

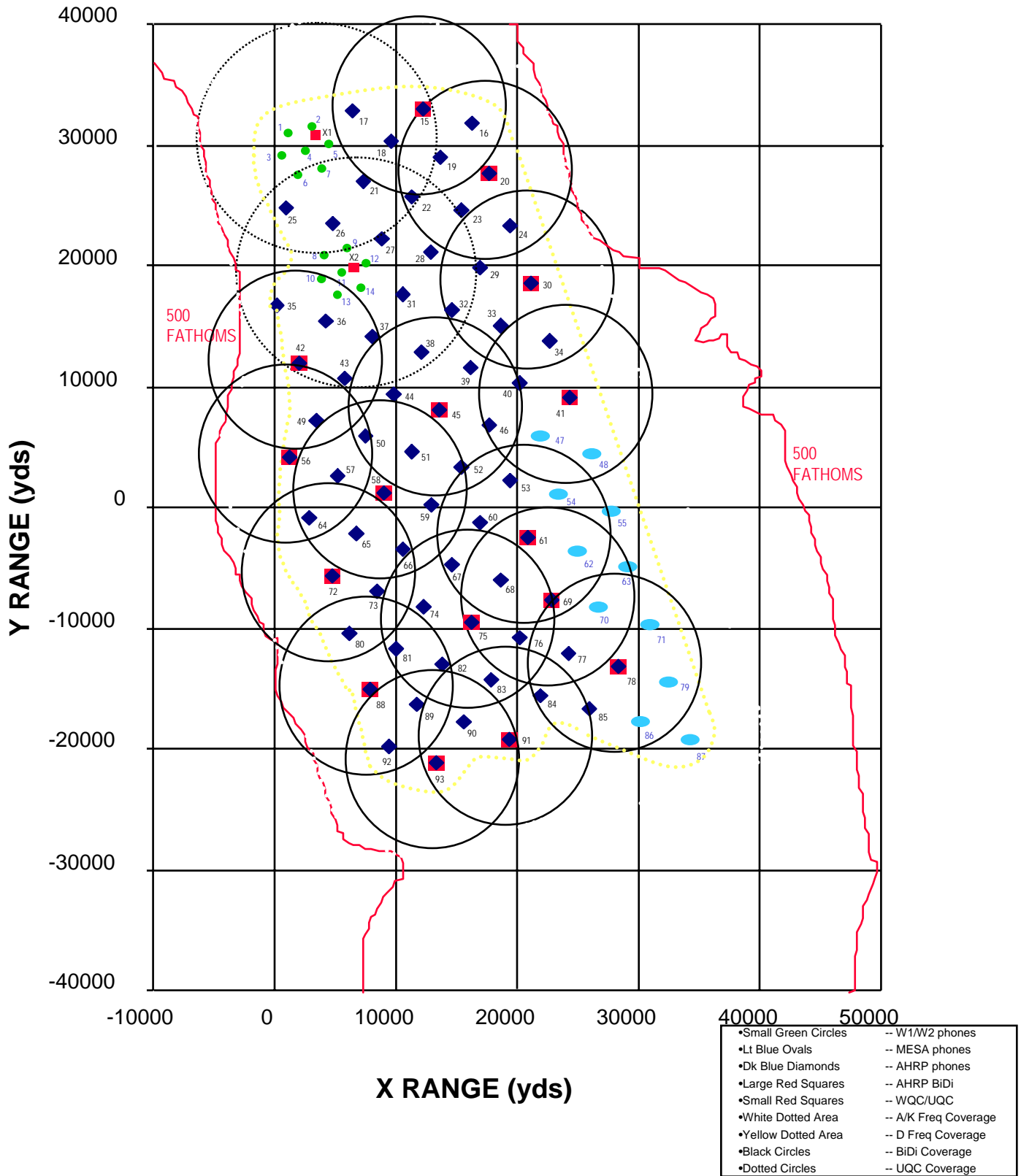
Useful properties of the new AHRP array at AUTECH

Distilled by GG from a number of emails/conversations with Dave Devau
Sept 30, 2004

- About 70 phones available (see layouts at bottom)
- Dynamic range: 96dB, limited from the bottom by sea noise
- Bandwidth: 50Hz – 40 kHz
- Each channel is capable to drive a 50 Ω circuit
- Channels are gain-matched to better than 1dB, relative gains cannot change with time because there are no replaceable gain stages in the system
- There is NO offset introduced by the DAC/driver system
- Time delays between channels are well below 10 μ s (1/100kHz)
- The IRIG-B signal provided by AUTECH is AM encoded and they can drive many (certainly >2) 50 Ω channels



