

1 General

1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

1.2 Well Information

Well	KP 431-17	Wellbore No.	
Well Name	KP 431-17	Common Name	KP 431-17
Project	KP 08-06S-91W	Site	KP 24-8 Pad
Vertical Section Azimuth	133.10 (°)	North Reference	True
Origin N/S		Origin E/W	
Spud Date	1/14/2012	UWI	KP 431-17
Active Datum	KB @6,552.0ft (above Mean Sea Level)		

2 Survey Name

2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	
Date Started	1/14/2012	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 (°)
1/14/2012	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/14/2012	NORMAL	105.0	1.67	172.88	104.99	-1.52	0.19	1.18	1.59	1.59	0.00	172.88
	NORMAL	135.0	2.55	169.45	134.96	-2.61	0.37	2.05	2.96	2.93	-11.43	350.12
	NORMAL	165.0	2.82	164.71	164.93	-3.98	0.68	3.22	1.16	0.90	-15.80	318.18
	NORMAL	195.0	3.61	160.40	194.88	-5.58	1.19	4.68	2.75	2.63	-14.37	340.83
	NORMAL	226.0	3.61	154.34	225.82	-7.38	1.94	6.46	1.23	0.00	-19.55	266.98
1/15/2012	NORMAL	257.0	3.78	144.32	256.76	-9.09	2.96	8.37	2.15	0.55	-32.32	279.71
	NORMAL	286.0	5.19	138.08	285.67	-10.84	4.40	10.62	5.14	4.86	-21.52	337.78
	NORMAL	317.0	6.77	136.58	316.50	-13.21	6.59	13.84	5.12	5.10	-4.84	353.60
	NORMAL	347.0	8.01	135.18	346.25	-15.98	9.28	17.69	4.18	4.13	-4.67	351.04
	NORMAL	377.0	9.68	134.65	375.89	-19.23	12.55	22.30	5.57	5.57	-1.77	356.94
	NORMAL	408.0	10.38	132.63	406.42	-22.96	16.46	27.70	2.53	2.26	-6.52	332.32
	NORMAL	438.0	11.17	132.28	435.89	-26.74	20.59	33.31	2.64	2.63	-1.17	355.09
	NORMAL	469.0	12.23	130.08	466.24	-30.87	25.33	39.59	3.71	3.42	-7.10	336.09
	NORMAL	499.0	13.28	129.02	495.50	-35.09	30.44	46.20	3.59	3.50	-3.53	346.92
	NORMAL	529.0	13.81	128.50	524.67	-39.49	35.92	53.21	1.81	1.77	-1.73	346.81
	NORMAL	600.0	15.64	129.44	593.33	-50.84	49.94	71.20	2.60	2.58	1.32	7.89
	NORMAL	692.0	18.36	128.53	681.31	-67.75	70.86	98.03	2.97	2.96	-0.99	353.98
	NORMAL	782.0	21.67	130.27	765.86	-87.33	94.63	128.76	3.74	3.68	1.93	11.02
	NORMAL	874.0	22.88	130.70	850.99	-109.97	121.15	163.60	1.33	1.32	0.47	7.87
	NORMAL	965.0	23.75	130.46	934.56	-133.40	148.51	199.58	0.96	0.96	-0.26	353.66

