[redacted] 1351

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9/24/98
RBCramer
9/28/98
W Layne

CLASSIFICATION REVIEW
Classification (Circle Numbers)
Classification Retained U
Classification Changed to
Contains No DOE Classified Information
Contains Wide
Contains UCNI NO
OK for Openet

TCG-NNT-1

AUG 7 1961
File No: XMC-1468, 3-2
T-17894
Project No: 13.689.00
Completion Date: 6-23-61

MR. A. V. ENGEL, JR. - 7115
Attn: W. J. Shock

Re: Thermal Shock and Vibration of Dummy XMC-1468 (U)

Summary of Test

An X-ray taken after the thermal shock sequence disclosed an internal crack. This crack, which formed between the transformer and the nearest thermal battery, did not worsen as a result of vibration.

Vibration was performed along each of three orthogonal axes. The frequencies of maximum response to the vibrational input were above 1000 cps in each orientation. Maximum response ratios were 13.4, 9.3, and 18.8 for the X, Y, and Z axes respectively.

Object of Test

The object of this was to determine if a different molding and potting technique would be satisfactory.

Authorization for Test

This test was requested by Division 7115 in an Environmental Test Authorization dated June 12, 1961. Mr. W. J. Shock was the consultant.

Procedure and Results

The XMC-1468 was first subjected to the temperature shock sequence as delineated in A5 of SC-4451(M). An X-ray photograph showed a crack between the transformer and an adjacent MC-818. This crack did not appear in an X-ray taken at Bendix before the XMC-1468 was subjected to test.

The test specimen was next subjected to vibration along each of three mutually perpendicular axes.

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The amplitudes of the applied vibrations were a constant double displacement of 0.018 in from 10 to 73 cps and a constant 5G peak level from 73 to 2000 cps. One sweep of one hour duration from 10-2000-10 cps was made along each axis. This was preceded by a search for the "worst frequency" for each axis. The results of this search are shown in Figs. 1 [illegible]. The vibrational input for the search were the same as given above.

CENTRAL RECORD FILE
ACCOUNTABILITY
FILE NO. MC-1468
3-2

AUG - 9 1961

CENTRAL RECORD FILE

[redacted]

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW
DOWNGRADING OR DECLASSIFICATION STAMP

CLASSIFICATION CHANGED TO: U	AUTHORITY: W. C. Layne
Emelda Selph 9/29/98	
PERSON CHANGING MARKING & DATE	RECORD ID: 98SN4501
W C Layne 9/29/98	
PERSON VERIFYING MARKING & DATE	DATED: 9/28/98

During vibration, the input was controlled by an accelerometer secured to the mounting fixture. The output was measured by means of a cluster of three accelerometers mounted at the center of the largest exposed area. For this test, the axes are defined as follows:

X - that axis normal to the plane of greatest area

Y - that axis parallel to the plane of greatest area

Z - that axis perpendicular to the X and Y axes

Maximum output response was noted at 2000 cps during vibration along the X axis, 1050 cps along the Y axis, and at 1900 cps along the Z axis. Figs. 1 through 3 show the output to input ratios noted (in 50 cps frequency increments) beginning at the frequency at which the ratio of output to input approached two.

Conclusions

It is the opinion of the consultant that the new fabrication technique is satisfactory. However, functional specimens will be tested in the near future to verify this.

R. G. Hamilton

7321 Project Engineer: R. G. HAMILTON - 7321-5

Approved By: R. S. HOOPER - 7321-5

RGH:mw

Encl: Fig. 1 thru 3

Copy to:
J. M. Wiesen, 1442
B. S. Bliss, 2344
L. E. Snodgrass, 2561
E. H. Copeland, 7321
J. R. Harrison, 7523
R. K. Smeltzer, 3421-3

[redacted]

