

AD-A067 053

NAVY ELECTRONICS LAB SAN DIEGO CALIF

F/G 9/1

PAIR (AN/SQQ-23) RECEIVING HYDROPHONE STAVE SERIAL NUMBER 2.(U)

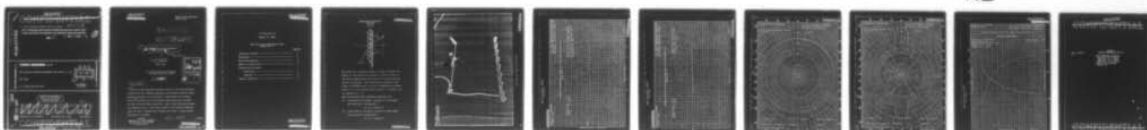
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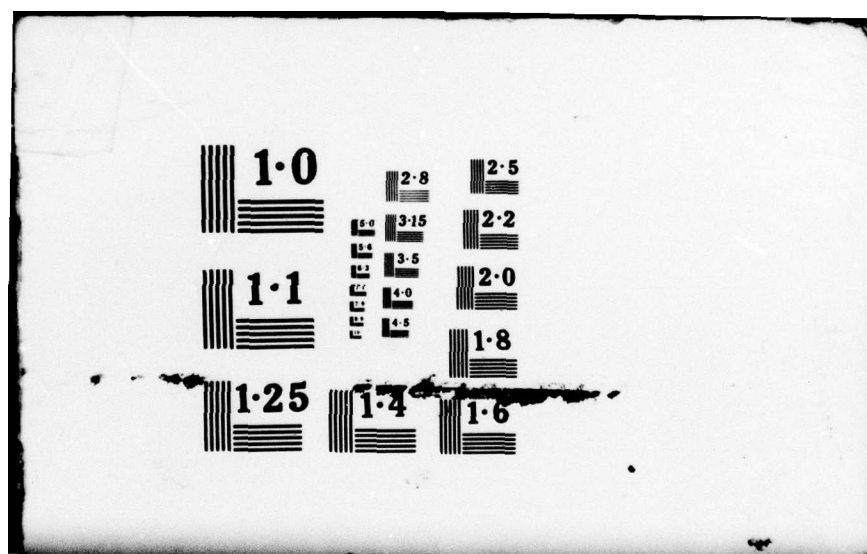
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This is a working paper giving tentative information about some work in progress at NEL.

If cited in the literature the information is to be identified as tentative and unpublished.

LEVEL II

MOST Project -4

AD A0 67053

NEL/Technical Memorandum 1053

TECHNICAL MEMORANDUM TM-1053

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

Apr 11 1966

D. A. Pierce (NEL Code 3160)

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S27-20(8573)
NEL J71471

NEL/Technical Memorandum 1053

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NEL Technical Memorandum
Number 1053

9 Technical memo.

14 NEL-TM-1053

6 PAIR (AN/SQQ-23) Receiving Hydrophone
Stave Serial ~~1~~ 2 .

by

Number

10 D. A./Pierce

Code 3160

U. S. Navy Electronics Laboratory
San Diego, California 92152

11 Apr ~~1966~~ 66

12 10 p.

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→ This technical memorandum represents a portion of the work being done on NEL Problem J714, AN/SQS-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.

