

# Deviation Summary

PICEANCE VLY

## 1 General

### 1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

### 1.2 Well/Wellbore Information

Well	RU 41-5	Wellbore No.	00
Wellbore Legal Name	RU 41-5	Common Wellbore Name	RU 41-5
Project	RU 05-07S-093W	Site	RU 23-5 Pad
Vertical Section Azimuth	93.14 (°)	North reference	True
Origin N/S		Origin E/W	
Spud date	12/26/2013	UWI	RU 41-5
Active datum	KB @7,627.0ft (above Mean Sea Level)		

## 2 Survey Name

### 2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	
Date Started	12/25/2013	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 (°)
12/25/2013	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/25/2013	NORMAL	85.0	0.62	120.94	85.00	-0.24	0.39	0.41	0.73	0.73	0.00	120.94
	NORMAL	178.0	2.55	116.54	177.96	-1.42	2.68	2.75	2.08	2.08	-4.73	354.19
	NORMAL	268.0	4.57	103.10	267.78	-3.13	7.96	8.12	2.41	2.24	-14.93	330.75
	NORMAL	360.0	7.30	92.99	359.28	-4.26	17.37	17.58	3.17	2.97	-10.99	333.97
	NORMAL	452.0	10.82	90.79	450.12	-4.69	31.85	32.05	3.84	3.83	-2.39	353.29
	NORMAL	524.0	12.99	93.22	520.57	-5.23	46.68	46.90	3.09	3.01	3.38	14.20
	NORMAL	616.0	15.39	90.61	609.76	-5.95	69.22	69.44	2.70	2.61	-2.84	343.80
	NORMAL	708.0	16.88	89.65	698.13	-5.99	94.78	94.97	1.65	1.62	-1.04	349.39
	NORMAL	799.0	17.76	90.88	785.00	-6.13	121.87	122.03	1.05	0.97	1.35	23.18
	NORMAL	891.0	19.03	90.07	872.30	-6.36	150.90	151.03	1.41	1.38	-0.88	348.24
	NORMAL	981.0	17.39	92.79	957.79	-7.03	179.01	179.13	2.05	-1.82	3.02	153.89
	NORMAL	1,072.0	17.67	93.69	1,044.56	-8.58	206.38	206.54	0.43	0.31	0.99	44.50
	NORMAL	1,118.0	18.03	93.16	1,088.35	-9.43	220.45	220.64	0.86	0.78	-1.15	335.46
12/26/2013	NORMAL	1,263.0	18.99	93.56	1,225.85	-12.13	266.40	266.67	0.67	0.66	0.28	7.73
	NORMAL	1,358.0	18.47	95.43	1,315.82	-14.51	296.81	297.16	0.84	-0.55	1.97	131.77
	NORMAL	1,453.0	18.10	96.19	1,406.02	-17.53	326.47	326.94	0.46	-0.39	0.80	147.56
	NORMAL	1,548.0	19.21	93.15	1,496.03	-19.98	356.74	357.30	1.55	1.17	-3.20	317.33
	NORMAL	1,643.0	19.20	92.41	1,585.74	-21.49	387.96	388.55	0.26	-0.01	-0.78	267.30
	NORMAL	1,738.0	18.29	91.23	1,675.70	-22.47	418.47	419.07	1.04	-0.96	-1.24	202.06
	NORMAL	1,834.0	18.19	91.38	1,766.88	-23.15	448.51	449.10	0.12	-0.10	0.16	154.92

