



DEPARTMENT OF THE NAVY

SURFACE EFFECT SHIP TEST FACILITY
NAVAL AIR STATION
PATUXENT RIVER, MARYLAND 20670

In Reply Refer To:
SEA03E-522
3960
Ser 90
29 MAR 1982

From: Officer in Charge, Surface Effect Ship Test Facility
To: Commander, Naval Sea Systems Command (SEA03E)

Subj: XR-1E Test Plan; transmittal of

Ref: (a) SESTF memo SEA03E-52, 3960 ser 68 of 2 Mar 1982, subj: "XR-1E
Test Plan; transmittal of"
(b) SESTF memo SEA03E-50, 3900 ser 300 of 10 Sep 1981, subj: "TSM Bow
Seal Extended Wear Tests Memorandum; forwarding of"

Encl: (1) XR-1E Test Plan, Transversely Stiffened Membrane Bow Seal -
Combined Extended Wear Tests and Loads and Motion Tests,
dated Mar 1982

1. The XR-1E Test Plan, TSM Seal - Combined Extended Wear Tests and Loads and
Motions Tests, dated March 1982, is forwarded as enclosure (1) for your informa-
tion and retention.

2. Please note that forwarded test plan, enclosure (1), makes reference to two
earlier test plans; they were transmitted via references (a) and (b).


R. S. HOLTZ

Copy to:
SEA03E-20/21/23



DEPARTMENT OF THE NAVY

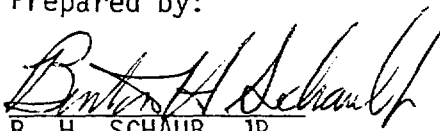
SURFACE EFFECT SHIP TEST FACILITY
NAVAL AIR STATION
PATUXENT RIVER, MARYLAND 20670

XR-1E
TEST PLAN

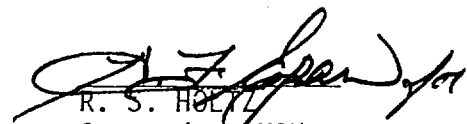
Transversely Stiffened Membrane Bow Seal
Combined Extended Wear Tests and Loads and Motions Tests

March 1982

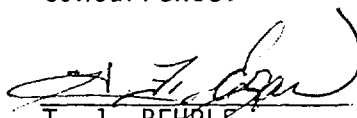
Prepared by:



B. H. SCHAUB, JR.
Project Engineer

Approved:


R. S. HOLTZ
Commander, USN
Officer in Charge

Concurrence:


T. J. BEHRLE
Lieutenant, USN
Ship Commander


W. F. BEVERLY III
Technical Director

Enclosure (1)

- Ref: (a) Memorandum from SEA03E-522B to SEA03E-50, subj: "TSM Bow Seal Extended Wear Tests; implementation of," 31 Aug 1981
(b) XR-7E Test Plan, "Transversely Stiffened Membrane Bow Seal Loads and Motions," Feb 1982

1. Introduction

Reference (a) initiated Extended Wear testing for the TSM Bow Seal. Since that time the redesigned parasol has been constructed and installed on the XR-7E. The new parasol incorporates heavier web fabrics, both segmented and continuous battens fabricated from multilayer unidirectional fiberglass laminates, revised end cap design and other design changes which simplify construction and enhance durability.

In addition, new instrumentation has been fabricated and installed to measure strap loads and batten accelerations. Reference (b) describes a test series which will permit estimation of scaled life cycle loads for future TSM Bow Seal designs.

2. Testcraft Configuration

As indicated in references (a) and (b), all testcraft systems will be operated within their normal ranges. The majority of testing will utilize high airflow (approximately 630 CFS) and midrange LCG (near 21.0 feet). Several special test configurations will utilize low airflow and aft LCG. In general, RCS will not be used except to aid changing of data tapes or other DAS operator adjustments. The Loads and Motions Test Plan, however, requires RCS On and Off comparisons.

3. Test Objectives

Commencing with Mission 306 on 23 February 1982, the testcraft will conduct Extended Wear and Loads and Motions testing through 30 June 1982. The test objective is to complete the Loads and Motions Test Plan while accumulating 100 hours of underway time. This will permit evaluation of both the wear characteristics of the replacement TSM Bow Seal Parasol and the variables which affect wear.

4. Test Data

Data tapes will be produced for all testing. However, unless an unusual condition or event occurs, data from Extended Wear tests will not be reduced. Video surveillance of the parasol will be conducted during all overhump operations. Waverider data will be recorded on tapes and strip charts during all missions for which seas are generally larger than .5 foot significant wave height.

5. Data Analysis and Reporting

Unless an unusual event or condition occurs, Extended Wear test results will be reported as part of the SESTF Biweekly Summary. Unusual conditions and events will be the subject of special reports which present the data and provide analysis and conclusions.

5. Data Analysis and Reporting (cont'd)

TSM Loads and Motions test data will be processed through standard data reduction programs, generally within two weeks of a successfully completed test mission. Tabular listings, histograms, time history strip charts and power spectral density plots will be available to interested parties. Mission flag reports will be prepared within four weeks of a test mission. Interim and final Loads and Motions test reports will be prepared if manpower limitations permit.

12 March 1982


MEMORANDUM

From: SEA03E-522A
To: SEA03E-23

Subj: Additional data from XR-1E Missions 275 and 276; forwarding of

- Encl: (1) Power Spectral Density (PSD) Plots, 2 cys each of 8 plots, measurements: BST, X11, CUSH1, BOWSEALP. 0-100 Hz scales
(2) PSD Plots, 2 cys each of 6 plots, measurements: BST, CUSH1, BOWSEALP, various expanded frequency scales

1. Enclosures (1) and (2) are forwarded as requested. To aid in comparison of the frequency response of various measurements they have all been plotted on a 0-100 Hz scale (enclosure (1)). In addition, for best frequency resolution, measurements BST, CUSH1 and BOWSEALP have been plotted on expanded frequency scales and are forwarded as enclosure (2).


BENTON H. SCHAUB, JR.

Copy to:
SEA03E-522

XR-1E

M-275 TASK-1 TSM BOW SEAL LOADS

START TIME 11:47:60

PSD

END TIME 11:48:50

BOWSEALP PORT BOW SEAL PRS.

MAX % ERROR = 31.6228

MEAN = 75.0454

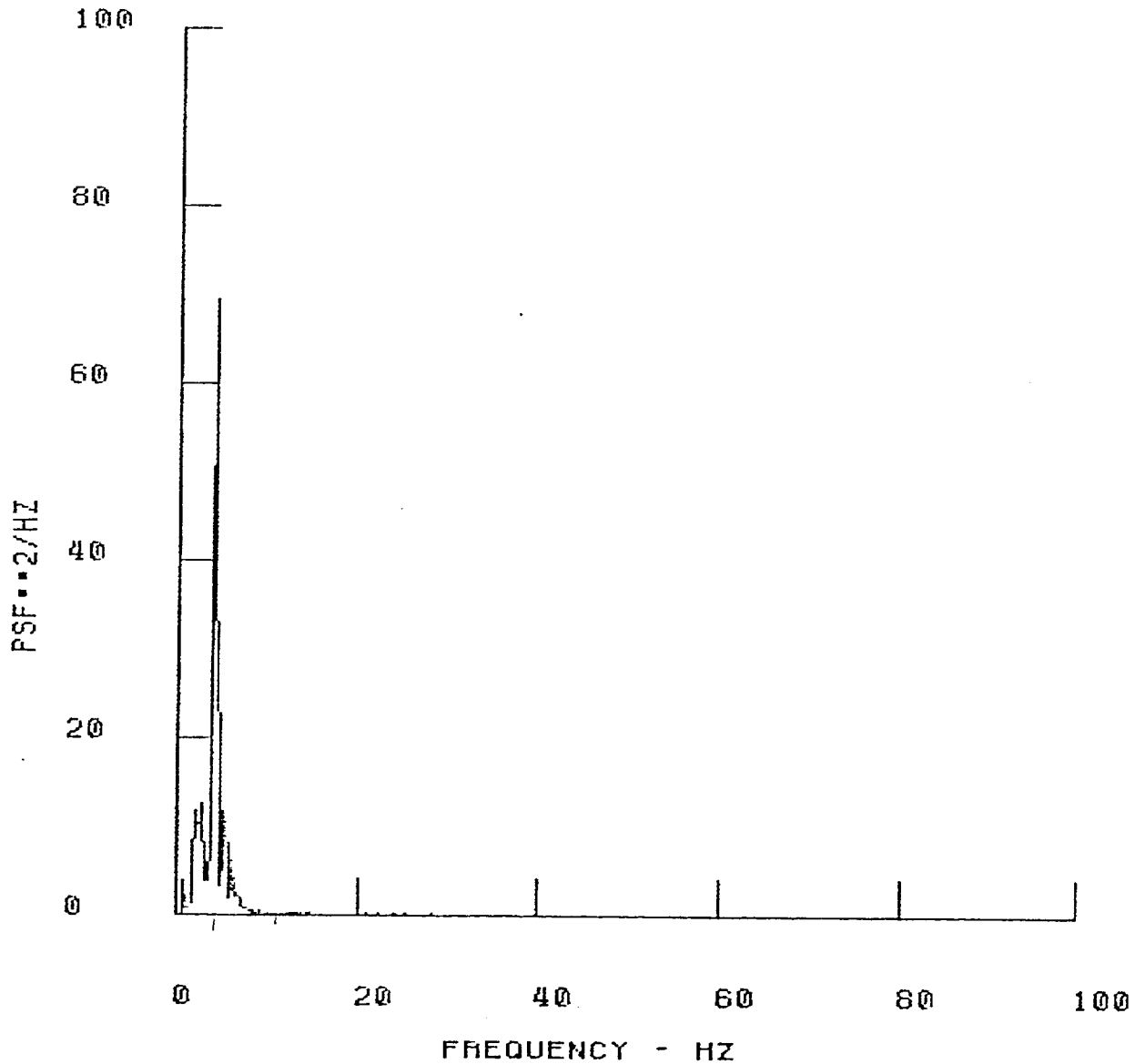
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VARIANCE = 55.9600

NYQUIST FREQ = 100.00



XR-1E

PSD

M-276 TASK-1 TSM BOW SEAL LOADS

START TIME 11: 6:20

END TIME 11: 7:10

BST

BOW SEAL TENSION

MAX % ERROR = 31.6228

MEAN = 283.0022

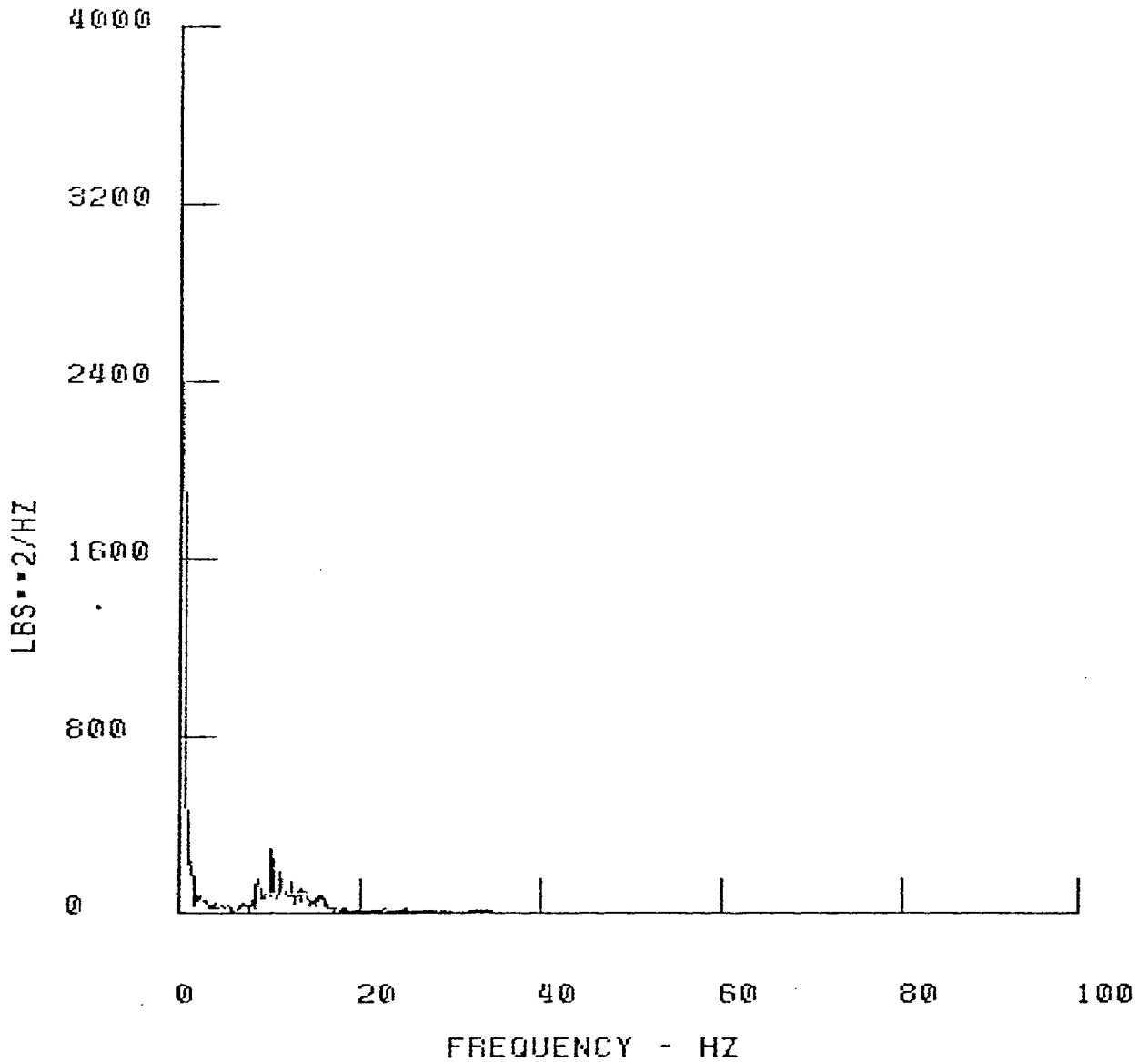
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XR-1E

