Detroit Edison
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June 4, 1981

EF2 - 53,455

Mr. L. L. Kintner
Division of Project Management
Office of Nuclear Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Kintner:

Reference: Enrico Fermi Atomic Power Plant Unit 2
NRC Docket 50-341

Subject: Responses to Questions from Gerry Mauch

Please find enclosed responses to several questions asked by Gerry Mauch. This information will be incorporated as appropriate into a forthcoming amendment to the FSAR.

Subjects:
- Regulatory Guide 1.75
- ATWS - "Monticello Fix"
- Item II.D.3 - S/R Valve Tailpipe Thermocouples
- ADS Option 2
- Seismic Recorder
- Bypass Valve Surveillance
- Level 8 Trip Surveillance
- FSAR 7.3 Omissions

Yours truly,

WF Coll /El

William F. Colbert
Technical Director
Enrico Fermi Unit 2

WFC:RMB/crm
Enclosure:

8106080 346 A

B001 S1/1

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F. E. Gregor
J. W. Honkala
E. Lusis
L. E. Schuerman
A. E. Wegele
L. F. Wooden
Document Control

SUBJECT: Regulatory Guide 1.75 Compliance

In reply to the NRC Staff question on the applicability of Regulatory Guide 1.75 to the Fermi 2 design, Edison believes that adequate discussion of the existing design and its acceptability exists presently in the body of the FSAR.

The compliance statement can be found in Appendix A. A summary of the physical separation can be found in Section 3.12.3.2.3.

A discussion of system independence is located in Section 8.3.1.4.

Edison's reply to a formal staff question which required that the specific Fermi 2 design aspects which do not meet the regulatory position of Regulatory Guide 1.75, Revision I, be justified is found in Appendix E on page E.2.222-4c as the response to question 222.2 (3.12).

L. F. Wooden
/dk
6-4-81

An increase in recirculation flow temporarily reduces the void content of the moderator by increasing the flow of coolant through the core. The additional neutron moderation increases the reactivity of the core, causing the reactor power level to increase. The increased steam generation rate increases the steam volume in the core with a consequent negative reactivity effect, and a new steady-state power level is established. When recirculation flow is reduced, the power level is reduced in the reverse manner.

Figure 7.7-13 illustrates how the RFCS operates in conjunction with the turbine controls for automatic load following.

Each recirculation pump motor has its own motor-generator set for a power supply. A variable speed converter is provided between the motor and generator of the motor-generator set. To change the speed of the reactor recirculation pump, the variable speed converter varies the generator speed which changes the frequency and magnitude of the voltage supplied to the pump motor so that the desired pump speed is attained. The RFCS uses a demand signal from either the operator or the main plant turbine-generator speed governing mechanism. The demand signal is supplied to the master controller. A signal from the master controller adjusts the speed setting of the speed controller for each motor-generator set converter.

The master controller signal adjusts each motor-generator set variable speed converter. The master controller signal is compared with the actual speed of the generator by the speed controller. The speed controller signal causes adjustment of the speed converter, resulting in a change of the generator speed until the feedback from the generator equals the master controller signal.

The reactor power change resulting from the change in recirculation flow causes the initial pressure regulator to reposition the turbine control valves. If the original demand signal was a turbine load/speed error signal, the turbine responds to the change in reactor power level by adjusting the turbine control valves until the load/speed error signal is reduced to zero.

INSERT A

7.7.1.3.3.2 Motor-Generator Sets

Each of the two motor-generator sets and its controls is identical; therefore, only one description is given of the motor-generator set. Figure 7.7-12 shows the general arrangement and rating of the motor-generator set. the motor-generator set can continuously supply power to the pump motor at any speed between approximately 19 percent and 96 percent of the drive motor speed. The motor-generator set is capable

Insert A

In order to mitigate the effects of an ATWS event, a provision has been included in the Fermi 2 design to trip the recirculation pump motor-generator field breakers using a specific logic philosophy defined as the "Monticello Fix." This logic includes reactor pressure and level as initiating signals which interface with redundant breaker trip coils in each MG set. Suitable redundant time delay relays will be provided to maximize the single failure withstand capability of the design.

H.II.D.3 Valve Position Indication

H.II.D.3.1 Statement of Concern

The operator needs a positive indication of power-operated relief-valve and safety-valve positions to provide additional assurance that the operator will correctly diagnose plant transients that potentially involve the opening of relief or safety valves.

H.II.D.3.2 NRC Position

Reactor coolant system relief and safety valves shall be provided with a positive indication in the control room derived from a reliable valve-position-detection device or a reliable indication of flow in the discharge pipe, which meet the following requirements:

a. The basic requirement is to provide the operator with unambiguous indication of valve position (open or closed) so that appropriate operator actions can be taken.

b. The valve position should be indicated in the control room. An alarm should be provided in conjunction with this indication.

c. The valve-position indication may be safety grade. If the position indication is not safety grade, a reliable single-channel direct indication powered from a vital instrument bus may be provided if backup methods of determining valve position are available and are discussed in the emergency procedures as an aid to operator diagnosis of an action.

d. The valve position indication should be seismically qualified consistent with the component or system to which it is attached.

e. The position indication should be qualified for its appropriate environment (any transient or accident that would cause the relief or safety valve to lift) and in accordance with NRC Order, May 23, 1980 (CLI-20-81).

f. It is important that the displays and controls added to the control room as a result of this requirement not increase the potential for operator error. A human-factors analysis should be performed taking into consideration--

   1. The use of this information by an operator during both normal and abnormal plant conditions

   2. Integration into emergency procedures

3. Integration into operator training

4. Other alarms during emergency and need for prioritization of alarms

H.II.D.3.3 Detroit Edison Position

The Fermi 2 plant has a valve-position-indication system that uses one pressure switch on each of the 15 safety and relief valves. The ~~[illegible]~~ tailpipe temperature-monitoring system provides a backup, ~~[illegible]~~ monitors valve leakage as its normal function. should a pressure switch become inoperable

H.II.D.3.4 Modifications

H.II.D.3.4.1 Design Basis

An in-containment, tailpipe-mounted, pressure-switch system provides status information via control room indicating lights of the relief valves and safety valves. This system provides the following information to the plant operator during normal and abnormal operating conditions:

a. Positive indication of valve position, including the stuck-open valve condition

b. Positive identification of the specific valve or valves that a e open

c. Annunciation of the activation of the automatic depressurization system (ADS) in the control room

By being provided with the immediate indication and annunciation of the valve opening and the identification of the valve, the plant operator can initiate recommended actions to control or rectify the situation.

The NRC has specified in NUREG-0578 and NUREG-0737 (References 1 and 2) that components of the safety/relief valve (SRV) monitor system must be qualified for the appropriate environmental conditions to be experienced under normal and abnormal conditions of plant operation. These environmental conditions include temperature, pressure, and humidity, and also the seismic acceleration of the component or system to which the components of the SRV system are attached.

The system instruments are qualified to IEEE 323-1974 and IEEE 344-1975.

The power for this system comes from a reliable source that is not affected by the loss of offsite power.

Should a failure of the primary (pressure switch) system occur, abnormal operating procedures (20.000.25) directs the operator to observe the tailpipe temperature recorder. An open valve can be identified by virtue of the elevated temperature recording of the associated tailpipe thermocouple input.

SUBJECT: <u>OPEN I&C ITEM ON ADS LOGIC CHANGE</u>

At the I&C exit interview, the staff reviewer requested that the specific design modification to the ADS initiation logic be identified, the attachment indicates clearly the method being employed to mitigate this concern.

L. F. Wooden
/dk
Attachment
6-4-81

H.II.K.3.18 Modification of Automatic Depressurization System Logic--Feasibility Study and Modification for Increased Diversity for Some Event Sequences

H.II.K.3.18.1 Statement of Concern

The automatic depressurization system (ADS) requires manual actuation in some event sequences to ensure adequate core cooling.

