

Deviation Summary

PICEANCE HL

1 General

1.1 Customer Information

Company	PICEANCE HL
Representative	
Address	

1.2 Well/Wellbore Information

Well	AP 321-20-695	Wellbore No.	00
Wellbore Legal Name	AP 321-20-695	Common Wellbore Name	AP 321-20-695
Project	AP 20-06S-095W	Site	AP 21-20-695 Pad
Vertical Section Azimuth	267.10 (°)	North reference	
Origin N/S		Origin E/W	
Spud date	7/24/2014	UWI	AP 321-20-695
Active datum	KB @6,935.0ft (above Mean Sea Level)		

2 Survey Name

2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	
Date Started	7/24/2014	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 (°/100usft)	Build Rate (°/100usft)	Turn (°/100usft)	Tface (°)
7/24/2014	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/24/2014	NORMAL	104.0	0.62	262.88	104.00	-0.07	-0.56	0.56	0.60	0.60	0.00	262.88
	NORMAL	134.0	1.23	278.35	133.99	-0.04	-1.04	1.04	2.18	2.03	51.57	30.12
	NORMAL	164.0	1.67	273.43	163.98	0.03	-1.79	1.79	1.52	1.47	-16.40	341.73
	NORMAL	195.0	2.20	265.87	194.97	0.01	-2.84	2.83	1.89	1.71	-24.39	330.47
	NORMAL	224.0	2.90	259.45	223.94	-0.16	-4.11	4.12	2.60	2.41	-22.14	334.57
	NORMAL	255.0	3.43	267.28	254.89	-0.35	-5.81	5.82	2.20	1.71	25.26	43.16
	NORMAL	285.0	3.96	267.80	284.83	-0.43	-7.74	7.75	1.77	1.77	1.73	3.88
	NORMAL	315.0	4.49	263.94	314.75	-0.59	-9.95	9.96	2.00	1.77	-12.87	329.85
	NORMAL	345.0	4.93	262.71	344.65	-0.88	-12.39	12.42	1.50	1.47	-4.10	346.46
	NORMAL	375.0	5.63	264.64	374.52	-1.18	-15.14	15.18	2.41	2.33	6.43	15.20
	NORMAL	406.0	6.16	265.34	405.35	-1.46	-18.31	18.36	1.73	1.71	2.26	8.07
	NORMAL	436.0	6.86	262.53	435.16	-1.82	-21.69	21.75	2.56	2.33	-9.37	334.13
7/25/2014	NORMAL	466.0	7.65	264.55	464.92	-2.25	-25.45	25.53	2.77	2.63	6.73	18.90
	NORMAL	496.0	7.83	269.91	494.65	-2.44	-29.48	29.57	2.48	0.60	17.87	78.66
	NORMAL	527.0	8.36	270.09	525.34	-2.44	-33.85	33.93	1.71	1.71	0.58	2.83
	NORMAL	534.0	8.62	270.48	532.26	-2.43	-34.88	34.96	3.80	3.71	5.57	12.68
	NORMAL	564.0	9.05	271.36	561.91	-2.36	-39.49	39.56	1.50	1.43	2.93	17.88
	NORMAL	594.0	9.63	271.36	591.51	-2.24	-44.36	44.41	1.93	1.93	0.00	0.00
	NORMAL	624.0	10.15	269.16	621.06	-2.22	-49.51	49.56	2.14	1.73	-7.33	322.91
	NORMAL	655.0	10.51	267.84	651.56	-2.37	-55.07	55.11	1.39	1.16	-4.26	326.02