PSD

M-276 TASK-1 TSM BOW SEAL LOADS

START TIME 11: 6:20

END TIME 11: 7:10

X11

PARASOL ACCEL

MAX % ERROR = 31.6228

MEAN = -28.1861

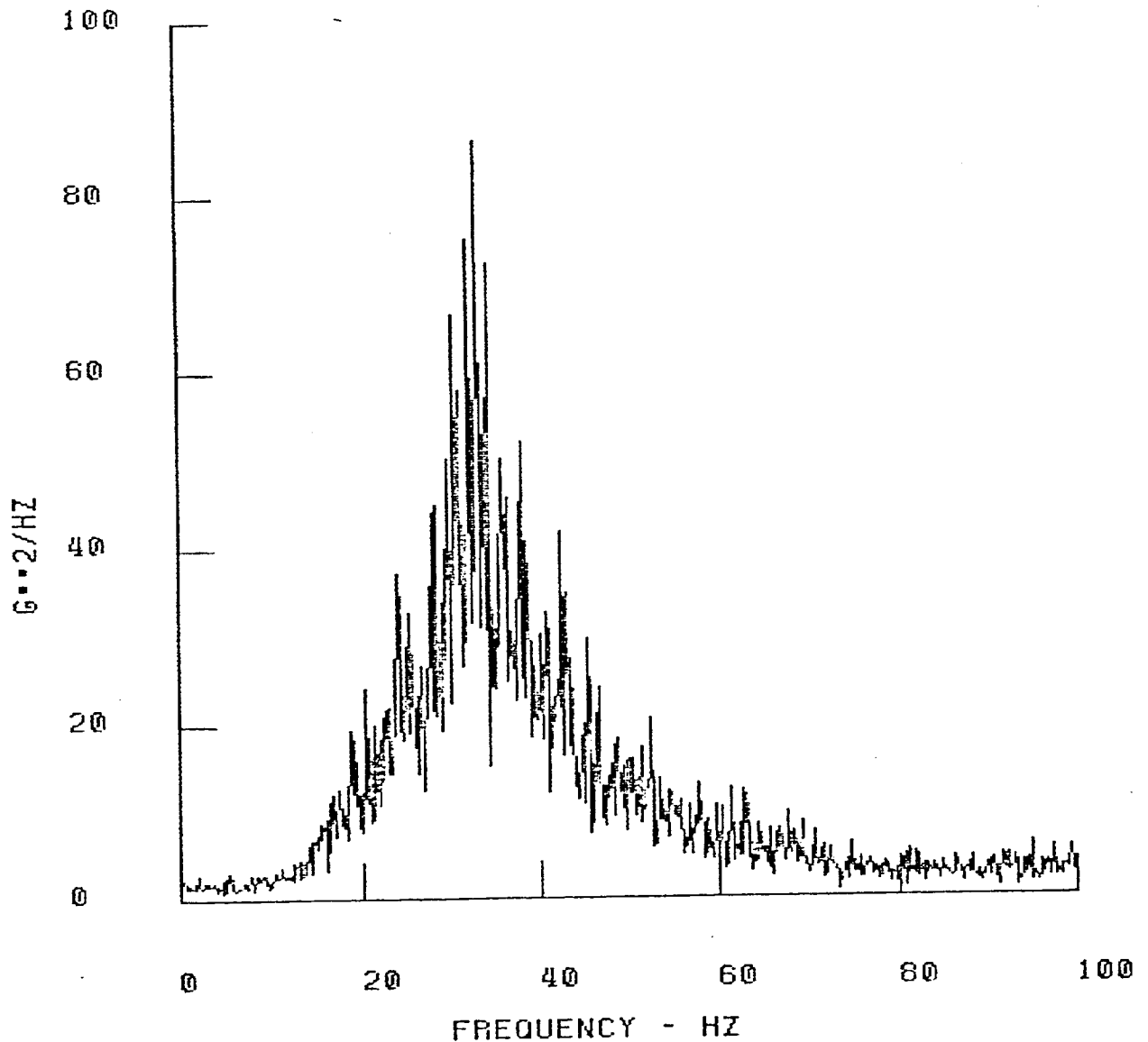
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NYQUIST FREQ = 100.00



XR-1E

M-276 TASK-1 TSM BOW SEAL LOADS

START TIME 11: 6:20

PSD

END TIME 11: 7:10

CUSH1 PORT FWD CUSHION PRS

MAX % ERROR = 31.6228

MEAN = 71.2962

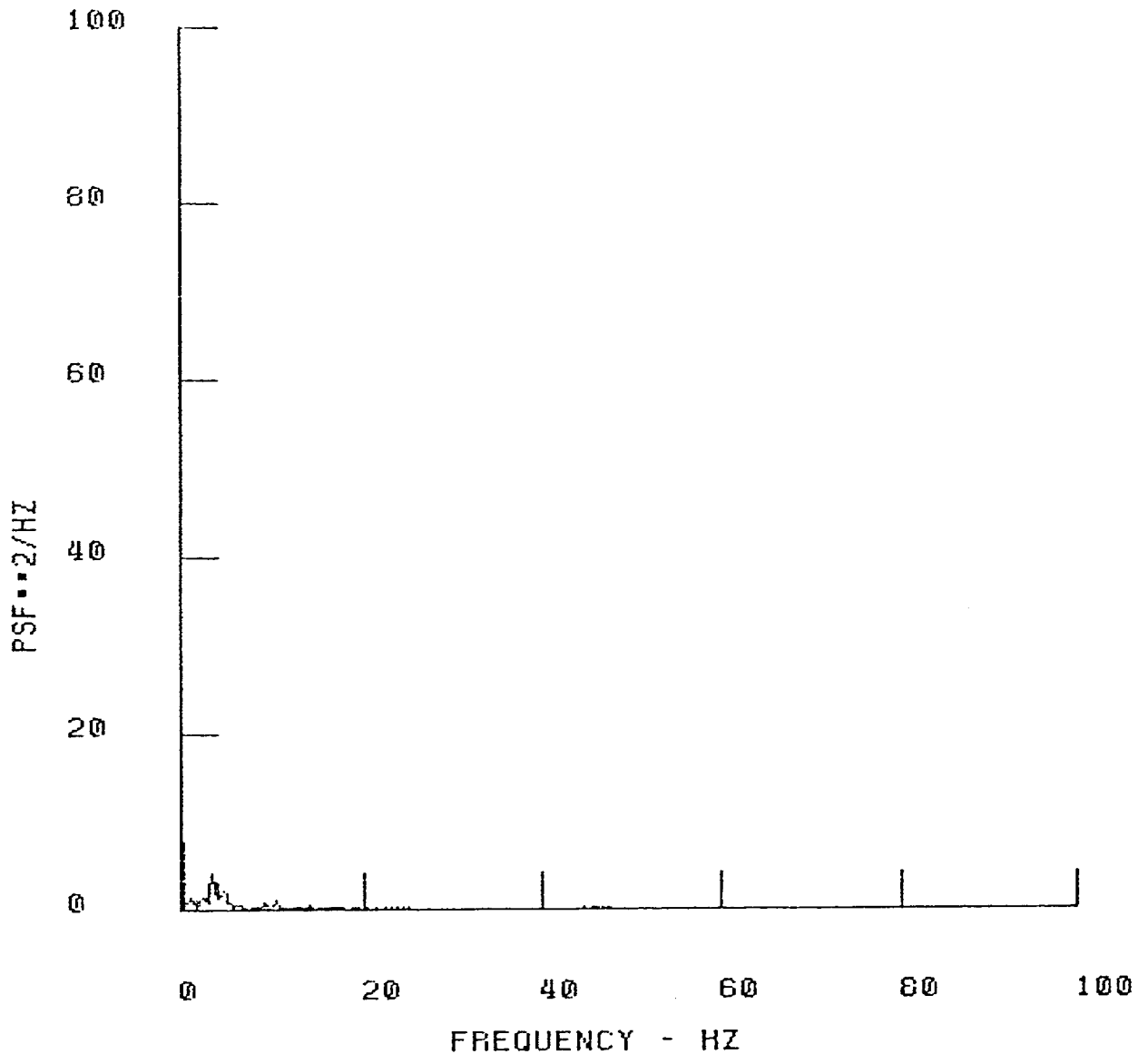
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DELTA TIME = .005

VARIANCE = 11.7309

NYQUIST FREQ = 100.00



XR-1E

PSD

276 TASK-1 TSM BOW SEAL LOADS

START TIME 11: 6:20

END TIME 11: 7:10

BOWSEALP PORT BOW SEAL PRS.

MAX % ERROR = 31.6228

MEAN = 74.3776

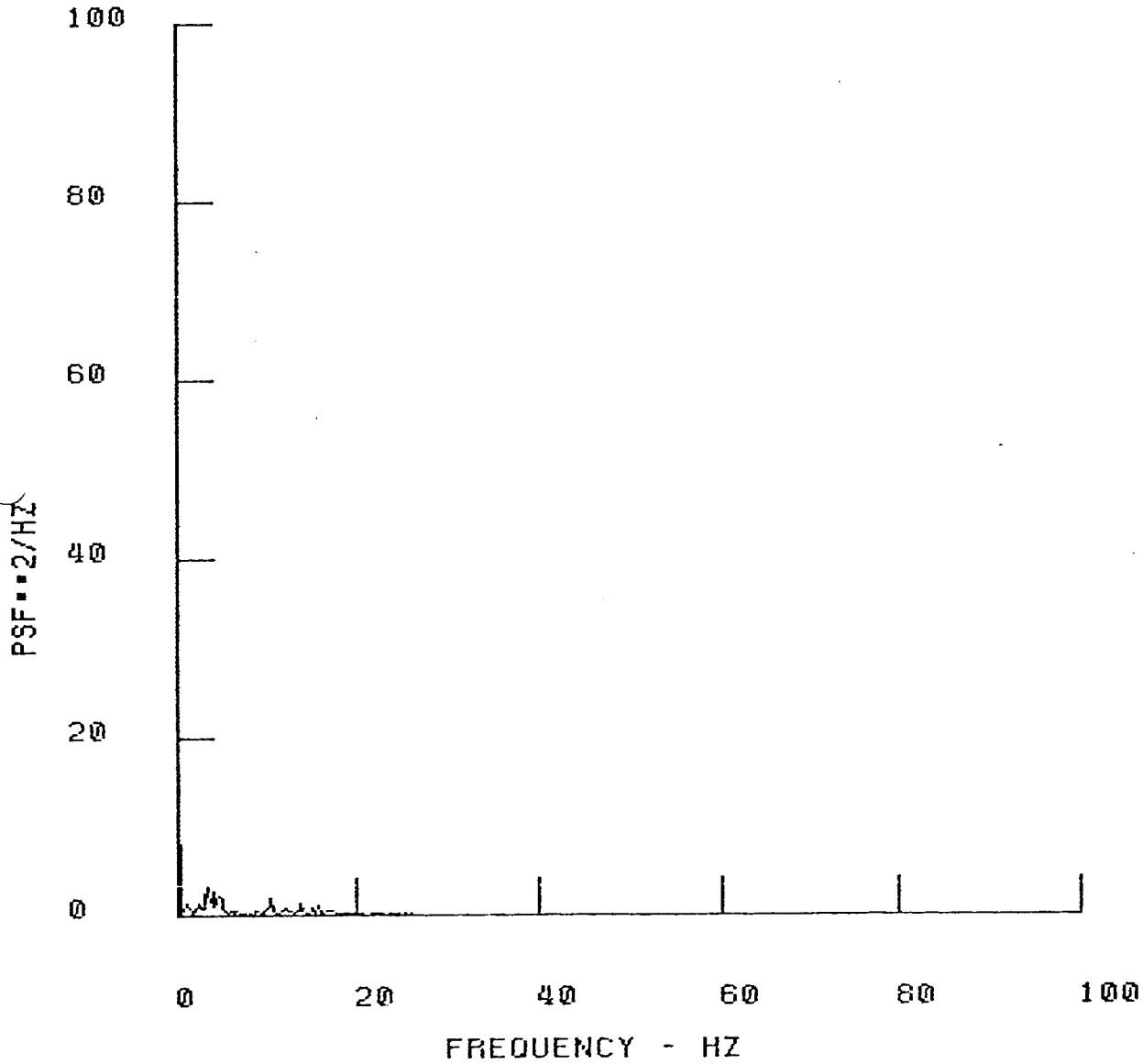
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VARIANCE = 13.3180

NYQUIST FREQ = 100.00



XR-1E

PSD

M 275 TASK-1 TSM BOW SEAL LOADS

START TIME 11:47:60

END TIME 11:48:50

BST BOW SEAL TENSION

MAX % ERROR = 31.6228

MEAN = 310.5322

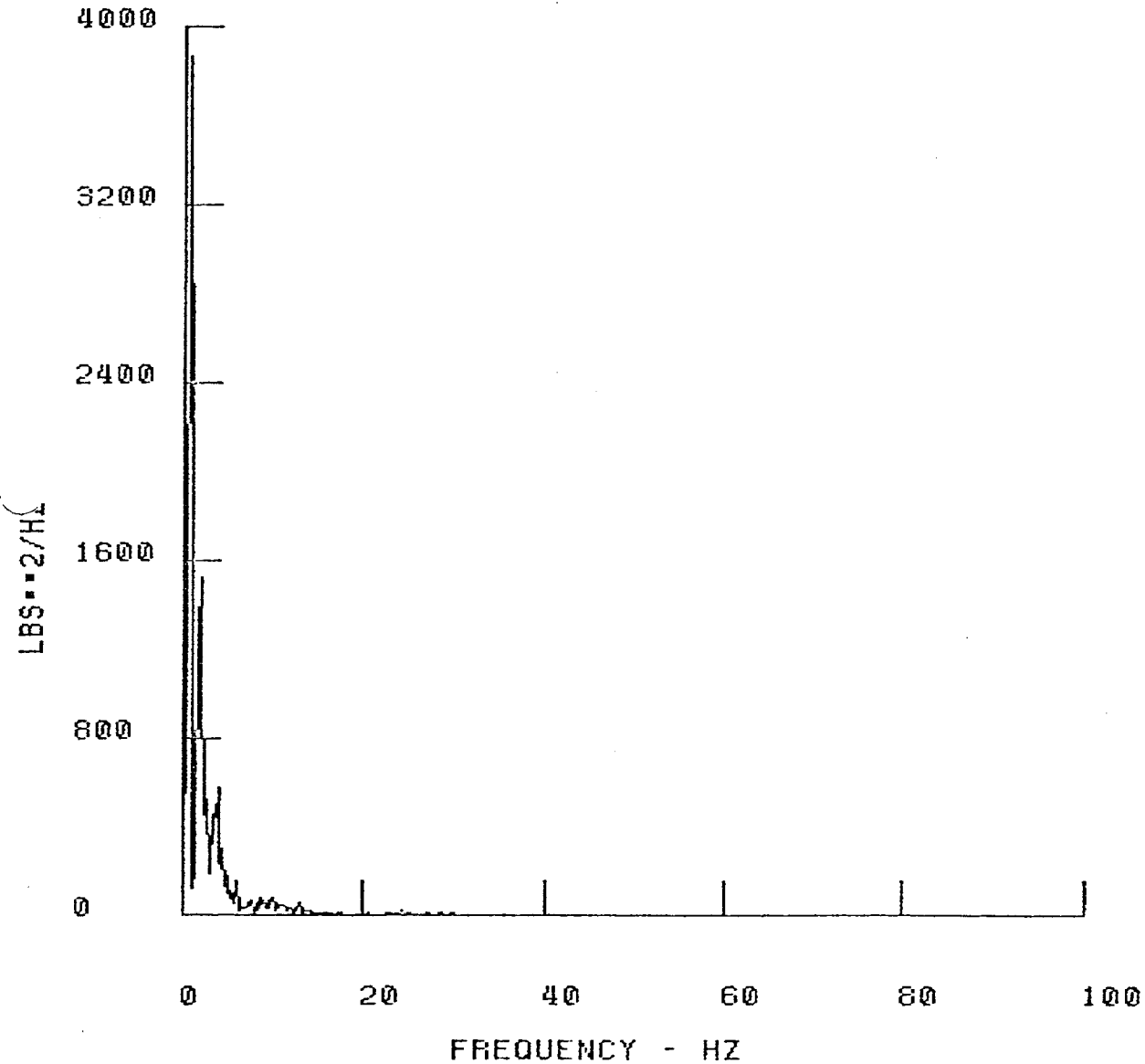
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NYQUIST FREQ = 100.00