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C O N T E N T S

Report No. 5308

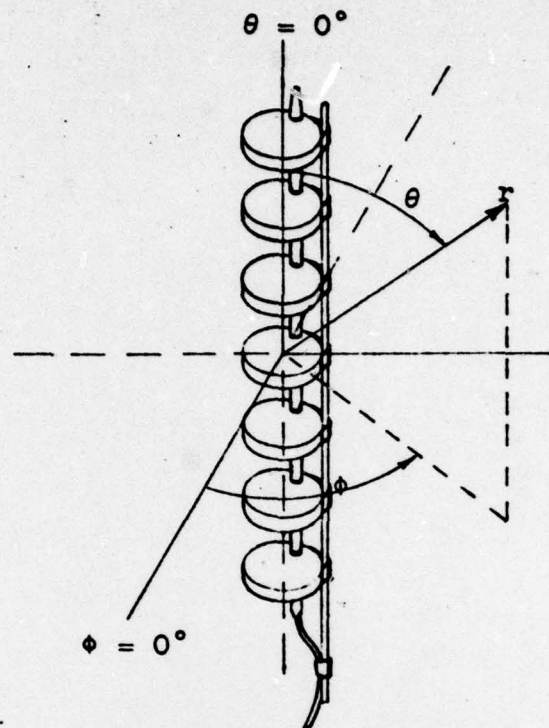
PAIR Receiving Hydrophone Stave
Serial No. 2

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Coordinate Diagram -----	3
Photograph -----	4
Receiving Response -----	5
Effect on Sound Field -----	6
Directivity Patterns:	
Horizontal -----	7
Vertical -----	8
Complex Impedance -----	9

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TRANSDUCER COORDINATE
DIAGRAM



The spherical coordinate system is used to define the angles in the directivity pattern: θ and ϕ 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 ϕ constant at some angle and rotating θ through 360° .

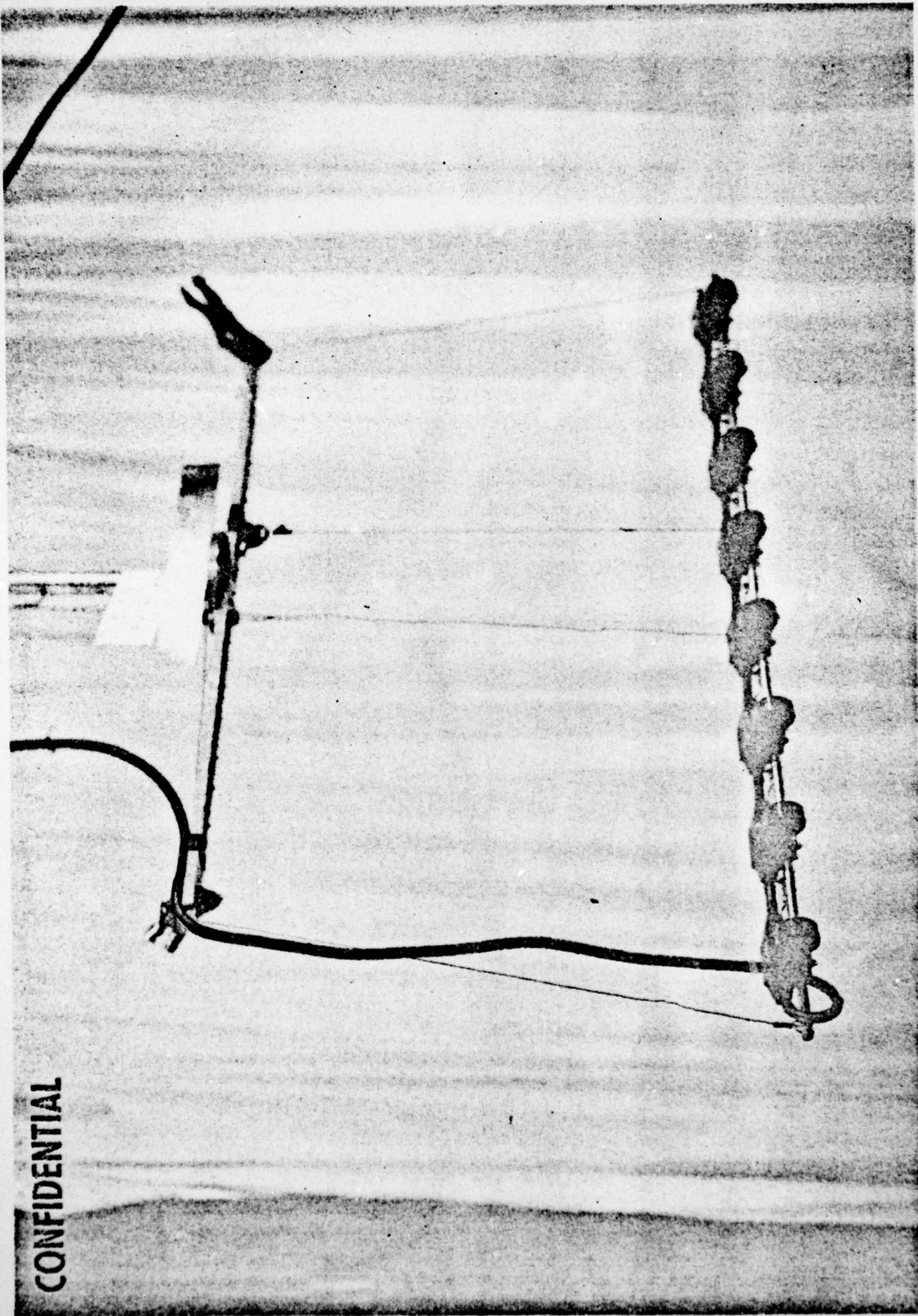
($\phi = a^\circ$; rotate θ)