AHRP LAYOUT





AHRP STRING CONFIGURATION

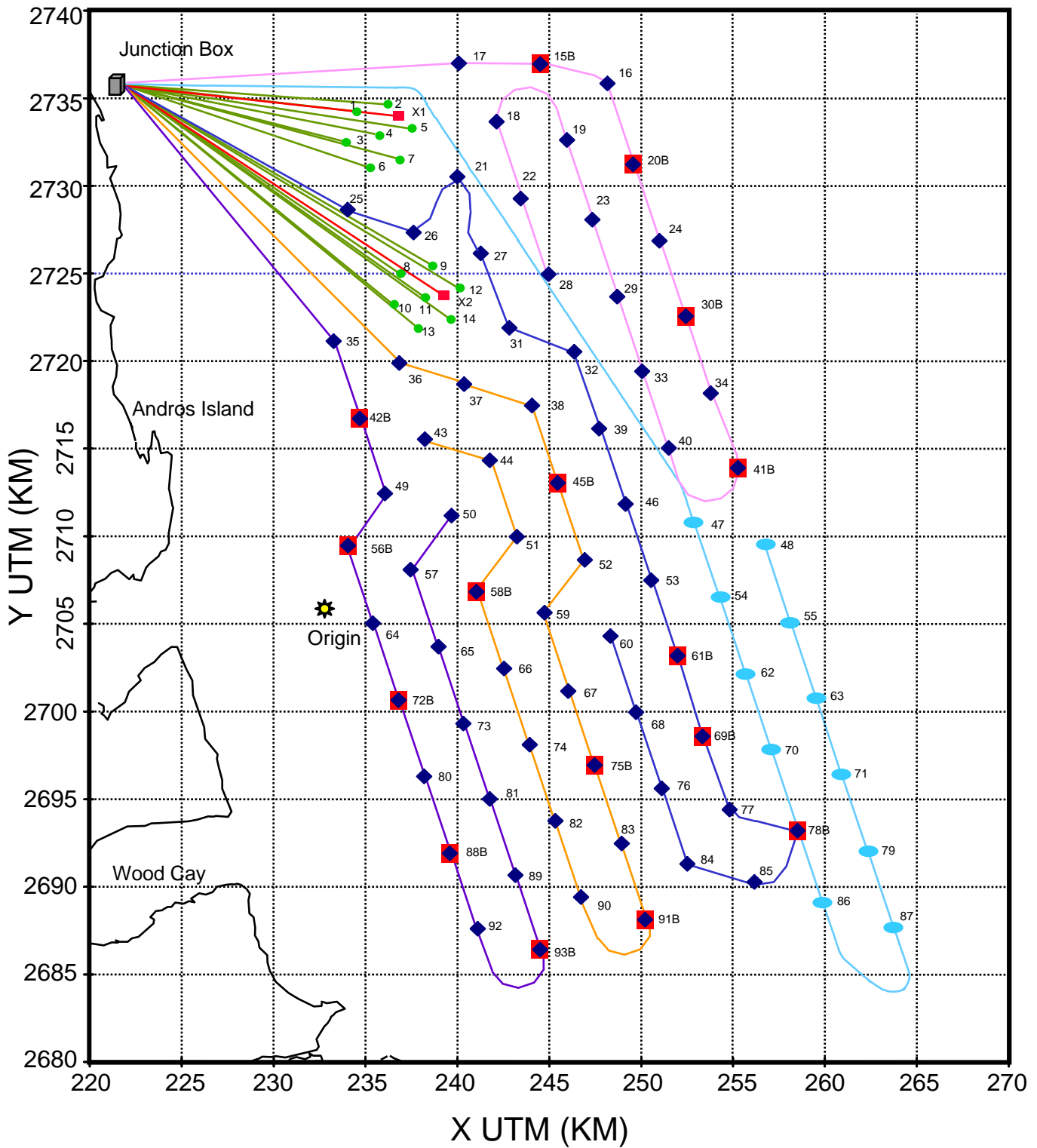


Table 3-1

AHRP HYDROPHONE COORDINATES

(Sources: References 38 and 8; see text, Section 3.1)

