

Deviation Summary

PICEANCE VLY

1 General

1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

1.2 Well/Wellbore Information

Well	RU 311-5	Wellbore No.	00
Wellbore Legal Name	RU 311-5	Common Wellbore Name	RU 311-5
Project	RU 05-07S-093W	Site	RU 23-5 Pad
Vertical Section Azimuth	261.08 (°)	North reference	True
Origin N/S		Origin E/W	
Spud date	12/14/2013	UWI	RU 311-5
Active datum	KB @7,627.0ft (above Mean Sea Level)		

2 Survey Name

2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	scientific
Date Started	12/14/2013	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 (°)
12/14/2013	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/14/2013	NORMAL	88.0	0.97	297.51	88.00	0.34	-0.66	0.60	1.10	1.10	0.00	297.51
	NORMAL	183.0	2.20	264.02	182.96	0.53	-3.19	3.07	1.57	1.29	-35.25	305.47
12/15/2013	NORMAL	268.0	4.22	253.21	267.82	-0.55	-7.80	7.80	2.47	2.38	-12.72	337.87
	NORMAL	360.0	7.13	259.98	359.36	-2.52	-16.67	16.86	3.24	3.16	7.36	16.34
	NORMAL	452.0	10.65	262.62	450.24	-4.61	-30.73	31.07	3.85	3.83	2.87	7.92
	NORMAL	544.0	14.60	262.09	540.00	-7.29	-50.65	51.17	4.30	4.29	-0.58	358.06
	NORMAL	636.0	16.98	260.60	628.52	-11.08	-75.39	76.20	2.62	2.59	-1.62	349.61
	NORMAL	708.0	17.85	259.37	697.22	-14.84	-96.61	97.74	1.31	1.21	-1.71	336.48
	NORMAL	799.0	18.73	259.90	783.62	-19.97	-124.70	126.29	0.98	0.97	0.58	10.95
	NORMAL	891.0	20.01	261.00	870.42	-25.03	-154.79	156.80	1.45	1.39	1.20	16.43
	NORMAL	981.0	20.95	260.56	954.73	-30.07	-185.88	188.29	1.06	1.04	-0.49	350.49
	NORMAL	1,072.0	19.54	262.73	1,040.10	-34.67	-217.02	219.77	1.76	-1.55	2.38	152.98
12/15/2013	NORMAL	1,108.0	19.70	262.80	1,074.01	-36.19	-229.01	231.85	0.45	0.44	0.19	8.39
12/16/2013	NORMAL	1,283.0	19.96	261.04	1,238.64	-44.54	-287.78	291.21	0.37	0.15	-1.01	292.70
	NORMAL	1,357.0	20.09	261.61	1,308.16	-48.36	-312.83	316.55	0.32	0.18	0.77	56.60
	NORMAL	1,453.0	20.00	262.27	1,398.35	-52.97	-345.41	349.45	0.25	-0.09	0.69	112.00
	NORMAL	1,548.0	20.22	259.81	1,487.56	-58.06	-377.67	382.10	0.92	0.23	-2.59	283.42
	NORMAL	1,643.0	19.96	259.73	1,576.78	-63.86	-409.78	414.73	0.28	-0.27	-0.08	186.00
	NORMAL	1,738.0	20.28	258.30	1,665.98	-70.09	-441.86	447.38	0.62	0.34	-1.51	302.37
	NORMAL	1,833.0	19.26	261.04	1,755.38	-75.87	-473.46	479.50	1.45	-1.07	2.88	139.02