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)	Bulld Rate ("/100usft)	Turn ("/100usft)	Tface (")
7/25/2014	NORMAL	685.0	11.12	268.72	681.03	-2.54	-60.69	60.74	2.11	2.03	2.93	15.58
	NORMAL	715.0	12.04	268.02	710.42	-2.71	-66.71	66.76	3.10	3.07	-2.33	350.97
	NORMAL	745.0	12.79	269.42	739.71	-2.85	-73.16	73.21	2.69	2.50	4.67	22.55
	NORMAL	775.0	13.49	269.07	768.93	-2.94	-79.98	80.02	2.35	2.33	-1.17	353.34
	NORMAL	806.0	13.89	268.90	799.05	-3.07	-87.31	87.36	1.30	1.29	-0.55	354.17
	NORMAL	836.0	14.29	266.96	828.15	-3.34	-94.61	94.66	2.06	1.33	-6.47	309.32
	NORMAL	866.0	14.86	266.87	857.18	-3.74	-102.15	102.21	1.90	1.90	-0.30	357.68
	NORMAL	926.0	16.00	267.58	915.02	-4.51	-118.09	118.17	1.93	1.90	1.18	9.75
	NORMAL	956.0	16.53	268.37	943.82	-4.81	-126.49	126.57	1.91	1.77	2.63	23.04
	NORMAL	1,052.0	16.22	264.68	1,035.93	-6.44	-153.49	153.62	1.13	-0.32	-3.84	251.64
	NORMAL	1,148.0	16.88	265.91	1,127.95	-8.68	-180.75	180.95	0.78	0.69	1.27	28.35
	NORMAL	1,243.0	18.37	264.59	1,218.49	-11.08	-209.41	209.70	1.62	1.57	-1.38	344.47
	NORMAL	1,339.0	17.67	267.05	1,309.78	-13.25	-239.02	239.38	1.08	-0.73	2.56	133.77
	NORMAL	1,435.0	16.22	270.21	1,401.61	-13.95	-266.98	267.34	1.79	-1.51	3.29	149.08
	NORMAL	1,531.0	16.92	270.48	1,493.62	-13.79	-294.36	294.68	0.73	0.73	0.28	6.41
	NORMAL	1,625.0	17.76	269.60	1,583.35	-13.77	-322.37	322.65	0.94	0.89	-0.94	342.24
	NORMAL	1,721.0	17.10	268.90	1,674.94	-14.15	-351.12	351.39	0.72	-0.69	-0.73	197.29
	NORMAL	1,817.0	16.40	270.39	1,766.87	-14.33	-378.79	379.03	0.86	-0.73	1.55	149.18
	NORMAL	1,912.0	17.32	269.07	1,857.79	-14.46	-406.34	406.55	1.05	0.97	-1.39	336.77
	NORMAL	2,008.0	15.82	267.84	1,949.80	-15.19	-433.70	433.92	1.60	-1.56	-1.28	192.57
	NORMAL	2,102.0	15.60	267.40	2,040.29	-16.25	-459.13	459.37	0.27	-0.23	-0.47	208.23
7/26/2014	NORMAL	2,197.0	16.40	266.08	2,131.61	-17.74	-485.28	485.55	0.93	0.84	-1.39	334.91
	NORMAL	2,291.0	17.45	265.82	2,221.53	-19.68	-512.57	512.91	1.12	1.12	-0.28	355.75
	NORMAL	2,387.0	16.26	265.64	2,313.41	-21.75	-540.33	540.74	1.24	-1.24	-0.19	182.43
	NORMAL	2,482.0	15.60	264.94	2,404.76	-23.89	-566.32	566.80	0.72	-0.69	-0.74	195.89
	NORMAL	2,550.0	16.09	263.62	2,470.18	-25.74	-584.79	585.34	0.89	0.72	-1.94	323.03
7/27/2014	NORMAL	2,677.0	16.84	263.97	2,591.97	-29.63	-620.57	621.28	0.60	0.59	0.28	7.70
	NORMAL	2,774.0	17.14	261.78	2,684.73	-33.15	-648.69	649.54	0.73	0.31	-2.26	294.07