XR-1E

PSD

I 275 TASK-1 TSM BOW SEAL LOADS

START TIME 11:47:60

END TIME 11:48:50

X11

PARASOL ACCEL

MAX % ERROR = 31.6228

MEAN = -26.7617

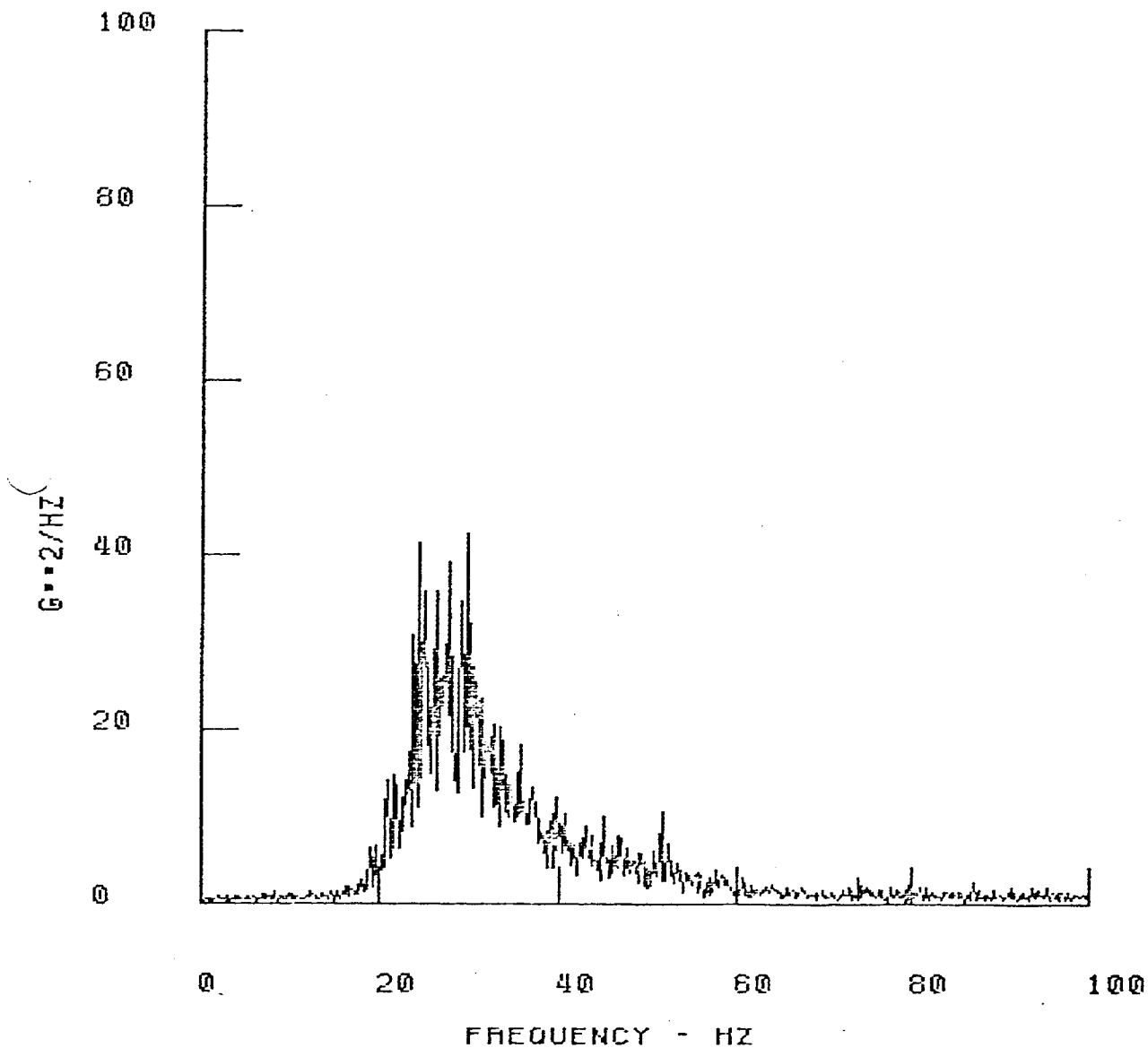
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DELTA TIME = .005

VARIANCE = 390.5791

NYQUIST FREQ = 100.00



XR-1E

PSD

275 TASK-1 TSM BOW SEAL LOADS

START TIME 11:47:60

END TIME 11:48:50

CUSH1 PORT FWD CUSHION PRS

MAX % ERROR = 31.6228

MEAN = 72.3708

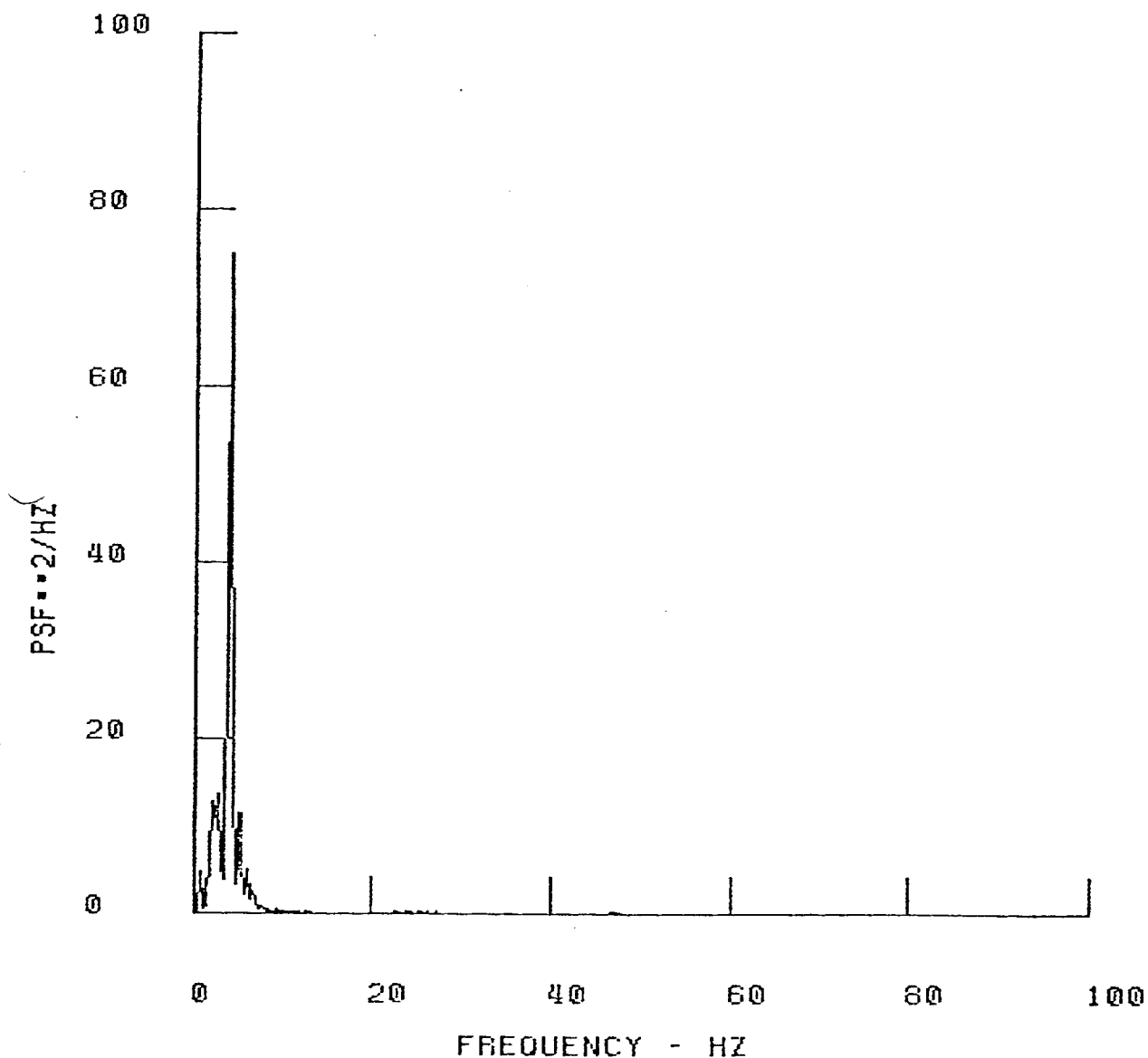
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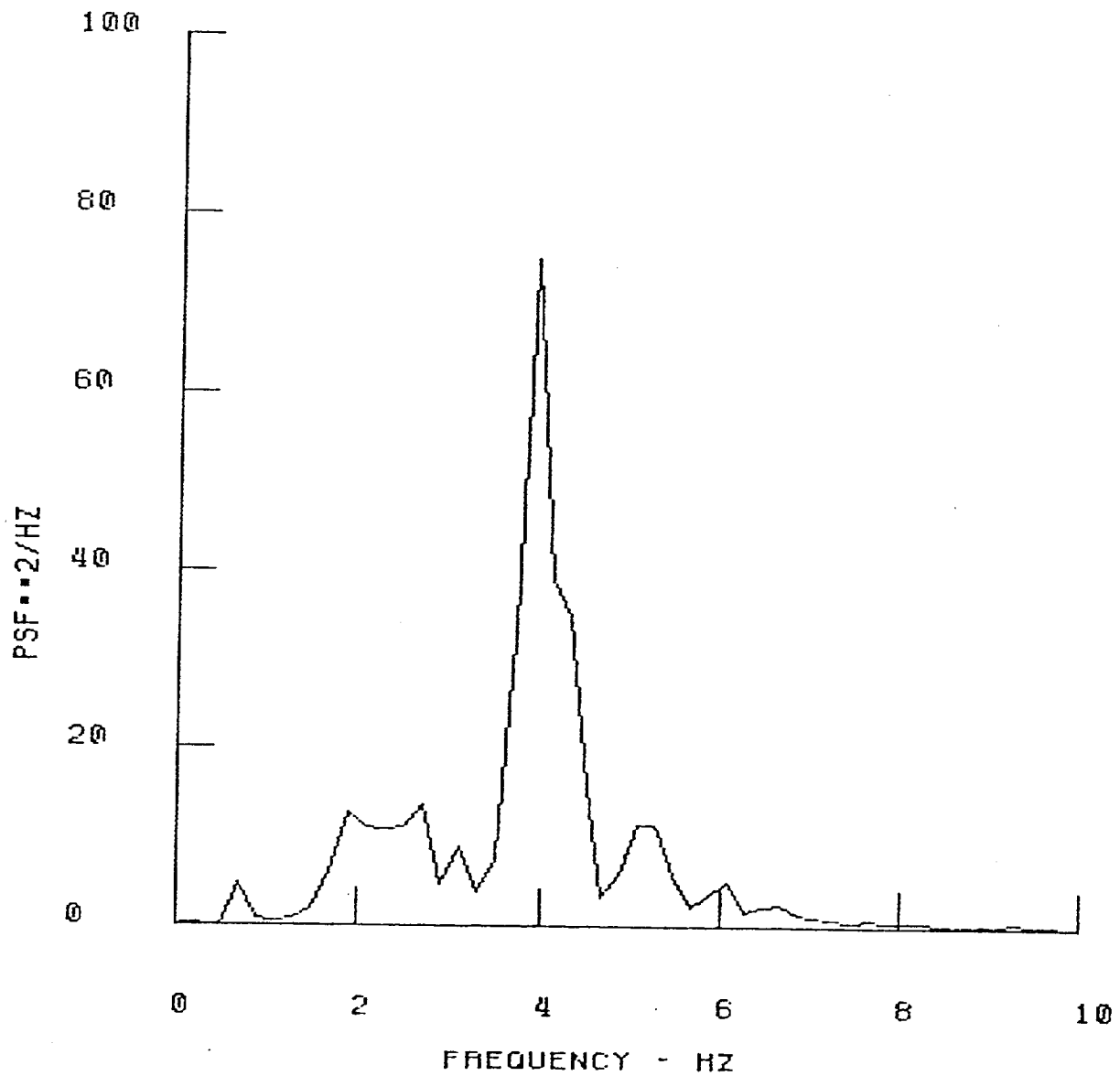
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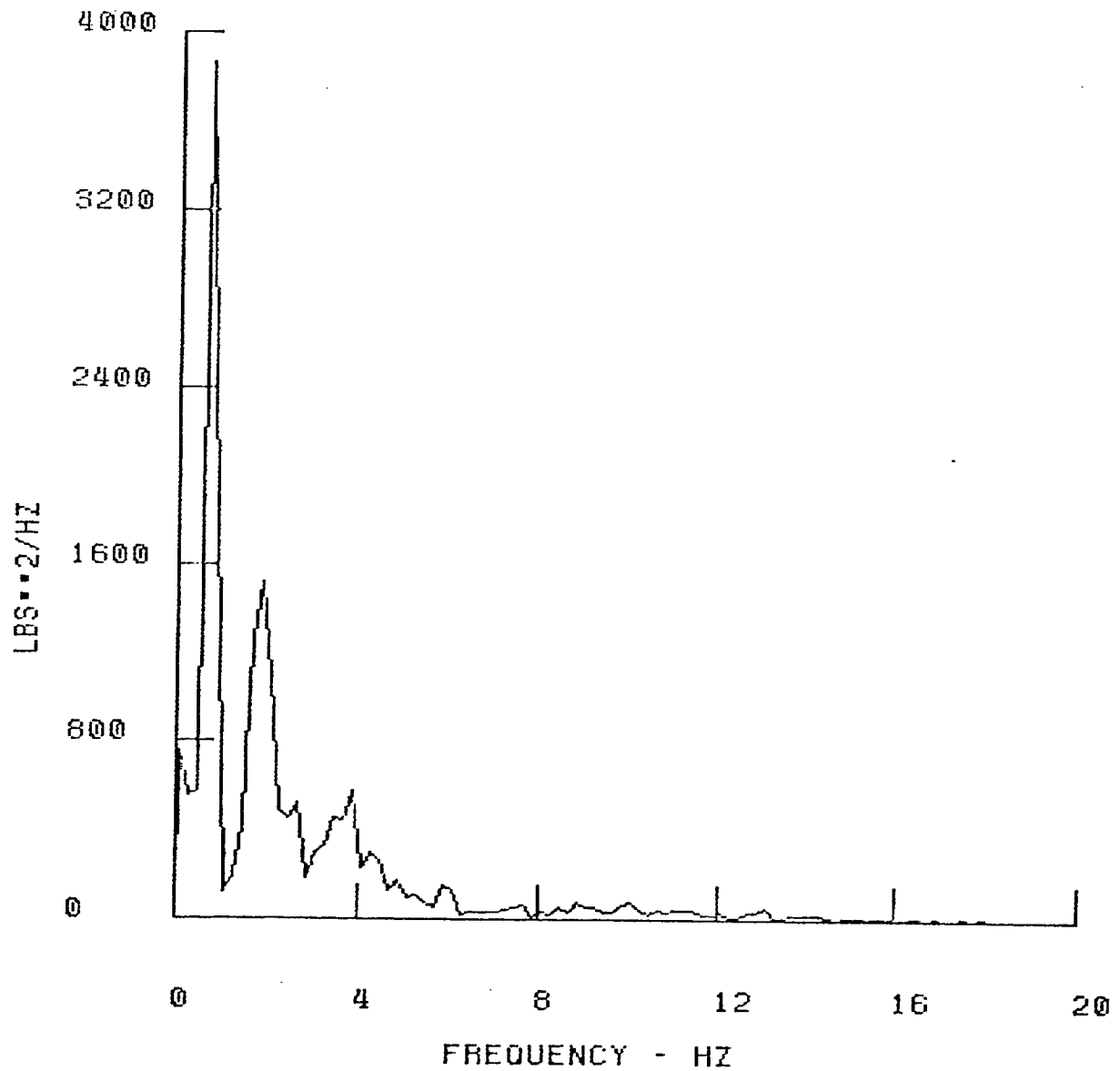
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XR-1E                                PSD
M-275 TASK-1   TSM   BOW SEAL LOADS
START TIME 11:47:60   END TIME 11:48:50
CUSH1   PORT   FWD   CUSHION   PRS
MAX % ERROR = 31.6228   MEAN = 72.3708
BANDWIDTH = .20   ST. DEV = 7.6833
DELTA TIME = .005   VARIANCE = 59.0336
NYQUIST FREQ = 100.00

