AD-A066 771 NAVAL RESEARCH LAB ORLANDO FLA UNDERWATER SOUND REFE--ETC F/G 20/1
ACOUSTIC MEASUREMENTS ON GOODYEAR RUBBER PANELS.(U)
JUN 67

UNCLASSIFIED USRD-CALIBRATION-2639 NL

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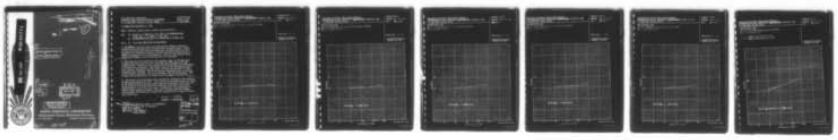

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(14) USRD-Calibration [illegible]-2639
K03-39, 0777

1 MOST Project-4

LEVEL II

(1)

(6) Acoustic Measurements on Goodyear Rubber Panels

Goodyear

(11) 1 June 1967

(12) 7 p.

NAVAL RESEARCH LABORATORY
Underwater Sound Reference Division
P. O. Box 8337 Orlando, Florida 32806

Naval Research Laboratory
UNDERWATER SOUND REFERENCE DIVISION
P. O. Box 8337, Orlando, Florida 32806

WLP/JLL/hs
K03-30.3271
1 June 1967

CALIBRATION REPORT No. 2639

Subj: Goodyear rubber panels; acoustic measurements on

Ref: (a) Goodyear ltr HDS:ld of 7 Apr 1967 to NAVSHIPSYSCOM, ATTN: Mr. J. D. Rigdon - Code 1631
(b) NAVSHIPSYSCOM spd ltr ser 1622G-353 of 25 May 1967

Encl: (1) Drawings USRD 48975 through 48980

1. Six 30x30x1-inch test panels were submitted by Goodyear Aerospace Corporation for determination of insertion loss and sound velocity. Reference (a) stated that these panels are duplicates of materials that have been evaluated in the Goodyear Aerospace Acoustic Test Pond; measurements at USRD are desired for correlation purposes. Reference (b) requested measurements by USRD on a not-to-interfere and a no-cost basis.

2. Insertion loss was measured in the frequency range 1 to 100 kHz under ambient conditions in the lake and in the range 50 to 200 kHz in the high-frequency tank. "Insertion loss" is defined as 20 log (incident sound pressure/transmitted sound pressure). The decibel values on the drawings are, therefore, positive. Except for the butyl panel, the loss was less than 0.2 dB at frequencies below 50 kHz. This is the minimum detectable loss, as imposed by the boundary conditions, the size of the panel, and the test facilities. The results of the measurements are shown on the drawings of enclosure (1).

3. Also shown on each drawing is the sound speed c measured at the frequency 60 kHz and the temperature 22°C. The accuracy of this measurement is limited by the determination of the phase shift caused by the presence of the panel and by the accuracy of measurement of the thickness of the panel at the center (approximately 1.13 in. for each panel). Consequently, the sound speed is shown to three significant figures. Because of a heavy workload of higher priority tasks, the sound speed could not be measured over a range of temperature at this time.

James L. Lastinger

JAMES L. LASTINGER

Copy to:
NAVSHIPSYSCOM (Code 1622, J. D. Rigdon)(1)
Goodyear Aerospace (H. D. Smith)(1)
USRD (Code 8250)(1)
NRL Wash (Code 2020)(1)
(Code 1570)(1)