## 2.1.2 Survey Stations (Continued)

Date	Type	MD (ft)	Inc. (°)	Azi. (°)	TVD (ft)	N/S (ft)	EW (ft)	V. sec. (ft)	DLS (°/100usft)	Build Rate (°/100usft)	Turn (°/100usft)	Tface (°)
12/26/2013	NORMAL	1,929.0	17.76	91.20	1,857.24	-23.81	477.82	478.40	0.46	-0.45	-0.19	187.28
	NORMAL	2,024.0	17.29	90.54	1,947.83	-24.25	506.42	506.99	0.54	-0.49	-0.69	202.61
	NORMAL	2,120.0	17.99	94.04	2,039.32	-25.43	535.47	536.06	1.32	0.73	3.65	58.25
	NORMAL	2,215.0	17.77	93.70	2,129.73	-27.40	564.58	565.23	0.26	-0.23	-0.36	205.22
	NORMAL	2,310.0	17.40	94.70	2,220.29	-29.50	593.20	593.92	0.50	-0.39	1.05	141.24
	NORMAL	2,405.0	16.62	93.82	2,311.14	-31.57	620.91	621.71	0.86	-0.82	-0.93	197.84
	NORMAL	2,501.0	17.33	94.86	2,402.95	-33.69	648.86	649.73	0.80	0.74	1.08	23.65
12/27/2013	NORMAL	2,596.0	18.62	93.79	2,493.32	-35.89	678.09	679.04	1.40	1.36	-1.13	345.13
	NORMAL	2,691.0	17.99	94.69	2,583.51	-38.10	707.84	708.87	0.73	-0.66	0.95	156.26
	NORMAL	2,787.0	17.37	95.21	2,674.97	-40.61	736.89	738.01	0.67	-0.65	0.54	165.96
	NORMAL	2,882.0	16.71	95.01	2,765.80	-43.09	764.62	765.83	0.70	-0.69	-0.21	184.98
	NORMAL	2,978.0	16.36	95.71	2,857.83	-45.64	791.82	793.13	0.42	-0.36	0.73	150.69
	NORMAL	3,074.0	15.92	94.39	2,950.05	-47.99	818.40	819.80	0.60	-0.46	-1.38	219.19
	NORMAL	3,169.0	17.06	93.69	3,041.14	-49.89	845.30	846.76	1.22	1.20	-0.74	349.78
	NORMAL	3,264.0	18.89	93.82	3,131.50	-51.81	874.55	876.08	1.93	1.93	0.14	1.32
	NORMAL	3,359.0	18.56	92.87	3,221.47	-53.59	905.00	906.57	0.47	-0.35	-1.00	222.29
	NORMAL	3,455.0	18.00	93.97	3,312.63	-55.38	935.05	936.68	0.69	-0.58	1.15	148.88
	NORMAL	3,550.0	19.36	91.33	3,402.62	-56.76	965.44	967.10	1.69	1.43	-2.78	326.87
	NORMAL	3,645.0	19.08	90.53	3,492.33	-57.27	996.71	998.35	0.40	-0.29	-0.84	222.87
	NORMAL	3,738.0	18.82	91.84	3,580.29	-57.90	1,026.90	1,028.53	0.54	-0.28	1.41	122.05
	NORMAL	3,834.0	17.78	91.89	3,671.43	-58.88	1,057.03	1,058.67	1.08	-1.08	0.05	179.16
	NORMAL	3,928.0	16.89	91.19	3,761.16	-59.63	1,085.03	1,086.66	0.97	-0.95	-0.74	192.86
	NORMAL	4,023.0	16.29	91.49	3,852.21	-60.27	1,112.14	1,113.77	0.64	-0.63	0.32	172.02
	NORMAL	4,118.0	17.67	91.49	3,943.06	-60.99	1,139.88	1,141.51	1.45	1.45	0.00	0.00
	NORMAL	4,213.0	17.50	92.81	4,033.62	-62.06	1,168.56	1,170.20	0.46	-0.18	1.39	113.72
	NORMAL	4,308.0	16.99	91.71	4,124.35	-63.18	1,196.70	1,198.36	0.64	-0.54	-1.16	212.07
	NORMAL	4,403.0	18.19	91.04	4,214.91	-63.86	1,225.40	1,227.05	1.28	1.26	-0.71	350.10