Phone ID	AUTEC Hyd Config File, Ver 1.7			WGS 84 (G873) Geodetic Coordinates							Depth (m)
	X (m)	Y (m)	Z (m)	North Latitude			West Longitude			Ellipsoid Height (m)	
				(deg)	(min)	(sec)	(deg)	(min)	(sec)		
01	1020.11	28371.36	-1835.17	24	41	59.9948	77	37	30.5758	-1800.81	1771.65
02	2779.49	28781.80	-1892.34	24	42	13.3384	77	36	27.9639	-1855.61	1826.45
03	509.24	26628.20	-1693.15	24	41	3.3076	77	37	48.7580	-1666.41	1637.25
04	2224.71	27084.86	-1835.31	24	41	18.1671	77	36	47.7170	-1806.27	1777.11
05	4000.82	27455.21	-1937.63	24	41	30.2084	77	35	44.5133	-1906.13	1876.97
06	1846.84	25186.47	-1750.21	24	40	16.4426	77	37	1.1722	-1729.11	1699.95
07	3494.90	25700.54	-1875.60	24	40	33.1607	77	36	2.5326	-1851.74	1822.59
08	3764.78	19111.19	-1719.57	24	36	58.9246	77	35	52.9968	-1718.83	1689.68
09	5525.43	19618.12	-1794.77	24	37	15.3930	77	34	50.3766	-1791.20	1762.05
10	3445.45	17327.13	-1687.30	24	36	0.9259	77	36	4.3688	-1691.87	1662.71
11	5128.55	17797.78	-1760.08	24	36	16.2161	77	35	4.5155	-1762.21	1733.06
12	6888.25	18410.46	-1826.04	24	36	36.1156	77	34	1.9308	-1824.77	1795.61
13	4781.66	16049.44	-1726.56	24	35	19.3795	77	35	16.8723	-1733.62	1704.47
14	6548.93	16557.88	-1801.22	24	35	35.8916	77	34	14.0287	-1805.41	1776.25
15B	11033.70	31243.58	-1682.89	24	43	33.2018	77	31	34.1683	-1625.58	1596.42
16	14771.92	30010.90	-1430.28	24	42	52.9778	77	29	21.1861	-1371.36	1342.21
17	6058.40	30897.10	-1954.35	24	43	22.0811	77	34	31.2438	-1905.40	1876.24
18	8885.46	27856.96	-1869.02	24	41	43.1856	77	32	50.6949	-1830.83	1801.68
19	12503.06	26756.01	-1754.26	24	41	7.2881	77	30	42.0089	-1714.75	1685.59
20B	16300.74	25645.78	-1595.82	24	40	31.0470	77	28	26.9457	-1552.32	1523.17
21	6458.68	24672.24	-1901.21	24	39	59.6998	77	34	17.1009	-1879.12	1849.97
22	10348.25	23495.87	-1825.95	24	39	21.3707	77	31	58.7599	-1803.21	1774.05
23	13959.87	22451.00	-1748.49	24	38	47.2910	77	29	50.3278	-1722.65	1693.50
24	17860.69	21336.59	-1666.82	24	38	10.9086	77	27	31.6360	-1635.10	1605.94
25	813.12	22682.11	-1557.98	24	38	55.0091	77	37	37.9547	-1546.54	1517.39
26	4322.16	21618.80	-1795.05	24	38	20.4480	77	35	33.1464	-1785.91	1756.75
27	8127.02	20423.38	-1844.13	24	37	41.5353	77	33	17.8379	-1835.24	1806.08
28	11808.99	19133.63	-1779.51	24	36	59.5137	77	31	6.9312	-1768.89	1739.73
29	15485.57	18049.03	-1742.42	24	36	24.1334	77	28	56.2327	-1727.11	1697.95
30B	19332.90	17006.29	-1630.21	24	35	50.0686	77	26	39.4915	-1607.28	1578.13

Table 3-1 (cont.)

AHRP HYDROPHONE COORDINATES (cont.)

