

DAYTON T. BROWN INC.

ENGINEERING AND TEST DIVISION

CHURCH STREET, BOHEMIA, LONG ISLAND,
NEW YORK 11716 / (516) 589-6300

TEST REPORT / PROCEDURE No.DTB04R80-1077.....

DAYTON T. BROWN, INC. JOB No.402871-00-000.....

CUSTOMER: VALCOR ENGINEERING CORPORATION
2 LAWRENCE ROAD
SPRINGFIELD, NEW JERSEY 07081

SUBJECT: SEISMIC VIBRATION TEST PROGRAM
PERFORMED ON ONE SOLENOID VALVE;
PART NUMBER V70900-301, REVISION
G, SERIAL NUMBER 1

ATTENTION: MR. E. NAMIOTKO

THIS REPORT CONTAINS: FIVE PAGES AND TWO ENCLOSURES

PREPARED BY	S. WIZEMANN <i>S. Wizemann</i>
TEST ENGINEER	W. SCHAAF <i>W. SchAAF</i>
STAFF ENGINEER	S. P. BENZA <i>S. P. Benza</i>
DATE	20 SEPTEMBER 1980

THE DATA CONTAINED IN THIS REPORT WAS OBTAINED BY TESTING
IN COMPLIANCE WITH THE APPLICABLE TEST SPECIFICATION AS NOTED

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(1) Seismic Vibration Tests and Results	25 Pages
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1.0 ABSTRACT

This test report details the results of seismic vibration test program conducted on one solenoid valve, part number 70900-301, revision G, serial number 1, under reference (a) to the requirements of reference (c).

Results of the test are detailed in the following text.

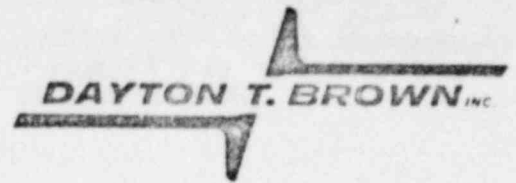
The test item was operated during specified portions of testing.

The test item's operation was the sole responsibility of Valcor Engineering Corporation personnel, and all operational data was retained by same.

Test data pertinent to this program will remain on file at Dayton T. Brown, Inc. for 90 days.

2.0 REFERENCES

- (a) Customer Purchase Order Number 45232
- (b) Dayton T. Brown, Inc. Job Number 402871-00-000
- (c) Test Specification Valcor Engineering Corporation - S-1424, as modified
per Valcor Engineering Corporation



3.0 ADMINISTRATIVE INFORMATION

Customer: Valcor Engineering Corporation

Test Item Description: Solenoid Valve

Quantity Received: One

Part Number: V70900-301, Revision G

Serial Number: 1

Date Received: 27 August 1980

Date Shipped: 27 August 1980

Customer Representative Present During Portions of Test:

<u>Name</u>	<u>Affiliation</u>
Mr. E. Namiotko	Valcor Engineering Corporation

4.0 TEST PROGRAM OUTLINE

<u>Test</u>	<u>Test Item Description</u>	<u>Results</u>
Seismic Vibration	Solenoid Valve; Part Number V70900-301, Revision G, Serial Number 1	See Enclosure 1 for details

Enclosure 1

Seismic Vibration Test and Results



TEST REQUIREMENT

The seismic vibration test shall be conducted in accordance with reference (c).

TEST RESULTS

A pretest visual inspection of the test item revealed no anomalies.

All testing was performed in accordance with the referenced specification.

Refer to the seismic vibration test summary for tabulated results.

Seismic Vibration Test Summary

<u>Sequence</u>	<u>Item</u>	<u>Axis</u>	<u>Condition</u>	<u>Frequency (Hz)</u>	<u>Duration (min.)</u>	<u>Remarks</u>	<u>Graph Page No. (Enc. '1)</u>
1	Solenoid Valve; Part Number V70900-301, Revision G, Serial Number 1	Y	Survey	1-50	5.5	See Photograph Number 1 in Enclosure 2	4 - 7
2	Solenoid Valve; Part Number V70900-301, Revision G, Serial Number 1	Z	Survey	1-50	5.5	-	8 - 11
3	Solenoid Valve; Part Number V70900-301, Revision G, Serial Number 1	X	Survey	1-50	5.5	-	12 - 15
4	Solenoid Valve; Part Number V70900-301, Revision G, Serial Number 1	X-Z	Bi-axial Sine, In-phase	1-40	11.5	-	16, 17
5	Solenoid Valve; Part Number V70900-301, Revision G, Serial Number 1	X-Z	Bi-axial Sine, 180° out-of-phase	1-40	11.5	-	18, 19

Seismic Vibration Test Summary
(Continued)

<u>Sequence</u>	<u>Item</u>	<u>Axis</u>	<u>Condition</u>	<u>Frequency (Hz)</u>	<u>Duration (min.)</u>	<u>Remarks</u>	<u>*Graph Page No. (Enc. 1)</u>
6	Solenoid Valve; Part Number V70900-301, Revision G, Serial Number 1	Y-Z	Bi-axial Sine, 180° out-of-phase	1-40	11.5	-	20, 21
7	Solenoid Valve; Part Number V70900-301, Revision G, Serial Number 1	Y-Z	Bi-axial Sine, In-phase	1-40	11.5	-	22, 23

The test item completed all phases of testing.

A post-test visual inspection of the test item revealed no anomalies due to testing.

W

Plotted by:

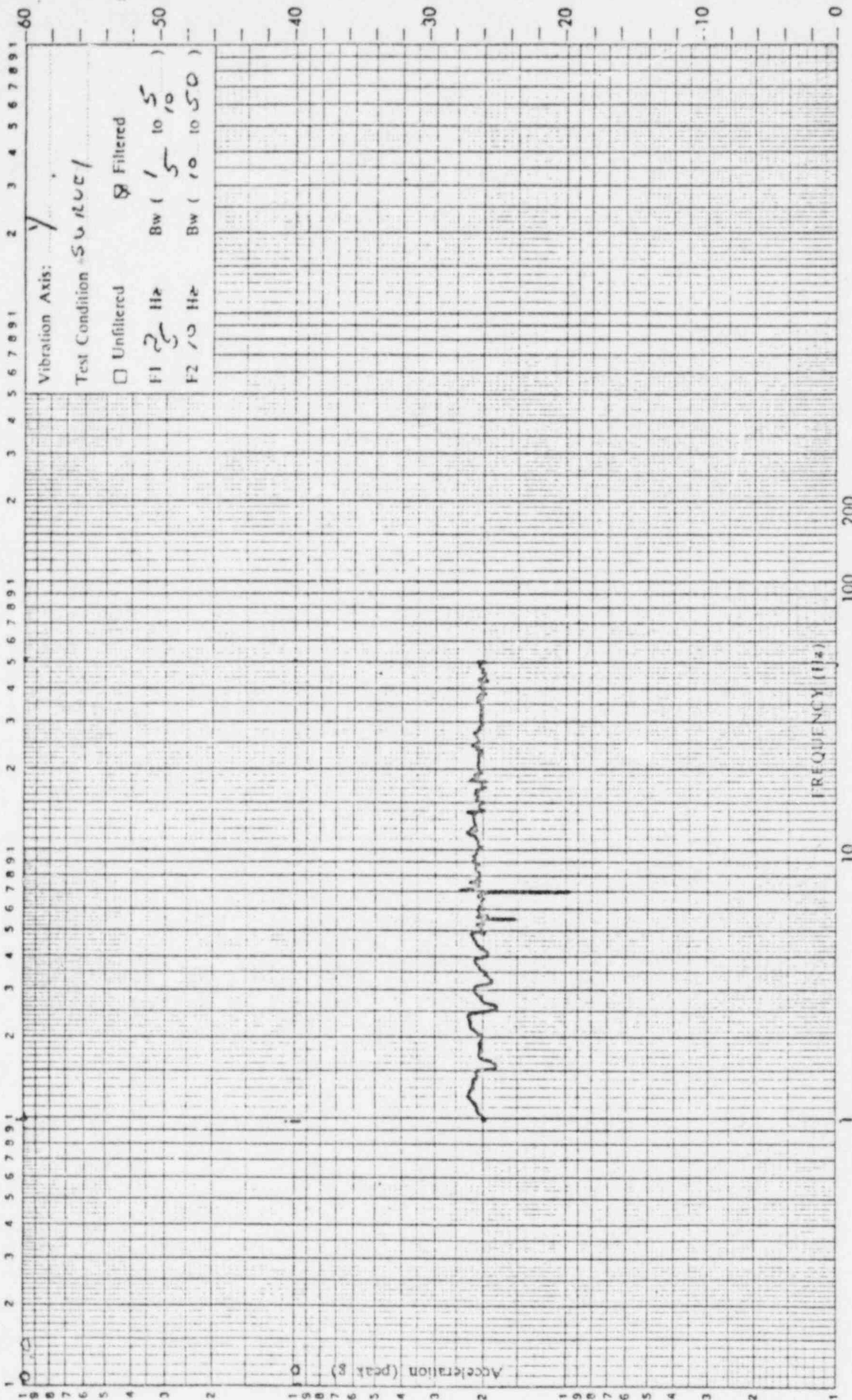
Checked by:

DAYTON T. BROWN INC.
Testing Laboratories

Test Item: VALVE

Serial Number(s): 1

Unit: Operational ☐ Non-operational ☒



Job Number: 402871

Date: 27 Aug 80

Time: 10:35

mv peak / g peak

Pickup Sensitivity: 100

Sweep Speed: 10

☒ Live ☐ Tape

Pickup Serial Number: 246

Pickup Location: CONT

Pickup Sensing Axis: Y

Plotted by: D. Bonchi

DAYTON T. BROWN INC.
Testing Laboratories

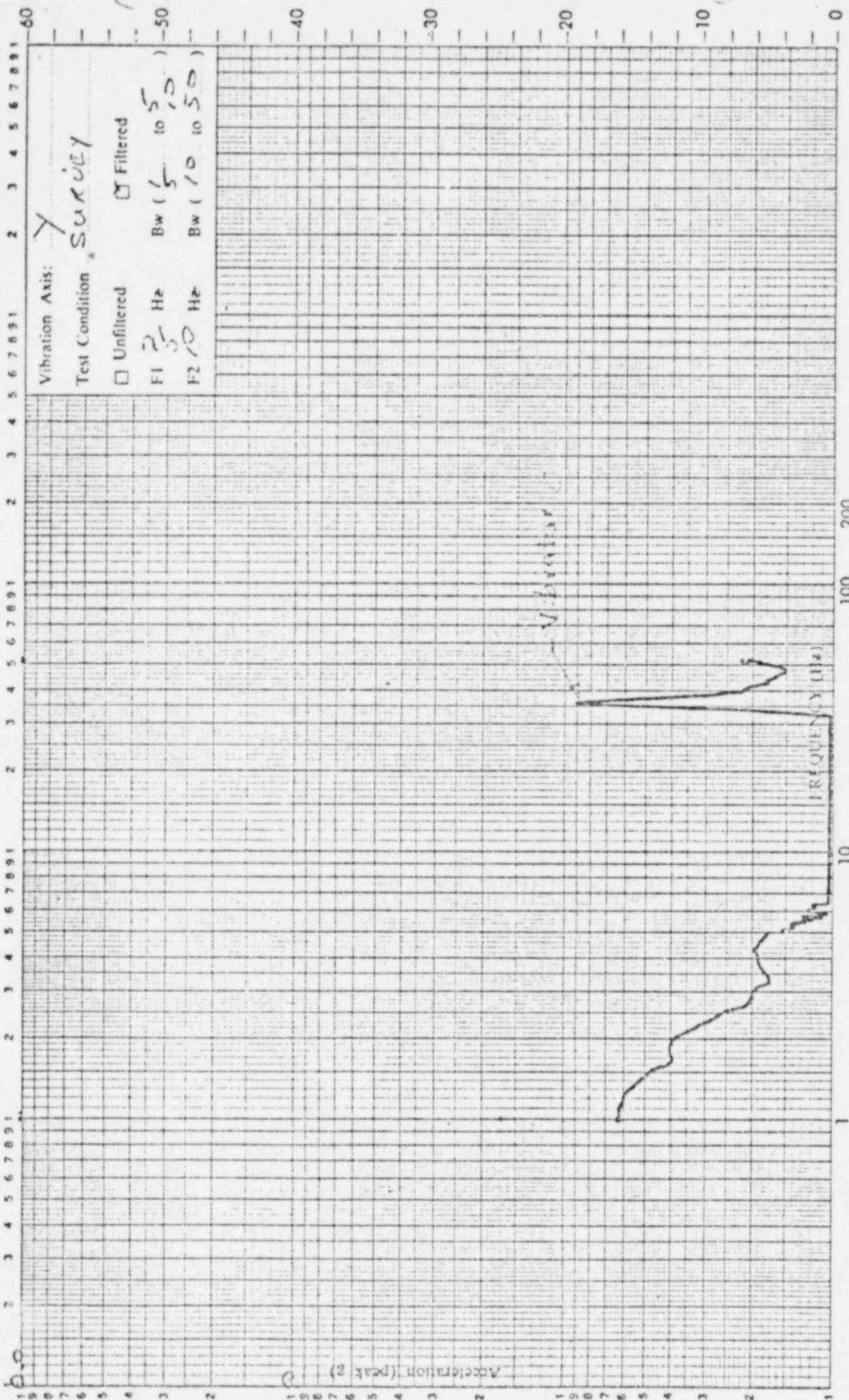
Test Item: VALVE

Serial Number(s): 1

Checked by:

Unit: Operational ☐

Non-operational ☒



Pickup Serial Number: DJ38

Pickup Location: 7P1

Pickup Sensing Axis: X

Pickup Sensitivity: 100

Sweep Speed: 1.0

☐ Live

☒ Tape

$\frac{\text{mv peak}}{\text{g peak}}$

oct/minute

Job Number: 402871

Date: 27 Aug 80

Time: 10:05

Plotted by: *D. Parker*

Test Item: VALUE

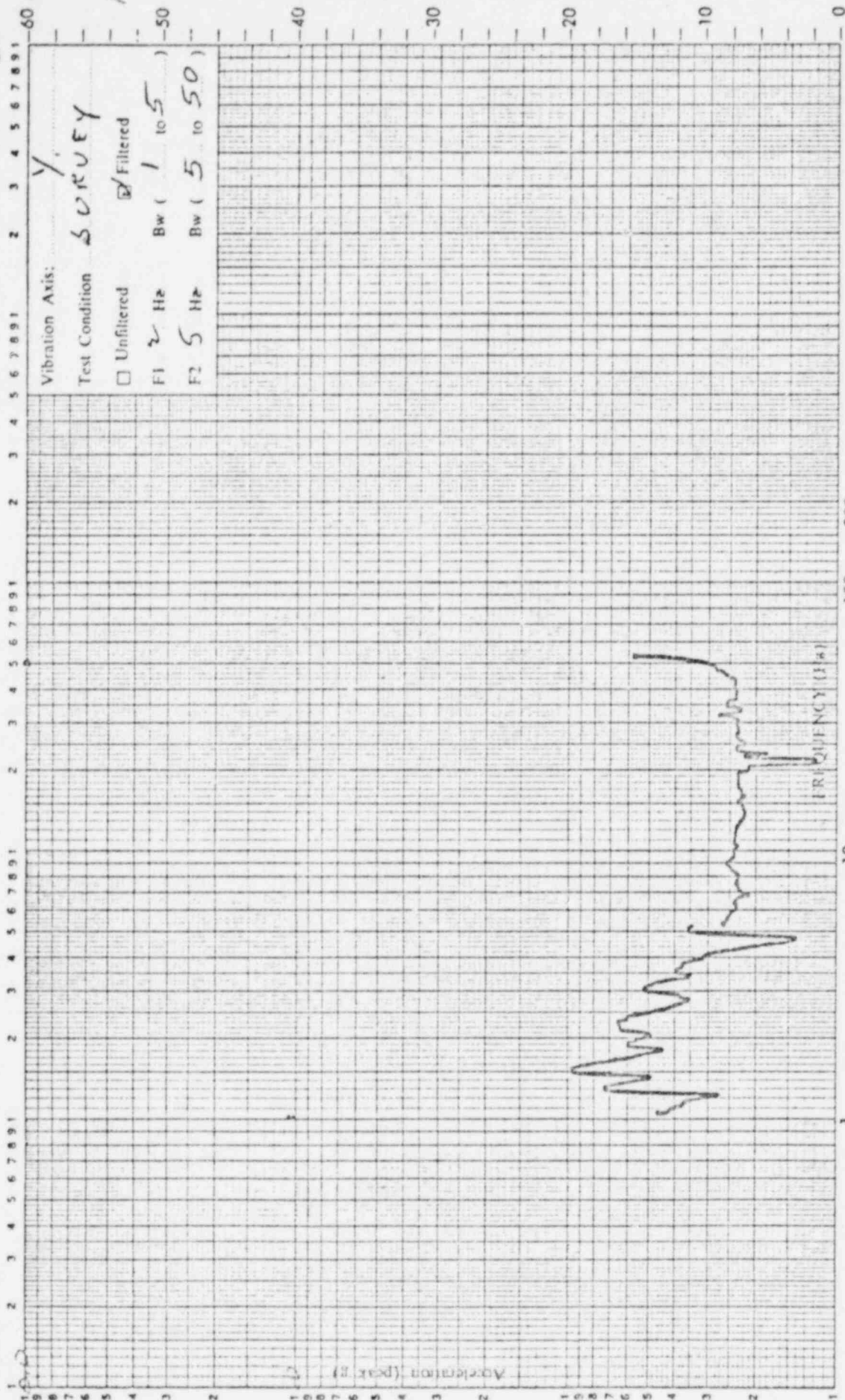
Serial Number(s): 1



Checked by:

Unit: Operational ☐

Non-operational ☒



Pickup Serial Number: TB70

Pickup Location: TPI

Pickup Sensing Axis: Z

Pickup Sensitivity: 100.0 $\frac{mv\ peak}{g\ peak}$

Sweep Speed: 1.0 oct/minute

☐ Live ☒ Tape

Job Number: 402871

Date: 27 AUG 80

Time: 1025

Plotted by:

Checked by:

DAYTON T. BROWN, INC.
Testing Laboratories

Test item:

✓ ALVE,

Serial Number(s):

Unit: Operational ☐Non-operational ☒

Vibration Axis:

Test Condition

☐ Unfiltered

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F2/C H2

1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.

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1. *Journal of the American Medical Association*, 1997; 278: 1039-1044.

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$$\frac{\text{mv peak}}{\text{g peak}}$$

beats/minute

Pickup Sensitivity: 100

Sweep Speed: 100

☒ Live ☐ Tape

Pickup Serial Number: 67

Pickup Location: Cont.

Pickup Sensing Axis: θ

Form D-24

Test Item: VALVE

Serial Number(s): 1

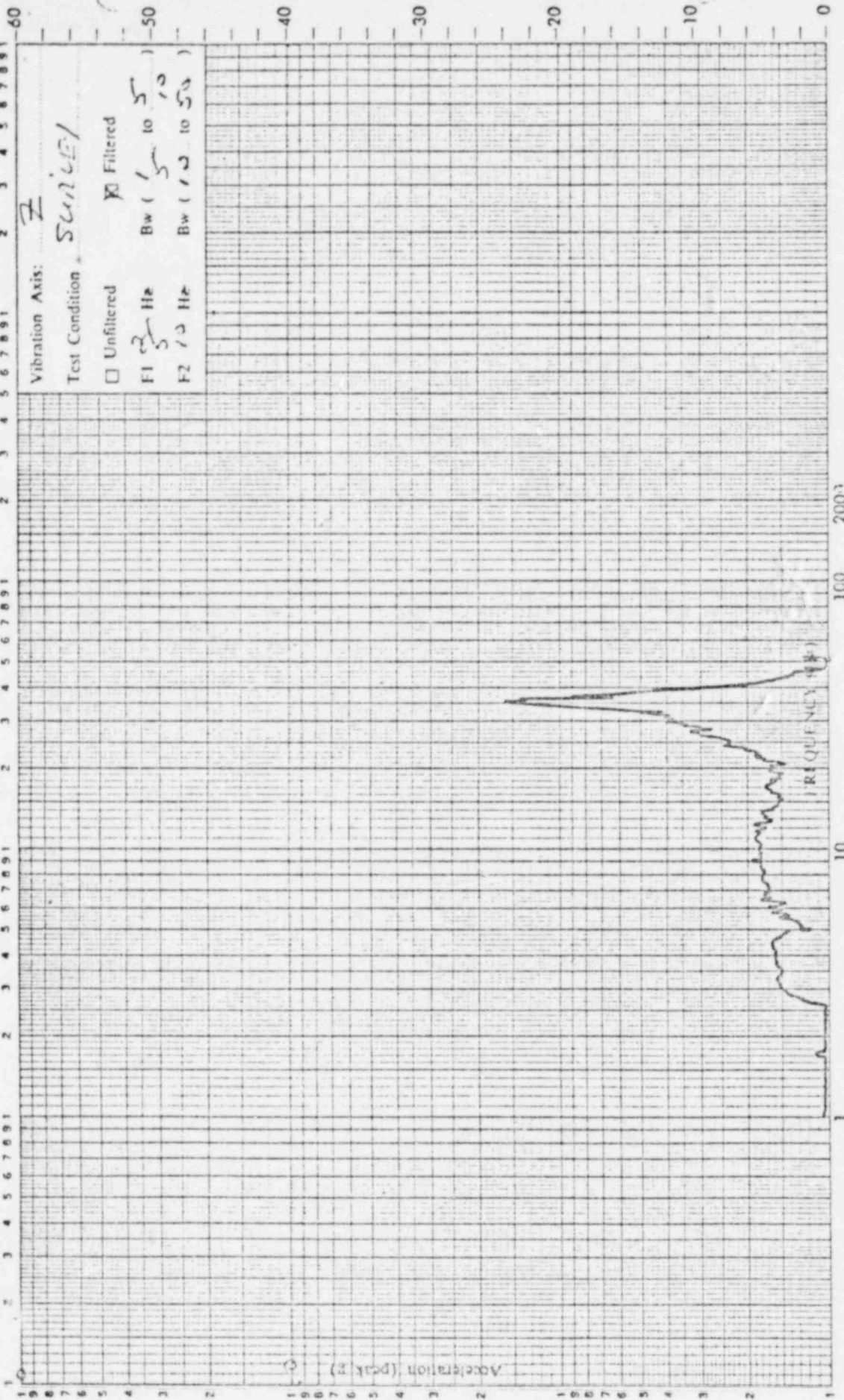
Unit: Operational ☐

Non-operational ☒

DAYTON T. BROWN, INC.
Testing Laboratories

Plotted by: W.D.