- (2) those made by holding θ constant at some angle and rotating ϕ through 360° .

($\theta = b^\circ$; rotate ϕ)

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MOUNTED FOR VERTICAL PATTERNS

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KOE 10 X 10 10 1/2 INCH
7 X 10 IN ALUMINUM
46 1327
MADE IN U.S.A.
KEUPPEL & ESSER CO.

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Measured at TRANSDEC
14 March 1966

U.S. NAVY ELECTRONICS LABORATORY
Transducer Calibration Facility
San Diego, California 92152

RECEIVING RESPONSE of PAIR RECEIVING Hydrophone Stave
Serial No. 2

Temperature: 14°C
Depth: 5.7 meters

Open-circuit voltage measured
at the end of approx. 50 feet
of 4 conductor shielded cable,
supplied with unit.

db below 1 volt/microbar

100

110

Frequency in Kc

T577 R1

1

2

3

4

5

6

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Measured at TRANSDEC
14 March 1966

U.S. NAVY ELECTRONICS LABORATORY
Transducer Calibration Facility
San Diego, California 92152

EFFECT of PAIR Receiving Hydrophone Stave on SOUND FIELD
Serial No. 2

Temperature: 14°C
Depth: 5.7 meters

--- BP2R1 probe without Stave.
--- BP2R1 probe next to one
element in Stave.