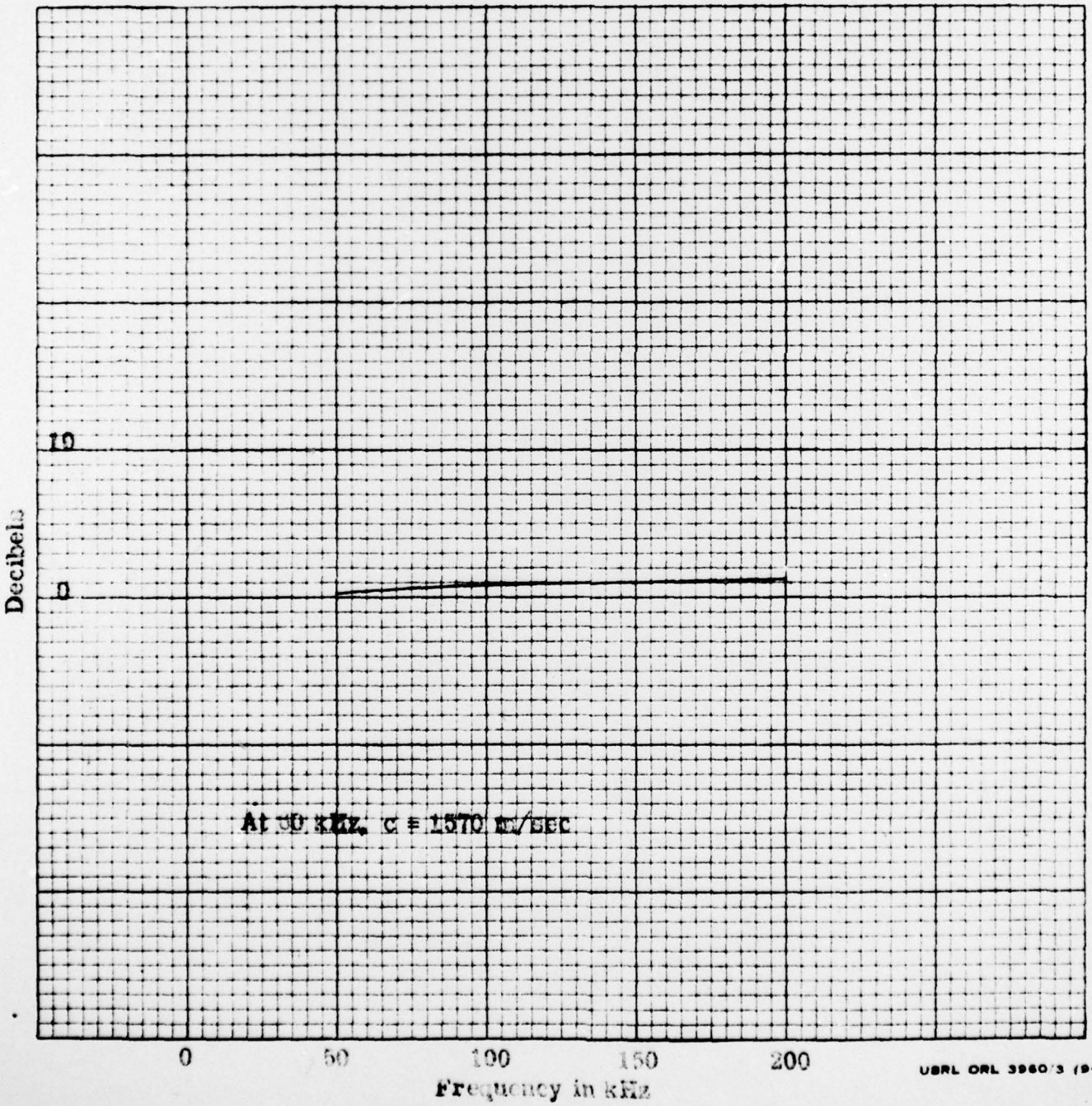
Department of the Navy, Office of Naval Research
UNDERWATER SOUND REFERENCE ~~LABORATORY~~ DIVISION, NRL
P. O. Box 8337, Orlando, Florida

USRL No. 48975
~~Proj. No.~~ K03-30.3271
Date: May 1967

INSERTION LOSS
Goodyear D811D353 Elastomer Panel (natural rubber)
Size: 30 x 30 x 1-inch

Water temp: 22 °C

MEASUREMENTS MADE IN ACCORDANCE WITH AMERICAN STANDARD Z 24.24-1957



USRL ORL 3960/3 (9-60)