H.II.K.3.18.2 NRC Position 33

The ADS actuation logic should be modified to eliminate the need for manual actuation to ensure adequate core cooling. A feasibility and risk assessment study is required to determine the optimum approach. One possible scheme that should be considered is ADS actuation on low reactor-vessel-water level provided no high-pressure coolant injection (HPCI) or high-pressure coolant system (HPCS) flow exists and a low-pressure emergency core cooling (ECC) system is running. This logic would complement, not replace, the existing ADS actuation logic (Reference 1).

H.II.K.3.18.3 Detroit Edison Position[a] 35

The ADS logic modifications that will eliminate the need for man-
ual actuation to ensure adequate core cooling have been studied
by General Electric as a generic item on behalf of the BWR Owners' 33
Group. A feasibility and risk assessment study has been performed
to determine the optimum approach. The results of this study have
been provided to the NRC. Five options, including retaining the
current design, were considered. The results showed that the
addition of a bypass of the high drywell pressure trip if the
reactor water level remains below the low-pressure ECCS initiation 35
setpoint for a sustained period, or the elimination of the high
drywell pressure trip, are the preferred concepts. Based on our
evaluation of these recommended changes and associated risks,
the optimum approach for Fermi 2 is described below. 33

Of the two alternatives recommended by the BWR Owners' Group study, the addition of a bypass to the high drywell pressure trip if the reactor water level remains below the low-pressure ECCS initiation setpoint for a sustained period, is judged to be the preferred solution.

This will be accomplished by installing a "bypass" timer activated
on low water level (Level 1). When this timer runs out, the high 35
drywell pressure trip is bypassed and the ADS is initiated on

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a. The Detroit Edison position was revised in response to a question from the NRC staff that was transmitted informally to Edison in a meeting held on April 22, 1981.

water level alone. This additional logic does not affect the high drywell pressure - low water level initiation sequence for pipe breaks inside the drywell.

Figures H.II.K.3.18-1 and H.II.K.3.18-2 show the logic for this alternative, with the bypass timer started on Level 1. A time delay of 8 minutes has been chosen for the Fermi 2 plant from the analyses presented in NEDO-24708 (Figure Group 3.5.2.1-33).
35 The results of these analyses demonstrate that adequate core cooling is ensured for isolation events, even with the ADS blowdown delayed 10 minutes after Level 1. Figure Group 3-1 shows the same analysis assuming a stuck-open relief valve.

Starting the bypass timer at Level 1 allows the operator enough time to control the system manually and still ensure automatic depressurization in time to prevent excessive fuel heat-up, even under the worst case conditions described above.

H.II.K.3.18.4 Modifications

The descriptions of proposed modifications will be provided no later than 4 months before the scheduled issuance of an operating license for Fermi 2.

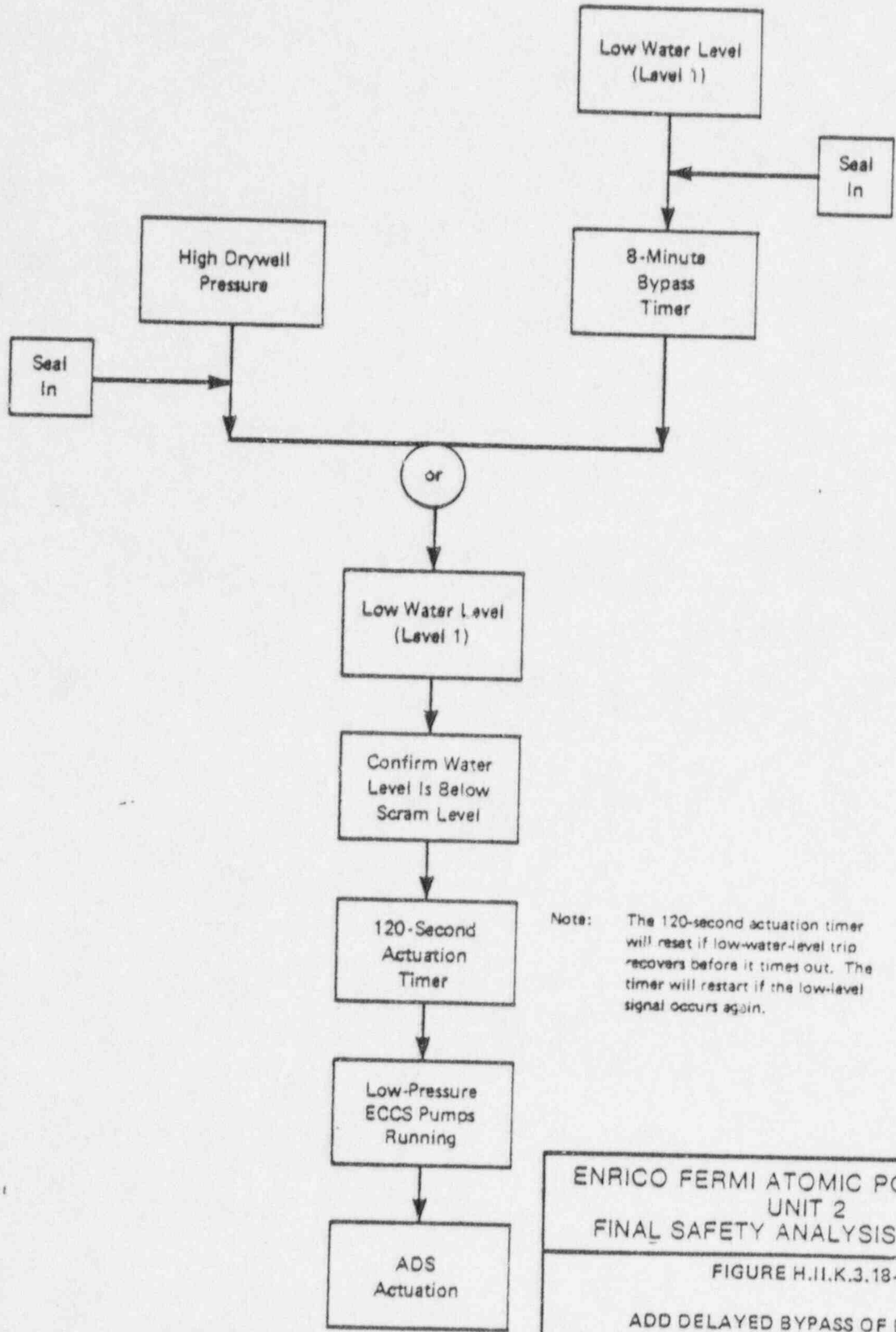
H.II.K.3.18.5 Schedule

The modifications will be completed by the end of the first
33 refueling, which is at least 6 months after the approval of the proposed changes by the NRC.

H.II.K.3.18.6 References

1. U.S. Nuclear Regulatory Commission, NRC Action Plan Developed as a Result of the TMI-2 Accident, NUREG-0660, May 1980; Revision 1, August 1980.

2. U.S. Nuclear Regulatory Commission, Clarification of TMI Action Plan Requirements, NUREG-0737, October 1980.



ENRICO FERMI ATOMIC POWER PLANT
UNIT 2
FINAL SAFETY ANALYSIS REPORT

FIGURE H.II.K.3.18–2

ADD DELAYED BYPASS OF DRYWELL PRESSURE TRIP WITH BYPASS TIMER STARTED AT LOW WATER LEVEL (LEVEL 1)

AMENDMENT 35 – MAY 1981

SUBJECT: Fermi 2 Recorder Seismic Qualification

An informal request that Edison resubmit copies of the recorder seismic qualification was made by the staff reviewer at the I&C exit interview. The information requested is attached as agreed.