+10

db

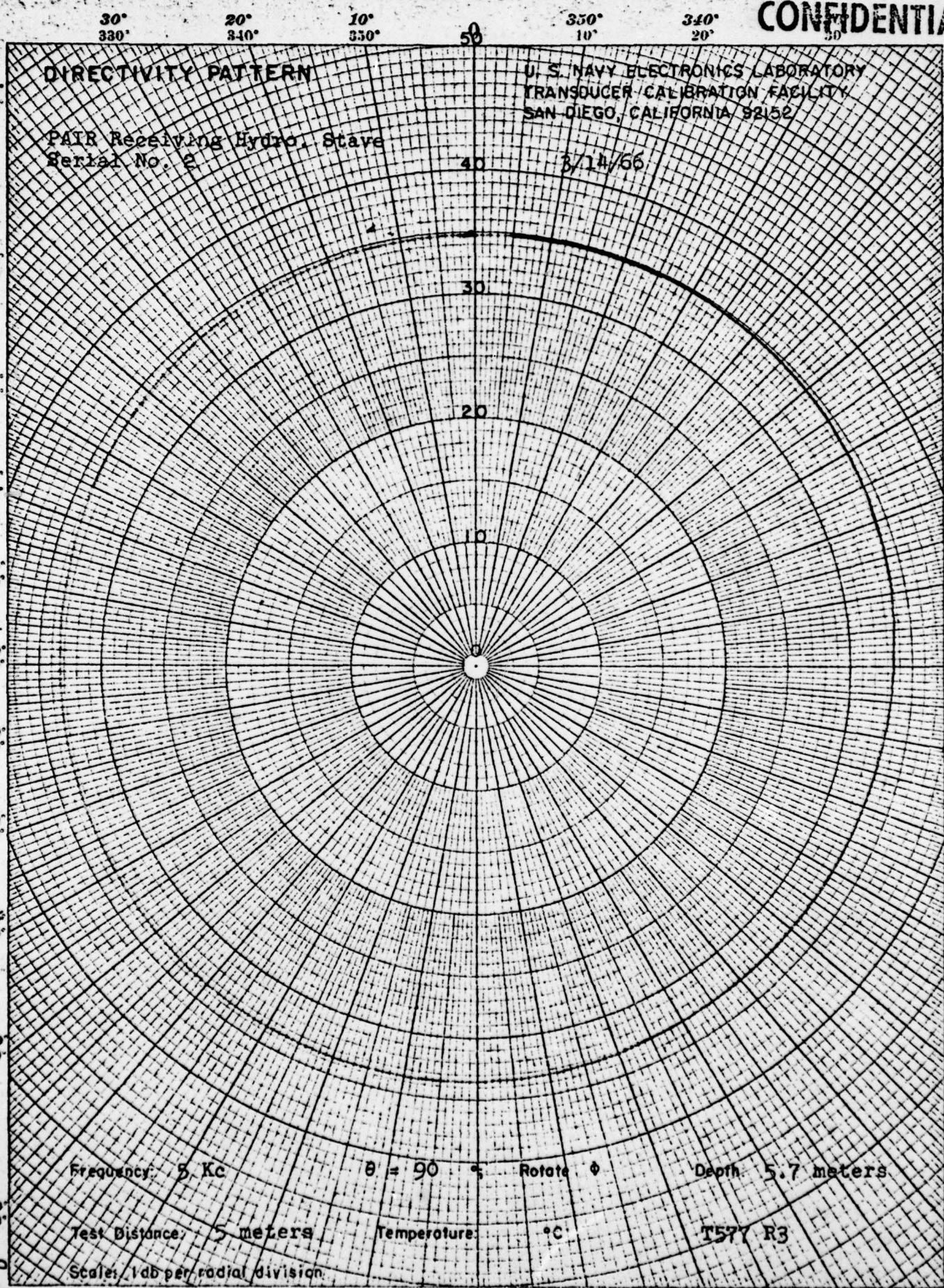
-10

Frequency in Kc

T577 RS

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SAN DIEGO, CALIFORNIA 92152

PAIR Receiving Hydro. Stave
Serial No. 2

3/14/66

Frequency: 5 Kc

$\theta = 90^\circ$

Rotate ϕ

Depth 5.7 meters

Test Distance: 5 meters

Temperature: $^\circ\text{C}$

T577 R3

Scale: 1db per radial division

HIND-NE-1900/22 (REV 7-64)