NAVY BPPO 6ND JAX

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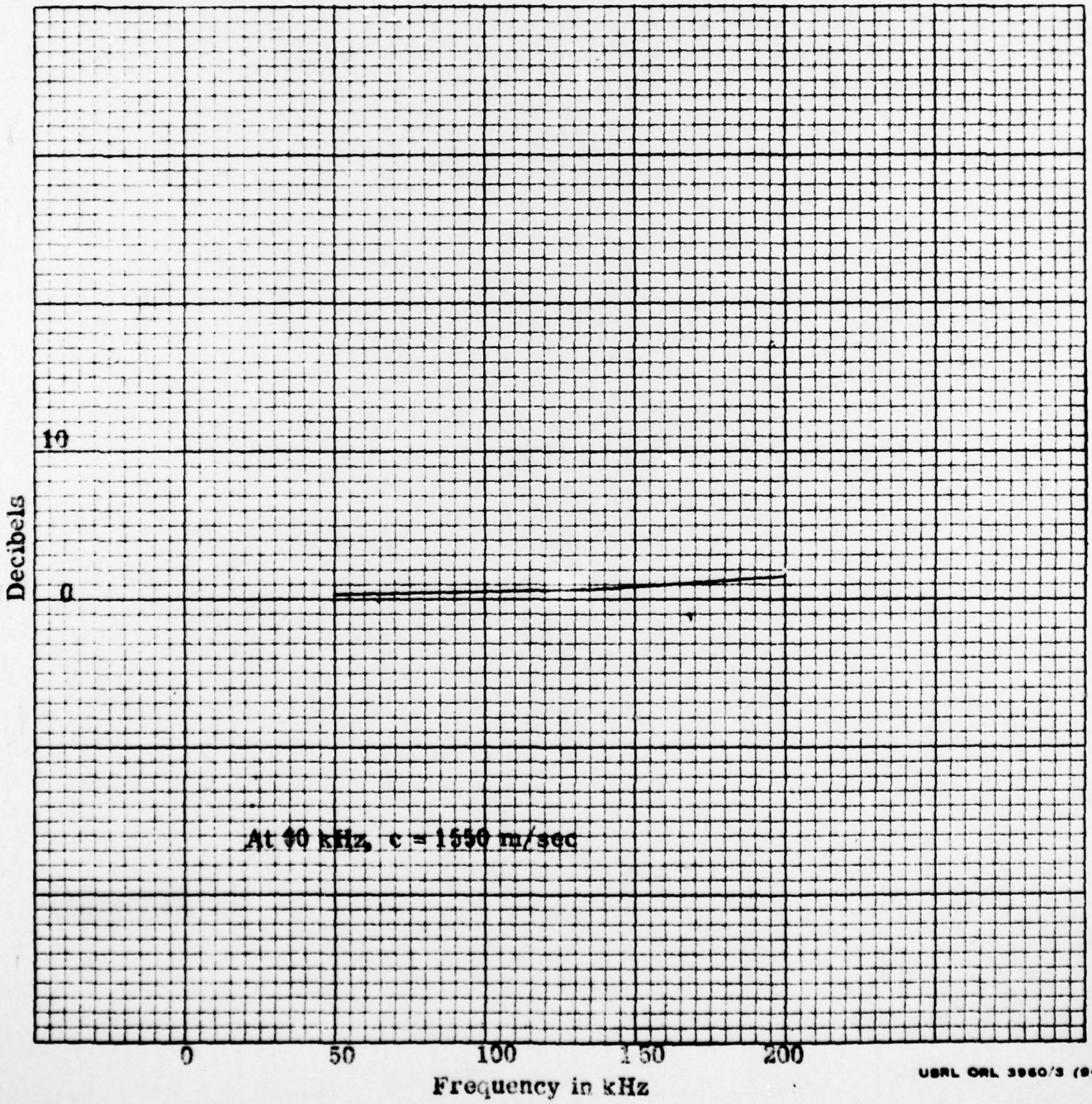
P. O. Box 8337, Orlando, Florida

USRD No. 48976
~~Proj. No.~~ K03-30.3271
Date: May 1967

INSERTION LOSS
Goodyear D811D348 Elastomer Panel (natural rubber)
Size: 30 x 30 x 1-inch