Checked by:



mv peak
g peak

Pickup Sensitivity: 100

Sweep Speed: 1.0

☐ Live

☒ Tape

Pickup Serial Number: 1238

Pickup Location: T1

Pickup Sensing Axis: X

Job Number: 40 2871

Date: 27 Aug 80

Time: 10:33

Plotted by: *R. Rankin*

DAYTON T. BROWN, INC.
Testing Laboratories

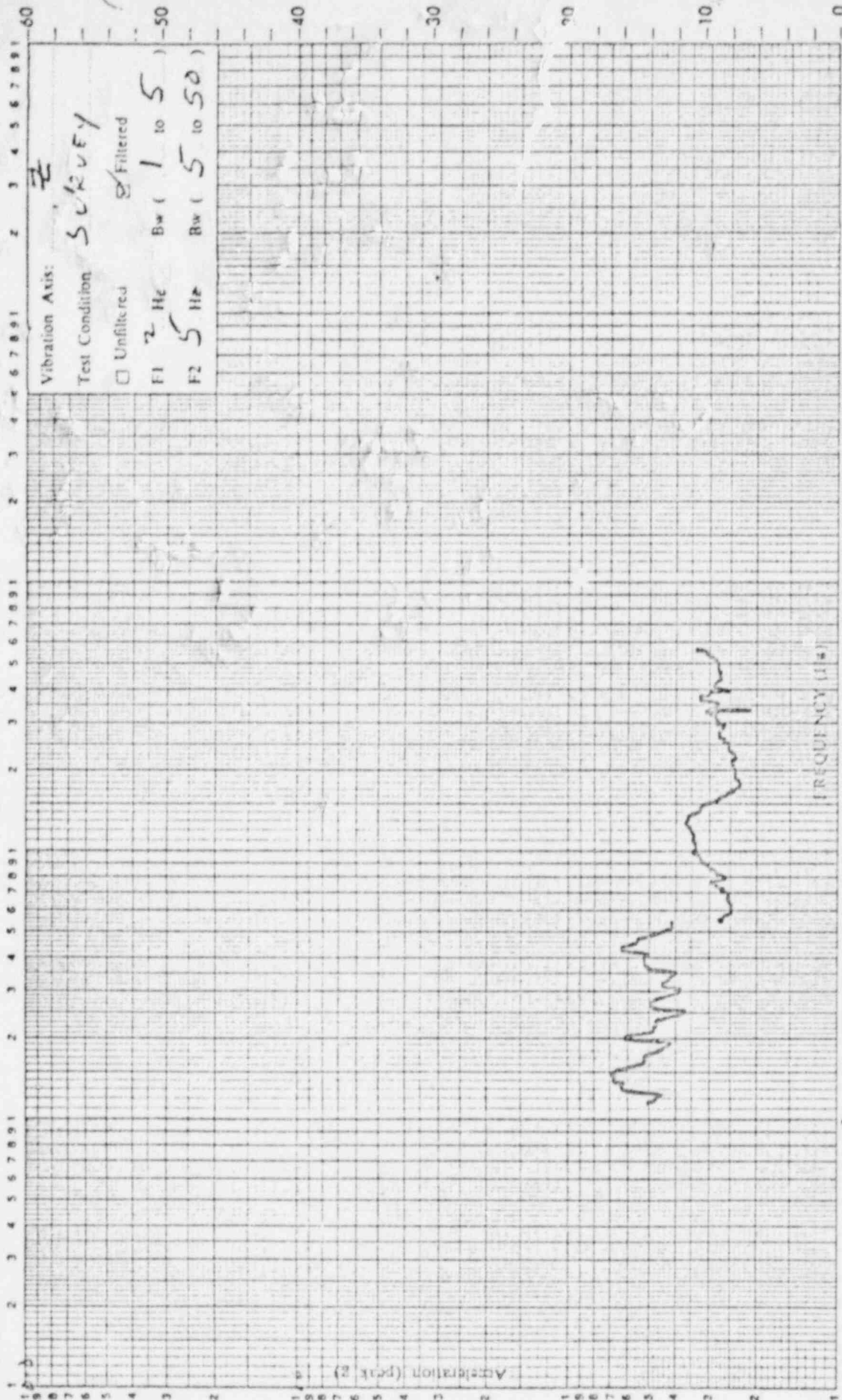
Test Item: **VALUE**

Serial Number(s): **1**

Checked by:

Unit: Operational ☐

Non-operational ☒



Pickup Serial Number: **TB70Z**

Pickup Location: **TP1**

Pickup Sensing Axis: **Y**

Pickup Sensitivity: **100.0** $\frac{\text{mv peak}}{\text{g peak}}$

Sweep Speed: **1.0** oct/minute

Job Number: **402871**

Date: **270680**

Time: **1038**

Test Item: VALUE

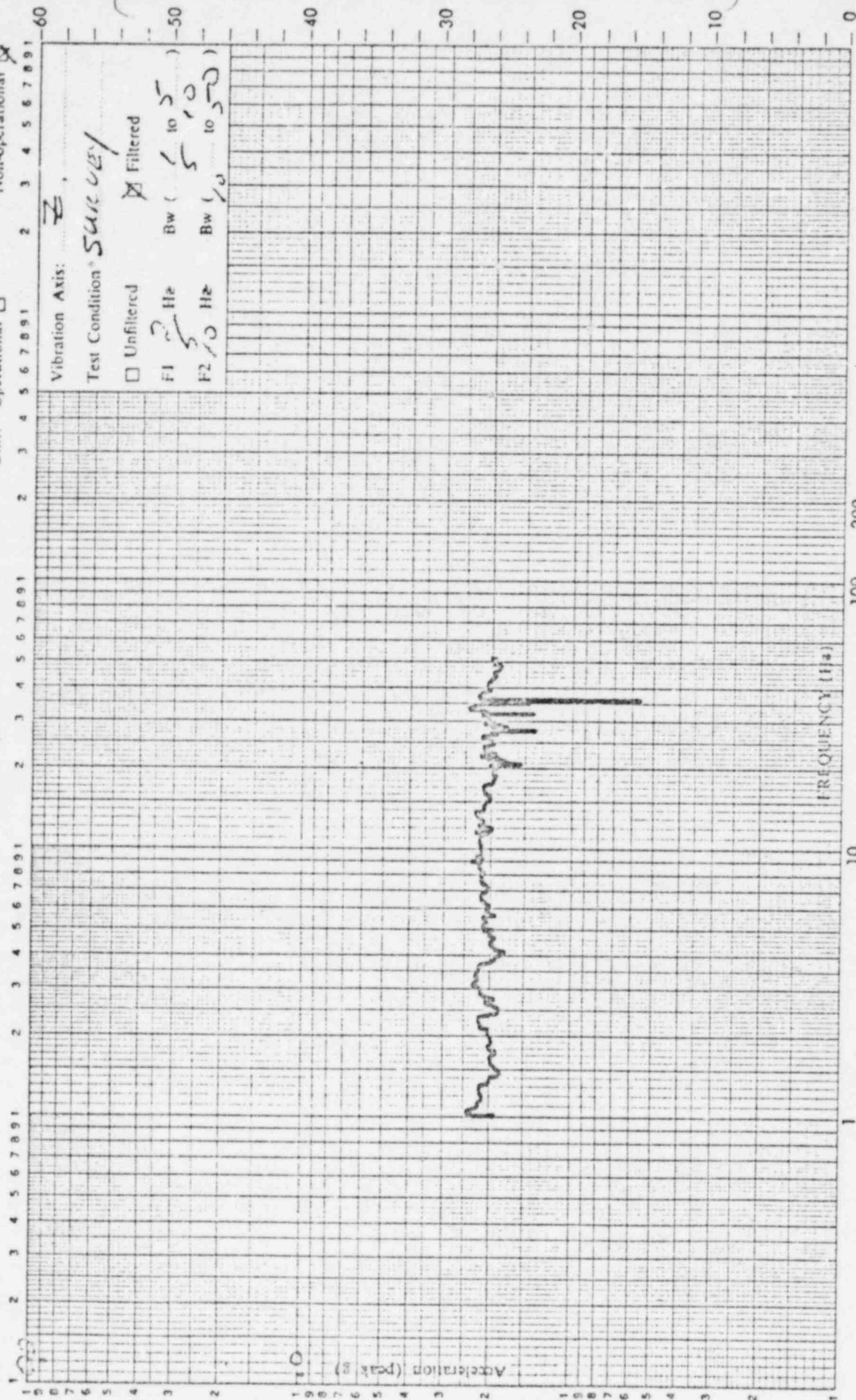
Serial Number(s): 1

Unit: Operational ☐ Non-operational ☒

DAYTON T. BROWN INC.
Testing Laboratories

Plotted by: W. D.