	NORMAL	4,498.0	18.18	91.24	4,305.16	-64.45	1,255.04	1,256.68	0.07	-0.01	0.21	99.20
	NORMAL	4,593.0	17.74	92.57	4,395.53	-65.42	1,284.31	1,285.97	0.63	-0.46	1.40	137.64
	NORMAL	4,688.0	16.97	92.46	4,486.21	-66.66	1,312.62	1,314.31	0.81	-0.81	-0.12	182.39
	NORMAL	4,784.0	16.36	91.49	4,578.18	-67.62	1,340.14	1,341.83	0.70	-0.64	-1.01	204.05
	NORMAL	4,879.0	17.15	91.84	4,669.14	-68.42	1,367.51	1,369.21	0.84	0.83	0.37	7.45
	NORMAL	4,975.0	18.20	93.58	4,760.61	-69.81	1,396.62	1,398.35	1.22	1.09	1.81	27.54
	NORMAL	5,070.0	17.67	93.42	4,850.99	-71.59	1,425.82	1,427.60	0.56	-0.56	-0.17	185.24
	NORMAL	5,166.0	17.07	93.69	4,942.62	-73.37	1,454.43	1,456.26	0.63	-0.63	0.28	172.48
	NORMAL	5,261.0	17.75	90.81	5,033.26	-74.47	1,482.82	1,484.67	1.16	0.72	-3.03	306.90
	NORMAL	5,357.0	17.22	91.23	5,124.83	-74.98	1,511.66	1,513.50	0.57	-0.55	0.44	166.81
12/28/2013	NORMAL	5,452.0	17.06	92.81	5,215.61	-75.97	1,539.64	1,541.49	0.52	-0.17	1.66	109.72
	NORMAL	5,548.0	16.62	92.64	5,307.49	-77.29	1,567.42	1,569.30	0.46	-0.46	-0.18	186.31
	NORMAL	5,643.0	18.47	92.02	5,398.07	-78.45	1,596.03	1,597.93	1.96	1.95	-0.65	353.94
	NORMAL	5,738.0	18.21	90.83	5,488.24	-79.19	1,625.91	1,627.81	0.48	-0.27	-1.25	234.66
	NORMAL	5,834.0	17.67	92.02	5,579.58	-79.92	1,655.47	1,657.36	0.68	-0.56	1.24	146.40
	NORMAL	5,930.0	17.06	92.37	5,671.20	-81.02	1,684.10	1,686.01	0.64	-0.64	0.36	170.45
	NORMAL	6,025.0	16.62	92.56	5,762.13	-82.20	1,711.60	1,713.53	0.47	-0.46	0.20	172.96
	NORMAL	6,120.0	16.11	93.74	5,853.28	-83.67	1,738.32	1,740.30	0.64	-0.54	1.24	147.46
	NORMAL	6,216.0	15.72	93.95	5,945.60	-85.43	1,764.59	1,766.62	0.41	-0.41	0.22	171.70
	NORMAL	6,311.0	13.53	90.28	6,037.52	-86.37	1,788.54	1,790.59	2.50	-2.31	-3.86	201.17
	NORMAL	6,407.0	13.16	92.26	6,130.92	-86.86	1,810.69	1,812.73	0.61	-0.39	2.06	129.95
12/29/2013	NORMAL	6,503.0	12.53	92.60	6,224.52	-87.76	1,832.02	1,834.07	0.66	-0.66	0.35	173.32
	NORMAL	6,599.0	12.05	91.76	6,318.32	-88.54	1,852.43	1,854.50	0.53	-0.50	-0.88	200.02
	NORMAL	6,694.0	10.73	90.00	6,411.45	-88.85	1,871.19	1,873.25	1.44	-1.39	-1.85	193.89
	NORMAL	6,790.0	9.85	87.27	6,505.90	-88.46	1,888.33	1,890.34	1.05	-0.92	-2.84	207.66
	NORMAL	6,885.0	9.23	87.51	6,599.59	-87.74	1,904.06	1,906.01	0.65	-0.65	0.25	176.45
	NORMAL	6,980.0	7.91	83.93	6,693.53	-86.72	1,918.17	1,920.04	1.50	-1.39	-3.77	200.24
	NORMAL	7,076.0	6.33	85.25	6,788.78	-85.58	1,930.01	1,931.80	1.65	-1.65	1.38	174.74
	NORMAL	7,172.0	5.98	84.72	6,884.23	-84.68	1,940.27	1,941.99	0.37	-0.36	-0.55	188.96