Water temp: 22 °C

MEASUREMENTS MADE IN ACCORDANCE WITH AMERICAN STANDARD Z.24.24-1957



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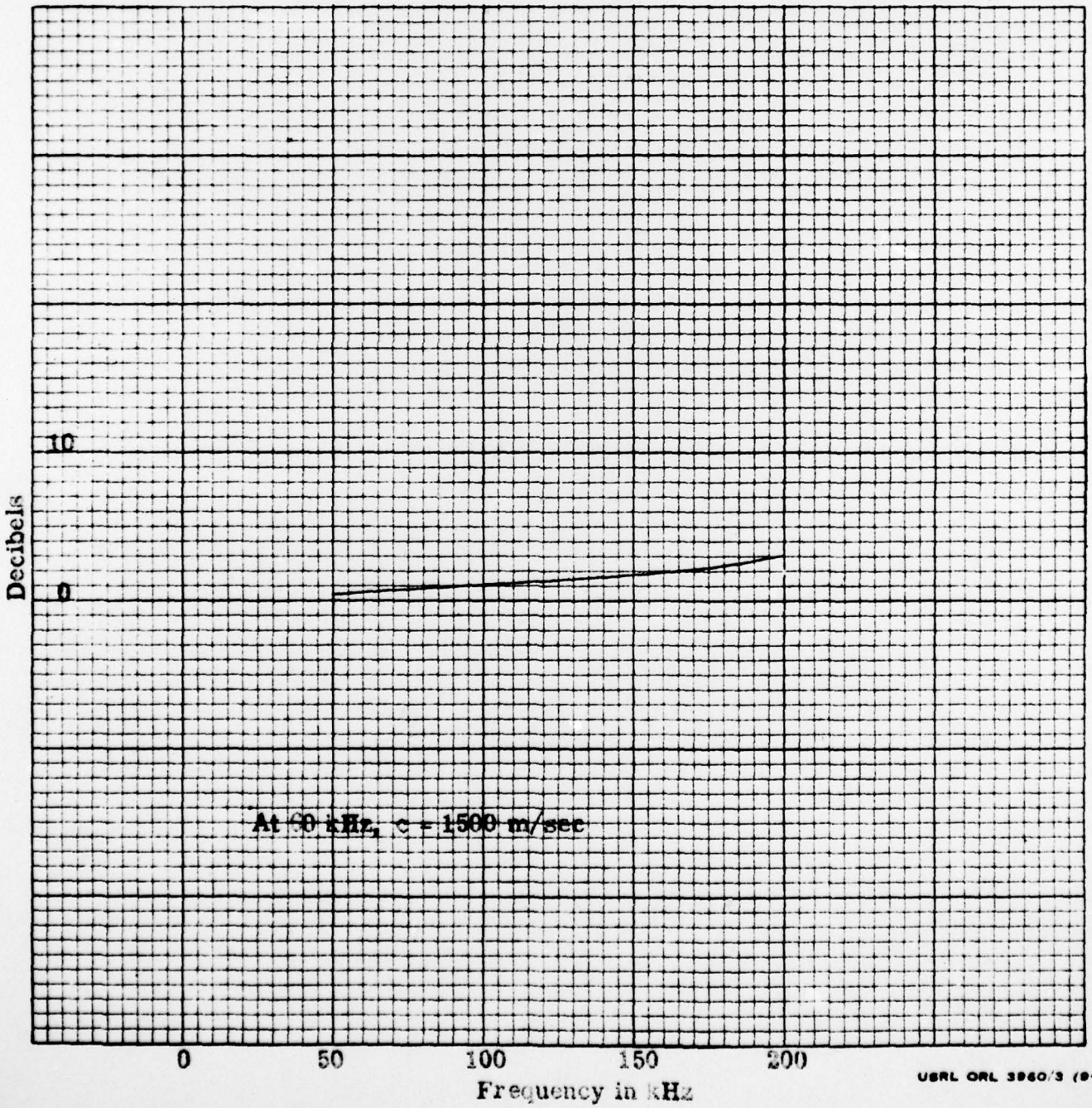
UNDERWATER SOUND REFERENCE LABORATORY, DIVISION, NRL
P. O. Box 8337, Orlando, Florida

USRD No. 43977
Proj. No. K03-30, 3271
Date: 1967

INSERTION LOSS
Goodyear DZ104D118 Elastomer Panel (neoprene)
Size: 30 x 30 x 1-inch