L/ F/ Wooden
/dk
Attachment
6-4-81

Detroit Edison

ENRICO FERMI UNIT 2 PROJECT
Instrumentation & Controls

EF2 - 53,110

Date: June 4, 1981

To: File - H11

From: R. W. Barr R. W. Barr / G.K.S.
Supervising Engineer

Subject: Shake Test of H11-P602 and Recorder T50-R800-B.-Trip Report

This letter documents witness of a Seismic Shake Test by G. A. Schulte, August 10, 1977, at the General Electric facility at San Jose, California.

As part of the Seismic Shake Test for Control Room Panel H11-P602, a type "W", L/N Speedomax, 12 point recorder, was energized and monitored during the shake testing.

This recorder, "Drywell and Torus Wall and Air Temperature Recorder, T50-R800-B", mounted on panel insert 602C520 was energized with a simulated signal to read approximately ½ scale. Readings were compared before and after the test. It was found that after the shake test, the recorder continued to record the proper value as called for by the simulated input. No damage to the recorder was noted after the test was completed.

This letter replaces the original trip report, written in September 1977, which is now not available.

General Electric has documented the seismic test as follows:

1. Seismic Test Report - Summary Benchboard H11-P602 - TDEC 3478, 8/30/78.

2. Complete Test Report - ATR - 510 - EAD05-01, 8-77, available at General Electric.

Written by: G. A. Schulte gas
/tab

cc: R. W. Barr
E. R. Bosetti
J. W. Nunley
M. G. Sigetich
G. K. Sharma
W. M. Street
L. F. Wooden
Document Control

TECHNICAL PUBLICATION
C0 0001-TK

SEISMIC QUALIFICATION TESTING OF SPEEDOMAX RECORDERS

LEEDS & NORTHRUP

Seismic Qualification Testing of Speedomax Recorders

Speedomax recorders have been subjected to seismic qualification testing according to an L&N Standard Specification, which is based on IEEE Standard 344-1971 and is the result of reviewing many customer inquiries from nuclear power generating stations.

The test results in this publication are the result of such seismic qualification testing, at a certified laboratory, of Class 1 electronic equipment for nuclear power generating stations. The following recorders were tested in accordance with the Specification and meet these standards except where noted:

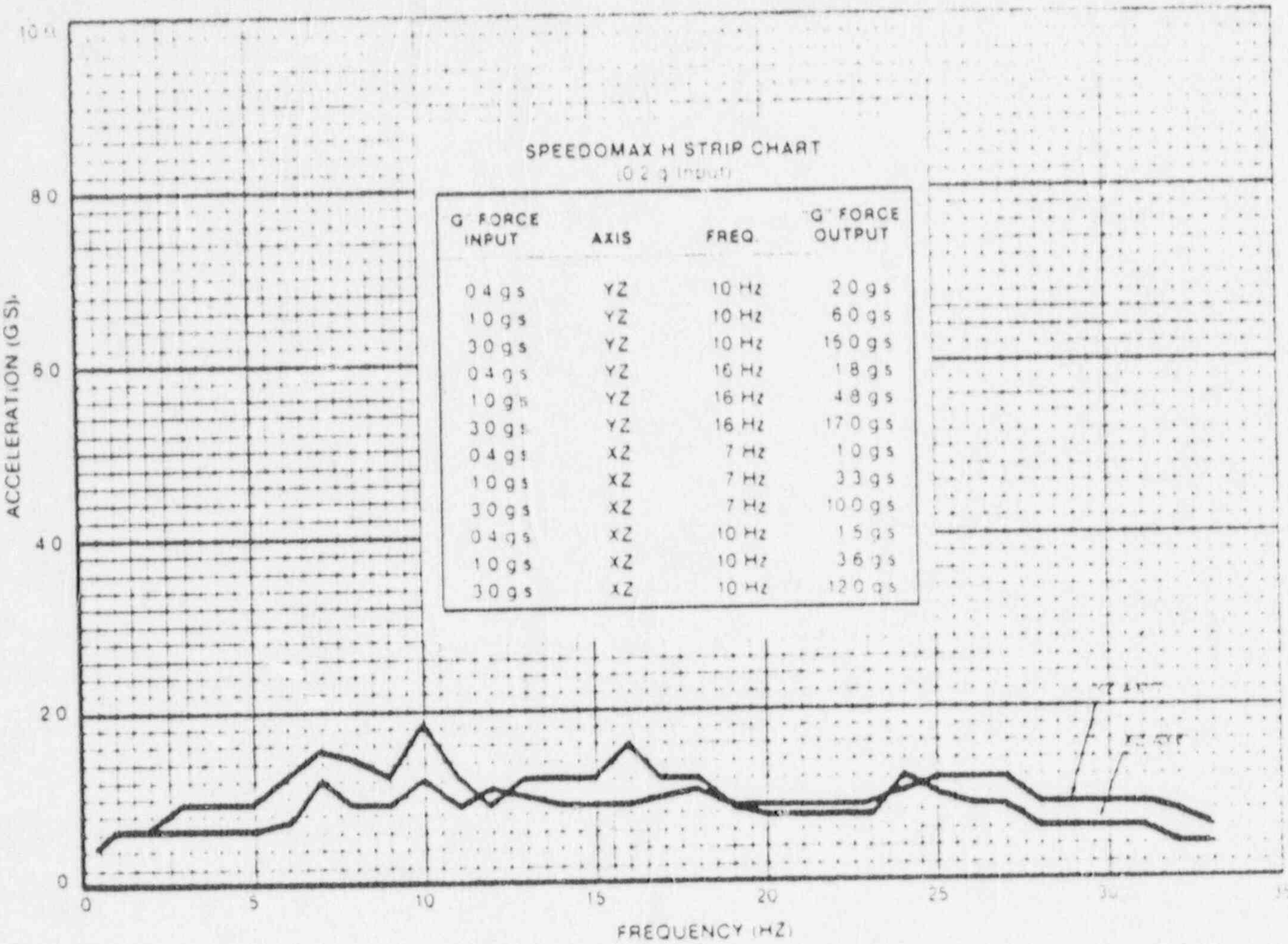
1. Speedomax H Strip-chart Recorder
2. Speedomax H Multi-point Recorder
3. Speedomax H Round-chart Recorder
4. Speedomax W Strip-chart Recorder
5. Speedomax W Multi-point Recorder
6. Speedomax W/L Strip-chart Recorder
7. Speedomax G Strip-chart Recorder
8. Speedomax M Strip-chart Recorder
9. Speedomax 660 Strip-chart Recorder

Procedure—Seismic Vibration Test

The test fixture utilized to perform the testing described herein was designed to hold the individual recorders at an angle of 34° with respect to the vertical axis. This fixture thus allowed the recorder to be tested in two (2) axes simultaneously, namely X-Z and Y-Z.