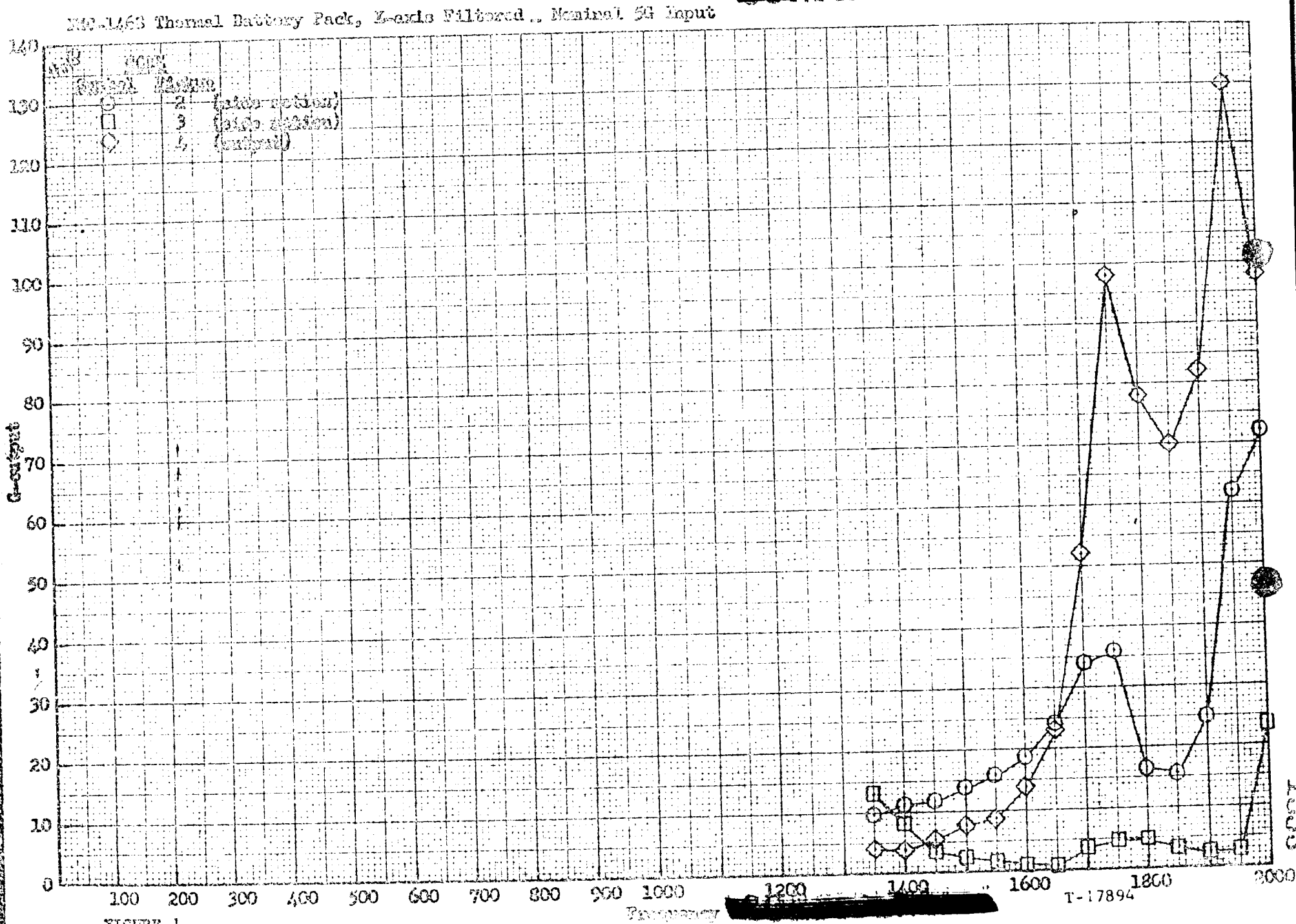

FIGURE 1

[redacted]

[redacted]

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XMC-1/68 Thermal Battery Pack, Y-axis Filtered .. Nominal 5G Input