Water temp: 22 °C

MEASUREMENTS MADE IN ACCORDANCE WITH AMERICAN STANDARD Z.24.24-1957



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NAVY BPPO 6ND JA1

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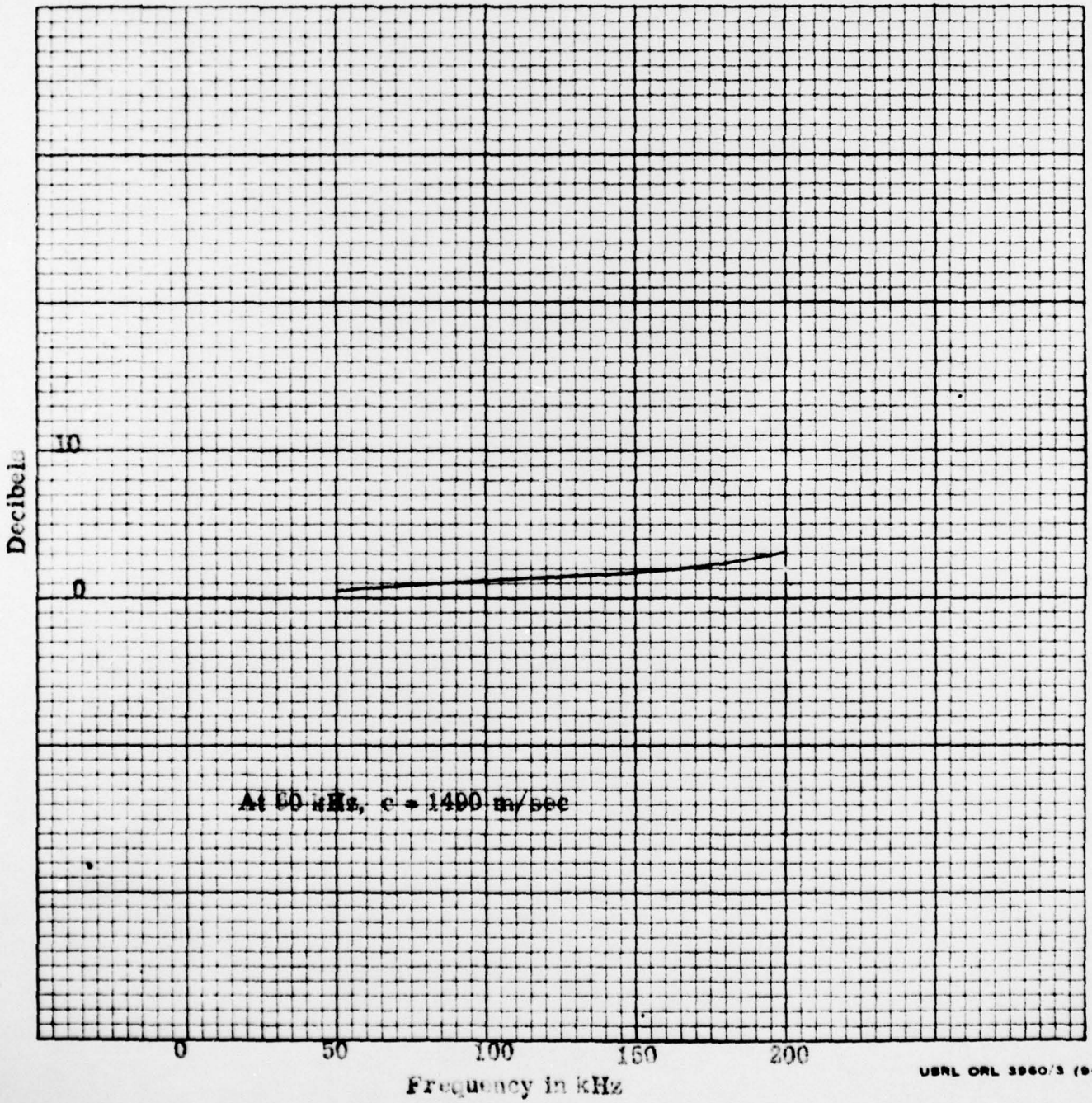
UNDERWATER SOUND REFERENCE ~~LABORATORY~~ DIVISION, NRL
P. O. Box 8337, Orlando, Florida

USRL No. 48978
~~Proj. No.~~ K03-30, 3271
Date: May 1967

INSERTION LOSS
Goodyear DZ104D141 Elastomer Panel (neoprene)
Size: 30 x 30 x 1-inch