The continuous test method was utilized, varying the frequency of applied vibration for two (2) continuous sweeps over the frequency range of 0.5 to 33 and return to 0.5 Hz at a rate of 10 Hz per minute. The amplitude of vibration for the resonance survey was 0.2 g's. Observation of resonance was conducted by electronic sensing devices [illegible] as well as audio and visual means. [illegible] were performed at the [illegible] at levels of 0.4 [illegible] for a period of [illegible] 30 seconds at [illegible] resonant frequency. If no resonances were observed, the [illegible] were performed at the [illegible] Hz for a period of thirty (30) seconds. [illegible] of all recorders was continuously [illegible]

POOR ORIGINAL



"G" FORCE INPUT	AXIS	FREQ.	"G" FORCE OUTPUT
0.4 g s	YZ	10 Hz	2.0 g s
1.0 g s	YZ	10 Hz	6.0 g s
3.0 g s	YZ	10 Hz	15.0 g s
0.4 g s	YZ	16 Hz	1.8 g s
1.0 g s	YZ	16 Hz	4.8 g s
3.0 g s	YZ	16 Hz	17.0 g s
0.4 g s	XZ	7 Hz	1.0 g s
1.0 g s	XZ	7 Hz	3.3 g s
3.0 g s	XZ	7 Hz	10.0 g s
0.4 g s	XZ	10 Hz	1.5 g s
1.0 g s	XZ	10 Hz	3.6 g s
3.0 g s	XZ	10 Hz	12.0 g s

1. Speedomax H Strip Chart

Cat. No. 300-101-000-0044-6-604-095-521-523-601
Serial No. D-69-19992-1-1
Range 0-10 mV
Accuracy ± 15% of span

a) X-Z Axis
Resonance was observed at frequencies of 7 Hz, 10 Hz, 15 Hz and 25 Hz

Endurance Testing:

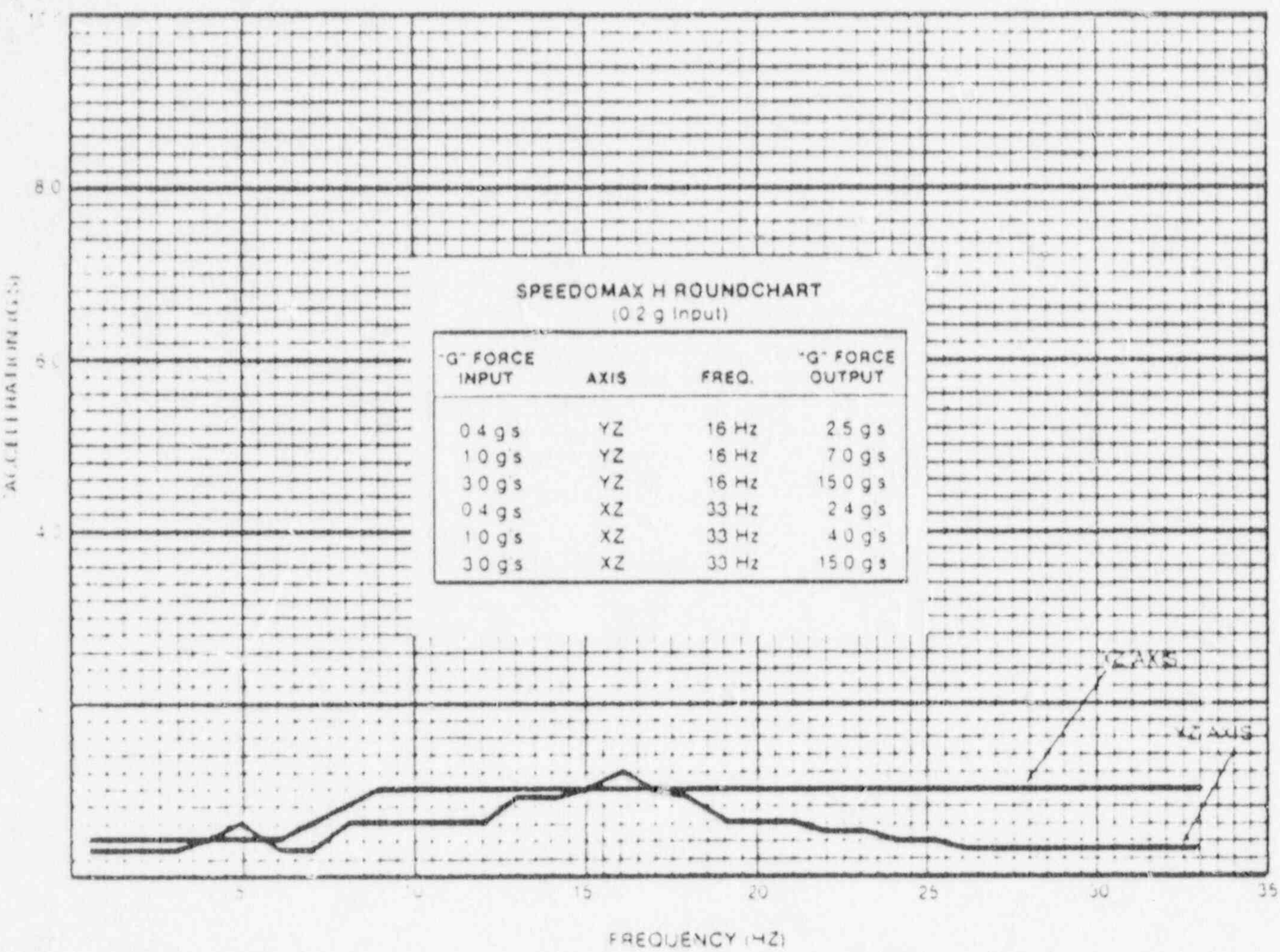
7 Hz, 10 Hz, 15 Hz & 25 Hz @ 0.4 g—No incident — Accuracy ± 25%
7 Hz @ 1 g—Parent paper roll fell off — Accuracy ± 25%
10 Hz, 15 Hz & 25 Hz @ 1.0 g—No incident — Accuracy ± 25%
7 Hz @ 3.0 g's—Recorder door glass broke due to mainframe hitting it
—Insco speed changer failed—replaced with 60 in./hr motor
—Ink bottle fell off — Accuracy ± 5%
10 Hz & 15 Hz @ 3 g's—No incident — Accuracy ± 5%
25 Hz @ 3 g's—Fluorescent light shorted at end of 30 sec. run — Accuracy ± 5%
Screws mounting 139206 amplifier plate were loose

b) Y-Z Axis (Taped ink bottle, tightened spring on paper roll.)
Resonance was observed at 10 Hz & 16 Hz

Endurance Testing:

10 Hz & 16 Hz @ .4 g—No incident — Accuracy ± 25%
10 Hz & 16 Hz @ 1.0 g—No incident — Accuracy ± 5%
10 Hz & 16 Hz @ 3.0 g's—No incident — Accuracy ± 75%

c) Accuracy after testing ± 15% of span



"G" FORCE INPUT	AXIS	FREQ.	"G" FORCE OUTPUT
0.4 g s	YZ	16 Hz	2.5 g s
1.0 g s	YZ	16 Hz	7.0 g s
3.0 g s	YZ	16 Hz	15.0 g s
0.4 g s	XZ	33 Hz	2.4 g s
1.0 g s	XZ	33 Hz	4.0 g s
3.0 g s	XZ	33 Hz	15.0 g s

2. Speedomax H Round Chart

Cat. No. 200-101-081-0240-6-024-034
Serial No. D-70-51668-4-4
Range 0-10 mv
Accuracy ± 15% of span

a) X-Z Axis
No resonance was observed

Endurance Testing:

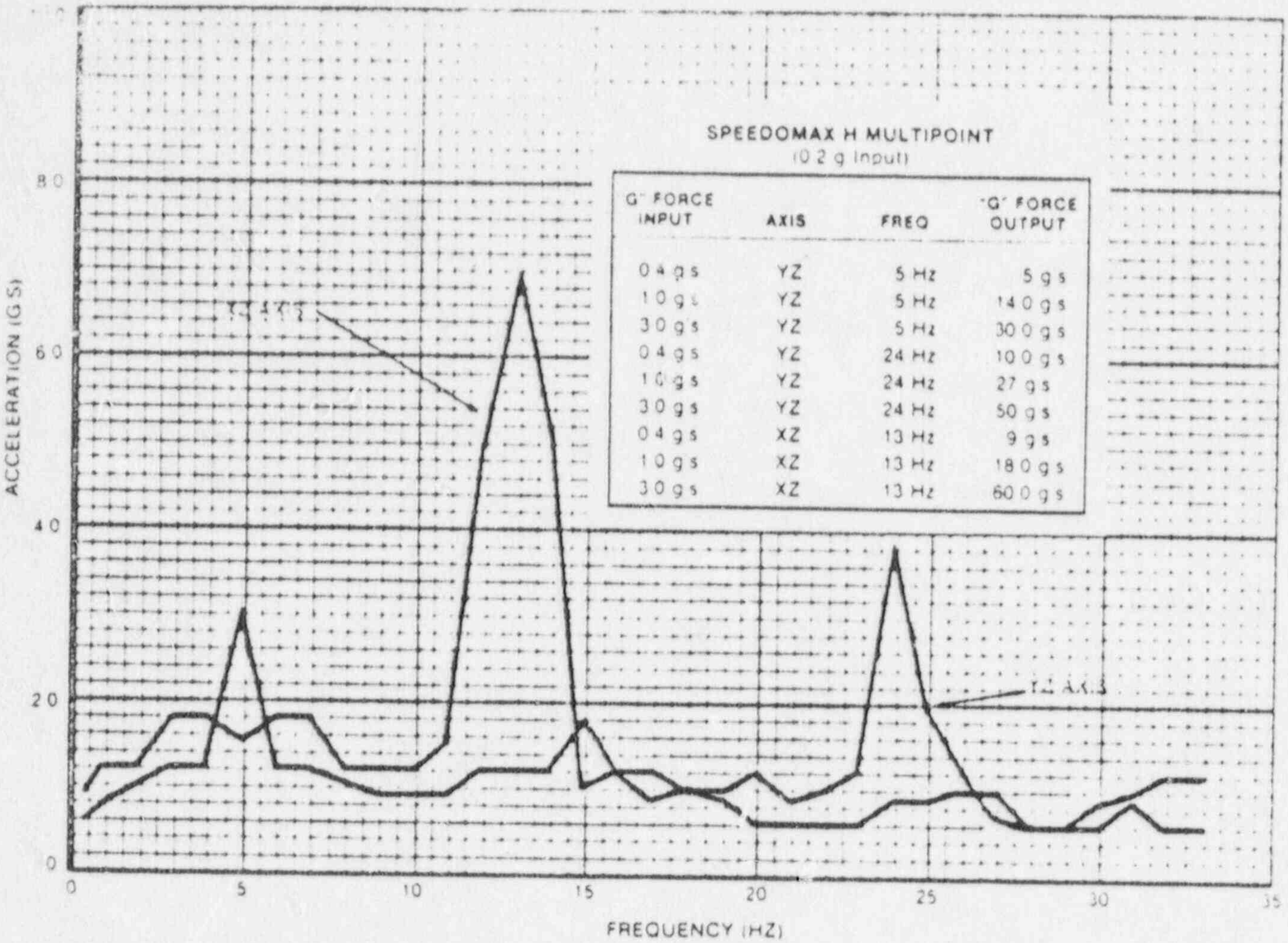
33 Hz @ 0.4 g — No incident — Accuracy ± 15%
33 Hz @ 1.0 g — No incident — Accuracy ± 15%
33 Hz @ 3.0 g s — No incident — Accuracy ± 25%

b) Y-Z Axis
Resonance was observed at 16 Hz

Endurance Testing:

16 Hz @ 0.4 g — No incident — Accuracy ± 15%
16 Hz @ 1.0 g — No incident — Accuracy ± 25%
16 Hz @ 3.0 g s — No incident — Accuracy ± 50%

c) Accuracy after testing ± 15% of span



"G" FORCE INPUT	AXIS	FREQ	"G" FORCE OUTPUT
0 4 g s	YZ	5 Hz	5 g s
1 0 g s	YZ	5 Hz	14 0 g s
3 0 g s	YZ	5 Hz	30 0 g s
0 4 g s	YZ	24 Hz	10 0 g s
1 0 g s	YZ	24 Hz	27 g s
3 0 g s	YZ	24 Hz	50 g s
0 4 g s	XZ	13 Hz	9 g s
1 0 g s	XZ	13 Hz	18 0 g s
3 0 g s	XZ	13 Hz	60 0 g s

3. Speedomax H Multipoint

Cat. No. 315-101-000-0044-6-001-095-170-381-038
Serial No. C 69-36543-4-1
Range 0-10 mV
Accuracy ± 15% of span

a) X-Z Axis
Resonance was observed at 13 Hz

Endurance Testing:

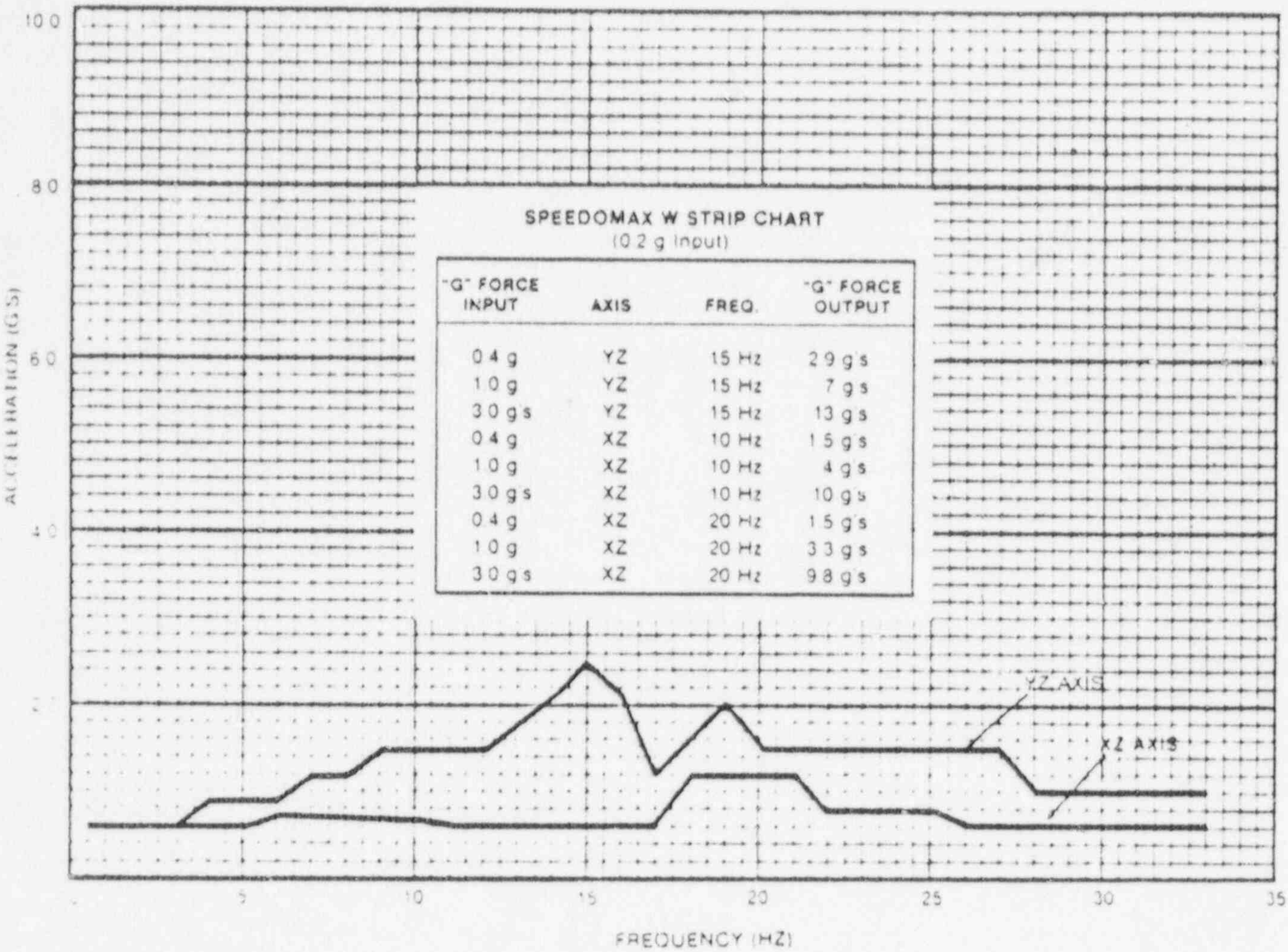
13 Hz @ 4 g—No incident	Accuracy ± 15%
13 Hz @ 1 0 g—No incident	Accuracy ± 15%
13 Hz @ 3 0 g s—input card shorted to case, blowing fuse. Installed electrical tape on case and completed run	Accuracy ± 50%

b) Y-Z Axis
Resonance was observed as 5 Hz & 24 Hz

Endurance Testing:

5 Hz & 24 Hz @ 4 g—No incident	Accuracy ± 15%
5 Hz & 24 Hz @ 1 0 g—No incident	Accuracy ± 15%
5 Hz @ 3 g s—input card fell out (replaced card)	Accuracy ± 5%
24 Hz @ 3 g s—input card fell out (replaced card)	Accuracy ± 5%

c) Accuracy after testing ± 15% of span



SPEEDOMAX W STRIP CHART
(0.2 g Input)

"G" FORCE INPUT	AXIS	FREQ.	"G" FORCE OUTPUT
0.4 g	YZ	15 Hz	2.9 g's
1.0 g	YZ	15 Hz	7 g's
3.0 g's	YZ	15 Hz	13 g's
0.4 g	XZ	10 Hz	1.5 g's
1.0 g	XZ	10 Hz	4 g's
3.0 g's	XZ	10 Hz	10 g's
0.4 g	XZ	20 Hz	1.5 g's
1.0 g	XZ	20 Hz	3.3 g's
3.0 g's	XZ	20 Hz	9.8 g's

4. Speedomax W Strip Chart

Cat. No. 500-101-000-0044-6-060-030-038-601
Serial No. D 68-64809-4-1
Range 0-10 mV
Accuracy ± 15% of span

a) X-Z Axis

Resonance was observed at 10 Hz & 20 Hz

Endurance Testing:

10 Hz & 20 Hz @ .4 g – No incident	Accuracy ± 15%
10 Hz @ 1.0 g – No incident	Accuracy ± 5%
20 Hz @ 1.0 g – Paper roll fell off (tightened spring)	Accuracy ± 25%
10 Hz @ 3 g's – No incident	Accuracy ± 1.5%
20 Hz @ 3 g's – No incident	Accuracy ± 5%

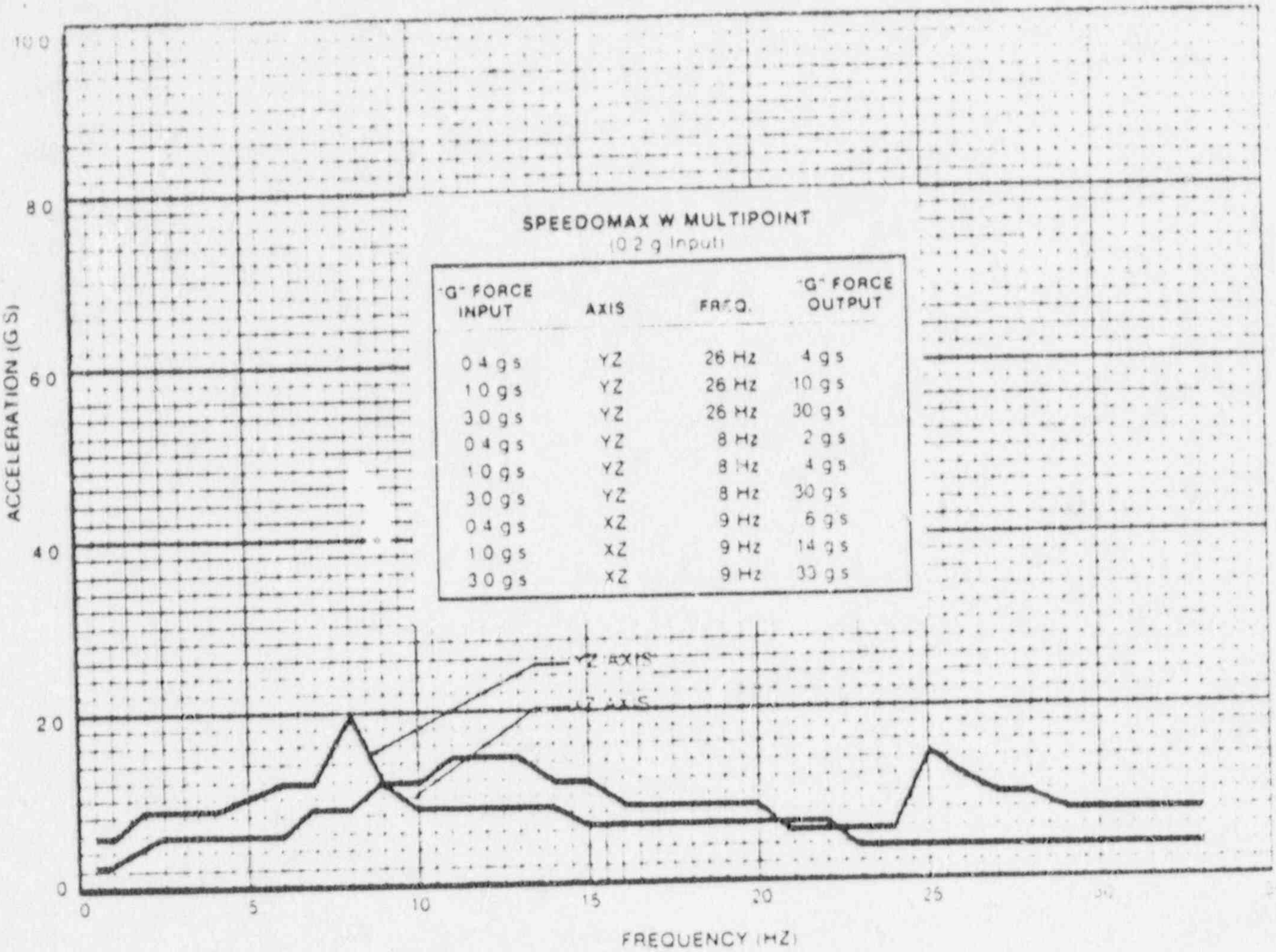
b) Y-Z Axis

Resonance was observed at 15 Hz

Endurance Testing:

15 Hz @ .4 g – No incident	Accuracy ± 25%
15 Hz @ 1.0 g – No incident	Accuracy ± 5%
15 Hz @ 3.0 g's – Paper roll fell off	Accuracy ± 75%

c) **Accuracy after testing** ± 15% of span



"G" FORCE INPUT	AXIS	FREQ.	"G" FORCE OUTPUT
0.4 gs	YZ	26 Hz	4 gs
1.0 gs	YZ	26 Hz	10 gs
3.0 gs	YZ	26 Hz	30 gs
0.4 gs	YZ	8 Hz	2 gs
1.0 gs	YZ	8 Hz	4 gs
3.0 gs	YZ	8 Hz	30 gs
0.4 gs	XZ	9 Hz	6 gs
1.0 gs	XZ	9 Hz	14 gs
3.0 gs	XZ	9 Hz	33 gs