	NORMAL	2,870.0	16.88	264.85	2,776.54	-36.42	-676.57	677.55	0.97	-0.27	3.20	107.61
	NORMAL	2,967.0	16.04	266.70	2,869.56	-38.46	-703.98	705.02	1.02	-0.87	1.91	148.92
	NORMAL	3,063.0	15.91	265.38	2,961.85	-40.28	-730.34	731.44	0.40	-0.14	-1.38	249.68
	NORMAL	3,160.0	15.74	263.97	3,055.18	-42.73	-756.67	757.87	0.43	-0.18	-1.45	245.47
	NORMAL	3,257.0	16.44	266.79	3,148.38	-44.88	-783.46	784.73	1.08	0.72	2.91	49.51
	NORMAL	3,353.0	16.84	265.38	3,240.36	-46.76	-810.89	812.21	0.59	0.42	-1.47	314.05
	NORMAL	3,450.0	16.09	267.23	3,333.38	-48.55	-838.32	839.70	0.94	-0.77	1.91	145.93
	NORMAL	3,546.0	16.13	266.26	3,425.61	-50.06	-864.91	866.34	0.28	0.04	-1.01	277.99
	NORMAL	3,643.0	16.61	268.72	3,518.68	-51.25	-892.22	893.67	0.87	0.49	2.54	56.49
	NORMAL	3,739.0	16.13	267.31	3,610.79	-52.18	-919.26	920.72	0.65	-0.50	-1.47	218.95
	NORMAL	3,835.0	15.96	266.08	3,703.05	-53.71	-945.74	947.25	0.40	-0.18	-1.28	242.84
	NORMAL	3,932.0	16.22	266.87	3,796.25	-55.36	-972.58	974.13	0.35	0.27	0.81	40.48
7/28/2014	NORMAL	4,028.0	16.00	266.17	3,888.48	-56.97	-999.17	1,000.77	0.31	-0.23	-0.73	221.11
	NORMAL	4,125.0	15.91	265.47	3,981.75	-58.92	-1,025.76	1,027.43	0.22	-0.09	-0.72	244.60
	NORMAL	4,221.0	16.00	269.07	4,074.05	-60.17	-1,052.10	1,053.80	1.03	0.09	3.75	86.54
	NORMAL	4,318.0	15.91	268.81	4,167.31	-60.66	-1,078.76	1,080.45	0.12	-0.09	-0.27	218.33
	NORMAL	4,412.0	16.00	268.11	4,257.69	-61.36	-1,104.59	1,106.28	0.23	0.10	-0.74	294.73
	NORMAL	4,508.0	16.00	265.38	4,349.98	-62.86	-1,131.00	1,132.74	0.78	0.00	-2.84	268.69
	NORMAL	4,603.0	16.09	267.23	4,441.28	-64.55	-1,157.20	1,158.99	0.55	0.09	1.95	80.91
	NORMAL	4,699.0	16.40	266.61	4,533.44	-66.00	-1,184.02	1,185.84	0.37	0.32	-0.65	330.48
	NORMAL	4,794.0	16.75	265.56	4,624.50	-67.85	-1,211.06	1,212.94	0.48	0.37	-1.11	318.94
	NORMAL	4,890.0	16.35	268.28	4,716.52	-69.33	-1,238.35	1,240.28	0.91	-0.42	2.83	118.60
	NORMAL	4,985.0	16.70	267.67	4,807.60	-70.28	-1,265.36	1,267.29	0.41	0.37	-0.64	333.34
	NORMAL	5,079.0	16.84	266.96	4,897.60	-71.55	-1,292.45	1,294.42	0.26	0.15	-0.76	304.01
	NORMAL	5,175.0	16.75	266.28	4,989.50	-73.19	-1,320.14	1,322.15	0.23	-0.09	-0.73	245.68
	NORMAL	5,270.0	16.84	265.91	5,080.45	-75.07	-1,347.53	1,349.60	0.14	0.09	-0.37	311.50
	NORMAL	5,365.0	16.09	267.40	5,171.56	-76.65	-1,374.40	1,376.52	0.91	-0.79	1.57	151.33
	NORMAL	5,461.0	15.87	265.82	5,263.85	-78.21	-1,400.78	1,402.95	0.51	-0.23	-1.65	242.41