Water temp: 22°C

MEASUREMENTS MADE IN ACCORDANCE WITH AMERICAN STANDARD Z 24.24-1957



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NAVY SPPO 6ND JAX

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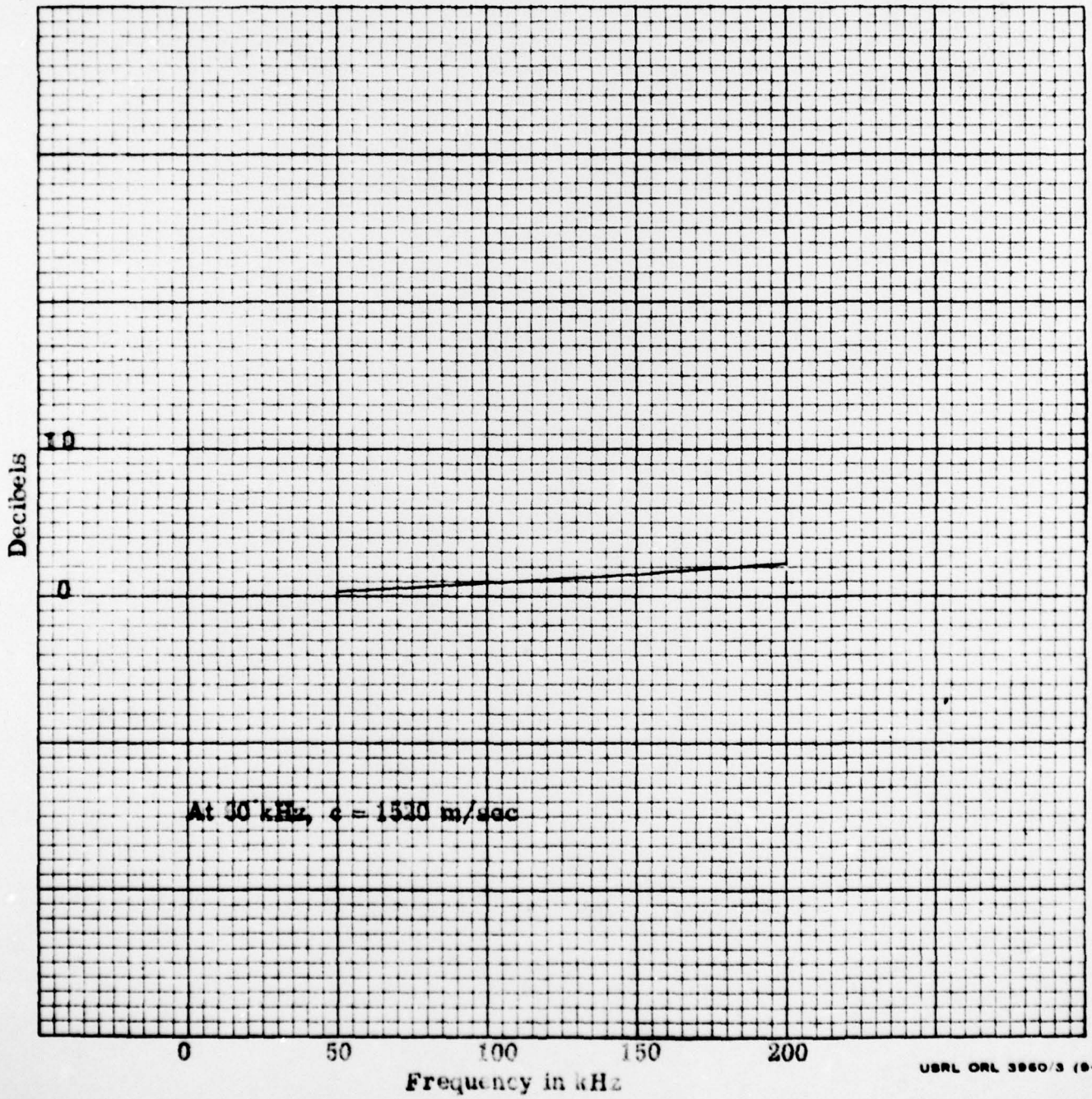
P. O. Box 8337, Orlando, Florida

USRD No. 48979
~~Proj. No.~~ K03-30.3271
Date: May 1967

INSERTION LOSS
Goodyear MA442 Elastomer Panel (neoprene)
Size: 30 x 30 x 1-inch

Water temp: 22 °C

MEASUREMENTS MADE IN ACCORDANCE WITH AMERICAN STANDARD Z 24.24-1957



USRL ORL 3960/3 (8-60)