(Sources: References 38 and 8; see text, Section 3.1)

Phone ID	AUTEC Hyd Config File, Ver 1.7			WGS 84 (G873) Geodetic Coordinates							Depth (m)
	X (m)	Y (m)	Z (m)	North Latitude			West Longitude			Ellipsoid Height (m)	
				(deg)	(min)	(sec)	(deg)	(min)	(sec)		
31	9624.70	16051.99	-1787.74	24	35	19.3861	77	32	24.6825	-1789.33	1760.17
32	13180.34	14907.60	-1757.28	24	34	42.0854	77	30	18.3069	-1755.31	1726.15
33	16939.83	13866.65	-1729.20	24	34	8.1106	77	28	4.7026	-1720.71	1691.56
34	20780.65	12651.33	-1642.04	24	33	28.4268	77	25	48.2449	-1624.74	1595.58
35	259.00	15311.80	-1309.08	24	34	55.3930	77	37	57.6695	-1319.76	1290.60
36	3738.55	14146.77	-1705.99	24	34	17.5335	77	35	53.9769	-1718.28	1689.12
37	7333.70	13029.13	-1767.26	24	33	41.1572	77	33	46.1931	-1778.82	1749.67
38	10995.58	11779.33	-1728.59	24	33	0.4459	77	31	36.0653	-1737.34	1708.18
39	14718.66	10618.31	-1725.34	24	32	22.5899	77	29	23.7815	-1728.63	1699.48
40	18501.34	9494.38	-1687.62	24	31	45.9033	77	27	9.4039	-1682.85	1653.69
41B	22208.94	8440.07	-1641.89	24	31	11.4508	77	24	57.7150	-1626.78	1597.62
42B	1773.45	11000.95	-1623.73	24	32	35.2721	77	37	3.8482	-1643.10	1613.95
43	5134.01	9772.78	-1657.64	24	31	55.3198	77	35	4.4287	-1677.20	1648.05
44	8879.54	8454.11	-1723.71	24	31	12.3923	77	32	51.3498	-1741.05	1711.90
45B	12557.48	7471.71	-1671.00	24	30	40.3610	77	30	40.6926	-1683.40	1654.24
46	16179.48	6294.09	-1672.46	24	30	1.9561	77	28	32.0468	-1677.98	1648.82
47x	19958.26	5283.94	-1665.72	24	29	28.9578	77	26	17.8458	-1661.46	1632.30
48x	23861.57	4007.05	-1625.05	24	28	47.2474	77	23	59.2619	-1608.32	1579.16
49	3159.07	6656.29	-1590.73	24	30	14.0207	77	36	14.6386	-1615.61	1586.46
50	6751.49	5390.27	-1652.70	24	29	32.8236	77	34	7.0233	-1675.99	1646.84
51	10447.48	4244.37	-1677.26	24	28	55.4975	77	31	55.7486	-1696.44	1667.29
52	14119.88	3034.43	-1627.08	24	28	16.0571	77	29	45.3407	-1639.89	1610.73
53	17691.59	1975.28	-1633.91	24	27	41.4929	77	27	38.5216	-1638.23	1609.07
54x	21439.19	1021.08	-1637.46	24	27	10.3024	77	25	25.4699	-1630.51	1601.36
55x	25324.85	-294.14	-1622.98	24	26	27.3347	77	23	7.5596	-1601.87	1572.71
56B	1227.70	3550.99	-1294.36	24	28	33.0737	77	37	23.2697	-1322.40	1293.25
57	4724.43	2295.30	-1578.86	24	27	52.2329	77	35	19.0755	-1605.85	1576.70
58B	8355.27	962.66	-1626.50	24	27	8.8547	77	33	10.1423	-1650.11	1620.96
59	12039.27	0.74	-1661.50	24	26	37.4959	77	30	59.3336	-1679.30	1650.14
60	15498.35	-962.24	-1608.50	24	26	6.0795	77	28	56.5362	-1618.76	1589.60

Table 3-1 (cont.)

AHRP HYDROPHONE COORDINATES (cont.)

(Sources: References 38 and 8; see text, Section 3.1)