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 (°)
12/17/2013	NORMAL	1,928.0	19.14	261.36	1,845.10	-80.65	-504.33	510.74	0.17	-0.13	0.34	138.90
	NORMAL	2,024.0	19.01	261.68	1,935.83	-85.27	-535.36	542.11	0.17	-0.14	0.33	141.34
	NORMAL	2,119.0	18.73	259.65	2,025.72	-90.25	-565.68	572.83	0.75	-0.29	-2.14	245.94
	NORMAL	2,214.0	18.62	258.14	2,115.72	-96.11	-595.52	603.23	0.52	-0.12	-1.59	256.47
	NORMAL	2,309.0	18.81	261.62	2,205.70	-101.46	-625.52	633.69	1.19	0.20	3.66	81.99
	NORMAL	2,405.0	19.84	262.62	2,296.29	-105.81	-656.99	665.45	1.13	1.07	1.04	18.28
	NORMAL	2,501.0	19.81	263.61	2,386.60	-109.71	-689.31	697.99	0.35	-0.03	1.03	95.57
	NORMAL	2,595.0	20.13	261.81	2,474.95	-113.79	-721.15	730.07	0.74	0.34	-1.91	296.65
	NORMAL	2,691.0	20.05	261.31	2,565.11	-118.63	-753.77	763.05	0.20	-0.08	-0.52	244.79
	NORMAL	2,786.0	19.70	261.92	2,654.45	-123.34	-785.72	795.34	0.43	-0.37	0.64	149.64
	NORMAL	2,882.0	19.61	262.45	2,744.86	-127.73	-817.71	827.63	0.21	-0.09	0.55	117.04
	NORMAL	2,977.0	19.42	262.53	2,834.40	-131.88	-849.17	859.35	0.20	-0.20	0.08	172.03
	NORMAL	3,073.0	18.99	262.01	2,925.06	-136.12	-880.47	890.92	0.48	-0.45	-0.54	201.45
	NORMAL	3,169.0	19.06	261.34	3,015.81	-140.66	-911.43	922.22	0.24	0.07	-0.70	287.45
	NORMAL	3,264.0	18.61	261.38	3,105.73	-145.26	-941.75	952.89	0.47	-0.47	0.04	178.38
	NORMAL	3,359.0	18.64	261.13	3,195.75	-149.88	-971.74	983.23	0.09	0.03	-0.26	290.47
	NORMAL	3,454.0	18.34	261.39	3,285.85	-154.45	-1,001.52	1,013.35	0.33	-0.32	0.27	164.75
	NORMAL	3,550.0	17.94	260.78	3,377.08	-159.08	-1,031.04	1,043.24	0.46	-0.42	-0.64	205.11
	NORMAL	3,645.0	17.50	260.43	3,467.57	-163.80	-1,059.57	1,072.15	0.48	-0.46	-0.37	193.44
	NORMAL	3,738.0	19.02	259.65	3,555.88	-168.85	-1,088.27	1,101.29	1.66	1.63	-0.84	350.49
	NORMAL	3,833.0	18.20	260.85	3,645.91	-173.99	-1,118.14	1,131.60	0.95	-0.86	1.26	155.53
	NORMAL	3,928.0	18.94	259.70	3,735.97	-179.11	-1,147.96	1,161.85	0.87	0.78	-1.21	333.12
	NORMAL	4,023.0	20.66	259.11	3,825.35	-185.03	-1,179.59	1,194.01	1.82	1.81	-0.62	353.09
	NORMAL	4,118.0	20.34	258.63	3,914.33	-191.45	-1,212.23	1,227.26	0.38	-0.34	-0.51	207.49
12/18/2013	NORMAL	3,740.0			3,544.22	-178.36	-1,147.14	1,160.93	0.00	5.38	0.00	180.00
	NORMAL	4,213.0	19.79	258.49	4,007.87	-194.50	-1,226.40	1,241.72	4.18	4.18	0.00	258.49
	NORMAL	4,308.0	20.22	258.20	4,097.14	-201.07	-1,258.22	1,274.18	0.46	0.45	-0.31	346.87
	NORMAL	4,403.0	20.40	259.99	4,186.24	-207.30	-1,290.60	1,307.14	0.68	0.19	1.88	74.68