## 2.1.2 Survey Stations (Continued)

Date	Type	MD (ft)	Inc. (°)	Azi. (°)	TVD (ft)	N/S (ft)	EW (ft)	V. sec. (ft)	DLS (°/100usft)	Build Rate (°/100usft)	Turn (°/100usft)	Tface (°)
12/30/2013	NORMAL	7,266.0	4.84	93.34	6,977.81	-84.46	1,949.10	1,950.80	1.49	-1.21	9.17	148.75
	NORMAL	7,362.0	4.40	91.93	7,073.50	-84.82	1,956.83	1,958.53	0.47	-0.46	-1.47	193.77
	NORMAL	7,457.0	2.99	67.76	7,168.31	-84.01	1,962.76	1,964.42	2.18	-1.48	-25.44	216.21
	NORMAL	7,552.0	2.90	71.89	7,263.18	-82.32	1,967.34	1,968.90	0.24	-0.09	4.35	115.04
	NORMAL	7,648.0	2.46	79.45	7,359.08	-81.19	1,971.67	1,973.16	0.59	-0.46	7.88	144.96
	NORMAL	7,743.0	2.11	84.20	7,454.00	-80.64	1,975.42	1,976.87	0.42	-0.37	5.00	153.94
	NORMAL	7,838.0	1.76	81.82	7,548.95	-80.26	1,978.60	1,980.03	0.38	-0.37	-2.51	191.74
	NORMAL	7,933.0	1.41	61.70	7,643.91	-79.49	1,981.07	1,982.45	0.69	-0.37	-21.18	228.04
	NORMAL	8,028.0	1.25	63.12	7,738.88	-78.47	1,983.03	1,984.35	0.17	-0.17	1.49	169.07
	NORMAL	8,124.0	0.61	153.61	7,834.88	-78.46	1,984.19	1,985.51	1.45	-0.67	94.26	154.08
	NORMAL	8,219.0	1.34	179.01	7,929.86	-80.02	1,984.43	1,985.84	0.87	0.77	26.74	43.74
	NORMAL	8,315.0	0.17	325.68	8,025.85	-81.02	1,984.37	1,985.83	1.55	-1.22	152.78	176.39
12/31/2013	NORMAL	8,411.0	0.21	296.94	8,121.85	-80.83	1,984.14	1,985.58	0.11	0.04	-29.94	277.97
	NORMAL	8,507.0	0.26	229.04	8,217.85	-80.89	1,983.81	1,985.27	0.28	0.05	-70.73	245.03
	NORMAL	8,601.0	0.46	220.69	8,311.85	-81.32	1,983.41	1,984.88	0.22	0.21	-8.88	341.10
	NORMAL	8,696.0	0.44	221.92	8,406.85	-81.88	1,982.91	1,984.42	0.02	-0.02	1.29	154.83
	NORMAL	8,792.0	0.70	218.06	8,502.84	-82.61	1,982.31	1,983.86	0.27	0.27	-4.02	349.67
	NORMAL	8,886.0	1.23	190.02	8,596.83	-84.06	1,981.78	1,983.41	0.74	0.56	-29.83	303.70
	NORMAL	8,982.0	1.06	198.63	8,692.81	-85.91	1,981.31	1,983.05	0.25	-0.18	8.97	138.91
1/2/2014	NORMAL	9,077.0	1.89	203.36	8,787.78	-88.18	1,980.41	1,982.27	0.88	0.87	4.98	10.71
	NORMAL	9,171.0	2.34	207.20	8,881.71	-91.31	1,978.92	1,980.95	0.50	0.48	4.09	19.41
	NORMAL	9,266.0	1.14	238.18	8,976.67	-93.54	1,977.23	1,979.39	1.56	-1.26	32.61	156.70
	NORMAL	9,361.0	1.23	237.48	9,071.65	-94.58	1,975.57	1,977.78	0.10	0.09	-0.74	350.51
	NORMAL	9,456.0	1.66	226.51	9,166.62	-96.08	1,973.71	1,976.01	0.54	0.45	-11.55	321.68
	NORMAL	9,551.0	1.73	206.62	9,261.58	-98.31	1,972.07	1,974.49	0.62	0.07	-20.94	266.78
	NORMAL	9,647.0	2.11	208.04	9,357.52	-101.16	1,970.59	1,973.17	0.40	0.40	1.48	7.85
	NORMAL	9,741.0	2.64	208.47	9,451.44	-104.59	1,968.74	1,971.52	0.56	0.56	0.46	2.14
1/3/2014	NORMAL	9,835.0	3.52	208.91	9,545.31	-109.02	1,966.32	1,969.34	0.94	0.94	0.47	1.76
	NORMAL	9,931.0	3.52	210.06	9,641.13	-114.15	1,963.42	1,966.72	0.07	0.00	1.20	90.57
	NORMAL	10,025.0	4.48	201.18	9,734.90	-120.07	1,960.64	1,964.28	1.21	1.02	-9.45	322.69
	NORMAL	10,121.0	4.40	199.16	9,830.61	-127.05	1,958.08	1,962.10	0.18	-0.08	-2.10	241.90
	NORMAL	10,215.0	4.31	198.63	9,924.34	-133.80	1,955.77	1,960.16	0.10	-0.10	-0.56	203.83
	NORMAL	10,319.0	4.13	198.98	10,028.05	-141.05	1,953.30	1,958.10	0.17	-0.17	0.34	172.03