.48	-11.85	338.55
	NORMAL	450.0	6.60	276.86	449.31	3.91	-20.05	20.42	2.28	2.26	-3.31	350.38
	NORMAL	541.0	8.45	277.73	539.53	5.44	-31.87	32.31	2.04	2.03	0.96	3.96
	NORMAL	632.0	9.33	276.24	629.43	7.14	-45.82	46.34	1.00	0.97	-1.64	344.60
	NORMAL	724.0	10.24	284.06	720.10	9.93	-61.17	61.93	1.75	0.99	8.50	59.50
	NORMAL	795.0	11.84	285.14	789.78	13.37	-74.32	75.50	2.27	2.25	1.52	7.90
	NORMAL	887.0	10.96	280.78	879.97	17.47	-92.03	93.67	1.34	-0.96	-4.74	222.28
	NORMAL	978.0	10.17	278.61	969.42	20.29	-108.47	110.34	0.97	-0.87	-2.38	205.67
	NORMAL	1,069.0	9.98	285.12	1,059.02	23.55	-124.03	126.24	1.27	-0.21	7.15	102.67
	NORMAL	1,165.0	8.15	284.30	1,153.82	27.40	-138.65	141.33	1.91	-1.91	-0.85	183.63
	NORMAL	1,260.0	8.70	280.87	1,247.80	30.42	-152.23	155.24	0.78	0.58	-3.61	315.88
	NORMAL	1,354.0	10.38	281.40	1,340.49	33.44	-167.52	170.82	1.79	1.79	0.56	3.25
	NORMAL	1,449.0	10.50	280.16	1,433.92	36.65	-184.43	188.03	0.27	0.13	-1.31	297.49
	NORMAL	1,545.0	11.78	280.53	1,528.11	39.99	-202.67	206.58	1.34	1.33	0.39	3.38
10/27/2014	NORMAL	1,640.0	10.64	278.77	1,621.30	43.10	-220.87	225.04	1.25	-1.20	-1.85	195.84
	NORMAL	1,736.0	10.82	277.19	1,715.62	45.58	-238.57	242.88	0.36	0.19	-1.65	300.68
	NORMAL	1,830.0	10.44	278.46	1,808.00	47.93	-255.75	260.19	0.47	-0.40	1.35	148.97
	NORMAL	1,926.0	9.75	282.07	1,902.52	50.91	-272.30	277.00	0.97	-0.72	3.76	139.25