	NORMAL	4,498.0	20.58	260.60	4,275.22	-212.91	-1,323.38	1,340.39	0.29	0.19	0.64	50.16
	NORMAL	4,593.0	20.31	259.99	4,364.24	-218.50	-1,356.09	1,373.57	0.36	-0.28	-0.64	217.99
	NORMAL	4,688.0	18.38	264.05	4,453.88	-222.92	-1,387.22	1,405.01	2.48	-2.03	4.27	147.03
	NORMAL	4,783.0	17.59	263.68	4,544.23	-226.05	-1,416.39	1,434.31	0.84	-0.83	-0.39	188.05
	NORMAL	4,879.0	18.20	265.33	4,635.59	-228.87	-1,445.75	1,463.75	0.83	0.64	1.72	40.52
	NORMAL	4,974.0	18.03	266.76	4,725.88	-230.91	-1,475.22	1,493.18	0.50	-0.18	1.51	111.60
	NORMAL	5,070.0	19.35	267.90	4,816.82	-232.33	-1,505.94	1,523.75	1.43	1.38	1.19	16.01
	NORMAL	5,165.0	19.03	267.10	4,906.54	-233.69	-1,537.14	1,554.78	0.44	-0.34	-0.84	219.03
	NORMAL	5,261.0	20.18	264.35	4,996.97	-236.11	-1,569.25	1,586.88	1.54	1.20	-2.86	319.96
	NORMAL	5,356.0	20.05	263.50	5,086.18	-239.57	-1,601.74	1,619.51	0.34	-0.14	-0.89	245.63
	NORMAL	5,452.0	19.54	264.59	5,176.51	-242.95	-1,634.07	1,651.98	0.66	-0.53	1.14	144.62
	NORMAL	5,548.0	19.18	264.79	5,267.08	-245.89	-1,665.76	1,683.74	0.38	-0.38	0.21	169.66
	NORMAL	5,642.0	20.40	263.07	5,355.53	-249.27	-1,697.40	1,715.52	1.44	1.30	-1.83	333.67
	NORMAL	5,738.0	20.22	263.15	5,445.56	-253.27	-1,730.48	1,748.82	0.19	-0.19	0.08	171.27
12/19/2013	NORMAL	5,833.0	19.79	259.66	5,534.83	-258.11	-1,762.60	1,781.31	1.34	-0.45	-3.67	248.56
	NORMAL	5,929.0	18.51	259.02	5,625.51	-263.93	-1,793.55	1,812.79	1.35	-1.33	-0.67	189.01
	NORMAL	6,024.0	18.07	256.27	5,715.72	-270.30	-1,822.67	1,842.54	1.02	-0.46	-2.89	241.68
	NORMAL	6,120.0	16.36	260.52	5,807.42	-276.06	-1,850.47	1,870.90	2.21	-1.78	4.43	145.68
	NORMAL	6,215.0	14.85	264.29	5,898.91	-279.48	-1,875.78	1,896.43	1.91	-1.59	3.97	147.92
12/20/2013	NORMAL	6,311.0	12.89	264.73	5,992.11	-281.69	-1,898.69	1,919.40	2.04	-2.04	0.46	177.13
	NORMAL	6,407.0	12.57	264.03	6,085.75	-283.76	-1,919.74	1,940.52	0.37	-0.33	-0.73	205.39
	NORMAL	6,502.0	11.52	258.14	6,178.66	-286.78	-1,939.31	1,960.32	1.70	-1.11	-6.20	226.64
	NORMAL	6,598.0	9.82	256.56	6,273.00	-290.66	-1,956.65	1,978.06	1.80	-1.77	-1.65	188.99
	NORMAL	6,694.0	8.67	257.23	6,367.75	-294.16	-1,971.67	1,993.44	1.20	-1.20	0.70	174.98
	NORMAL	6,790.0	7.30	253.92	6,462.82	-297.45	-1,984.59	2,006.71	1.50	-1.43	-3.45	196.92
	NORMAL	6,885.0	5.88	257.19	6,557.19	-300.20	-1,995.14	2,017.55	1.55	-1.49	3.44	168.82
	NORMAL	6,980.0	3.87	266.99	6,651.84	-301.45	-2,003.08	2,025.60	2.28	-2.12	10.32	162.33
	NORMAL	7,075.0	2.37	283.46	6,746.70	-301.16	-2,008.20	2,030.60	1.82	-1.58	17.34	157.19