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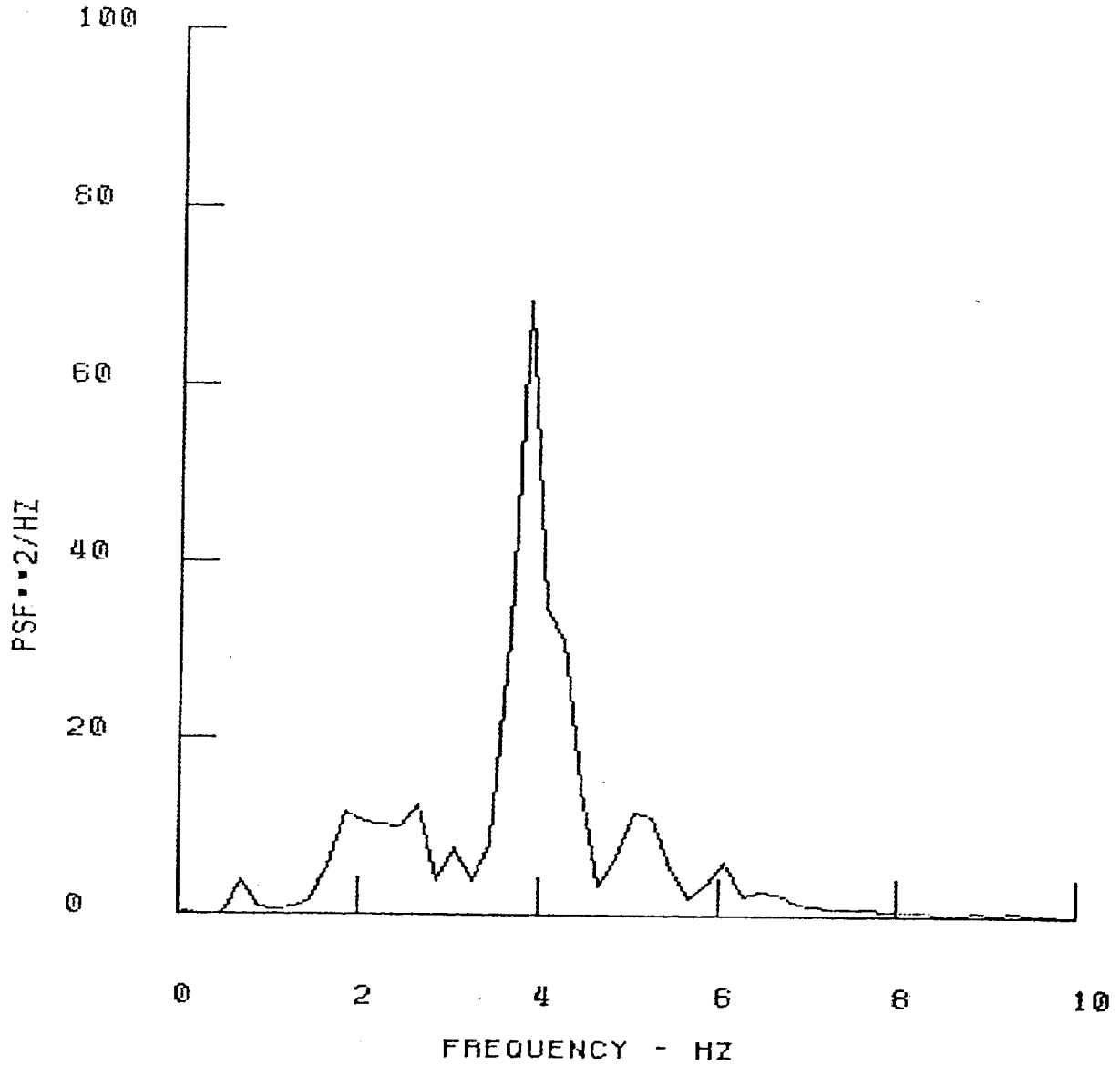
XR-1E PSD
M-275 TASK-1 TSM BOW SEAL LOADS
START TIME 11:47:60 END TIME 11:48:50
BST BOW SEAL TENSION
MAX % ERROR = 31.6228 MEAN = 310.5322
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NYQUIST FREQ = 100.00



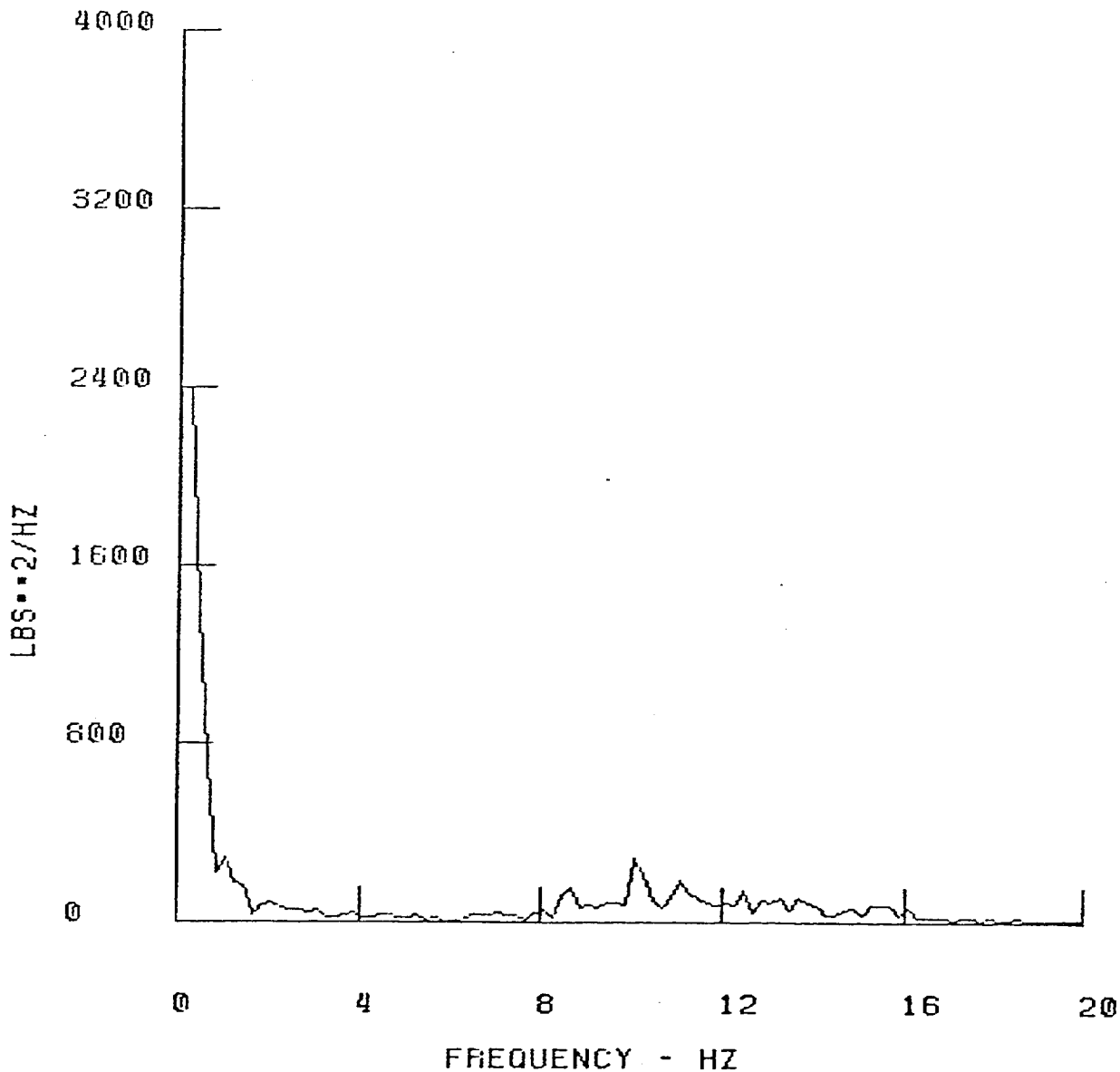
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M-275 TASK-1 TSM BOW SEAL LOADS
START TIME 11:47:60 END TIME 11:48:50

BOWSEALP PORT BOW SEAL PAS.