## 2.1.2 Survey Stations (Continued)

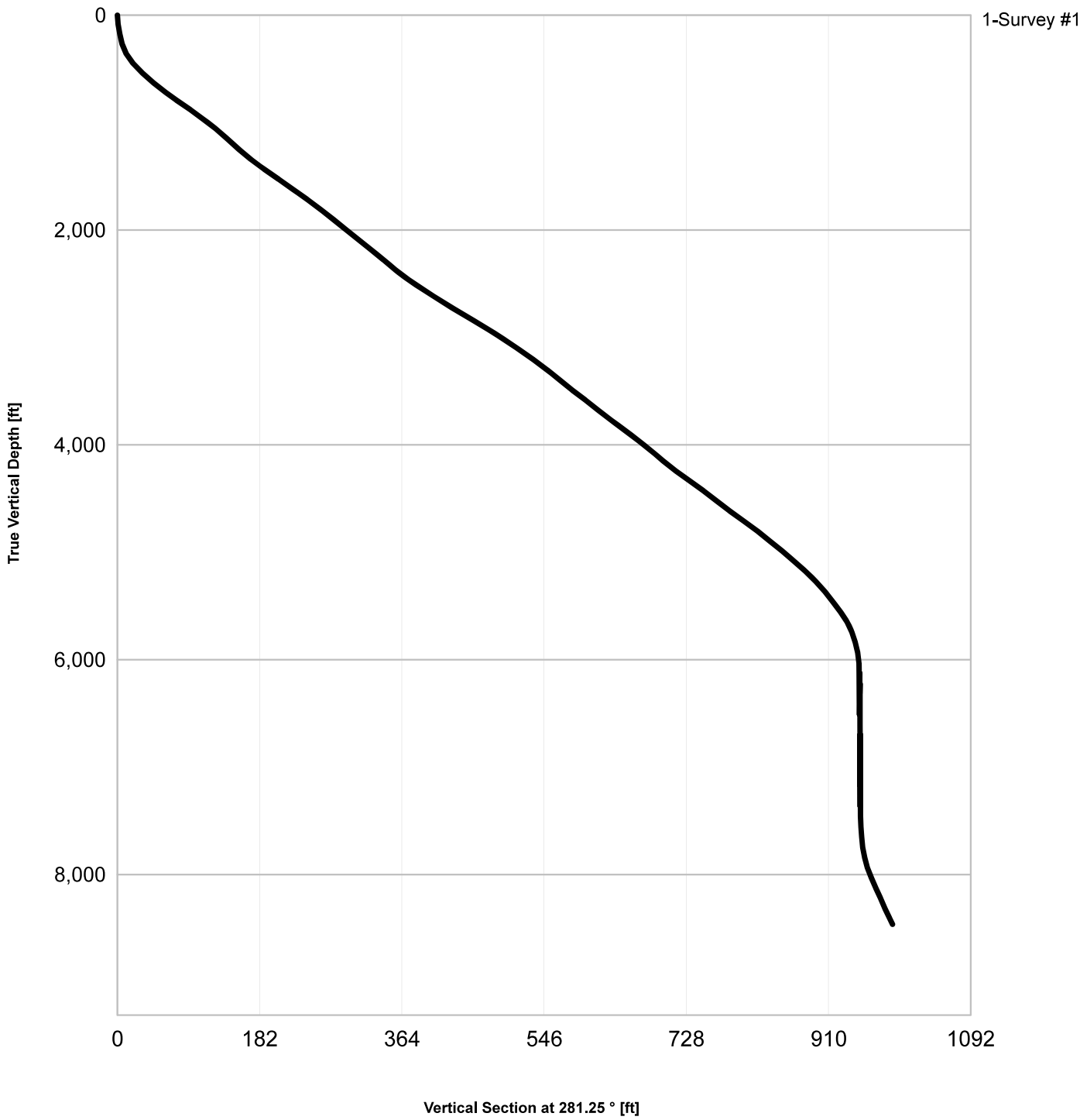
Date	Type	MD (ft)	Inc. (°)	Azi. (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. sec. (ft)	DLS (°/100ft)	Build Rate (°/100ft)	Turn (°/100ft)	Tface (°)
10/27/2014	NORMAL	2,021.0	9.17	281.24	1,996.23	54.07	-287.59	292.62	0.63	-0.61	-0.87	192.83
	NORMAL	2,115.0	10.00	281.22	2,088.91	57.12	-302.95	308.27	0.88	0.88	-0.02	359.76
	NORMAL	2,210.0	9.97	282.49	2,182.47	60.50	-319.07	324.74	0.23	-0.03	1.34	98.38
	NORMAL	2,306.0	8.97	285.36	2,277.16	64.28	-334.40	340.51	1.15	-1.04	2.99	156.13
	NORMAL	2,401.0	9.61	284.37	2,370.92	68.21	-349.22	355.82	0.69	0.67	-1.04	345.49
	NORMAL	2,495.0	11.08	284.96	2,463.39	72.49	-365.55	372.67	1.57	1.56	0.63	4.41
	NORMAL	2,590.0	12.46	283.48	2,556.39	77.24	-384.33	392.02	1.49	1.45	-1.56	346.93
	NORMAL	2,685.0	11.81	280.92	2,649.27	81.47	-403.85	411.98	0.89	-0.68	-2.69	218.38
	NORMAL	2,761.0	12.66	279.47	2,723.54	84.31	-419.70	428.08	1.19	1.12	-1.91	339.41
10/29/2014	NORMAL	2,877.0	13.62	276.96	2,836.50	88.06	-445.79	454.41	0.96	0.83	-2.16	328.05
	NORMAL	2,972.0	12.22	280.76	2,929.10	91.29	-466.78	475.62	1.72	-1.47	4.00	150.59
	NORMAL	3,067.0	11.90	279.00	3,022.00	94.70	-486.33	495.46	0.51	-0.34	-1.85	228.11
	NORMAL	3,162.0	11.23	285.43	3,115.07	98.69	-504.92	514.47	1.53	-0.71	6.77	120.59
	NORMAL	3,257.0	11.05	285.73	3,208.28	103.62	-522.60	532.77	0.20	-0.19	0.32	162.30
	NORMAL	3,353.0	9.90	277.14	3,302.69	107.14	-539.65	550.18	2.02	-1.20	-8.95	229.46
	NORMAL	3,448.0	9.35	277.48	3,396.35	109.16	-555.40	566.03	0.58	-0.58	0.36	174.27
	NORMAL	3,544.0	10.19	283.45	3,490.96	112.15	-571.39	582.29	1.37	0.88	6.22	53.30
	NORMAL	3,639.0	10.11	280.35	3,584.47	115.61	-587.77	599.03	0.58	-0.08	-3.26	260.15
	NORMAL	3,734.0	9.63	278.78	3,678.07	118.32	-603.82	615.30	0.58	-0.51	-1.65	208.51
	NORMAL	3,829.0	10.76	281.15	3,771.57	121.24	-620.38	632.11	1.27	1.19	2.49	21.54
	NORMAL	3,925.0	10.33	281.93	3,865.94	124.76	-637.59	649.68	0.47	-0.45	0.81	162.02
	NORMAL	4,020.0	9.98	281.50	3,959.46	128.16	-653.99	666.43	0.38	-0.37	-0.45	192.01
	NORMAL	4,116.0	9.59	279.89	4,054.06	131.19	-670.02	682.74	0.50	-0.41	-1.68	214.26
	NORMAL	4,211.0	9.24	278.34	4,147.78	133.66	-685.36	698.27	0.45	-0.37	-1.63	215.16
	NORMAL	4,306.0	10.52	281.10	4,241.37	136.43	-701.42	714.56	1.44	1.35	2.91	21.67
	NORMAL	4,401.0	10.96	286.32	4,334.71	140.64	-718.60	732.23	1.12	0.46	5.49	68.24
	NORMAL	4,496.0	10.47	284.35	4,428.05	145.32	-735.63	749.84	0.64	-0.52	-2.07	215.81