Phone ID	AUTEC Hyd Config File, Ver 1.7			WGS 84 (G873) Geodetic Coordinates							Depth (m)
	X (m)	Y (m)	Z (m)	North Latitude			West Longitude			Ellipsoid Height (m)	
				(deg)	(min)	(sec)	(deg)	(min)	(sec)		
61B	19260.52	-2340.53	-1616.65	24	25	21.1203	77	26	43.0101	-1616.30	1587.15
62x	22933.85	-3291.80	-1620.43	24	24	50.0155	77	24	32.6403	-1607.51	1578.36
63x	26788.09	-4614.99	-1612.90	24	24	6.7777	77	22	15.8931	-1584.14	1554.98
64	2653.44	-833.03	-1390.62	24	26	10.5509	77	36	32.6563	-1419.17	1390.01
65	6184.51	-1984.24	-1561.25	24	25	33.0888	77	34	27.2844	-1587.10	1557.94
66	9777.53	-3249.92	-1605.22	24	24	51.8750	77	32	19.7366	-1626.05	1596.90
67	13342.11	-4353.39	-1612.63	24	24	15.9060	77	30	13.2173	-1626.34	1597.19
68	17026.35	-5513.11	-1596.45	24	23	38.0749	77	28	2.4749	-1600.49	1571.34
69B	20758.41	-7006.18	-1596.42	24	22	49.3727	77	25	50.0735	-1587.94	1558.78
70x	24425.56	-7626.92	-1599.71	24	22	29.0013	77	23	39.9502	-1577.53	1548.37
71x	28260.27	-8927.18	-1597.99	24	21	46.4972	77	21	23.9415	-1558.28	1529.12
72B	4151.81	-5126.91	-1463.98	24	23	50.9487	77	35	39.4943	-1489.71	1460.56
73	7650.39	-6318.47	-1563.29	24	23	12.1611	77	33	35.3194	-1584.71	1555.56
74	11306.95	-7548.88	-1574.03	24	22	32.0804	77	31	25.5613	-1588.68	1559.52
75B	14841.47	-8692.58	-1584.58	24	21	54.7919	77	29	20.1537	-1590.52	1561.36
76	18557.05	-9863.81	-1579.59	24	21	16.5726	77	27	8.3442	-1574.09	1544.94
77	22239.18	-11036.52	-1583.62	24	20	38.2748	77	24	57.7433	-1564.42	1535.26
78B	25886.33	-12216.17	-1587.51	24	19	59.7222	77	22	48.4062	-1552.39	1523.24
79x	29770.47	-13290.01	-1592.51	24	19	24.5628	77	20	30.6756	-1538.29	1509.14
80	5652.68	-9489.32	-1503.54	24	21	29.1112	77	34	46.2770	-1523.10	1493.94
81	9123.61	-10650.88	-1536.83	24	20	51.2886	77	32	43.1274	-1550.52	1521.37
82	12788.99	-11897.12	-1556.13	24	20	10.6800	77	30	33.1014	-1561.31	1532.16
83	16349.34	-12999.80	-1577.43	24	19	34.7113	77	28	26.8183	-1572.32	1543.16
84	20037.48	-14201.91	-1568.45	24	18	55.4771	77	26	16.0295	-1550.25	1521.09
85	23686.76	-15348.90	-1575.52	24	18	18.0046	77	24	6.6370	-1542.14	1512.99
86x	27363.74	-16248.79	-1580.58	24	17	48.5331	77	21	56.2668	-1530.25	1501.09
87x	31268.55	-17573.81	-1575.35	24	17	5.1945	77	19	37.8686	-1503.55	1474.39
88B	7111.20	-13815.03	-1456.33	24	19	8.4664	77	33	54.5973	-1466.48	1437.33
89	10658.04	-14953.63	-1530.54	24	18	31.3731	77	31	48.7948	-1533.17	1504.02
90	14318.86	-16189.18	-1553.57	24	17	51.0987	77	29	38.9746	-1546.00	1516.85

Table 3-1 (cont.)

AHRP HYDROPHONE COORDINATES (cont.)

(Sources: References 38 and 8; see text, Section 3.1)

AUTEC Hyd Config File, Ver 1.7			WGS 84 (G873) Geodetic Coordinates								
Phone ID	X	Y	Z	North Latitude			West Longitude			Ellipsoid Height	Depth
	(m)	(m)	(m)	(deg)	(min)	(sec)	(deg)	(min)	(sec)	(m)	(m)
91B	17852.19	-17280.04	-1576.97	24	17	15.5023	77	27	33.6919	-1557.62	1528.46
92	8672.59	-18064.35	-1361.91	24	16	50.3043	77	32	59.3025	-1359.46	1330.30
93B	12007.57	-19239.04	-1522.48	24	16	12.0214	77	31	1.0523	-1511.17	1482.01

B: AHRP bi-directional (transmit and receive) nodes.

x: AHRP hydrophones 47, 48, 54, 55, 62, 63, 70, 71, 79, 86 and 87 are in the MESA (W6) array which became inoperative in January 2002 due to a failure near the first MESA node (47).