5. Speedomax W Multipoint

Cat. No. 513-101-000-0044-6-003-038-601
Serial No. C-69-69829-1-1
Range 0-10 mV
Accuracy ± 15% of span

a) X-Z Axis
Resonance was observed at 9 Hz

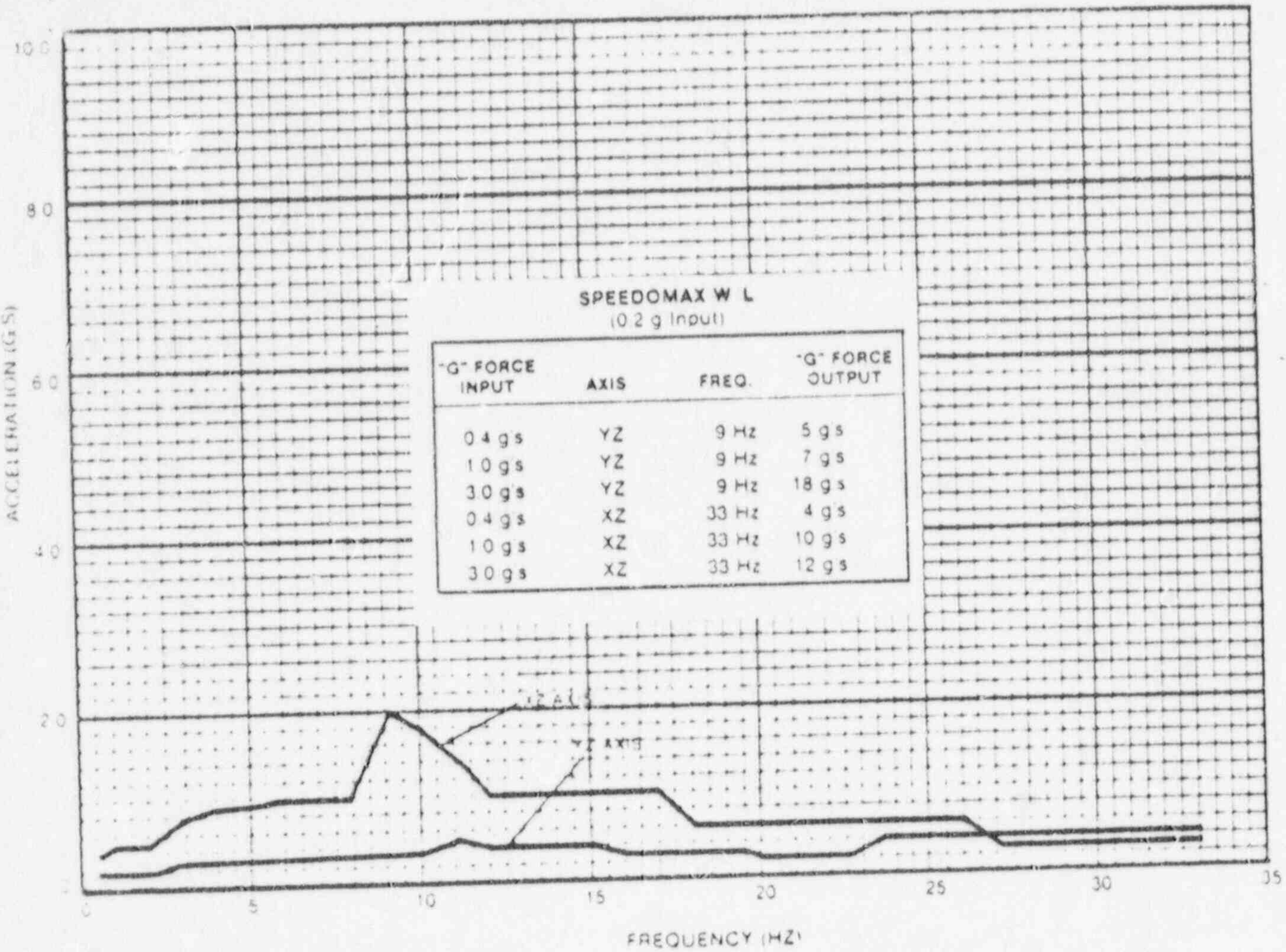
Endurance Testing:
9 Hz @ .4 g—No incident — Accuracy ± 15%
9 Hz @ 1.0 g—No incident — Accuracy ± 25%
9 Hz @ 3.0 g s—No incident. — Accuracy ± 1.0%

b) Y-Z Axis
Resonance was observed at 3 Hz, 8 Hz & 26 Hz

Endurance Testing:
3 Hz, 8 Hz & 26 Hz @ .4 g—No incident — Accuracy ± 15%
3 Hz, 8 Hz & 26 Hz @ 1.0 g—No incident — Accuracy ± 25%
3 Hz @ 3 g s—No incident — Accuracy ± 5%
8 Hz @ 3 g s—Input card fell out — Accuracy ± 75%
26 Hz @ 3 g s—Rear cover fell off — Accuracy ± 5%

c) Accuracy after testing ± 15% of span

RALPH HARTMAN
DICK WEAVER
WARREN BOOZ 103-1-215-643-2000



6. Speedomax W/L

Cat. No. [illegible] 30 33-134-131-1029-4359 6-T0000-001-772-038-712-722
Serial No. C 72 8366-0-9
Range 0 10 mV
Accuracy ± 15% of span

a) X-Z Axis

Resonance was observed at 9 Hz

Endurance Testing:

9 Hz @ 0.4 g—No incident	Accuracy ± 15%
9 Hz @ 1.0 g—No incident	Accuracy ± 25%
9 Hz @ 3.0 g's—No incident	Accuracy ± 50%