	NORMAL	4,591.0	10.00	282.44	4,521.54	149.23	-752.05	766.71	0.61	-0.49	-2.01	214.90
	NORMAL	4,686.0	10.74	282.67	4,614.99	152.95	-768.74	783.80	0.78	0.78	0.24	3.32
	NORMAL	4,782.0	10.73	281.58	4,709.31	156.71	-786.22	801.68	0.21	-0.01	-1.14	266.64
	NORMAL	4,877.0	10.11	279.87	4,802.74	159.91	-803.10	818.86	0.73	-0.65	-1.80	205.67
	NORMAL	4,972.0	9.75	279.65	4,896.32	162.69	-819.24	835.24	0.38	-0.38	-0.23	185.91
	NORMAL	5,067.0	9.22	285.70	4,990.02	166.10	-834.50	850.87	1.19	-0.56	6.37	120.96
	NORMAL	5,163.0	9.23	285.87	5,084.78	170.28	-849.31	866.21	0.03	0.01	0.18	69.93
	NORMAL	5,257.0	8.54	286.92	5,177.65	174.38	-863.24	880.67	0.75	-0.73	1.12	167.29
	NORMAL	5,353.0	7.57	291.19	5,272.70	178.74	-875.95	893.99	1.19	-1.01	4.45	150.43
	NORMAL	5,448.0	6.48	289.39	5,366.99	182.78	-886.85	905.46	1.17	-1.15	-1.89	190.53
	NORMAL	5,543.0	5.95	285.02	5,461.43	185.83	-896.66	915.68	0.75	-0.56	-4.60	219.59
	NORMAL	5,638.0	5.74	289.96	5,555.94	188.73	-905.88	925.29	0.57	-0.22	5.20	115.10
	NORMAL	5,733.0	4.77	297.92	5,650.54	192.20	-913.83	933.77	1.27	-1.02	8.38	146.99
	NORMAL	5,828.0	3.67	321.41	5,745.29	196.43	-919.22	939.88	2.13	-1.16	24.73	133.82
	NORMAL	5,924.0	3.23	322.00	5,841.11	200.96	-922.80	944.28	0.46	-0.46	0.61	175.68
	NORMAL	6,019.0	2.21	325.69	5,936.00	204.58	-925.48	947.61	1.09	-1.07	3.88	172.10
	NORMAL	6,115.0	1.20	354.17	6,031.96	207.11	-926.63	949.23	1.34	-1.05	29.67	153.65
	NORMAL	6,210.0	1.03	332.43	6,126.94	208.86	-927.13	950.06	0.48	-0.18	-22.88	237.48
	NORMAL	6,306.0	1.55	18.83	6,222.92	210.85	-927.11	950.43	1.17	0.54	48.33	88.01
	NORMAL	6,400.0	0.97	25.20	6,316.90	212.78	-926.36	950.07	0.63	-0.62	6.78	169.59
	NORMAL	6,496.0	0.79	23.62	6,412.89	214.12	-925.75	949.73	0.19	-0.19	-1.65	186.89
	NORMAL	6,592.0	0.28	305.58	6,508.88	214.86	-925.67	949.80	0.81	-0.53	-81.29	200.52
	NORMAL	6,687.0	0.78	232.47	6,603.88	214.60	-926.37	950.44	0.79	0.53	-76.96	265.91
	NORMAL	6,782.0	0.92	18.39	6,698.88	214.93	-926.64	950.77	1.71	0.15	153.60	161.51
	NORMAL	6,877.0	0.38	20.27	6,793.87	215.95	-926.29	950.63	0.57	-0.57	1.98	178.68
	NORMAL	6,972.0	0.81	11.26	6,888.86	216.91	-926.05	950.58	0.46	0.45	-9.48	343.19
	NORMAL	7,067.0	0.23	14.56	6,983.86	217.75	-925.88	950.57	0.61	-0.61	3.47	178.69
	NORMAL	7,162.0	0.40	16.68	7,078.86	218.25	-925.73	950.52	0.18	0.18	2.23	4.98
	NORMAL	7,257.0	0.17	330.00	7,173.86	218.69	-925.71	950.59	0.33	-0.24	-49.14	203.58
10/31/2014	NORMAL	7,257.0	0.17	330.00	7,173.86	218.69	-925.71	950.59	0.00	0.00	0.00	0.00