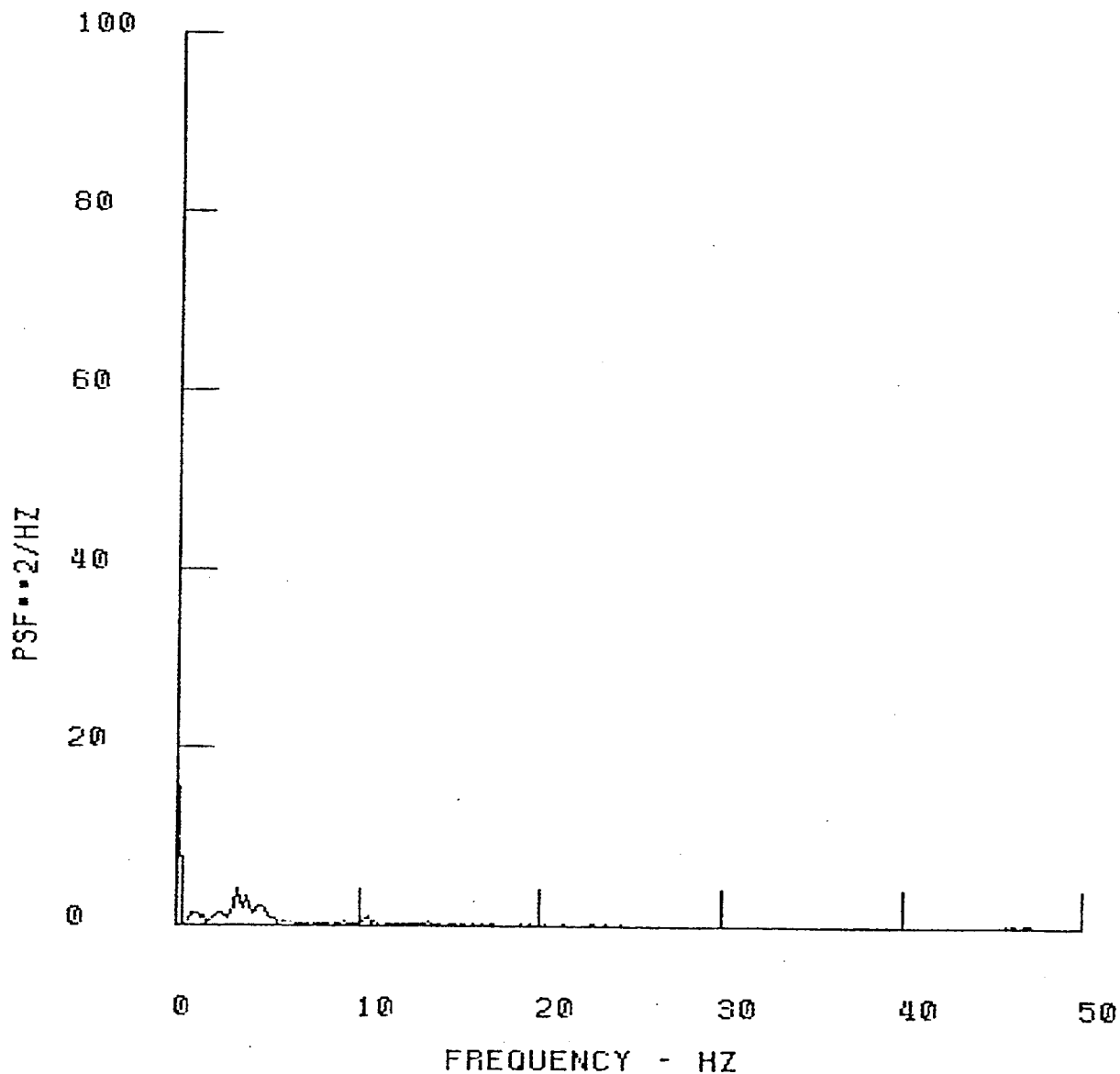
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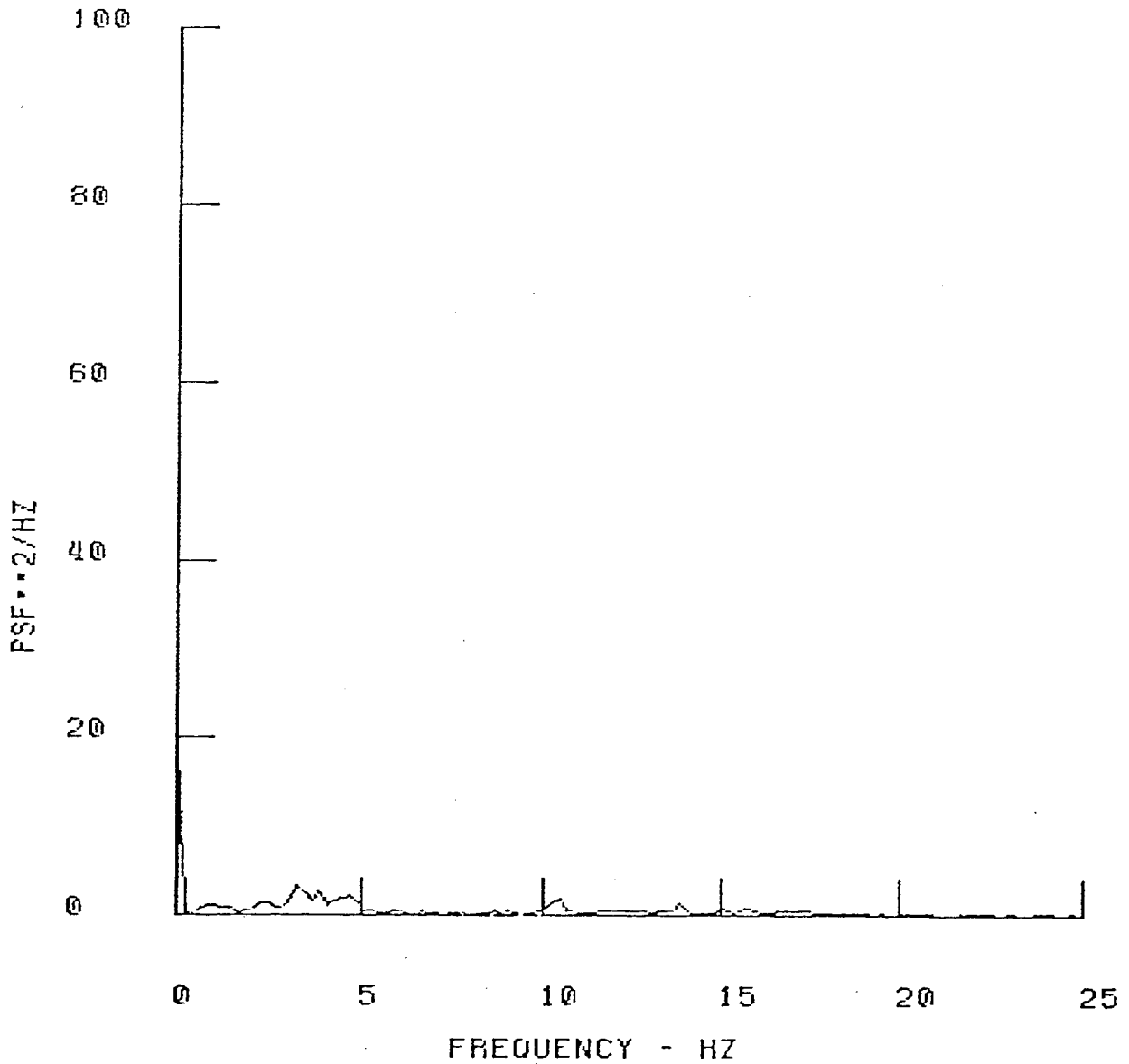
XR-1E		PSD
M-276 TASK-1	TSM BOW SEAL LOADS	
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BSI	BOW SEAL TENSION	
MAX % ERROR = 31.6228	MEAN = 283.0022	
BANDWIDTH = .20	ST. DEV = 81.9733	
DELTA TIME = .005	VARIANCE = 6719.6133	
NYQUIST FREQ = 100.00		



XR-1E PSD
M-276 TASK-1 TSM BOW SEAL LOADS
START TIME 11: 6:20 END TIME 11: 7:10
CUSH1 PORT FWD CUSHION PRS
MAX % ERROR = 31.6228 MEAN = 71.2962
BANDWIDTH = .20 ST. DEV = 3.4250
DELTA TIME = :005 VARIANCE = 11.7309
NYQUIST FREQ = 100.00



XR-1E PSD
M-276 TASK-1 TSM BOW SEAL LOADS
START TIME 11: 6:20 END TIME 11: 7:10
BOWSEALP PORT BOW SEAL PRS.
MAX % ERROR = 31.6228 MEAN = 74.3776
BANDWIDTH. = .20 ST. DEV = 3.6494
DELTA TIME = .005 VARIANCE = 13.3180
NYQUIST FREQ = 100.00



XR-1E

PSD

M-275 TASK-1 TSM BOW SEAL LOADS

START TIME 11:47:60

END TIME 11:48:50

BST BOW SEAL TENSION

MAX % ERROR = 31.6228

MEAN = 310.5322

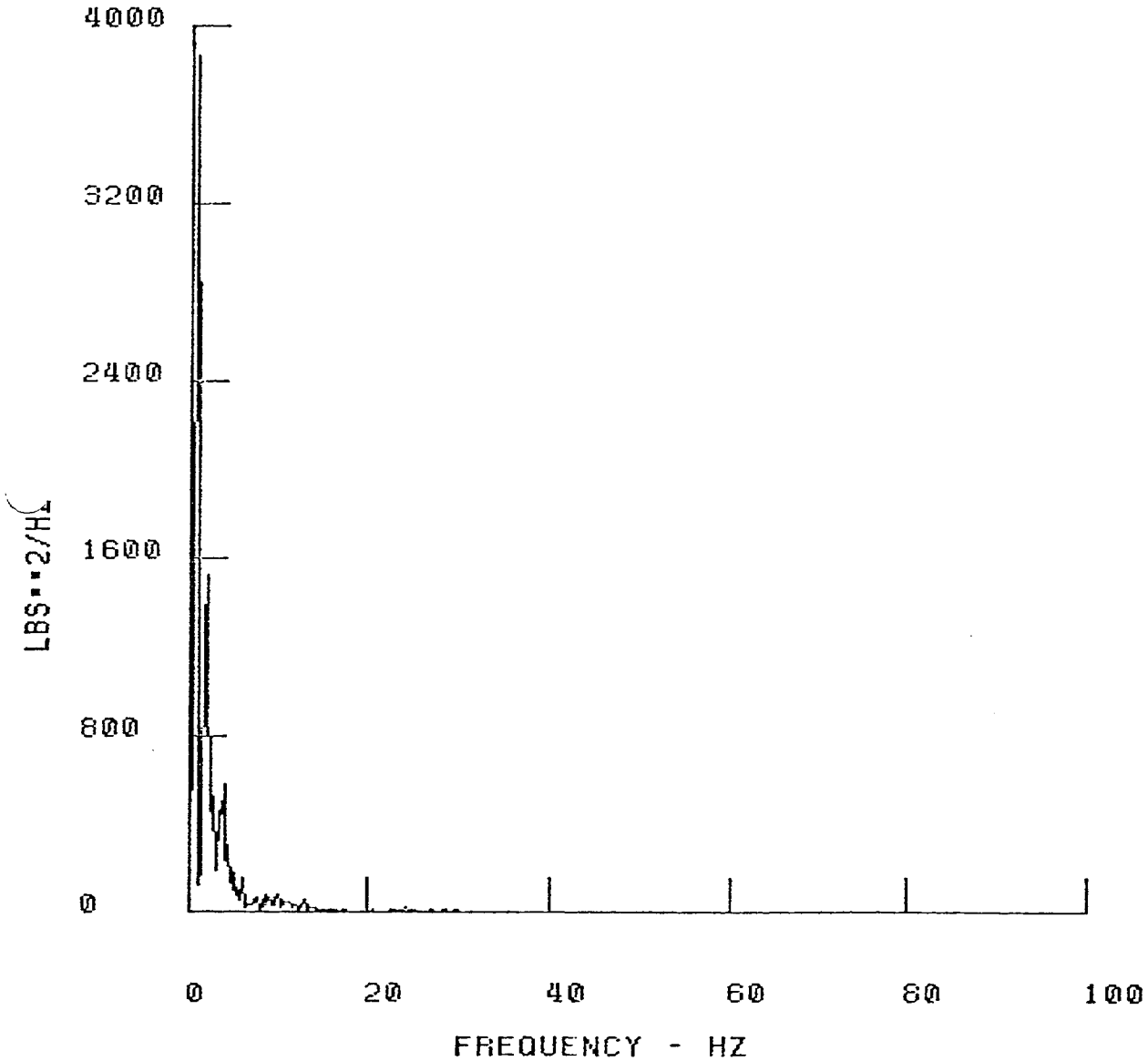
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DELTA TIME = .005

VARIANCE = 3165.0552

NYQUIST FREQ = 100.00



XR-1E

PSD

M 275 TASK-1 TSM BOW SEAL LOADS

START TIME 11:47:60

END TIME 11:48:50

X11

PARASOL ACCEL

MAX % ERROR = 31.6228

MEAN = -26.7617

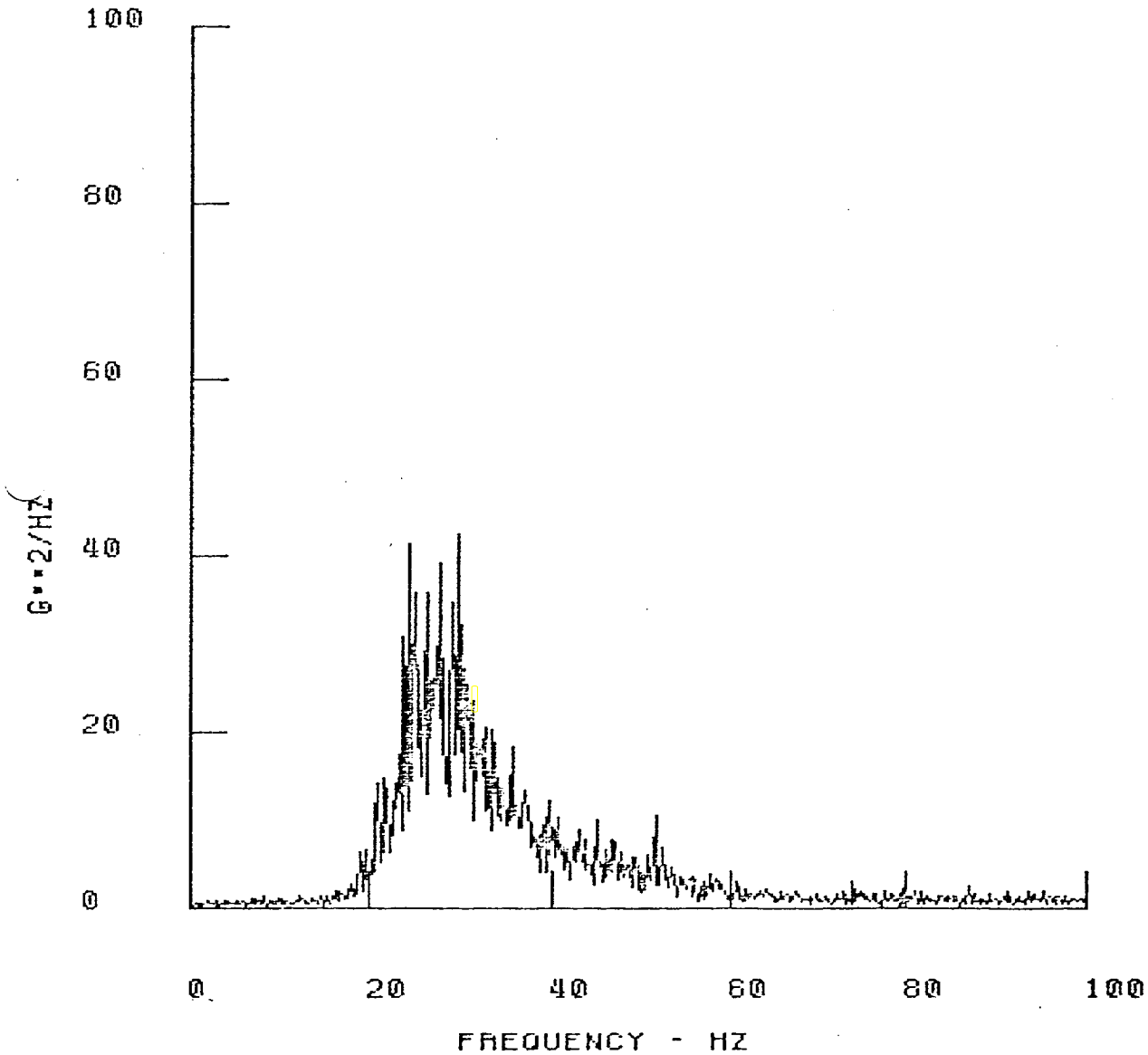
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DELTA TIME = .005