Checked by:



Job Number: 402871

Date: 27 Nov 80

Time: 10:30

mv peak
g peak

Pickup Sensitivity: 1.00


Sweep Speed: 1.0

☒ Live ☐ Tape

Pickup Serial Number: TB70 Y

Pickup Location: TPI

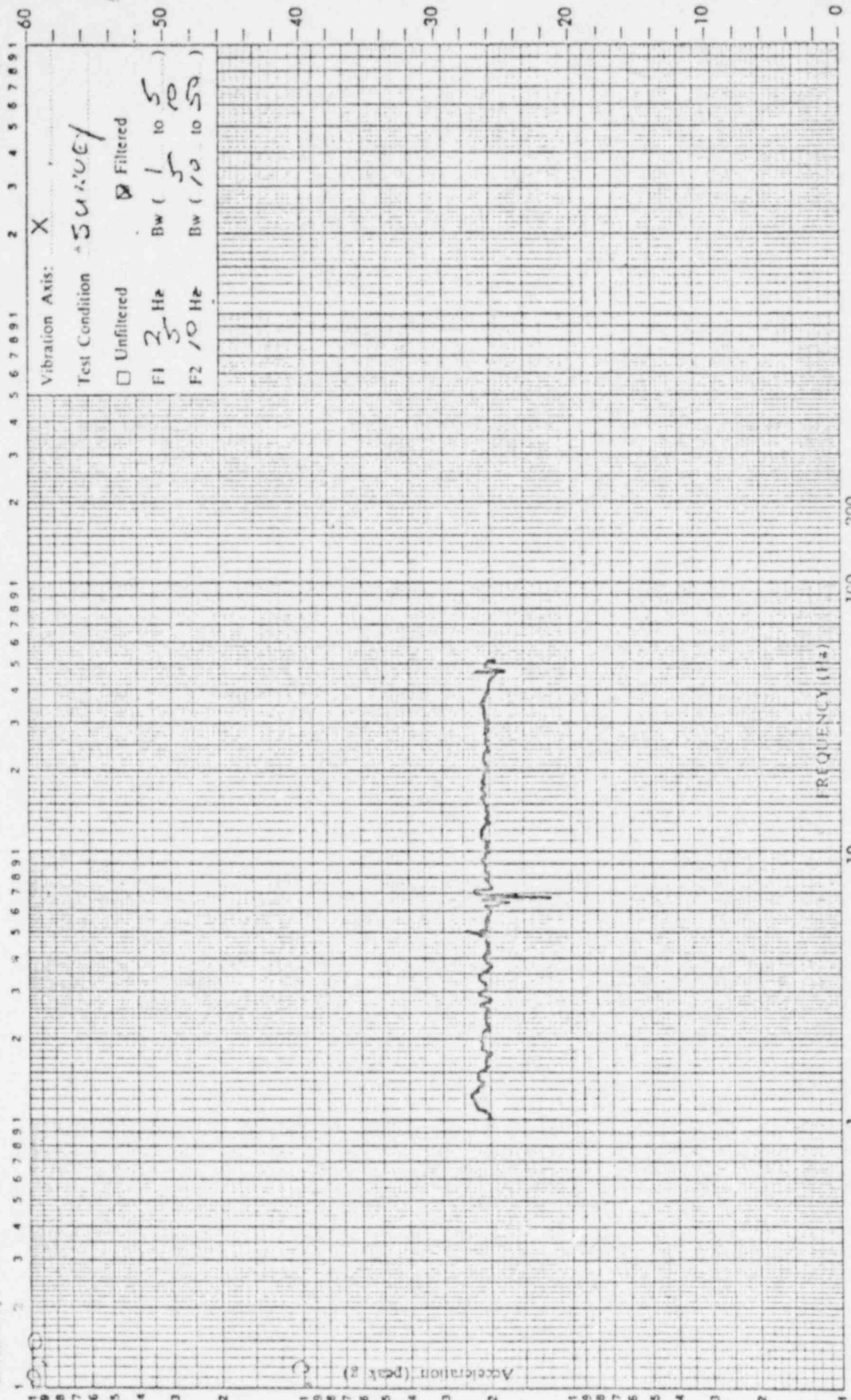
Pickup Sensing Axis: Z

Non-operational 

DAYTON T. BROWN INC.
Testing Laboratories

Plotted by: Wm. C. C.

Checked by:



Job Number: 402871
Date: 27 Nov 80
Time: 153

	mv peak	z peak
100°C	0.68	0.79
120°C	0.68	0.79
140°C	0.68	0.79
160°C	0.68	0.79
180°C	0.68	0.79
200°C	0.68	0.79
220°C	0.68	0.79
240°C	0.68	0.79
260°C	0.68	0.79
280°C	0.68	0.79
300°C	0.68	0.79
320°C	0.68	0.79
340°C	0.68	0.79
360°C	0.68	0.79
380°C	0.68	0.79
400°C	0.68	0.79
420°C	0.68	0.79
440°C	0.68	0.79
460°C	0.68	0.79
480°C	0.68	0.79
500°C	0.68	0.79
520°C	0.68	0.79
540°C	0.68	0.79
560°C	0.68	0.79
580°C	0.68	0.79
600°C	0.68	0.79
620°C	0.68	0.79
640°C	0.68	0.79
660°C	0.68	0.79
680°C	0.68	0.79
700°C	0.68	0.79
720°C	0.68	0.79
740°C	0.68	0.79
760°C	0.68	0.79
780°C	0.68	0.79
800°C	0.68	0.79
820°C	0.68	0.79
840°C	0.68	0.79
860°C	0.68	0.79
880°C	0.68	0.79
900°C	0.68	0.79
920°C	0.68	0.79
940°C	0.68	0.79
960°C	0.68	0.79
980°C	0.68	0.79
1000°C	0.68	0.79

Pickup Sensitivity: 20/00

Sweep Speed: 2.0

☐ Live ☐ Tape

Pickup Serial Number: 246

Pickup Location: C-17

Pickup Sensing Array

Plotted by:

R. Rankin

Checked by:

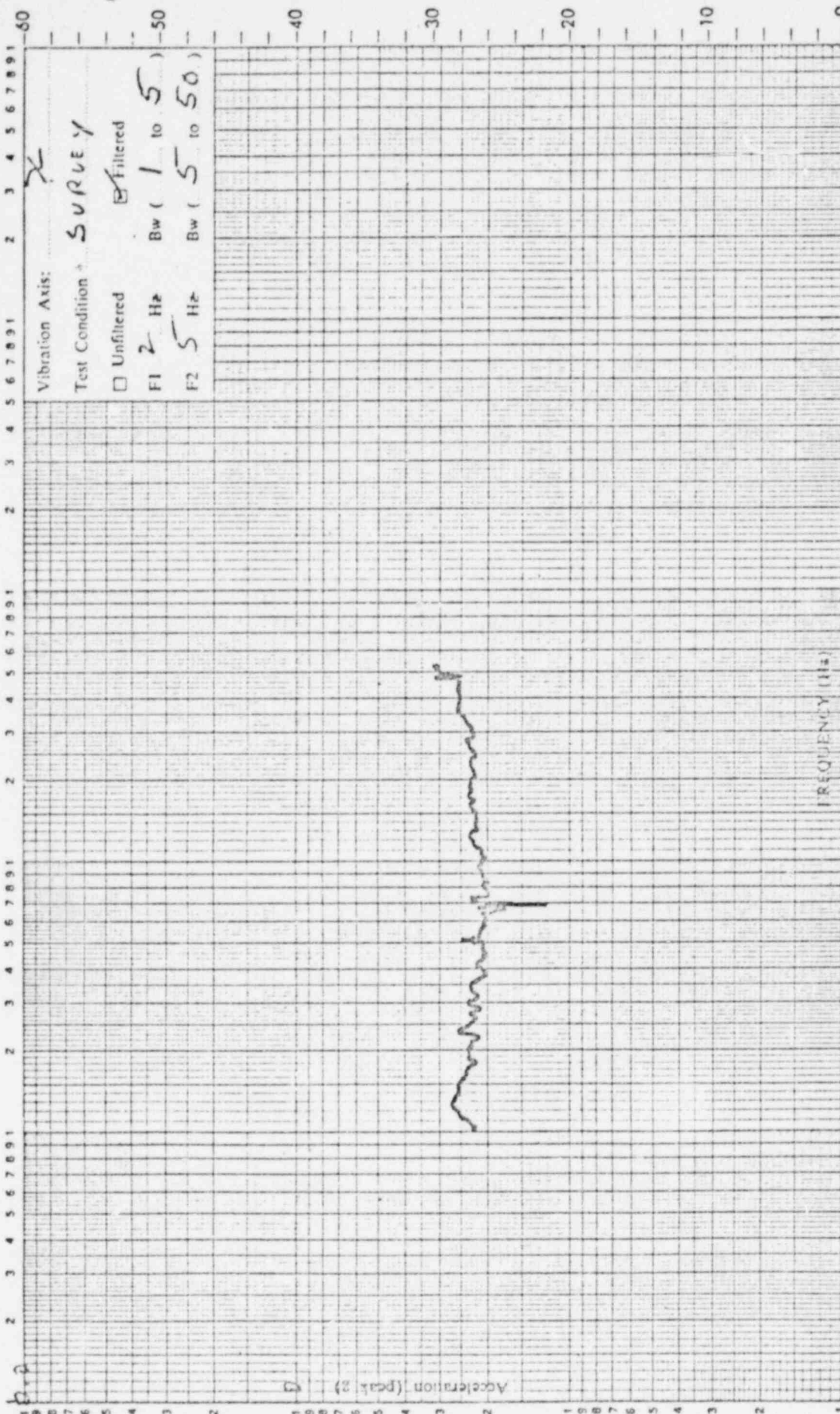
DAYTON T. BROWN INC.
Testing Laboratories

Test Item: VALUE

Serial Number(s): 1

Unit: Operational ☐

Non-operational ☒



Job Number: 402871

Date: 27 AUG 80

Time: 1058

Pickup Sensitivity: 100.0

Sweep Speed: 1.0

[X] Live [] Tape

Pickup Serial Number: DJ 38

Pickup Location: TPI

Pickup Sensing Axis: X

Plotted by: *W. Allen*

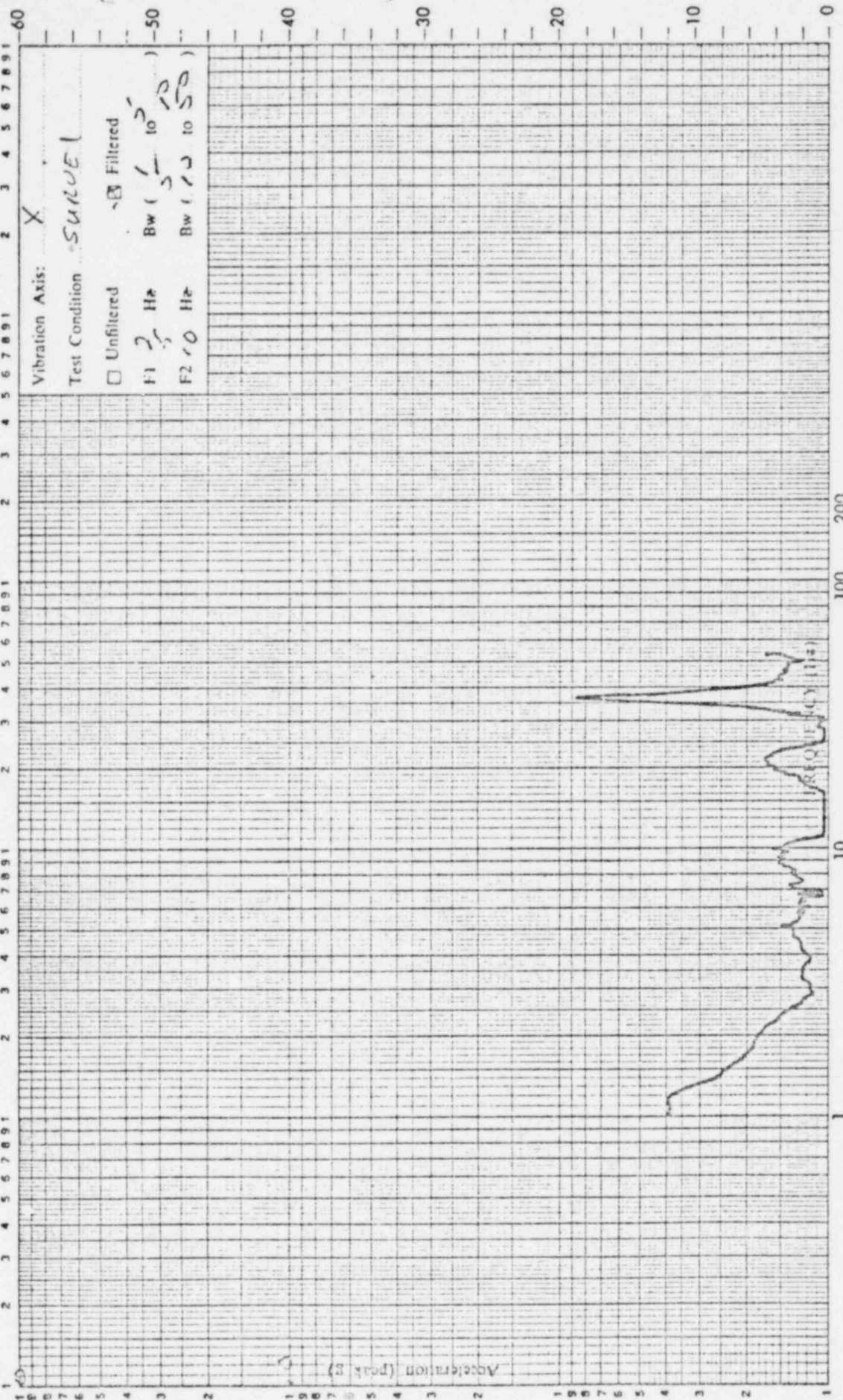
Checked by:

DAYTON T. BROWN INC.
Testing Laboratories

Test Item: *VALUE*

Serial Number(s): *1*

Unit: Operational ☐ Non-operational ☒



Pickup Serial Number: *7170 Z* Job Number: *40-1871*

Pickup Location: *721* Date: *27 Aug 80*

Pickup Sensing Axis: *Y* Time: *10:53*

Pickup Sensitivity: *100* mv peak / g peak

Sweep Speed: *1.0* oct/minute

☐ Live ☒ Tape

Plotted by: *D. Rankin*

Checked by:

DAYTON T. BROWN INC.
Testing Laboratories

Test Item: **VALUE**

Serial Number(s): **1**

Unit: Operational ☐ Non-operational ☒

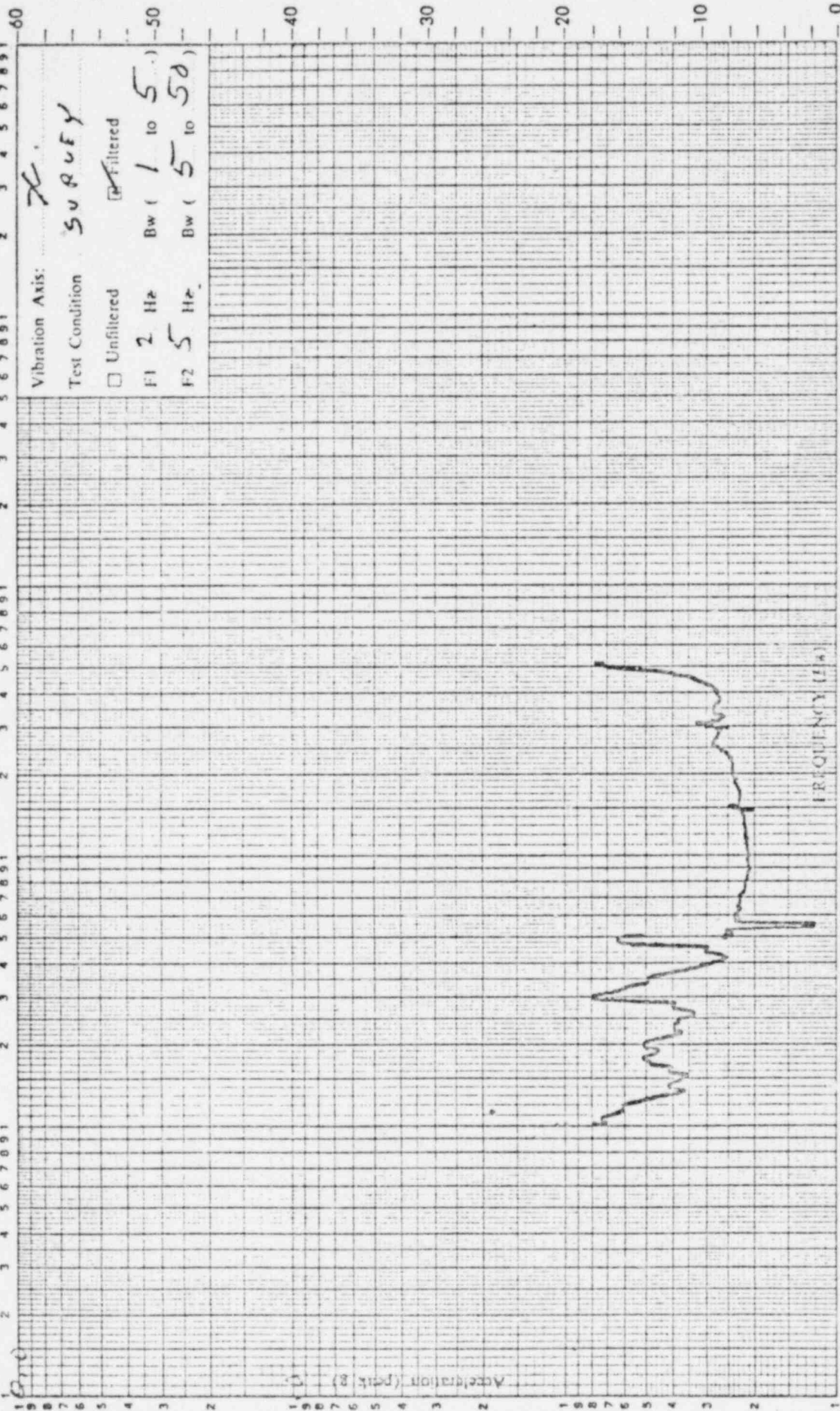
Vibration Axis: **X**

Test Condition: **SURF**

☐ Unfiltered ☒ Filtered

F1 **2 Hz** Bw (**1 to 5**)

F2 **5 Hz** Bw (**5 to 50**)



Job Number: **402871**

mv peak
g peak

Pickup Sensitivity: **100.0**

Pickup Serial Number: **TB70Y**

Date: **27 AUG 80**

oct/minute

Sweep Speed: **1.0**

Pickup Location: **TP1**

Time: **1053**

☐ Live ☒ Tape

Pickup Sensing Axis: **Y**

P. Parker

Plotted by:

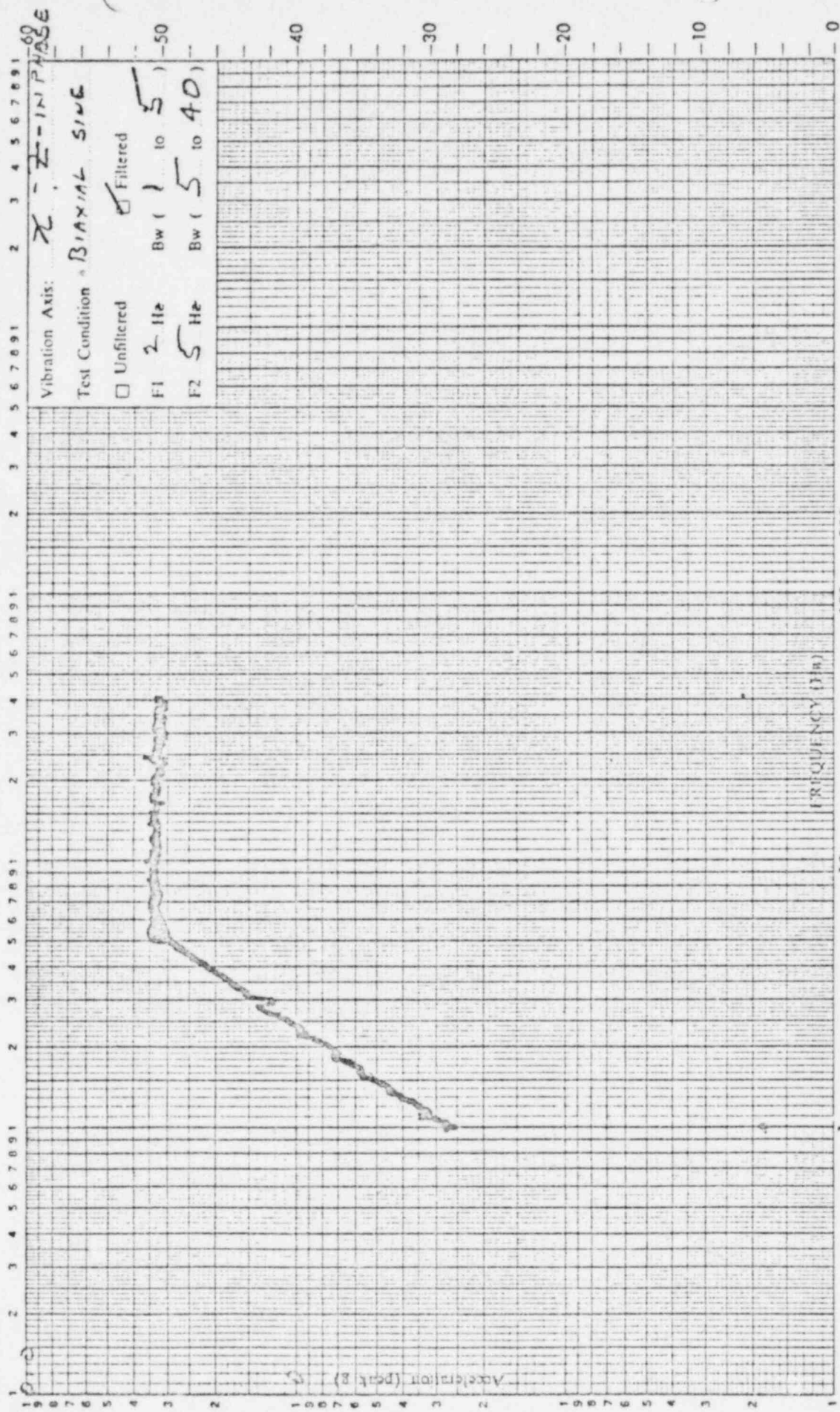
Checked by:

DAYTON T. BROWN, INC.
Testing Laboratories

Test Item: **VALVE**

Serial Number(s): **1**

Unit: Operational ☐ Non-operational ☐



Pickup Serial Number: **246**

Pickup Location: **CONT.**

Pickup Sensing Axis: **HOR**

Pickup Sensitivity: **100.0** mv peak / g peak

Sweep Speed: **0.5** oct/minute

Job Number: **402871**

Date: **27 AUG 80**

Time: **1154**

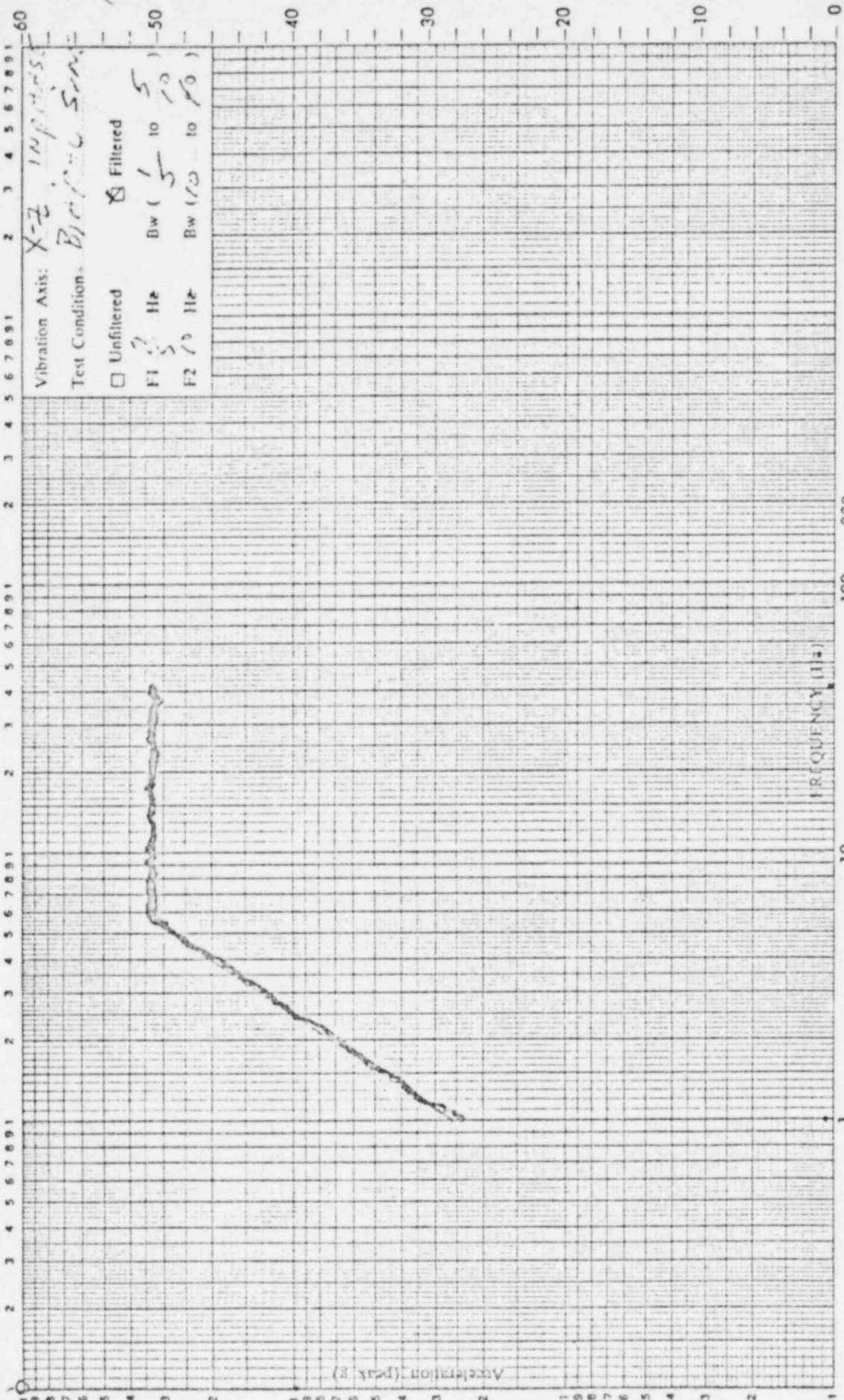
Test Item: VALUE
Serial Number(s): 1

Unit: Operational ☐ Non-operational ☒

DAYTON T. BROWN INC.
Testing Laboratories

Plotted by: W. D. D.

Checked by:



Vibration Axis: X-Z IMPROV.
Test Condition: Blowing Sin.
☐ Unfiltered ☒ Filtered
F1 3 Hz Bw 1 to 5
F2 10 Hz Bw 10 to 100

Job Number: 4003711
Date: 27 Nov 80
Time: 1154

Pickup Sensitivity: 100 mv peak / g peak
Sweep Speed: 5 oct/minute
☒ Live ☐ Tape

Pickup Serial Number: 567
Pickup Location: Cont
Pickup Sensing Axis: Z

VALUE

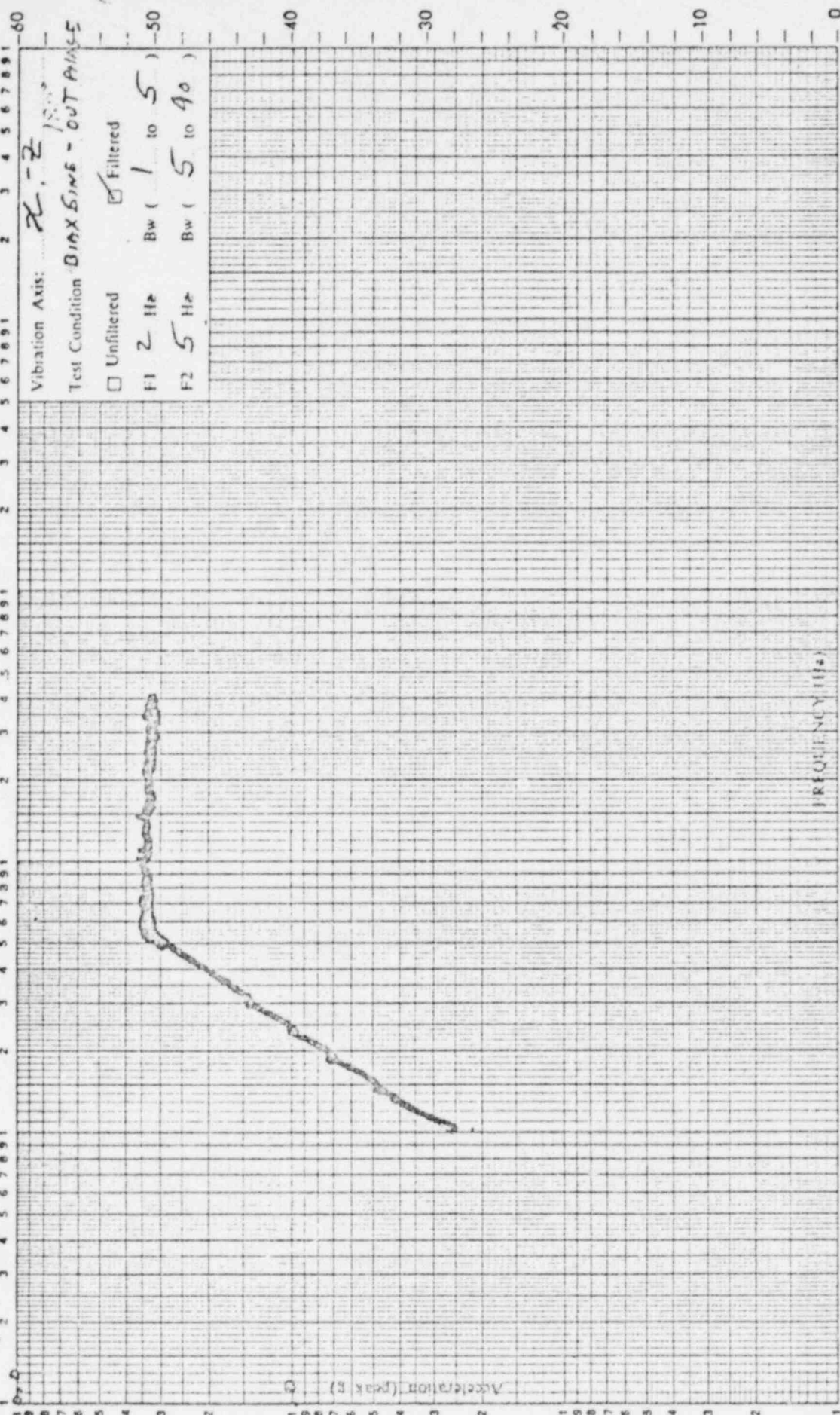
Serial Number(s):

DAVIDSON INSTRUMENTS

Testing Laboratory

Checked by:

Unit: Operational ☐ Non-operational ☒



Pickup Serial Number: 246 Job Number: 402871

Pickup Location: CONT, Date: 27 AUG 80

Pickup Sensing Axis: 110R Time: 13 13

Pickup Sensitivity: 100.0 mv peak / g peak

Sweep Speed: 0.5 oct/minute

☐ Five ☐ Tape

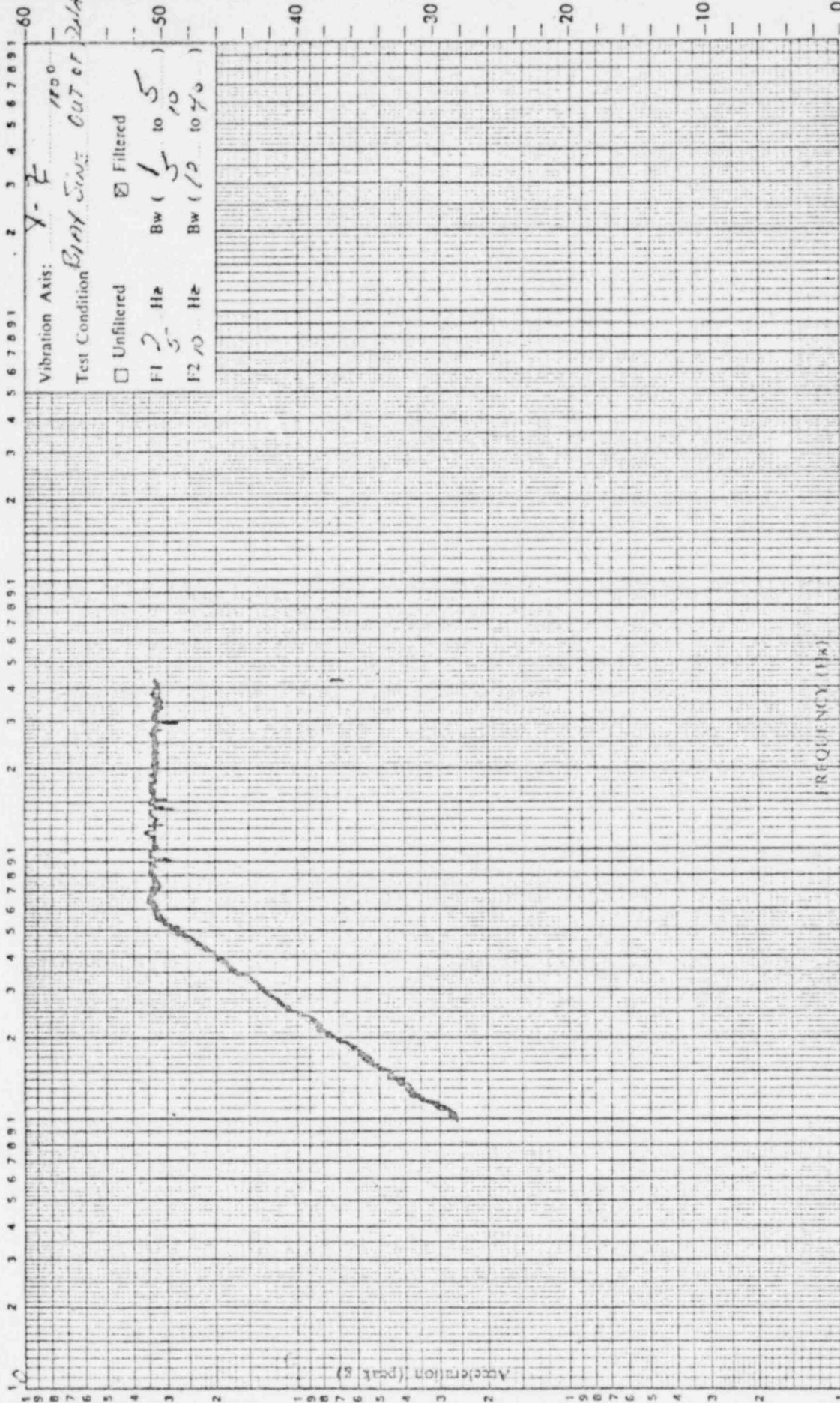
Plotted by: *W. A. C.*

Checked by: *W. A. C.*

DAYTON T. BROWN INC.
Testing Laboratories

Test Item: *VALVE*
Serial Number(s): *1*

Unit: Operational ☐ Non-operational ☒



Pickup Serial Number: *867* Job Number: *402271*
Pickup Location: *LOW* Date: *27 Aug 70*
Pickup Sensing Axis: *1* Time: *15:15*
Pickup Sensitivity: *1.00* $\frac{\text{mv peak}}{\text{g peak}}$
Sweep Speed: *.5* oct/minute
☐ Live ☐ Tape