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30°
330°20°
340°10°
350°

50

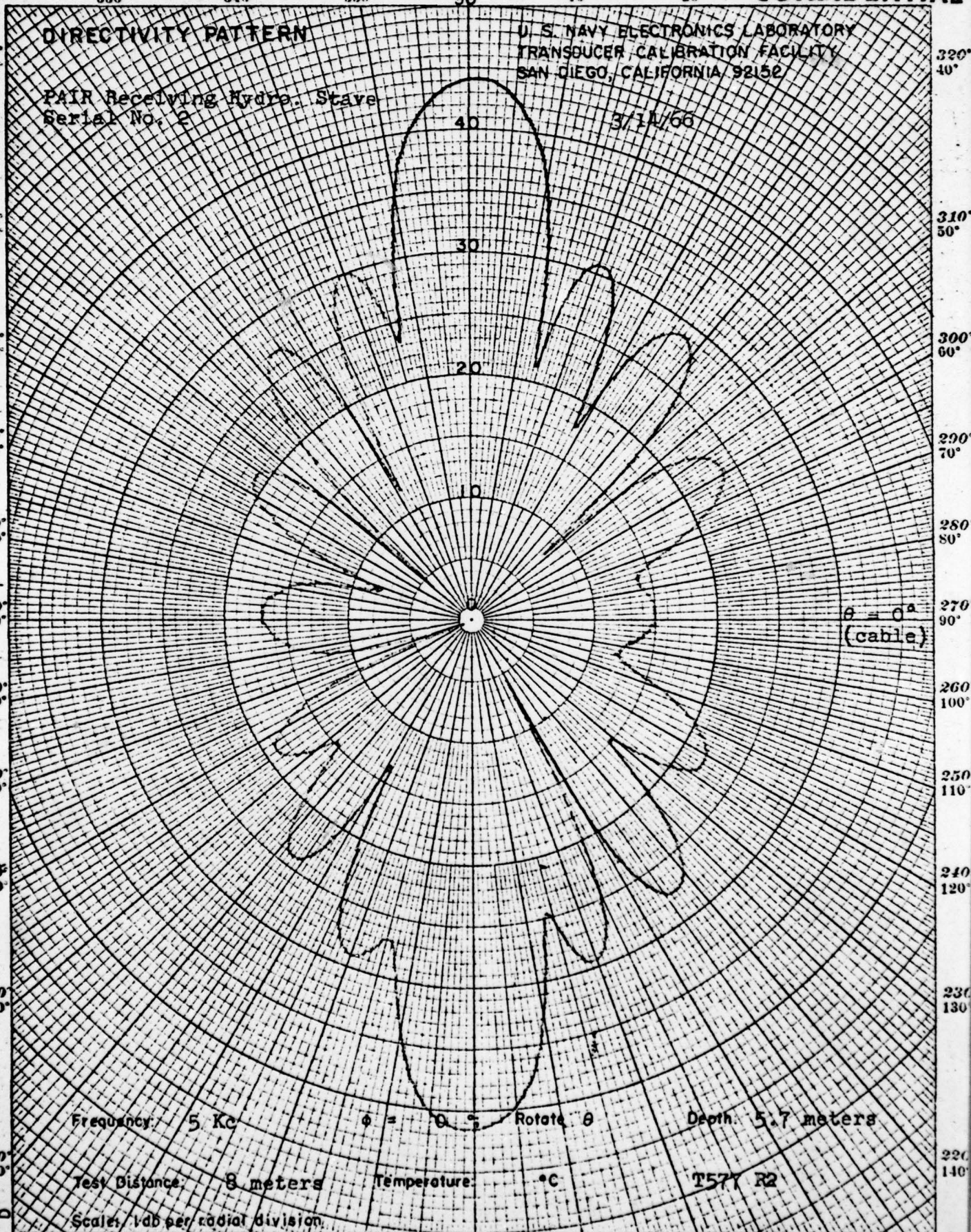
350°
10°340°
20°

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DIRECTIVITY PATTERN

U. S. NAVY ELECTRONICS LABORATORY
TRANSDUCER CALIBRATION FACILITY
SAN DIEGO, CALIFORNIA 92152PAIR Receiving Hydro. Stave
Serial No. 2

3/14/66



Frequency 5 Kc

 $\theta = 0^\circ$ Rotate θ

Depth 5.7 meters

Test Distance 8 meters

Temperature °C

T577 R2

Scale 1db per radial division

1110-NO-2900/22 (REV 7-64)

170°
160°180°
180°190°
170°200°
160°

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8

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Measured at TRANSDEC
14 March 1966