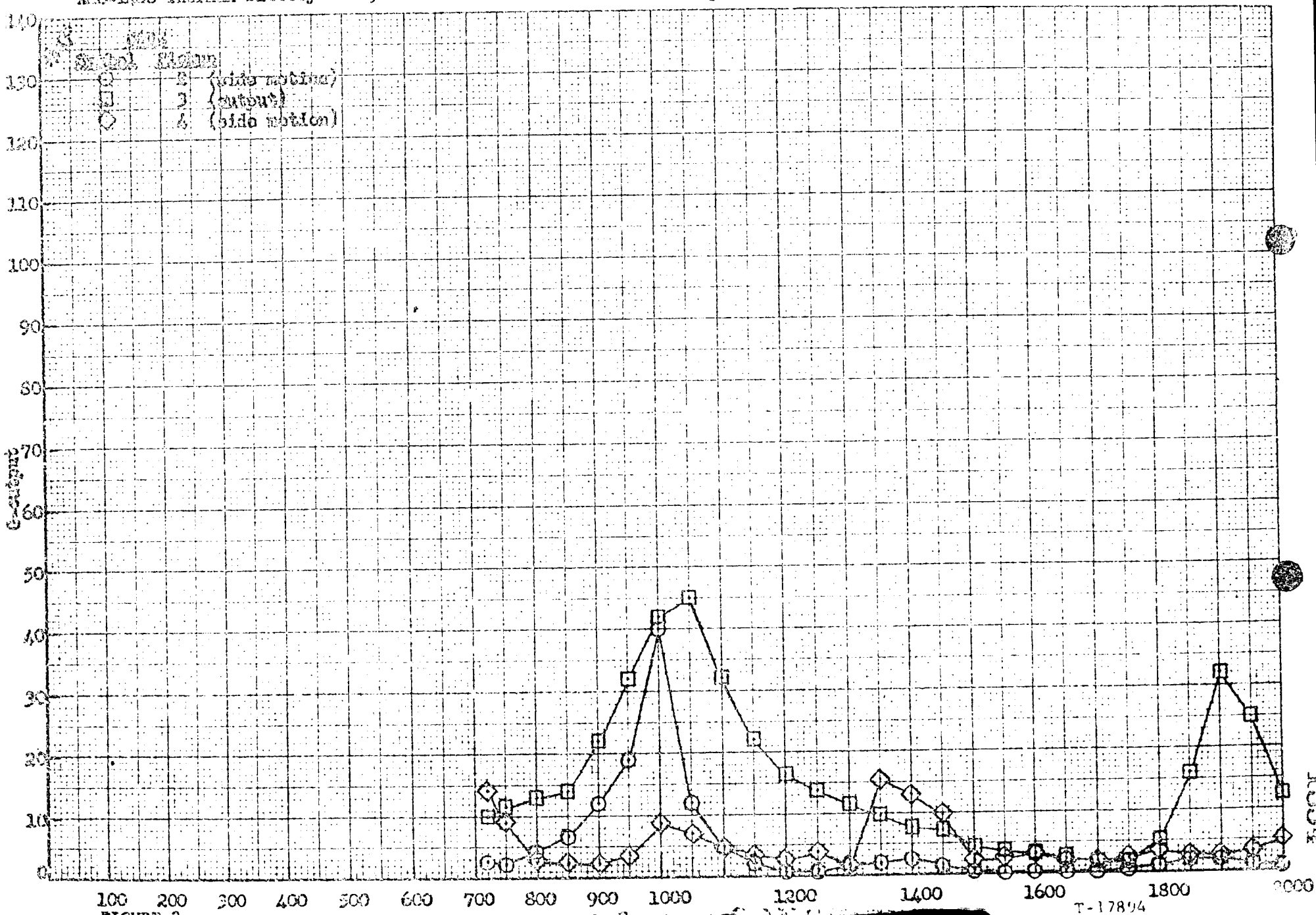

FIGURE 2

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10 X 10 TO THE ½ INCH 359-11

[redacted]

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XMC-1468 Thermal Battery Pack, Z-axis Filtered - Nominal 5G Input