Test Item: VALUE

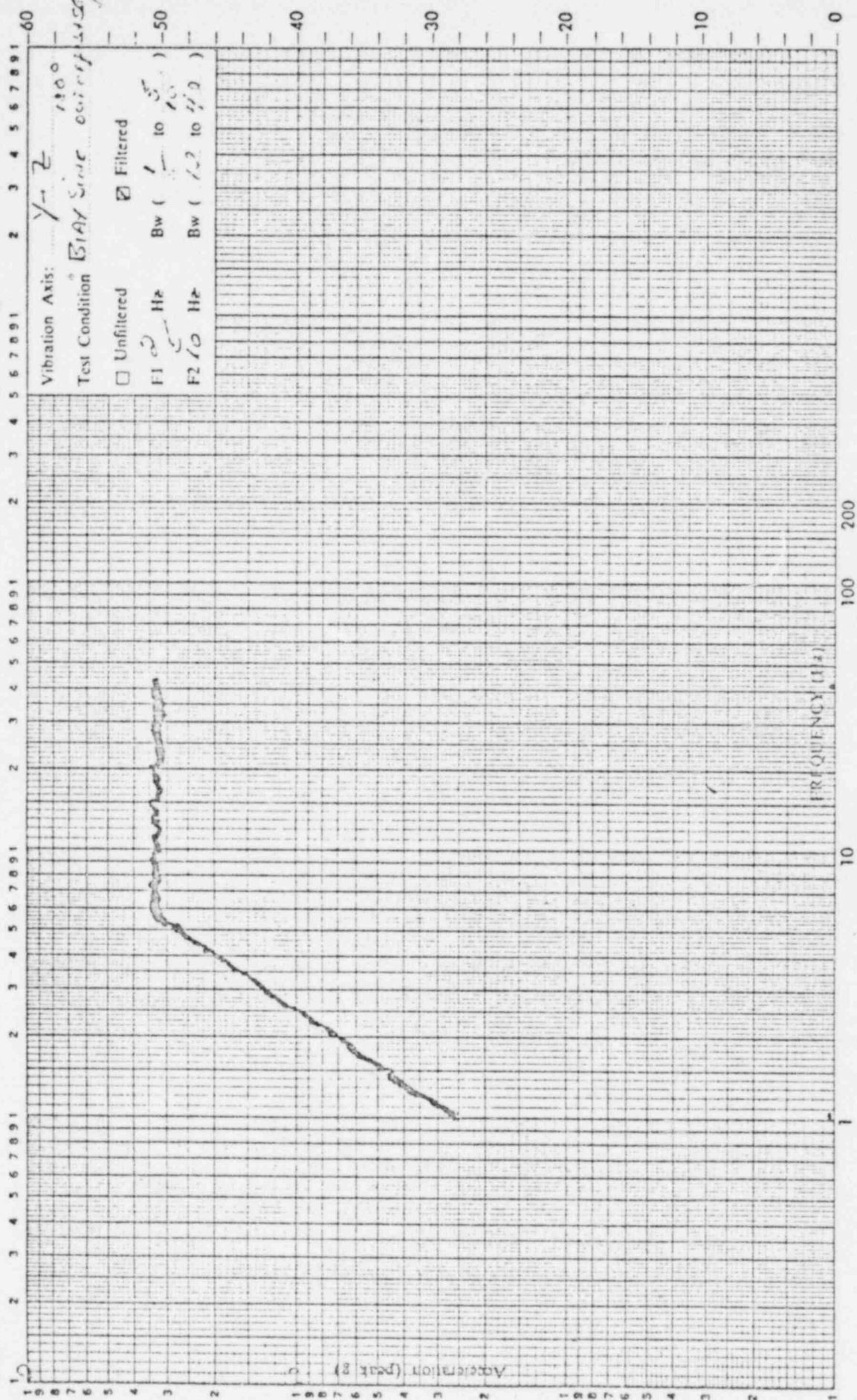
Serial Number(s):

Unit: ☒ Operational ☐ Non-operational

DAYTON T. BROWN INC.
Testing Laboratories

Plotted by: W. C. Chen

Checked by:



mv peak
g peak

Pickup Sensitivity: 100

Sweep Speed: 1.0

☐ Live ☐ Tape

Pickup Serial Number: 767

Pickup Location: Cont

Pickup Sensing Axis: Z

Job Number: 402341

Date: 24 Aug 70

Time: 1:40

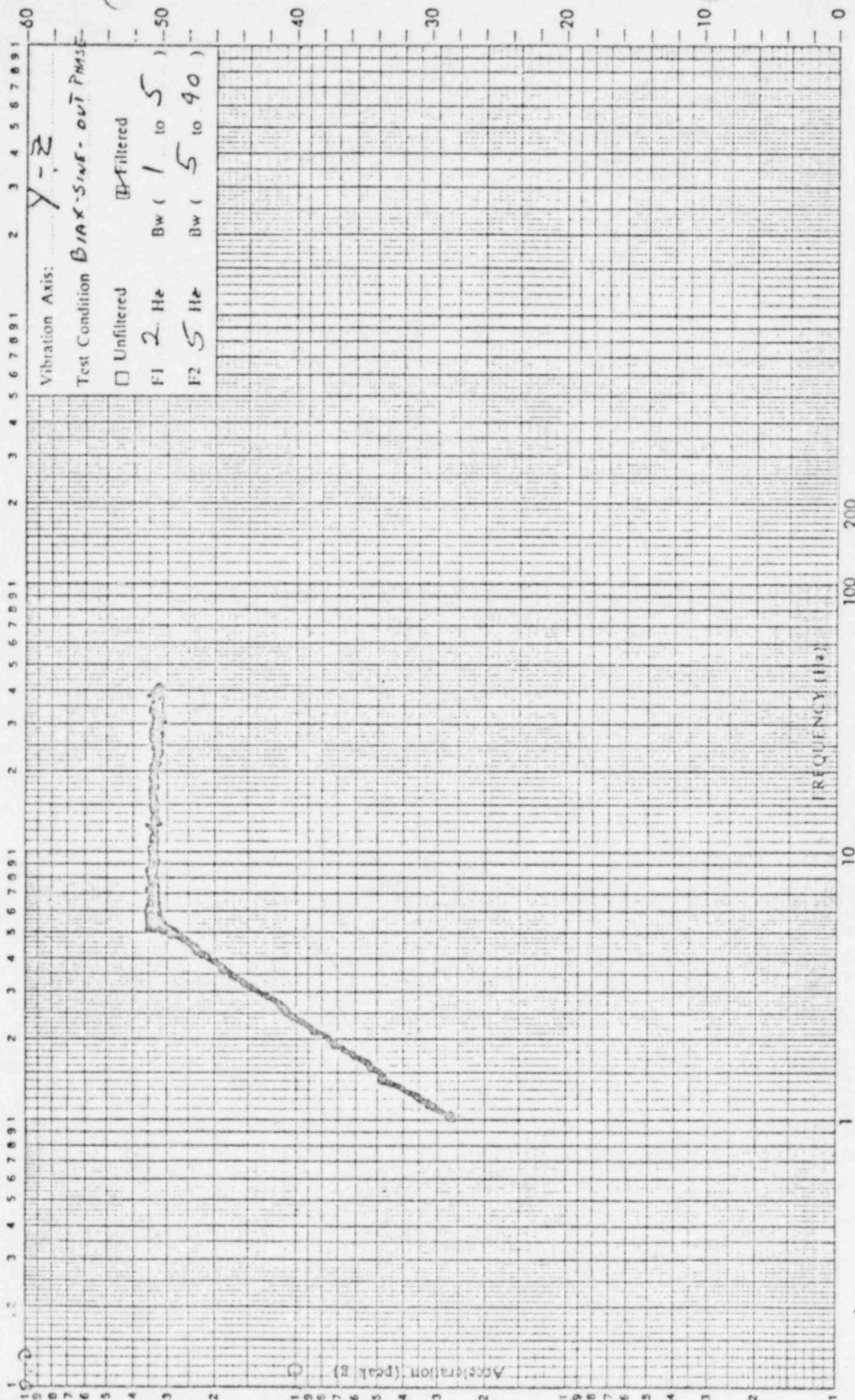
Test Item: VALUE
Serial Number(s): 1

Unit: Operational ☐ Non-operational ☒

DAYTON T. BROWN INC.
Testing Laboratories

Plotted by: R. Rankin

Checked by:



Pickup Serial Number: 246 Job Number: 402-871
Pickup Location: CONT. Date: 27 AUG 80
Pickup Sensing Axis: H&R Time: 1340
Pickup Sensitivity: 100.0 mv peak / g peak
Sweep Speed: D.5 oct/minute
☒ Live ☐ Tape