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 (°)
1/15/2012	NORMAL	1,061.0	22.28	134.39	1,022.92	-158.68	176.22	237.09	2.21	-1.53	4.09	135.53
	NORMAL	1,157.0	22.80	133.50	1,111.59	-184.21	202.72	273.88	0.65	0.54	-0.93	326.32
	NORMAL	1,253.0	20.88	136.30	1,200.70	-209.39	228.03	309.57	2.27	-2.00	2.92	152.81
	NORMAL	1,265.0	21.04	135.80	1,211.90	-212.48	231.01	313.86	2.00	1.33	-4.17	311.58
1/16/2012	NORMAL	1,265.0	21.04	135.80	1,211.90	-212.48	231.01	313.86	0.00	0.00	0.00	0.00
	NORMAL	1,341.0	21.10	136.00	1,282.82	-232.10	250.03	341.15	0.12	0.08	0.26	50.25
	NORMAL	1,437.0	21.50	132.30	1,372.27	-256.37	275.04	376.00	1.46	0.42	-3.85	284.84
	NORMAL	1,532.0	21.50	130.90	1,460.66	-279.48	301.08	410.80	0.54	0.00	-1.47	269.35
	NORMAL	1,627.0	21.60	132.70	1,549.02	-302.74	327.09	445.68	0.70	0.11	1.89	82.24
	NORMAL	1,723.0	21.90	131.80	1,638.19	-326.66	353.42	481.25	0.47	0.31	-0.94	311.55
	NORMAL	1,818.0	21.80	133.40	1,726.36	-350.59	379.45	516.60	0.64	-0.11	1.68	100.27
	NORMAL	1,913.0	21.60	132.80	1,814.63	-374.59	405.09	551.73	0.31	-0.21	-0.63	227.69
1/17/2012	NORMAL	2,009.0	22.30	134.10	1,903.67	-399.27	431.14	587.61	0.89	0.73	1.35	35.37
	NORMAL	2,105.0	22.60	133.20	1,992.39	-424.57	457.66	624.27	0.48	0.31	-0.94	310.70
	NORMAL	2,200.0	22.70	131.80	2,080.07	-449.29	484.64	660.85	0.58	0.11	-1.47	279.86
	NORMAL	2,295.0	22.40	134.60	2,167.81	-474.21	511.19	697.27	1.17	-0.32	2.95	106.90
	NORMAL	2,391.0	20.90	135.60	2,257.03	-499.29	536.20	732.66	1.61	-1.56	1.04	166.65
	NORMAL	2,487.0	21.00	135.10	2,346.69	-523.71	560.32	766.96	0.21	0.10	-0.52	298.99
	NORMAL	2,582.0	21.50	134.90	2,435.23	-548.06	584.67	801.37	0.53	0.53	-0.21	351.66
	NORMAL	2,677.0	22.10	134.10	2,523.43	-572.78	609.83	836.64	0.70	0.63	-0.84	333.29
	NORMAL	2,768.0	22.90	133.00	2,607.51	-596.77	635.07	871.46	0.99	0.88	-1.21	331.74
	NORMAL	2,862.0	21.70	131.80	2,694.47	-620.83	661.40	907.13	1.37	-1.28	-1.28	200.23
	NORMAL	2,958.0	22.20	131.10	2,783.52	-644.58	688.30	943.00	0.59	0.52	-0.73	332.05
	NORMAL	3,053.0	20.80	133.00	2,871.90	-667.88	714.16	977.80	1.65	-1.47	2.00	154.44
	NORMAL	3,149.0	21.60	132.30	2,961.41	-691.40	739.70	1,012.52	0.87	0.83	-0.73	342.11
	NORMAL	3,244.0	19.80	133.90	3,050.27	-714.33	764.23	1,046.09	1.99	-1.89	1.68	163.30
	NORMAL	3,340.0	18.70	138.40	3,140.91	-737.11	786.16	1,077.68	1.92	-1.15	4.69	128.66
	NORMAL	3,436.0	17.40	134.10	3,232.18	-758.61	806.69	1,107.36	1.94	-1.35	-4.48	223.67
	NORMAL	3,530.0	16.40	137.10	3,322.13	-778.11	825.82	1,134.65	1.41	-1.06	3.19	140.34
	NORMAL	3,625.0	13.90	137.80	3,413.82	-796.39	842.62	1,159.40	2.64	-2.63	0.74	176.15
	NORMAL	3,721.0	12.80	138.40	3,507.22	-812.89	857.42	1,181.48	1.15	-1.15	0.63	173.11
	NORMAL	3,816.0	11.90	136.20	3,600.02	-827.83	871.19	1,201.74	1.07	-0.95	-2.32	206.53
	NORMAL	3,912.0	10.80	136.30	3,694.14	-841.48	884.25	1,220.61	1.15	-1.15	0.10	179.02
	NORMAL	4,007.0	9.20	138.80	3,787.70	-853.63	895.41	1,237.05	1.74	-1.68	2.63	166.05
	NORMAL	4,102.0	6.20	145.30	3,881.83	-863.56	903.33	1,249.63	3.28	-3.16	6.84	167.02
	NORMAL	4,198.0	4.80	137.80	3,977.39	-870.80	908.98	1,258.70	1.64	-1.46	-7.81	203.48
	NORMAL	4,293.0	4.60	132.60	4,072.07	-876.32	914.45	1,266.47	0.50	-0.21	-5.47	242.28
1/18/2012	NORMAL	4,388.0	3.70	142.20	4,166.82	-881.32	919.14	1,273.30	1.19	-0.95	10.11	147.06
	NORMAL	4,483.0	3.20	133.40	4,261.65	-885.57	922.94	1,278.98	0.77	-0.53	-9.26	222.31
	NORMAL	4,578.0	2.80	131.90	4,356.52	-888.94	926.60	1,283.95	0.43	-0.42	-1.58	190.36
	NORMAL	4,674.0	2.50	132.70	4,452.42	-891.92	929.88	1,288.39	0.31	-0.31	0.83	173.37
	NORMAL	4,769.0	1.20	136.70	4,547.36	-894.05	932.09	1,291.46	1.37	-1.37	4.21	176.32
	NORMAL	4,865.0	0.80	315.60	4,643.36	-894.30	932.31	1,291.79	2.08	-0.42	186.35	179.56
	NORMAL	4,959.0	0.90	331.50	4,737.35	-893.19	931.49	1,290.43	0.27	0.11	16.91	75.11
	NORMAL	5,054.0	1.10	348.50	4,832.33	-891.64	930.96	1,288.98	0.37	0.21	17.89	64.71
	NORMAL	5,149.0	1.60	9.10	4,927.31	-889.43	930.98	1,287.50	0.73	0.53	21.68	54.76
	NORMAL	5,244.0	1.10	319.50	5,022.28	-887.43	930.60	1,285.85	1.28	-0.53	-52.21	223.36
	NORMAL	5,339.0	1.10	290.10	5,117.27	-886.42	929.15	1,284.10	0.59	0.00	-30.95	255.30
	NORMAL	5,436.0	0.90	298.20	5,214.25	-885.74	927.61	1,282.51	0.25	-0.21	8.35	148.75
	NORMAL	5,529.0	0.20	166.90	5,307.25	-885.56	927.00	1,281.94	1.12	-0.75	-141.18	188.28
	NORMAL	5,624.0	0.30	58.10	5,402.25	-885.59	927.25	1,282.14	0.43	0.11	-114.53	223.75
	NORMAL	5,720.0	0.70	170.10	5,498.25	-886.03	927.56	1,282.68	0.89	0.42	116.67	130.90
	NORMAL	5,815.0	0.70	169.20	5,593.24	-887.17	927.77	1,283.61	0.01	0.00	-0.95	269.55
	NORMAL	5,910.0	0.70	129.80	5,688.23	-888.12	928.33	1,284.66	0.50	0.00	-41.47	250.30
1/19/2012	NORMAL	6,005.0	0.50	202.80	5,783.23	-888.87	928.61	1,285.38	0.77	-0.21	76.84	139.19
	NORMAL	6,101.0	0.20	3.50	5,879.23	-889.09	928.46	1,285.42	0.72	-0.31	167.40	174.52
	NORMAL	6,195.0	1.10	149.30	5,973.22	-889.70	928.93	1,286.18	1.35	0.96	155.11	150.88