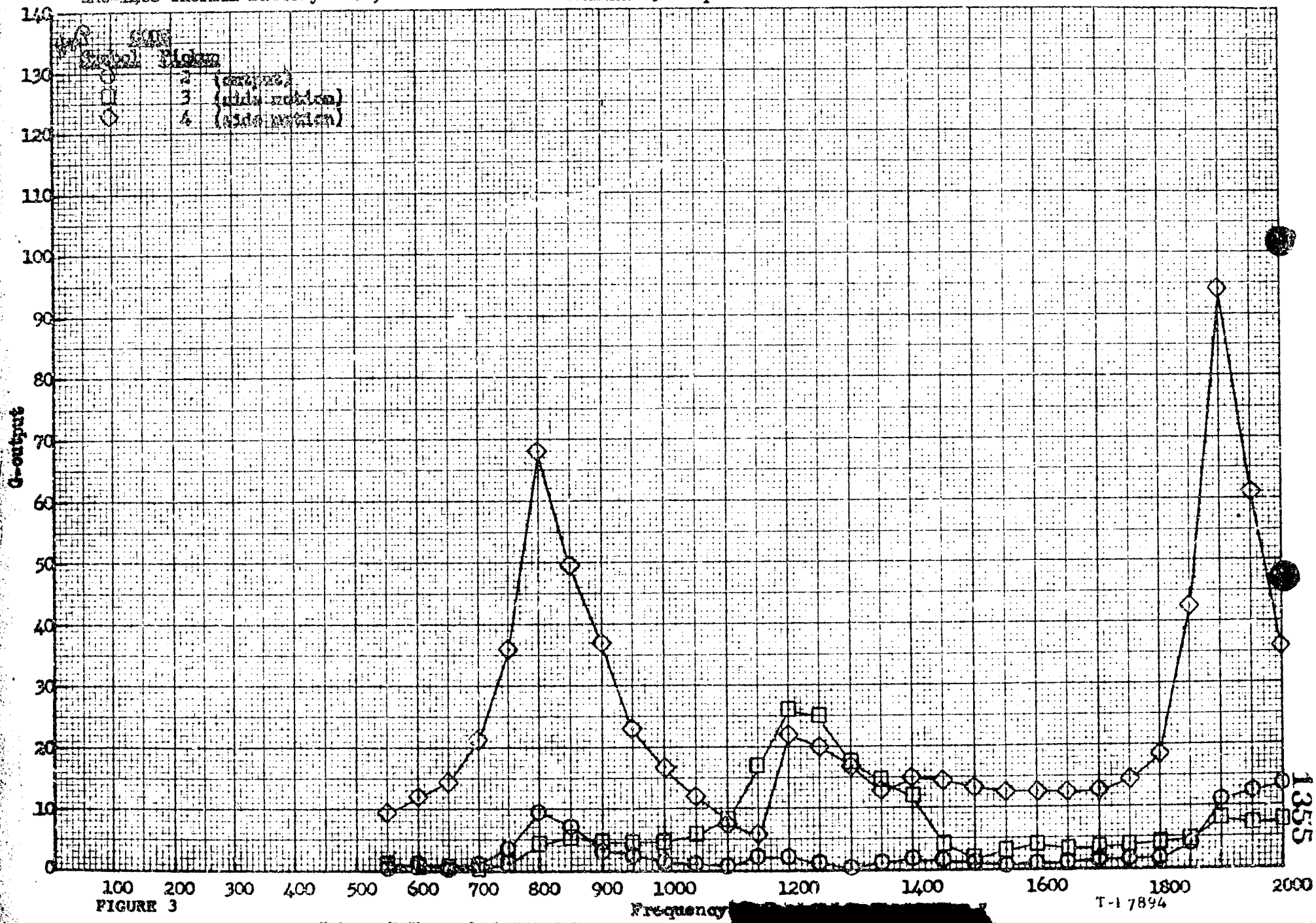

FIGURE 3

T-17894

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