## 2.1.2 Survey Stations (Continued)

Date	Type	MD (ft)	Inc. (°)	Azi. (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. sec. (ft)	DLS (°/100ft)	Build Rate (°/100ft)	Turn (°/100ft)	Tface (°)
10/31/2014	NORMAL	7,352.0	0.55	7.79	7,268.85	219.27	-925.72	950.71	0.45	0.40	39.78	51.86
	NORMAL	7,448.0	0.44	5.43	7,364.85	220.09	-925.62	950.77	0.12	-0.11	-2.46	189.32
	NORMAL	7,543.0	0.44	219.79	7,459.85	220.17	-925.82	950.98	0.88	0.00	-153.31	197.18
	NORMAL	7,639.0	1.05	217.61	7,555.84	219.19	-926.59	951.55	0.64	0.64	-2.27	356.25
	NORMAL	7,734.0	1.85	214.99	7,650.81	217.25	-928.00	952.55	0.84	0.84	-2.76	353.95
	NORMAL	7,830.0	2.85	210.48	7,746.73	213.92	-930.10	953.96	1.06	1.04	-4.70	347.26
	NORMAL	7,925.0	3.72	221.08	7,841.57	209.56	-933.32	956.27	1.11	0.92	11.16	40.29
	NORMAL	8,020.0	4.46	226.76	7,936.33	204.71	-938.04	959.95	0.89	0.78	5.98	31.55
	NORMAL	8,115.0	5.34	227.30	8,030.98	199.18	-943.98	964.70	0.93	0.93	0.57	3.27
	NORMAL	8,210.0	5.92	230.79	8,125.52	193.08	-951.02	970.42	0.71	0.61	3.67	32.30
	NORMAL	8,305.0	6.05	226.19	8,220.01	186.52	-958.43	976.41	0.52	0.14	-4.84	282.87
	NORMAL	8,401.0	6.20	227.54	8,315.46	179.52	-965.91	982.37	0.22	0.16	1.41	44.51
	NORMAL	8,492.0	6.42	226.74	8,405.91	172.71	-973.24	988.23	0.26	0.24	-0.88	337.82
	NORMAL	8,550.0	6.42	226.74	8,463.54	168.27	-977.96	992.00	0.00	0.00	0.00	0.00

3 Charts

3.1 Vertical Section View



3.2 Plan View