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 (°)
12/20/2013	NORMAL	7,171.0	0.84	308.89	6,842.66	-300.25	-2,010.67	2,032.91	1.72	-1.59	26.49	167.38
	NORMAL	7,266.0	0.62	269.31	6,937.65	-299.82	-2,011.73	2,033.89	0.56	-0.23	-41.66	227.49
12/21/2013	NORMAL	7,362.0	0.84	241.77	7,033.64	-300.16	-2,012.87	2,035.07	0.42	0.23	-28.69	287.82
	NORMAL	7,457.0	1.36	237.99	7,128.63	-301.09	-2,014.44	2,036.76	0.55	0.55	-3.98	350.16
	NORMAL	7,552.0	0.97	235.73	7,223.61	-302.14	-2,016.06	2,038.52	0.41	-0.41	-2.38	185.59
	NORMAL	7,648.0	0.66	226.82	7,319.60	-302.97	-2,017.13	2,039.72	0.35	-0.32	-9.28	197.82
	NORMAL	7,743.0	0.30	356.34	7,414.60	-303.10	-2,017.55	2,040.15	0.93	-0.38	136.34	164.78
	NORMAL	7,838.0	0.40	107.04	7,509.59	-302.95	-2,017.25	2,039.82	0.61	0.11	116.53	139.71
	NORMAL	7,933.0	0.26	79.64	7,604.59	-303.01	-2,016.72	2,039.31	0.22	-0.15	-28.84	215.27
	NORMAL	8,028.0	0.51	140.73	7,699.59	-303.30	-2,016.24	2,038.88	0.47	0.26	64.31	91.72
	NORMAL	8,124.0	0.41	133.34	7,795.59	-303.86	-2,015.72	2,038.46	0.12	-0.10	-7.70	207.02
	NORMAL	8,219.0	0.44	184.23	7,890.59	-304.46	-2,015.50	2,038.33	0.39	0.03	53.57	111.20
	NORMAL	8,315.0	0.34	53.93	7,986.58	-304.66	-2,015.29	2,038.16	0.74	-0.10	-135.73	201.45
	NORMAL	8,410.0	0.97	31.12	8,081.58	-303.80	-2,014.65	2,037.39	0.70	0.66	-24.01	325.84
12/22/2013	NORMAL	1,198.0	18.73	87.47	1,001.36	-408.06	-3,213.10	3,237.51	0.00	-0.25	-0.78	58.80
	NORMAL	1,262.0	19.45	87.19	1,061.84	-407.08	-3,192.19	3,216.70	1.13	1.13	-0.44	352.62
	NORMAL	1,358.0	18.41	89.44	1,152.65	-406.15	-3,161.06	3,185.81	1.32	-1.08	2.34	146.00
	NORMAL	1,453.0	18.38	88.88	1,242.80	-405.71	-3,131.09	3,156.13	0.19	-0.03	-0.59	260.10
12/23/2013	NORMAL	9,076.0	0.70	191.26	8,736.59	-428.08	-1,928.06	1,971.12	0.24	-0.23	1.34	177.85
	NORMAL	9,171.0	0.91	185.02	8,831.58	-429.40	-1,928.24	1,971.50	0.24	0.22	-6.57	334.20
	NORMAL	9,266.0	0.78	197.34	8,926.57	-430.77	-1,928.50	1,971.97	0.23	-0.14	12.97	131.64
	NORMAL	9,361.0	0.86	192.92	9,021.56	-432.08	-1,928.85	1,972.52	0.11	0.08	-4.65	319.44
	NORMAL	9,456.0	1.23	198.38	9,116.54	-433.75	-1,929.33	1,973.25	0.40	0.39	5.75	17.80
	NORMAL	9,551.0	1.47	194.21	9,211.52	-435.90	-1,929.95	1,974.20	0.27	0.25	-4.39	335.64
	NORMAL	9,646.0	1.76	203.12	9,306.48	-438.42	-1,930.82	1,975.45	0.40	0.31	9.38	45.40
	NORMAL	9,741.0	1.76	194.24	9,401.44	-441.17	-1,931.75	1,976.80	0.29	0.00	-9.35	265.56
	NORMAL	9,835.0	1.93	205.06	9,495.39	-444.01	-1,932.78	1,978.25	0.41	0.18	11.51	69.46
	NORMAL	9,930.0	2.46	216.22	9,590.32	-447.10	-1,934.66	1,980.59	0.71	0.56	11.75	44.55
	NORMAL	10,025.0	2.58	221.15	9,685.23	-450.36	-1,937.27	1,983.67	0.26	0.13	5.19	63.51
	NORMAL	10,120.0	3.01	221.41	9,780.11	-453.84	-1,940.33	1,987.23	0.45	0.45	0.27	1.82
	NORMAL	10,260.0	2.99	220.35	9,919.92	-459.38	-1,945.13	1,992.83	0.04	-0.01	-0.76	249.65