This is a working paper giving tentative information about some work in progress at NEL. If cited in the literature the information is to be identified as tentative and unpublished.

LEVEL II

PAIR (AN/SQQ-23) RECEIVING HYDROPHONE STAVE SERIAL NO. 2 (U)

April 1966

D. A. Pierce (NEL Code 3160)

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This technical memorandum represents a portion of the work being done on NEL Problem J714, AN/SSQ-23 Performance and Integration Retrofit (PAIR) Program. It should not be construed as a formal report as its primary intent is to present some of the problems confronting project personnel and some of the preliminary conclusions. While it was originally published in a different form, it is now being included in the technical memorandum series for sake of documentation uniformity and control. Limited outside distribution is intended.
## CONTENTS

Report No. 5308

**PAIR Receiving Hydrophone Stave**  
Serial No. 2

<table>
<thead>
<tr>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinate Diagram</td>
</tr>
<tr>
<td>Photograph</td>
</tr>
<tr>
<td>Receiving Response</td>
</tr>
<tr>
<td>Effect on Sound Field</td>
</tr>
<tr>
<td>Directivity Patterns:</td>
</tr>
<tr>
<td>Horizontal</td>
</tr>
<tr>
<td>Vertical</td>
</tr>
<tr>
<td>Complex Impedance</td>
</tr>
</tbody>
</table>
The spherical coordinate system is used to define the angles in the directivity pattern: \( \theta \) and \( \phi \) shown in the above diagram give the directions in which the response is measured. The transducer is placed in the frame of reference with its axis of symmetry coincident with \( \theta = 0^\circ \), its fiducial mark in the \( \phi = 0^\circ \) plane, and its center at \( r = 0 \).

The two patterns most frequently measured are:

1. those made by holding \( \phi \) constant at some angle and rotating \( \theta \) through 360°.
   \[ (\phi = a^\circ; \text{rotate } \theta) \]

2. those made by holding \( \theta \) constant at some angle and rotating \( \phi \) through 360°.
   \[ (\theta = b^\circ; \text{rotate } \phi) \]
COMPLEX IMPEDANCE OF PAIR, Receiving Hydrophone S/N 2

Series Measurement

Measured at the end of approximately 50 ft of conductor Shield with cable.
Temperature: 14°C
Depth: 5.7 meters

Solid curve: \( R \)
Dotted curve: \( -X \)
TM-1053
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