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 (°)
1/19/2012	NORMAL	6,288.0	0.90	138.30	6,066.21	-891.01	929.87	1,287.76	0.30	-0.22	-11.83	218.42
	NORMAL	6,383.0	0.90	200.70	6,161.20	-892.27	930.11	1,288.79	0.98	0.00	65.68	121.20
1/20/2012	NORMAL	6,478.0	0.50	222.70	6,256.19	-893.27	929.56	1,289.08	0.50	-0.42	23.16	156.77
	NORMAL	6,572.0	0.30	290.90	6,350.19	-893.48	929.05	1,288.85	0.51	-0.21	72.55	144.37
	NORMAL	6,668.0	0.70	358.20	6,446.19	-892.81	928.80	1,288.21	0.67	0.42	70.10	92.65
	NORMAL	6,764.0	0.90	7.00	6,542.18	-891.47	928.87	1,287.35	0.24	0.21	9.17	36.01
	NORMAL	6,859.0	1.30	10.10	6,637.16	-889.67	929.15	1,286.32	0.43	0.42	3.26	10.01
	NORMAL	6,955.0	1.90	17.90	6,733.12	-887.09	929.83	1,285.05	0.66	0.63	8.13	23.88
1/21/2012	NORMAL	7,050.0	2.00	13.80	6,828.07	-883.98	930.71	1,283.57	0.18	0.11	-4.32	303.57
	NORMAL	7,144.0	1.50	14.00	6,922.02	-881.19	931.40	1,282.17	0.53	-0.53	0.21	179.40
	NORMAL	7,240.0	1.20	299.80	7,018.00	-879.47	930.83	1,280.58	1.71	-0.31	-77.29	224.55
	NORMAL	7,335.0	0.60	19.30	7,112.99	-878.51	930.13	1,279.41	1.31	-0.63	83.68	151.59
	NORMAL	7,431.0	1.00	33.30	7,208.98	-877.33	930.76	1,279.06	0.46	0.42	14.58	33.16
	NORMAL	7,526.0	1.60	36.30	7,303.96	-875.57	932.00	1,278.77	0.64	0.63	3.16	7.97
	NORMAL	7,555.0	1.90	36.30	7,332.95	-874.86	932.52	1,278.66	1.03	1.03	0.00	0.00
	NORMAL	7,600.0	1.90	36.30	7,377.92	-873.66	933.41	1,278.49	0.00	0.00	0.00	0.00