VARIANCE = 390.5791

NYQUIST FREQ = 100.00



XR-1E

PSD

275 TASK-1 TSM BOW SEAL LOADS

START TIME 11:47:60

END TIME 11:48:50

CUSH1 PORT FWD CUSHION PRS

MAX % ERROR = 31.6228

MEAN = 72.3708

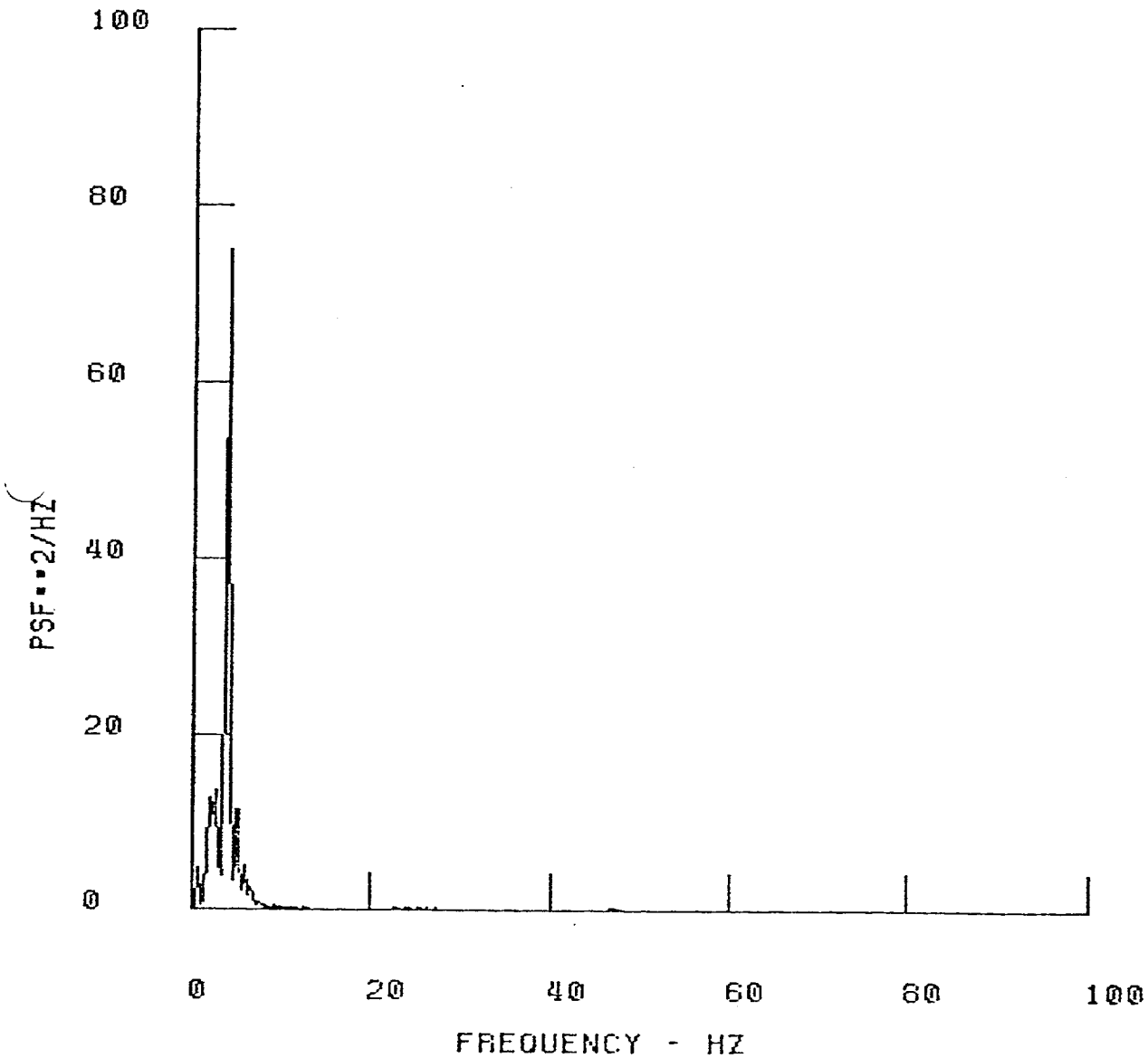
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DELTA TIME = .005

VARIANCE = 59.0336

NYQUIST FREQ = 100.00



XR-1E

PSD

M-275 TASK-1 TSM BOW SEAL LOADS

START TIME 11:47:60

END TIME 11:48:50

BOWSEALP PORT BOW SEAL PRS.

MAX % ERROR = 31.6228

MEAN = 75.0454

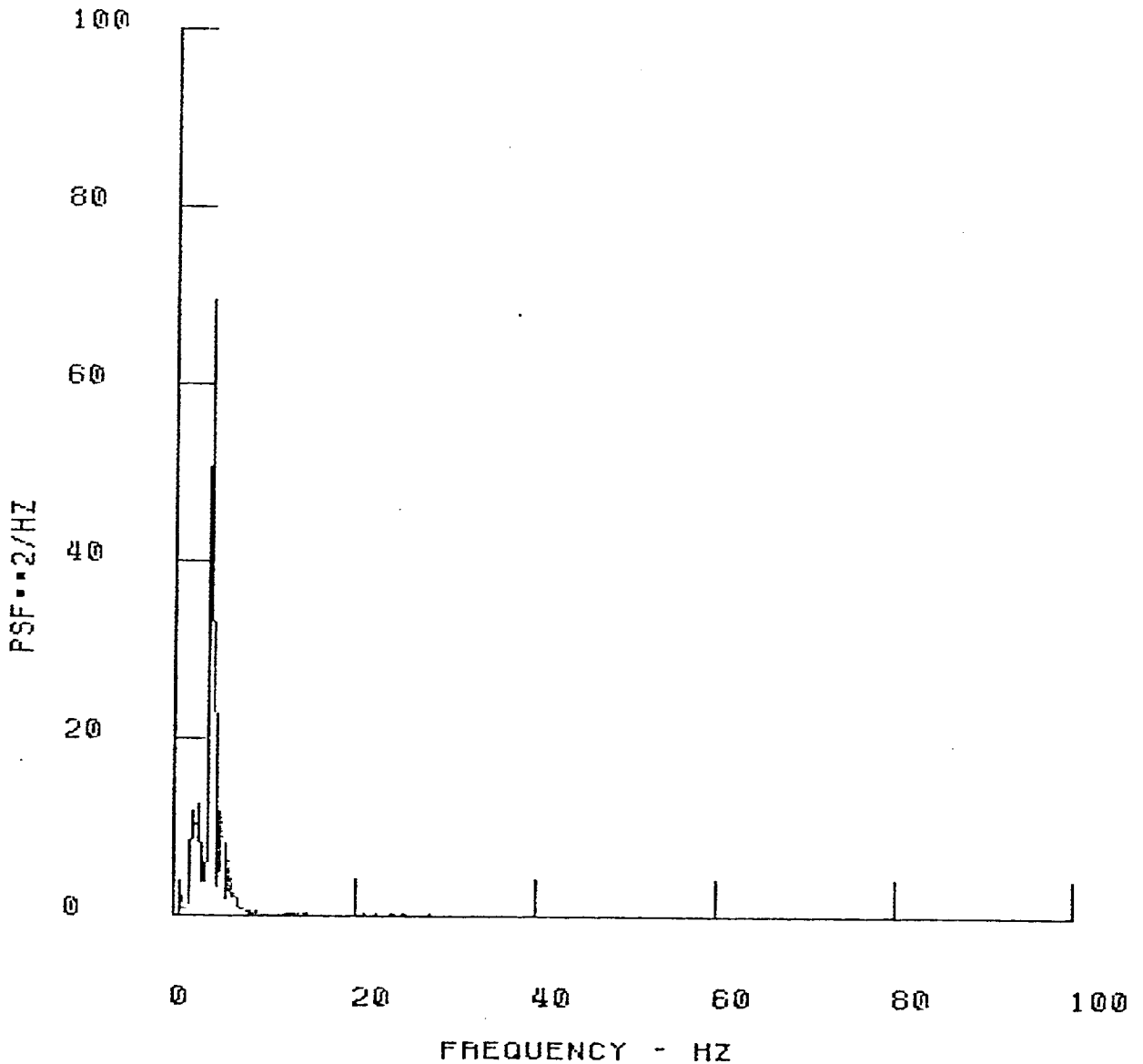
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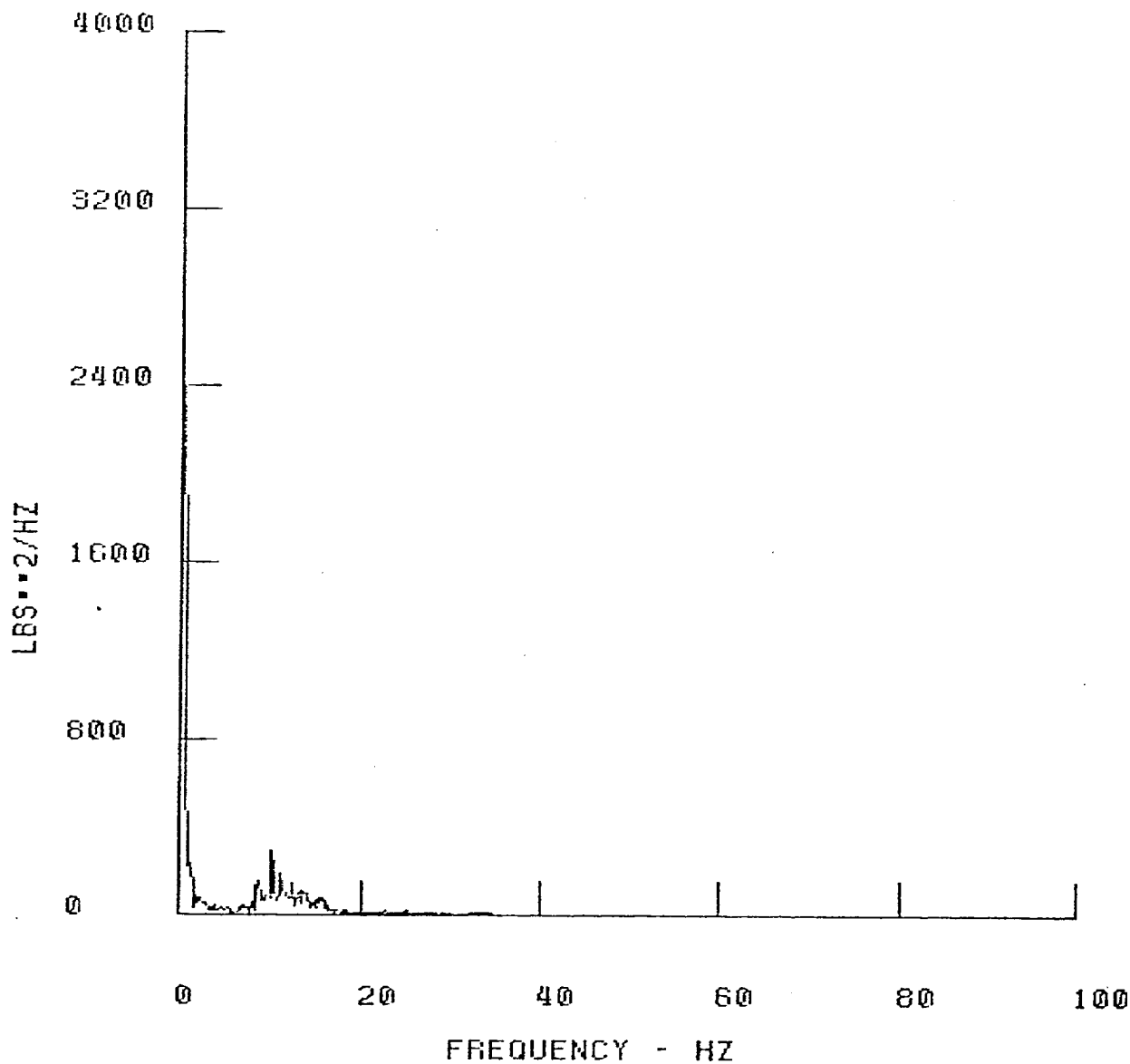
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NYQUIST FREQ = 100.00



XR-1E		PSD
M-276 TASK-1	TSM BOW SEAL LOADS	
START TIME 11: 6:20		END TIME 11: 7:10
<u>BST</u>	<u>BOW SEAL TENSION</u>	
MAX % ERROR = 31.6228	MEAN = 283.0022	
BANDWIDTH = .20	ST. DEV = 81.9733	
DELTA TIME = .005	VARIANCE = 6719.6133	
NYQUIST FREQ = 100.00		