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 (°)
7/28/2014	NORMAL	5,557.0	15.82	265.03	5,356.20	-80.30	-1,426.91	1,429.15	0.23	-0.05	-0.82	256.57
	NORMAL	5,652.0	14.99	267.14	5,447.79	-82.03	-1,452.08	1,454.37	1.05	-0.87	2.22	146.98
	NORMAL	5,748.0	13.41	268.54	5,540.85	-82.93	-1,475.61	1,477.92	1.68	-1.65	1.46	168.41
	NORMAL	5,843.0	12.97	267.49	5,633.34	-83.68	-1,497.28	1,499.59	0.53	-0.46	-1.11	208.06
7/29/2014	NORMAL	5,939.0	12.75	264.32	5,726.94	-85.20	-1,518.58	1,520.95	0.77	-0.23	-3.30	251.14
	NORMAL	6,035.0	12.62	270.13	5,820.60	-86.23	-1,539.61	1,542.00	1.34	-0.14	6.05	98.65
	NORMAL	6,130.0	12.53	267.75	5,913.32	-86.61	-1,560.29	1,562.67	0.55	-0.09	-2.51	258.99
	NORMAL	6,226.0	12.62	266.26	6,007.02	-87.70	-1,581.16	1,583.57	0.35	0.09	-1.55	284.78
	NORMAL	6,321.0	11.34	267.40	6,099.95	-88.80	-1,600.84	1,603.29	1.37	-1.35	1.20	170.08
	NORMAL	6,417.0	10.99	266.17	6,194.13	-89.84	-1,619.40	1,621.87	0.44	-0.36	-1.28	213.63
	NORMAL	6,512.0	10.20	265.56	6,287.51	-91.10	-1,636.82	1,639.34	0.84	-0.83	-0.64	187.78
	NORMAL	6,607.0	9.36	262.83	6,381.13	-92.71	-1,652.88	1,655.45	1.01	-0.88	-2.87	207.56
	NORMAL	6,702.0	8.00	259.93	6,475.04	-94.83	-1,667.05	1,669.71	1.50	-1.43	-3.05	196.41
	NORMAL	6,797.0	7.43	259.58	6,569.18	-97.10	-1,679.60	1,682.36	0.60	-0.60	-0.37	184.54
	NORMAL	6,890.0	6.99	258.09	6,661.44	-99.36	-1,691.05	1,693.91	0.51	-0.47	-1.60	202.29
	NORMAL	6,985.0	6.55	268.37	6,755.79	-100.70	-1,702.12	1,705.04	1.35	-0.46	10.82	115.01
7/30/2014	NORMAL	7,080.0	5.58	266.08	6,850.25	-101.17	-1,712.15	1,715.07	1.05	-1.02	-2.41	192.87
	NORMAL	7,176.0	3.91	263.10	6,945.92	-101.88	-1,720.06	1,723.01	1.76	-1.74	-3.10	186.91
	NORMAL	7,271.0	4.09	260.19	7,040.69	-102.85	-1,726.61	1,729.60	0.29	0.19	-3.06	310.11
	NORMAL	7,366.0	3.47	274.52	7,135.49	-103.20	-1,732.81	1,735.82	1.18	-0.65	15.08	130.29
	NORMAL	7,462.0	3.65	272.94	7,231.30	-102.82	-1,738.76	1,741.74	0.21	0.19	-1.65	330.62
	NORMAL	7,557.0	2.29	287.62	7,326.17	-102.09	-1,743.59	1,746.52	1.63	-1.43	15.45	157.98
7/31/2014	NORMAL	7,653.0	2.33	283.57	7,422.09	-101.05	-1,747.32	1,750.19	0.18	0.04	-4.22	281.74
	NORMAL	7,747.0	2.15	323.12	7,516.03	-99.19	-1,750.23	1,753.01	1.62	-0.19	42.07	116.14
	NORMAL	7,843.0	1.89	320.22	7,611.97	-96.53	-1,752.33	1,754.96	0.29	-0.27	-3.02	200.02
	NORMAL	7,938.0	2.59	336.40	7,706.90	-93.36	-1,754.19	1,756.66	0.99	0.74	17.03	50.38
	NORMAL	8,034.0	2.07	323.21	7,802.82	-89.98	-1,756.09	1,758.40	0.77	-0.54	-13.74	219.42
	NORMAL	8,129.0	2.81	348.88	7,897.73	-86.33	-1,757.57	1,759.69	1.37	0.78	27.02	69.17
	NORMAL	8,224.0	2.55	343.95	7,992.63	-82.01	-1,758.60	1,760.50	0.37	-0.27	-5.19	219.12
	NORMAL	8,319.0	2.42	339.21	8,087.54	-78.10	-1,759.90	1,761.60	0.26	-0.14	-4.99	235.33
	NORMAL	8,415.0	1.14	352.30	8,183.49	-75.26	-1,760.75	1,762.30	1.39	-1.33	13.64	168.85
	NORMAL	8,511.0	0.79	329.37	8,279.48	-73.75	-1,761.21	1,762.69	0.54	-0.36	-23.89	216.73
	NORMAL	8,606.0	0.61	300.61	8,374.47	-72.93	-1,761.98	1,763.41	0.41	-0.19	-30.27	228.99
	NORMAL	8,701.0	0.79	261.43	8,469.47	-72.77	-1,763.06	1,764.49	0.53	0.19	-41.24	270.28
	NORMAL	8,796.0	1.41	251.93	8,564.45	-73.23	-1,764.82	1,766.27	0.68	0.65	-10.00	338.82
	NORMAL	8,892.0	2.02	237.26	8,660.41	-74.51	-1,767.37	1,768.87	0.78	0.64	-15.28	316.77
8/1/2014	NORMAL	8,987.0	2.64	230.40	8,755.33	-76.81	-1,770.46	1,772.08	0.71	0.65	-7.22	332.33
	NORMAL	9,080.0	1.58	213.70	8,848.26	-79.24	-1,772.82	1,774.56	1.31	-1.14	-17.96	201.95
	NORMAL	9,175.0	1.85	206.41	8,943.22	-81.70	-1,774.23	1,776.09	0.36	0.28	-7.67	317.38
	NORMAL	9,270.0	1.85	202.28	9,038.17	-84.49	-1,775.50	1,777.50	0.14	0.00	-4.35	267.94
	NORMAL	9,364.0	2.46	204.30	9,132.11	-87.74	-1,776.90	1,779.07	0.65	0.65	2.15	8.11
	NORMAL	9,459.0	2.81	197.79	9,227.01	-91.81	-1,778.45	1,780.82	0.48	0.37	-6.85	316.18
	NORMAL	9,545.0	3.03	199.73	9,312.89	-95.96	-1,779.86	1,782.44	0.28	0.26	2.26	25.16
	NORMAL	9,650.0	3.03	199.37	9,417.75	-101.19	-1,781.72	1,784.56	0.02	0.00	-0.34	269.82