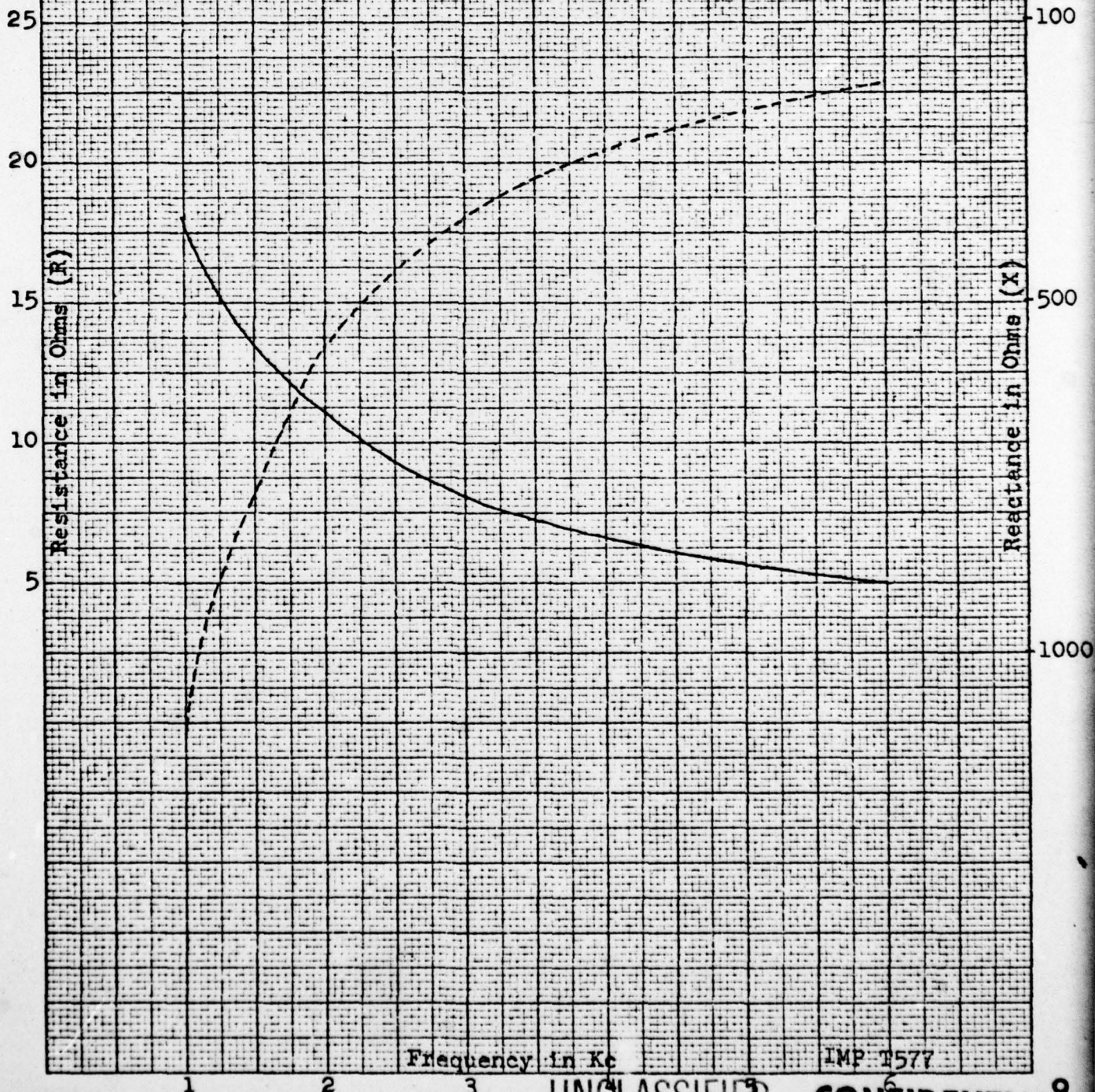
U.S. NAVY ELECTRONICS LABORATORY
Transducer Calibration Facility
San Diego, California 92152

COMPLEX IMPEDANCE of PAIR, Receiving Hydrophone S/N 2

Series Measurement

Measured at the end of
approximately 50' - 4
Conductor Shield with cable
Temperature: 14°C
Depth: 5.7 meters

Solid curve: R
Dotted curve: $-X$



K&E 10 x 10 to 1 1/2 INCH
7 x 10 IN - ALUMINUM
46 1327
REDFILL & LESSER CO.

Frequency in Kc

IMP T577

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