XR-1E

M-276 TASK-1

TSM BOW SEAL LOADS

PSD

START TIME 11: 6:20

END TIME 11: 7:10

X11

PARASOL ACCEL

MAX % ERROR = 31.6228

MEAN = -28.1861

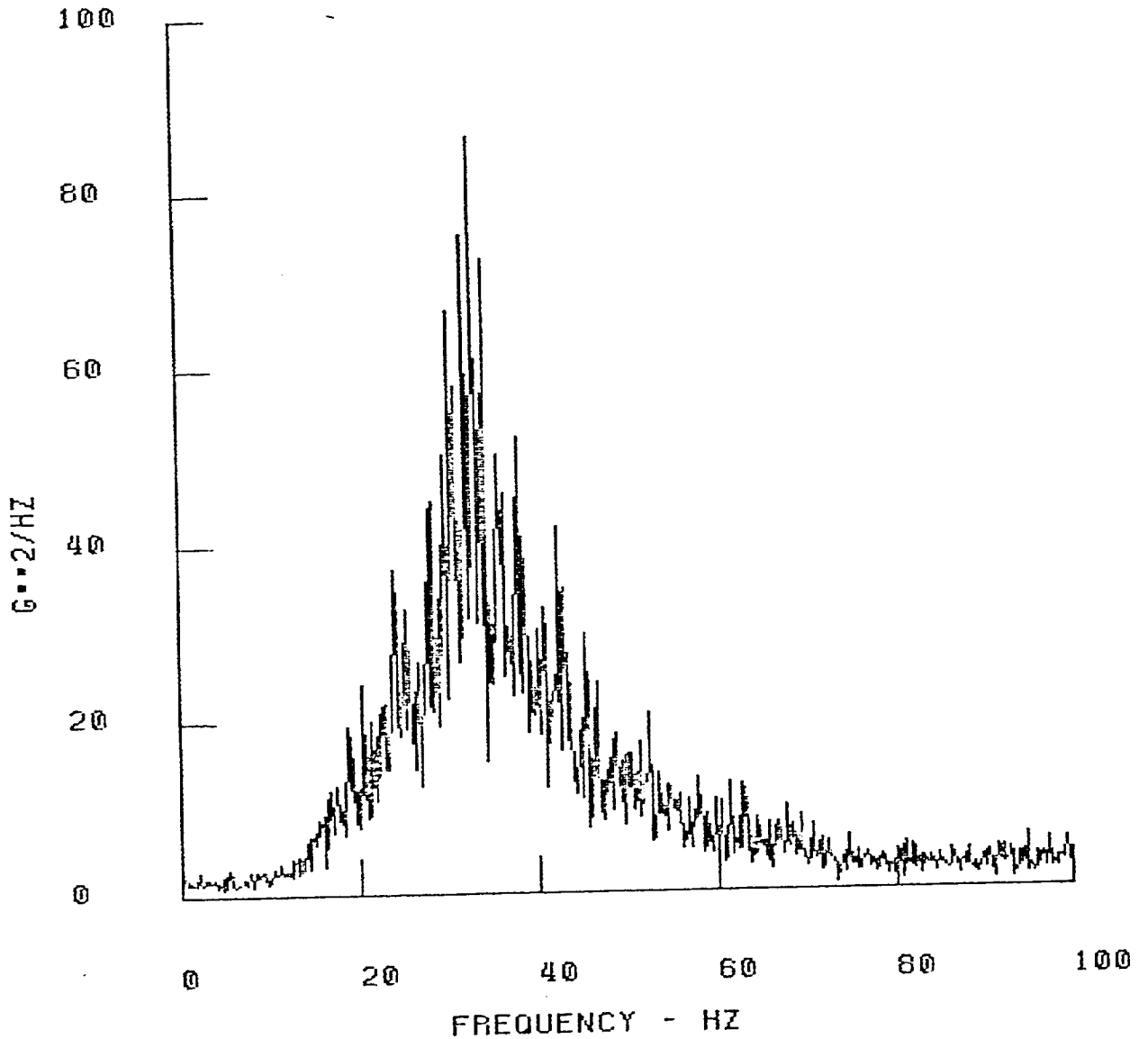
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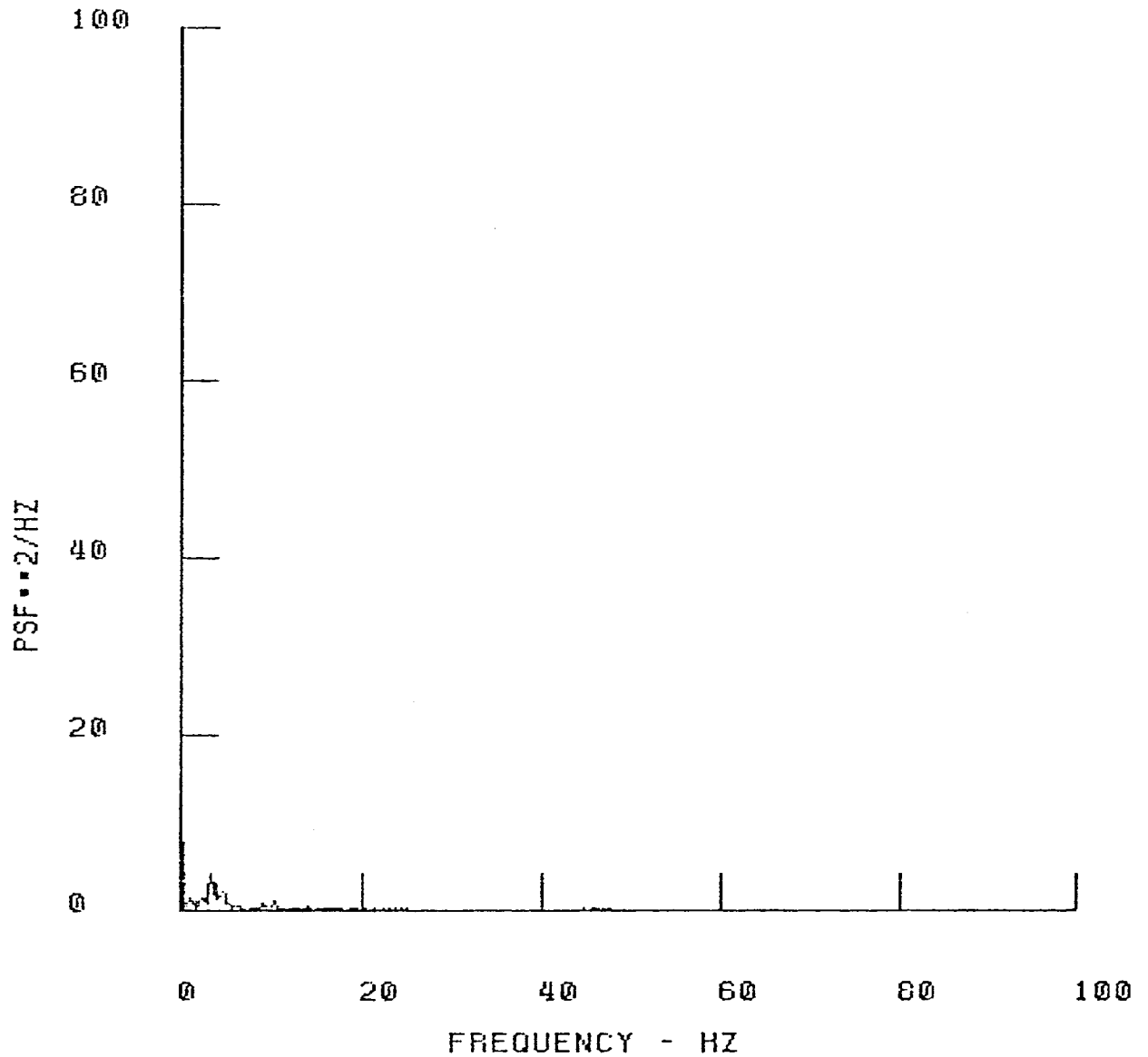
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NYQUIST FREQ = 100.00



XR-1E PSD
M-276 TASK-1 TSM BOW SEAL LOADS
START TIME 11: 6:20 END TIME 11: 7:10
CUSH1 PORT FWD CUSHION PRS
MAX % ERROR = 31.6228 MEAN = 71.2962
BANDWIDTH = .20 ST. DEV = 3.4250
DELTA TIME = .005 VARIANCE = 11.7309
NYQUIST FREQ = 100.00



XR-1E

PSD

M 276 TASK-1 TSM BOW SEAL LOADS

START TIME 11: 6:20

END TIME 11: 7:10

BOWSEALP PORT BOW SEAL PRS.

MAX % ERROR = 31.6228

MEAN = 74.3776

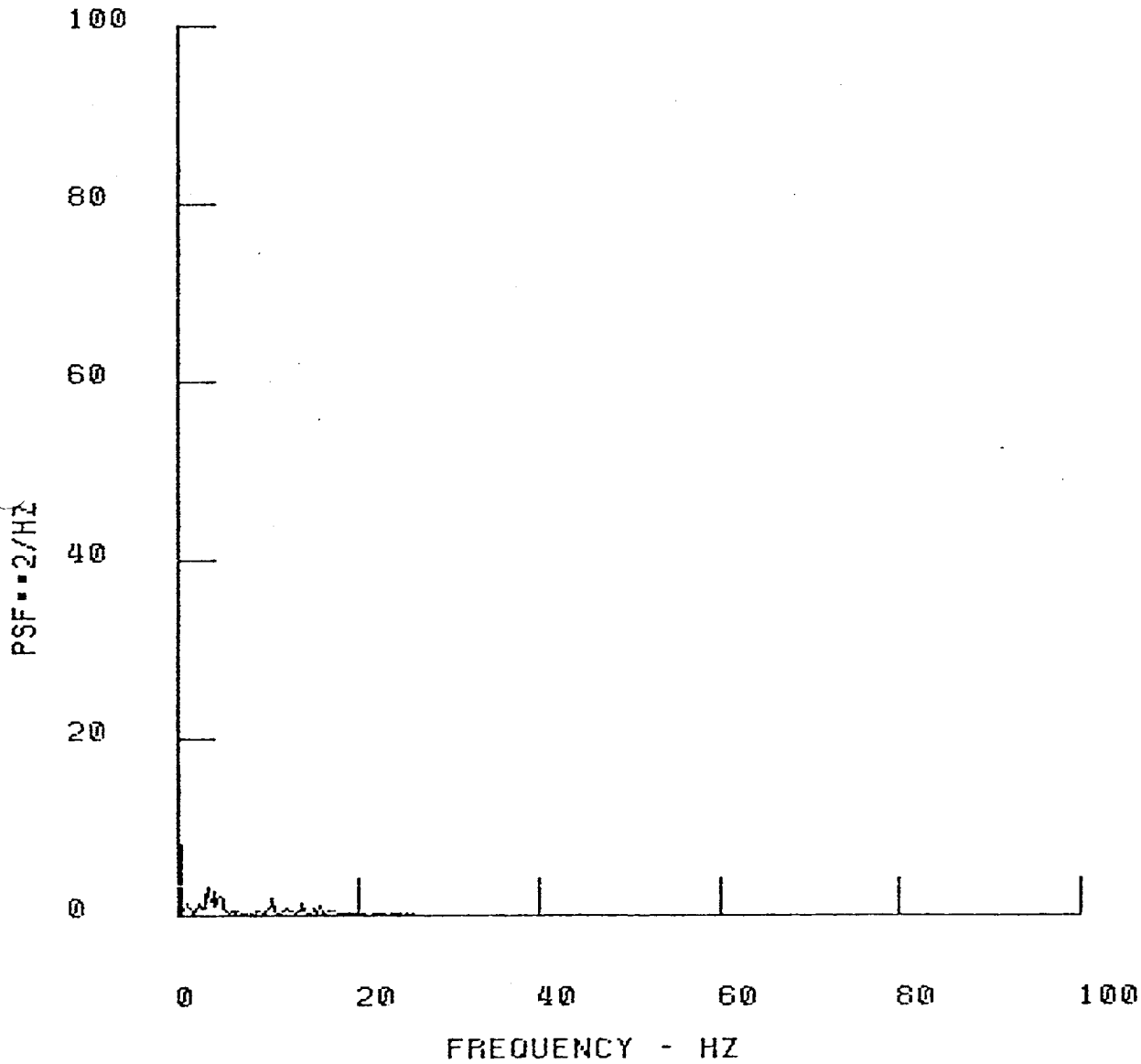
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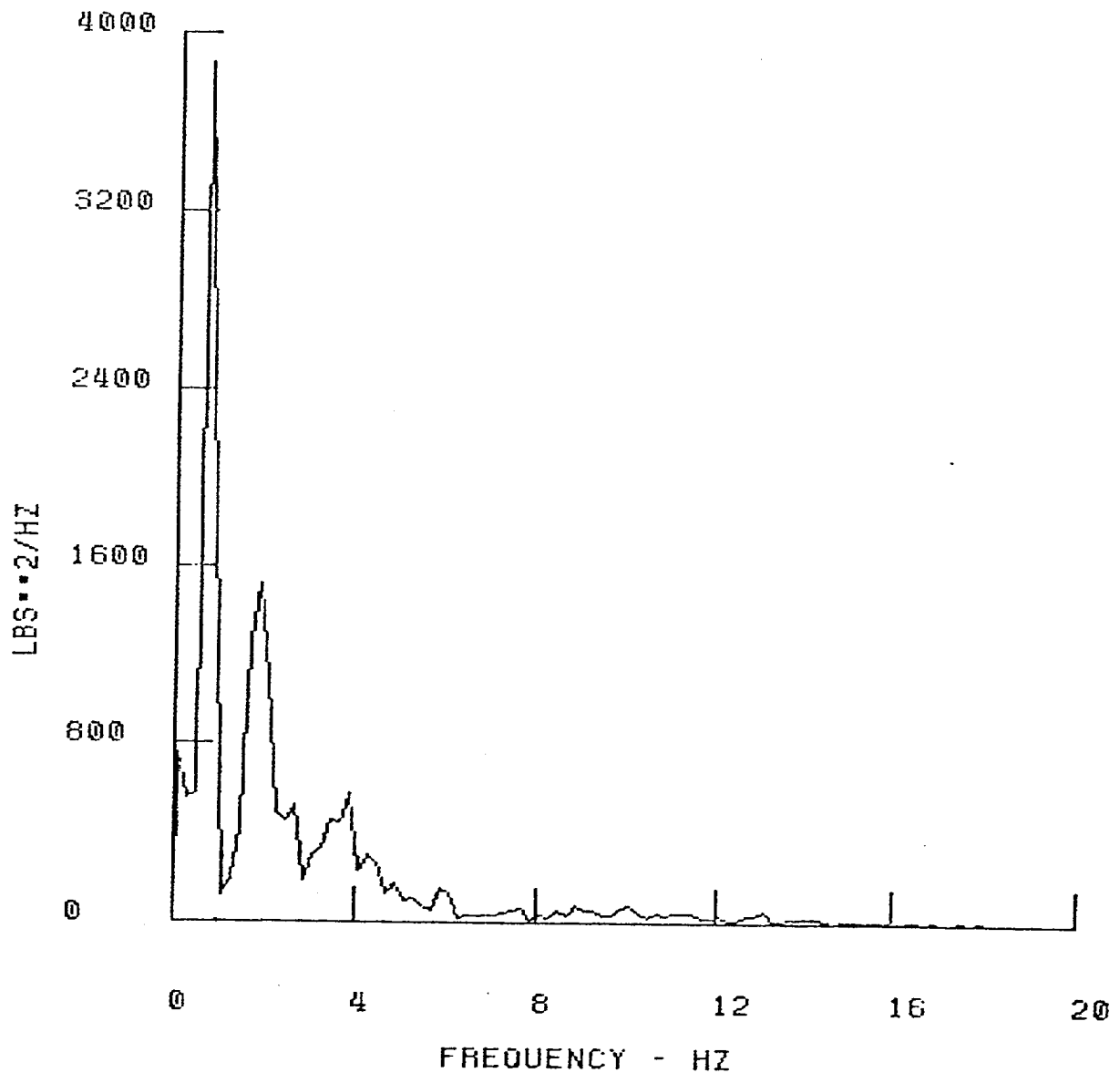
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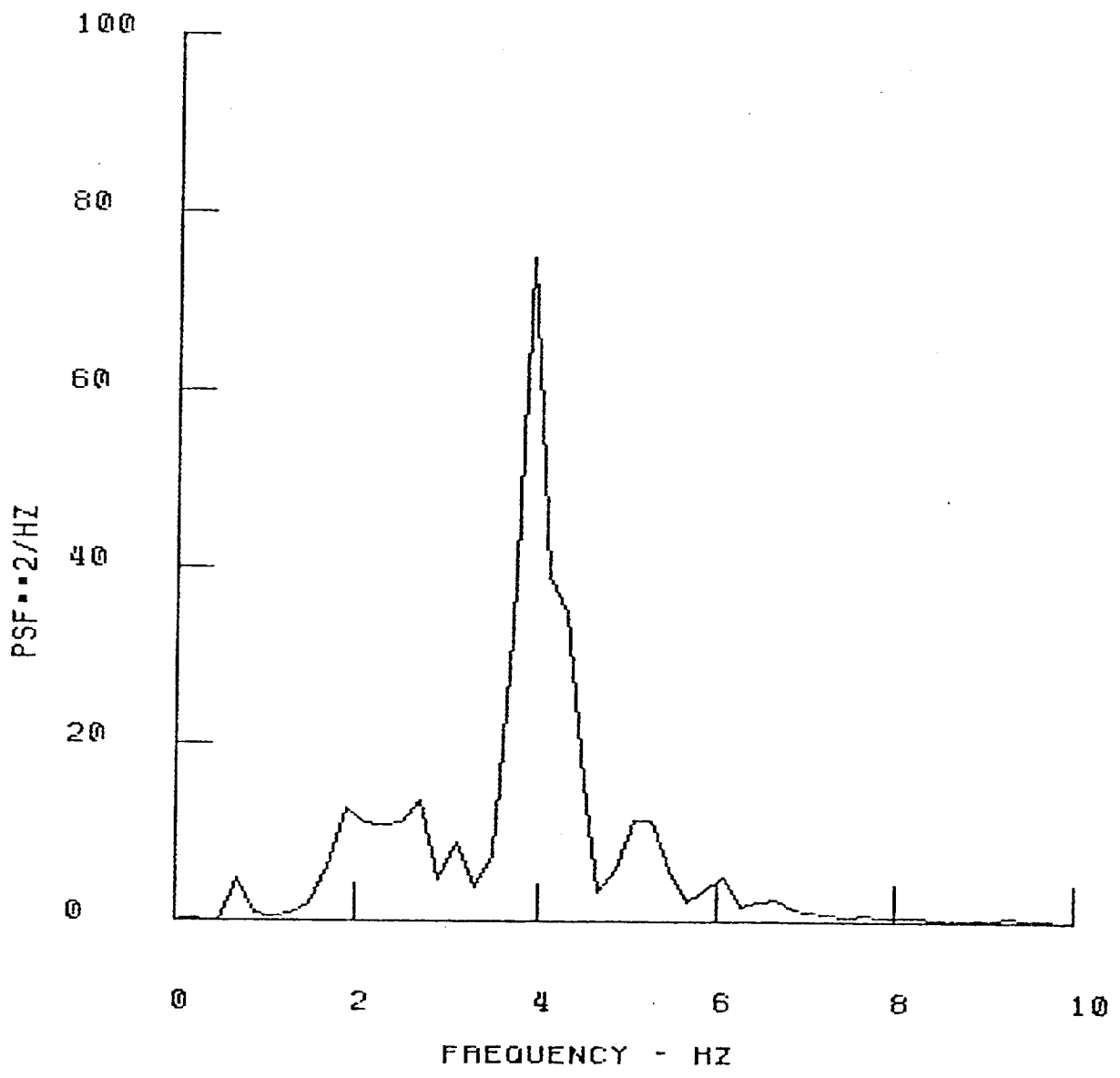