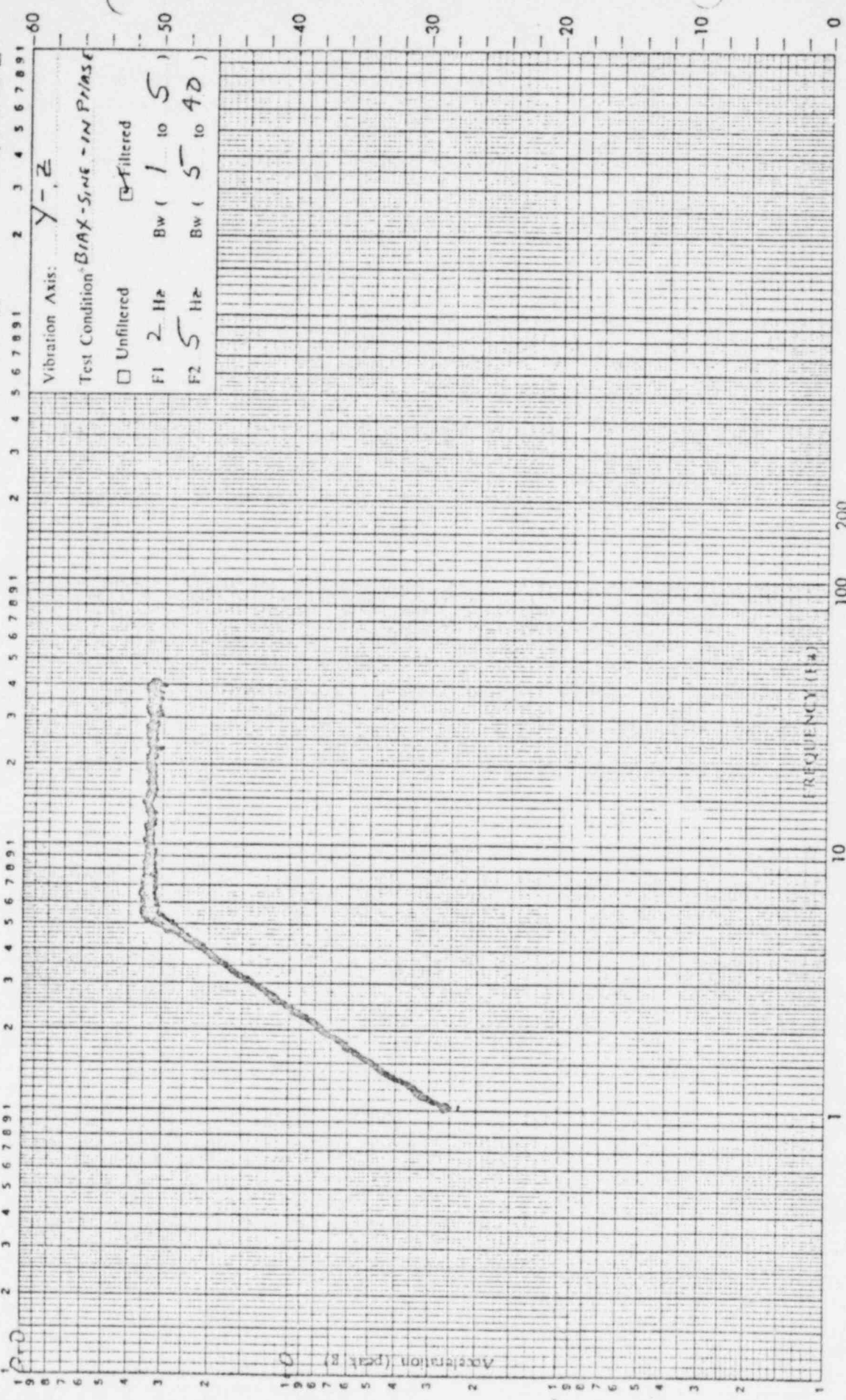
Plotted by: *B. Rankin*

Test Item: *VALVE*
 Serial Number(s): *1*

DAYTON T. BROWN INC.
Testing Laboratories

Checked by:

Unit: Operational ☐ Non-operational ☒



Pickup Serial Number: *246* Job Number: *402871*
 Pickup Location: *CONT* Date: *27 AUG 80*
 Pickup Sensing Axis: *HOR* Time: *1403*
 Pickup Sensitivity: *100.0* mv peak / g peak
 Sweep Speed: *0.5* oct/minute
☒ Live ☐ Tape

Plotted by:

W.H. Ch...

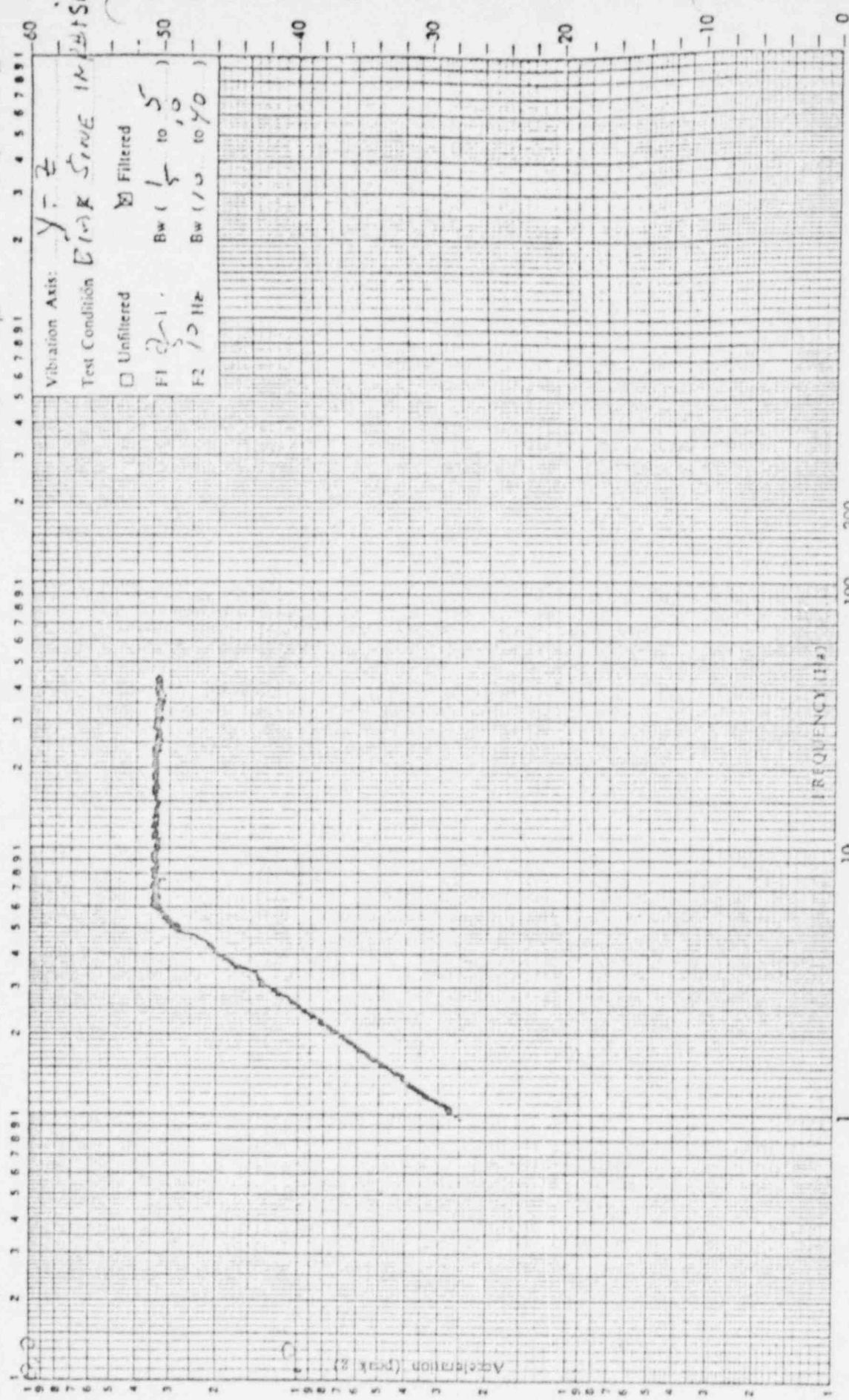
Checked by:

DAYTON T. BROWN
Testing Laboratories

Test Item: **VALUE**

Serial Number(s): **1**

Unit: ☒ Operational ☐ Non-operational



Pickup Serial Number: **867**

Pickup Location: **Cont**

Pickup Sensing Axis: **Z**

Pickup Sensitivity: **100**

Sweep Speed: **5**

☒ Live ☐ Tape

$\frac{mv\ peak}{g\ peak}$

oct/minute

Job Number: **402371**

Date: **27 Aug 80**

Time: **1415**

TEST EQUIPMENT

TEST: SEISMIC VIBRATION

ITEM	MANUFACTURER	MODEL	S/N	ACCURACY
Seismic Vibrator	Dayton T. Brown, Inc.	001	001	Transfer Instrument
Sweep Oscillator	Spectral Dynamics	SD104A-5	187	$\pm 2\%$
Servo Monitor	Spectral Dynamics	SD105A	140	$\pm 4\%$
Digital Voltmeter	Dana	4200	505387	Mfr.
Dynamic Analyzer	Spectral Dynamics	SD101A	135	± 0.25 dB
Dynamic Analyzer	Spectral Dynamics	SD101B	53	± 0.25 dB
Electronic Counter	Anadex	CF603R	31326	± 1 Count
Timer	Dimco Gray	167	47-156	± 1 Second
Log Converter	Hewlett Packard	7562A	1211A 01452	± 0.25 dB
Log Converter	Hewlett Packard	7562A	16129A 02165	± 0.25 dB
X-Y Recorder	Hewlett Packard	7035B	1206A 05761	$\pm 1\%$
X-Y Recorder	Hewlett Packard	7035B	1543A- 11724	$\pm 1\%$
Charge Amplifier	Unholtz Dickie	D22PMS (0)-82	50-126	$\pm 5\%$
Charge Amplifier	Unholtz Dickie	D22PMS -82	50-129	$\pm 5\%$
Charge Amplifier	Unholtz Dickie	D22PMS -82	50-132	$\pm 5\%$

Test equipment utilized for the program reported herein was within its assigned interval of calibration. Details are on file at Dayton T. Brown, Inc. and will be made available upon request.

TEST EQUIPMENT

TEST: SEISMIC VIBRATION

ITEM	MANUFACTURER	MODEL	S/N	ACCURACY
Charge Amplifier	Unholtz Dickie	D22PMS -82	50-133	$\pm 5\%$
Charge Amplifier	Unholtz Dickie	D22PMS -82	50-136	$\pm 5\%$
Accelerometer	Unholtz Dickie	5D21-8	246	$\pm 5\%$
Accelerometer	Unholtz Dickie	5D21-8	867	$\pm 5\%$
Accelerometer	Endevco	2226C	DJ38	$\pm 5\%$
Bi-axial Vibrator	Dayton T. Brown, Inc.	3000	3.4	Transfer Instrument
Gauge	U.S. Gauge	0-300	60-492	$\pm 1\%$ F.S.
Accelerometer	Endevco	2228C	TB70	$\pm 5\%$

Test equipment utilized for the program reported herein was within its assigned interval of calibration. Details are on file at Dayton T. Brown, Inc. and will be made available upon request.



Enclosure 2

Photograph



TESTED FOR: VALCOR ENGINEERING CORPORATION
P/N: V70900-301, REVISION C
JON NO: 402871-00-000
DTB04RBO-1077

SEISMIC TEST SETUP X-Z AXIS
FILE NO: 80-1678
ENCLOSURE: 2

ITEM: SOLENOID VALVE
S/N: 1
DATE: 27 AUGUST 1980
PHOTO: 1

DAYTON T. BROWN
ENGINEERING AND
TEST DIVISION