NAVY BPPO GND JAX

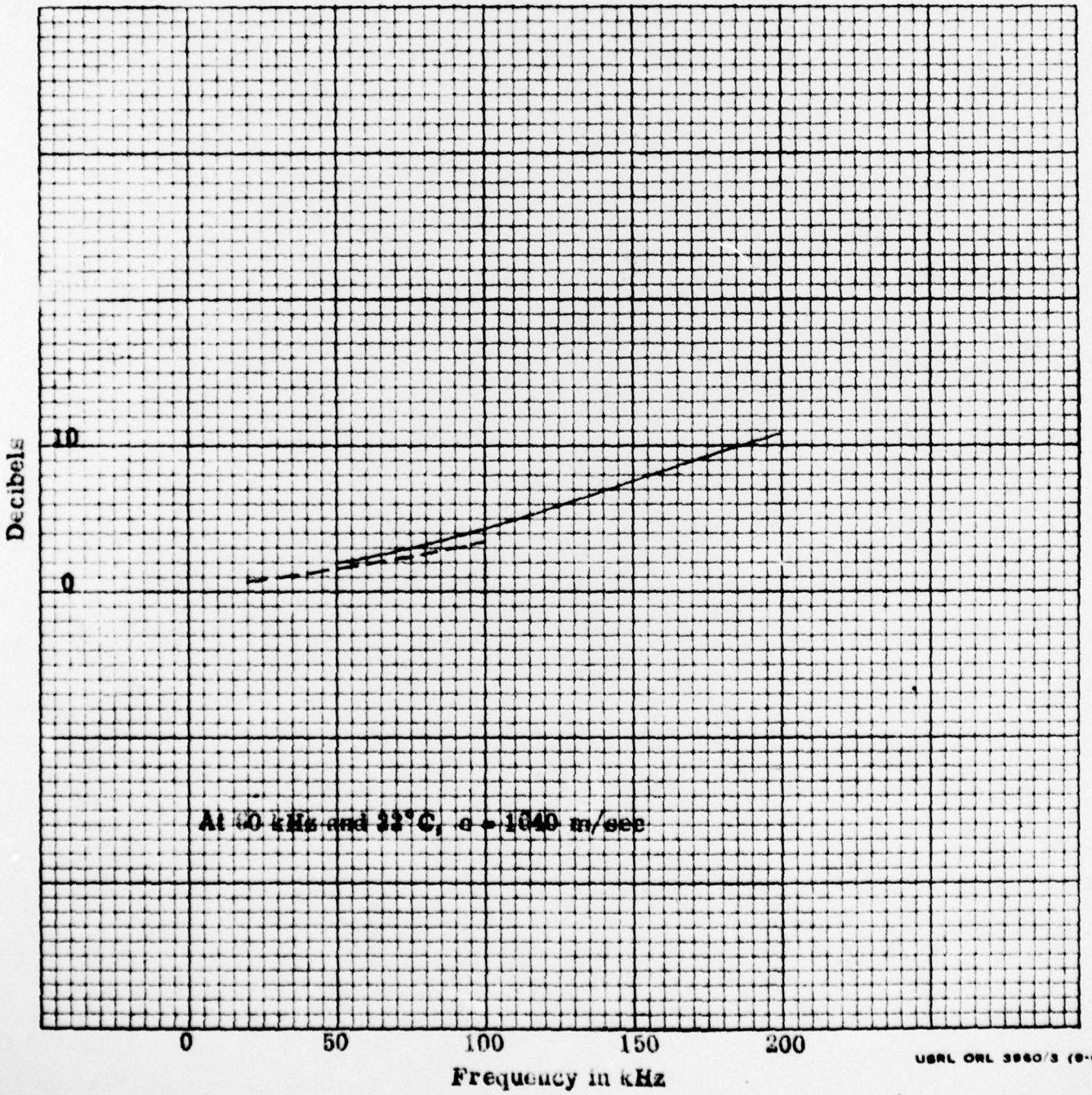
Department of the Navy, Office of Naval Research
UNDERWATER SOUND REFERENCE ~~LABORATORY~~ DIVISION, NRL
P. O. Box 8337, Orlando, Florida

USRD No. 48980
~~Proj. No.~~ K03-30.3271
Date: May 1967

INSERTION LOSS
Goodyear DXLD35 Elastomer Panel (butyl)
Size: 30 x 30 x 1-inch

— — — Open-water (lake) at 26°C
——— High-frequency tank at 22°C

MEASUREMENTS MADE IN ACCORDANCE WITH AMERICAN STANDARD Z 24.24-1957



USRL ORL 3960/3 (8-60)

NAVY BPPO AND JAX