XR-1E PSD
M-275 TASK-1 TSM BOW SEAL LOADS
START TIME 11:47:60 END TIME 11:48:50

BST BOW SEAL TENSION
MAX % ERROR = 31.6228 MEAN = 310.5322
BANDWIDTH = .20 ST. DEV = 56.2588
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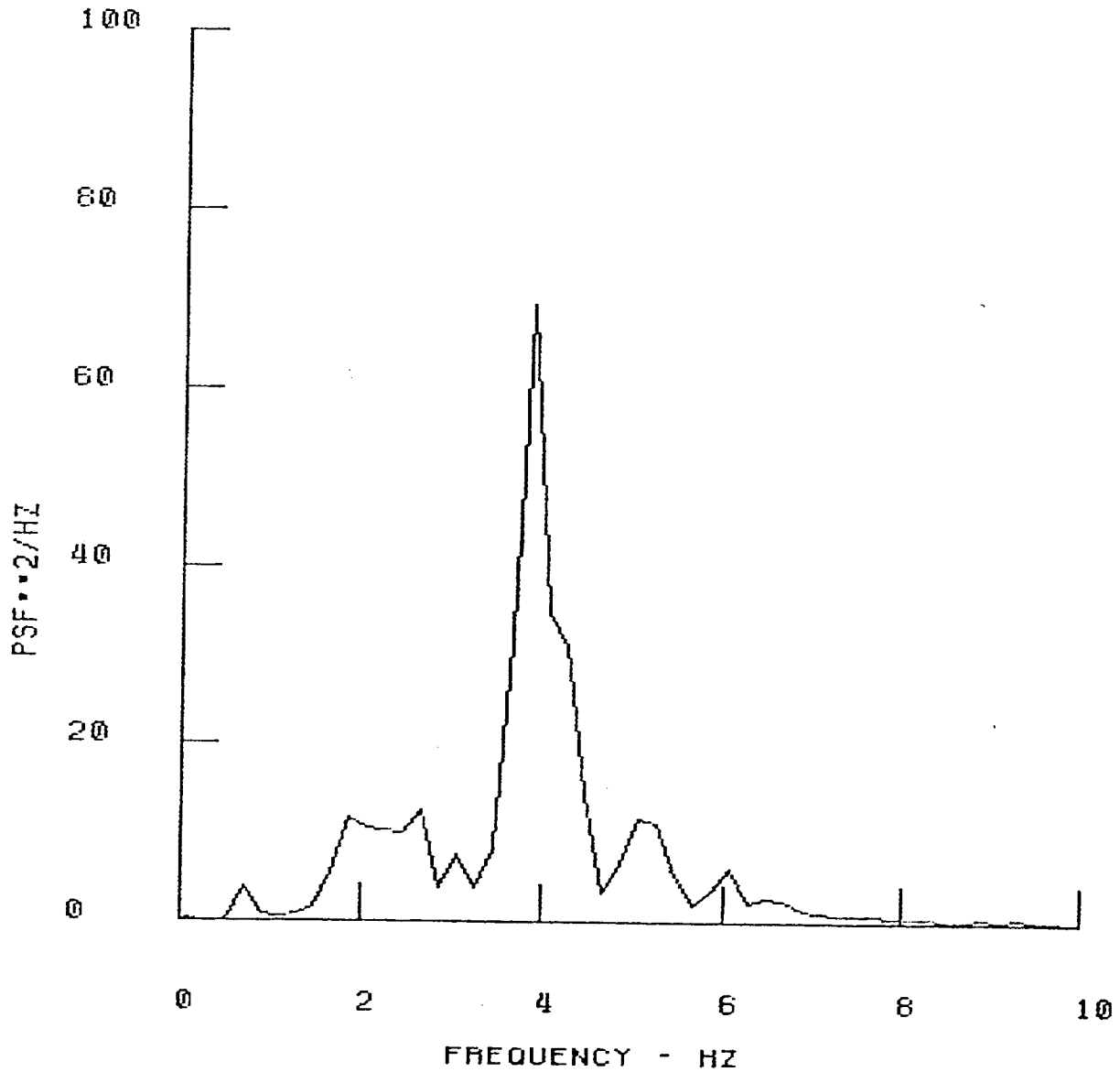


XR-1E PSD
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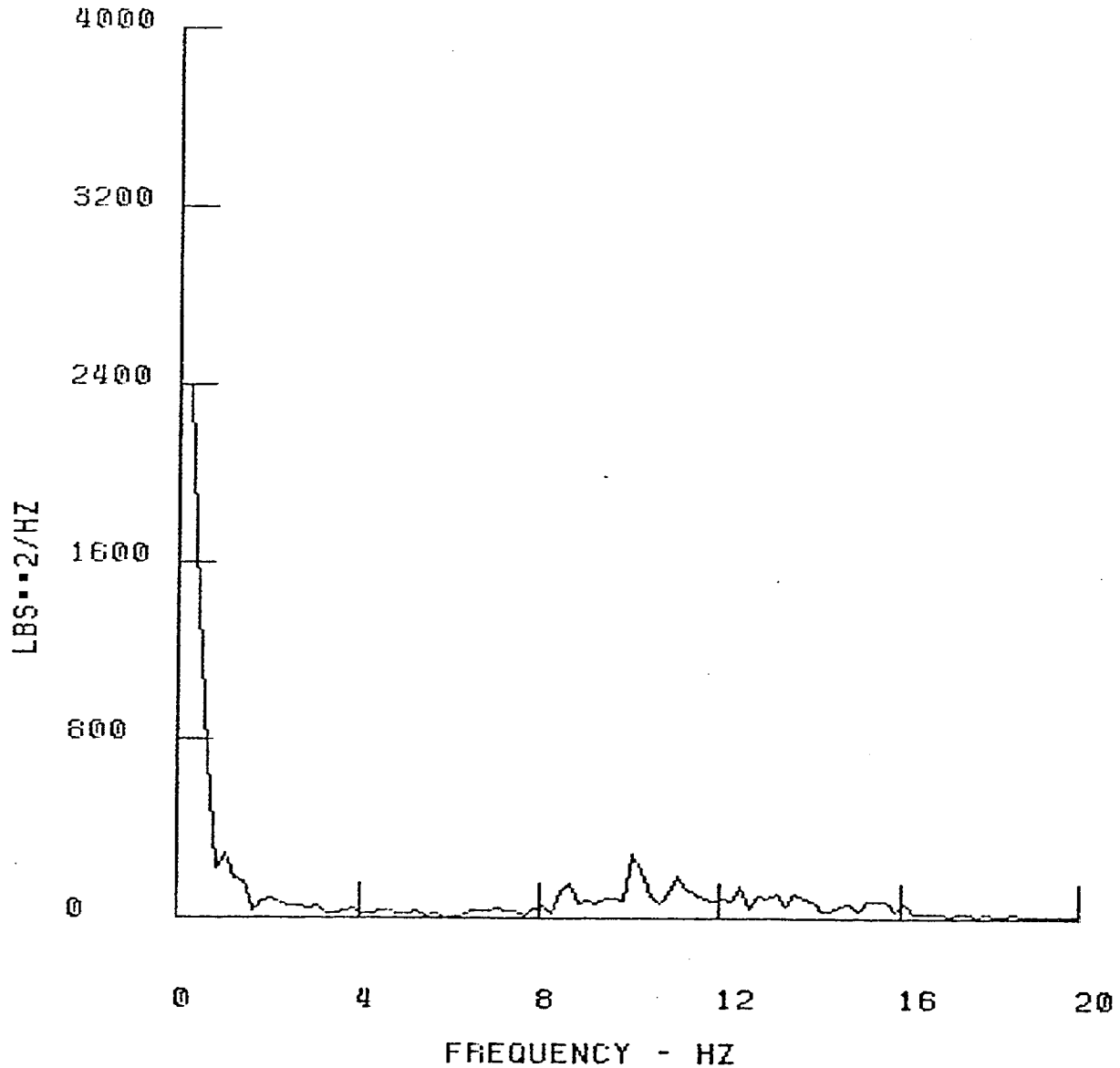


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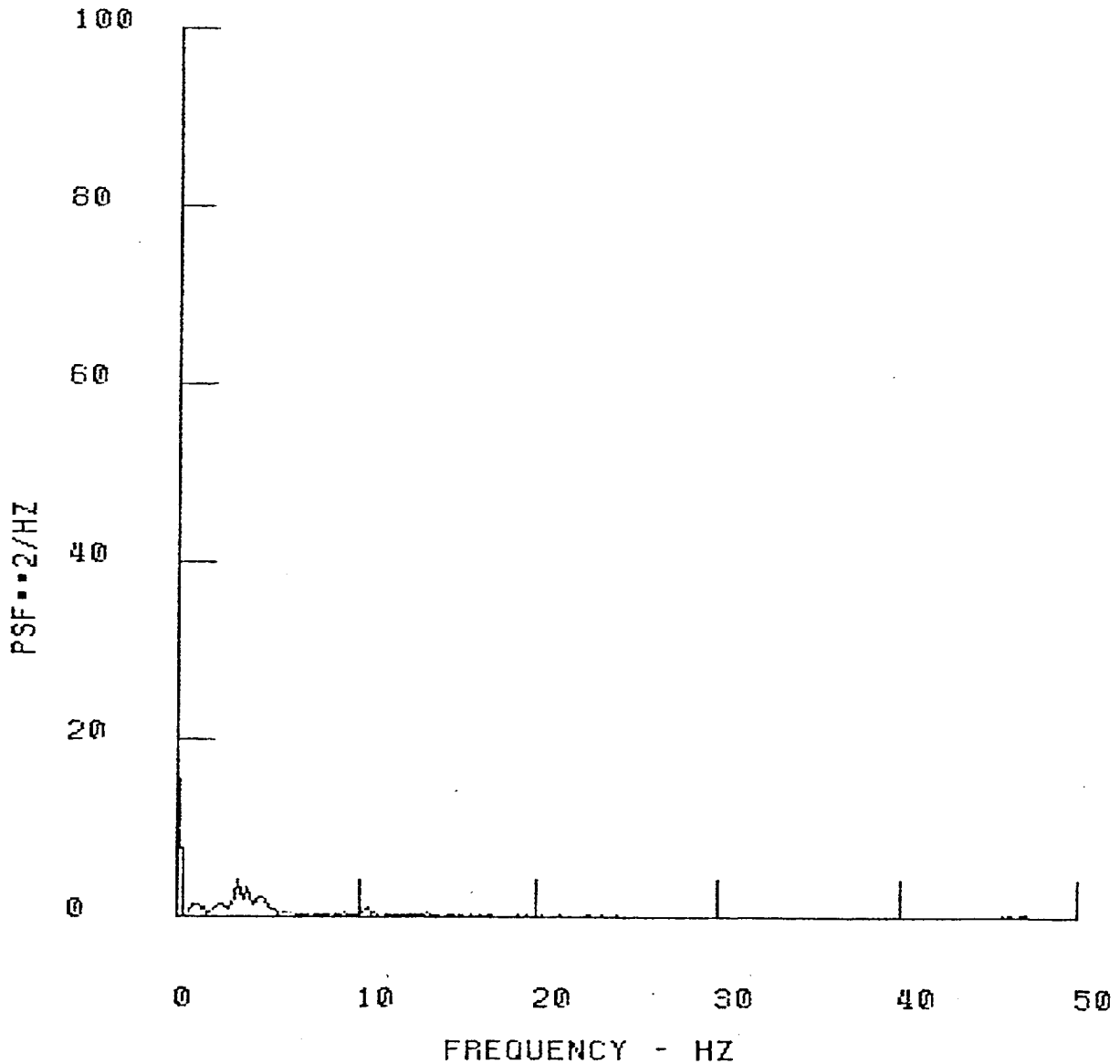
BOWSEALP PORT BOW SEAL PRS.
MAX % ERROR = 31.6228 MEAN = 75.0454
BANDWIDTH = .20 ST. DEV = 7.4806
DELTA TIME = .005 VARIANCE = 55.9600
NYQUIST FREQ = 100.00



XR-1E PSD
M-276 TASK-1 TSM BOW SEAL LOADS
START TIME 11: 6:20 END TIME 11: 7:10
BST BOW SEAL TENSION
MAX % ERROR = 31.6228 MEAN = 283.0022
BANDWIDTH = .20 ST. DEV = 81.9733
DELTA TIME = .005 VARIANCE = 6719.6133
NYQUIST FREQ = 100.00



XR-1E		PSD
M-276 TASK-1	TSM BOW SEAL LOADS	
START TIME 11: 6:20	END TIME 11: 7:10	
CUSH1	PORT	FWD
	CUSHION	PR\$
MAX % ERROR = 31.6228	MEAN = 71.2962	
BANDWIDTH = .20	ST. DEV = 3.4250	
DELTA TIME = :005	VARIANCE = 11.7309	
NYQUIST FREQ = 100.00		



XR-1E

PSD

M-276 TASK-1 TSM BOW SEAL LOADS

START TIME 11: 6:20

END TIME 11: 7:10

BOWSEALP PORT BOW SEAL PRS.

MAX % ERROR = 31.6228

MEAN = 74.3776

BANDWIDTH. = .20

ST. DEV = 3.6494

DELTA TIME = .005

VARIANCE = 13.3180

NYQUIST FREQ = 100.00