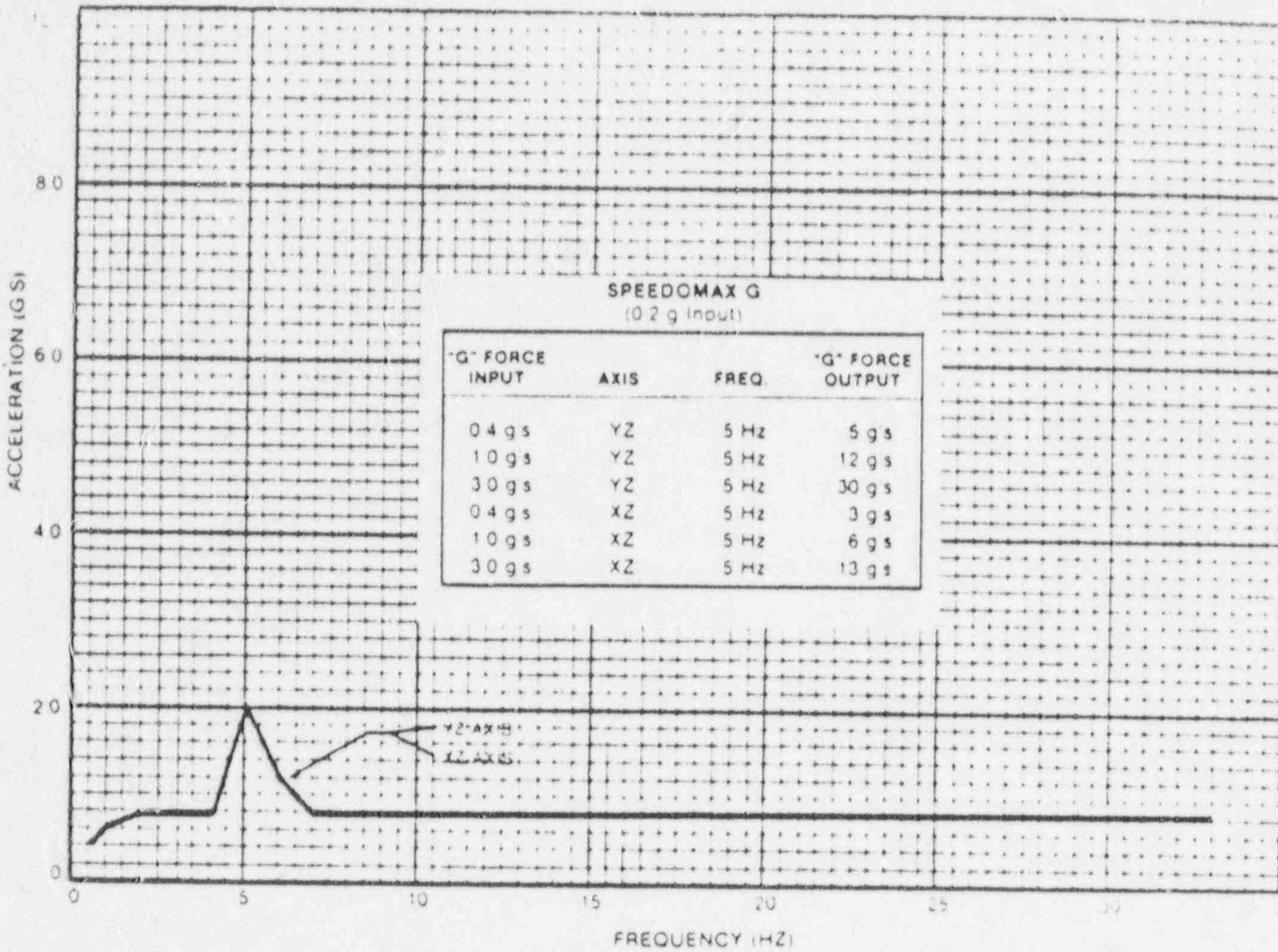
b) Y-Z Axis

No resonance was observed

Endurance Testing:

33 Hz @ 0.4 g—No incident	Accuracy ± 25%
33 Hz @ 1.0 g—No incident	Accuracy ± 50%
33 Hz @ 3.0 g's—Both pens fell off. System continued to operate satisfactorily	Accuracy ± 75%

c) Accuracy after testing ± 15% of span



"G" FORCE INPUT	AXIS	FREQ.	"G" FORCE OUTPUT
0.4 gs	YZ	5 Hz	.5 gs
1.0 gs	YZ	5 Hz	1.2 gs
3.0 gs	YZ	5 Hz	3.0 gs
0.4 gs	XZ	5 Hz	.3 gs
1.0 gs	XZ	5 Hz	.6 gs
3.0 gs	XZ	5 Hz	1.3 gs

7. Speedomax G Strip Chart

Cat. No. 60101-
Serial No. B-66-51412-1-1
Range 0-10 mv
Accuracy ± 15% of span

a) X-Z Axis

Resonance was observed at 5 Hz

Endurance Testing:

5 Hz @ .4 g—No incident — Accuracy ± 15%
5 Hz @ 1.0 g—No incident — Accuracy ± 25%
5 Hz @ 3.0 g s—Connection to amplifier chopper broke after 25 sec. Replaced chopper and continued testing — Accuracy ± 75%

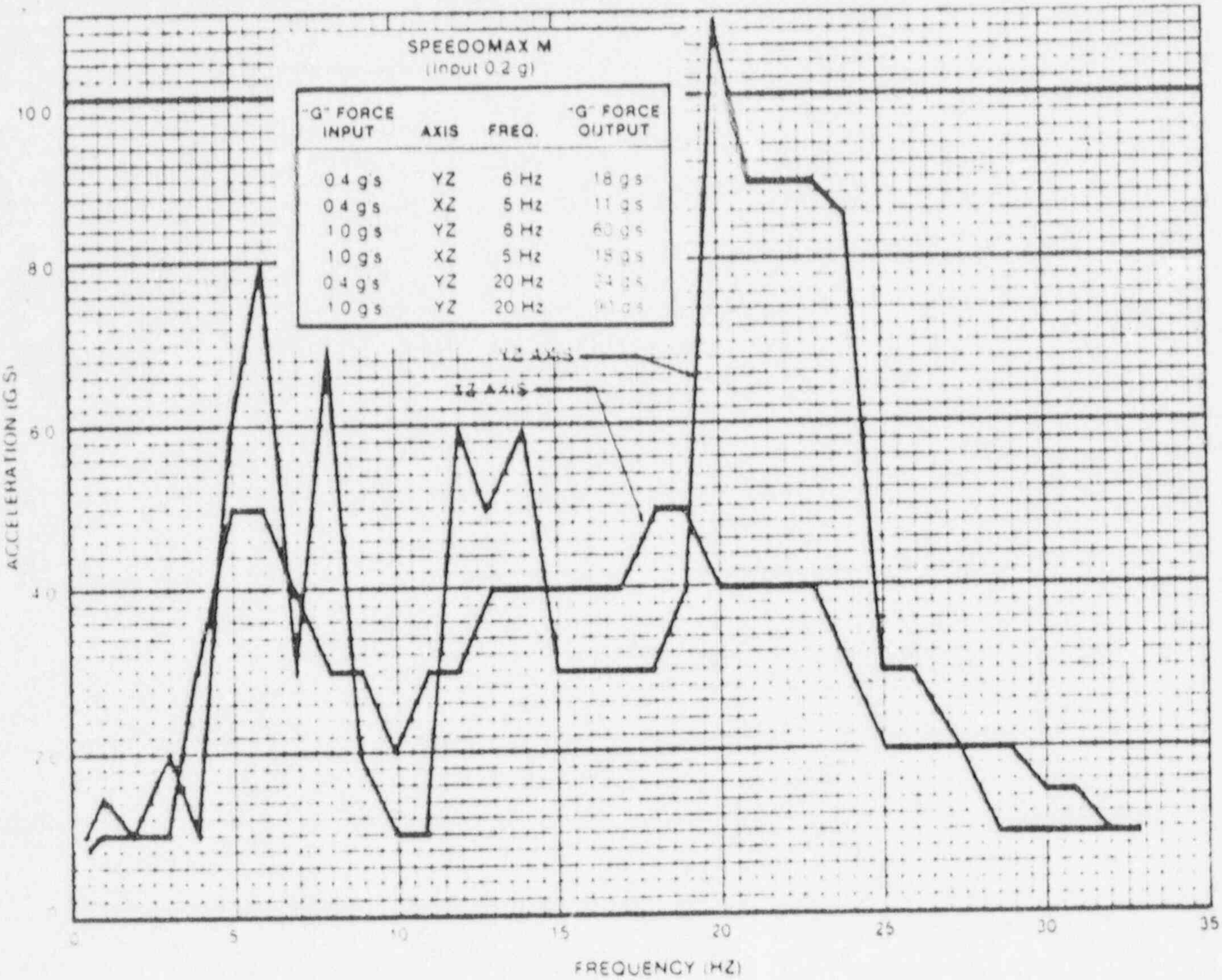
b) Y-Z Axis

Resonance was observed at 5 Hz

Endurance Testing:

5 Hz @ .4 g—No incident — Accuracy ± 15%
. Hz @ 1.0 g—No incident — Accuracy ± 25%
5 Hz @ 3.0 g s—No incident — Accuracy ± .75%

c) Accuracy after testing ± 15% of span



8. Speedomax Mark III M

Cat. No. [illegible]
Serial No. Prototype
Range [illegible]
Accuracy ± [illegible] of span

a) X-Z Axis

[illegible] was observed at 6 Hz & 20 Hz

Endurance Testing:

[illegible] – No incident — Accuracy ± 5%
[illegible] – No incident — Accuracy ± 75%
[illegible] – No incident — Accuracy ± 25%
[illegible] #1, 2 & 3 amplifiers came loose from connectors (Locked Amp. down)
[illegible] g – No incident — Accuracy ± 5%

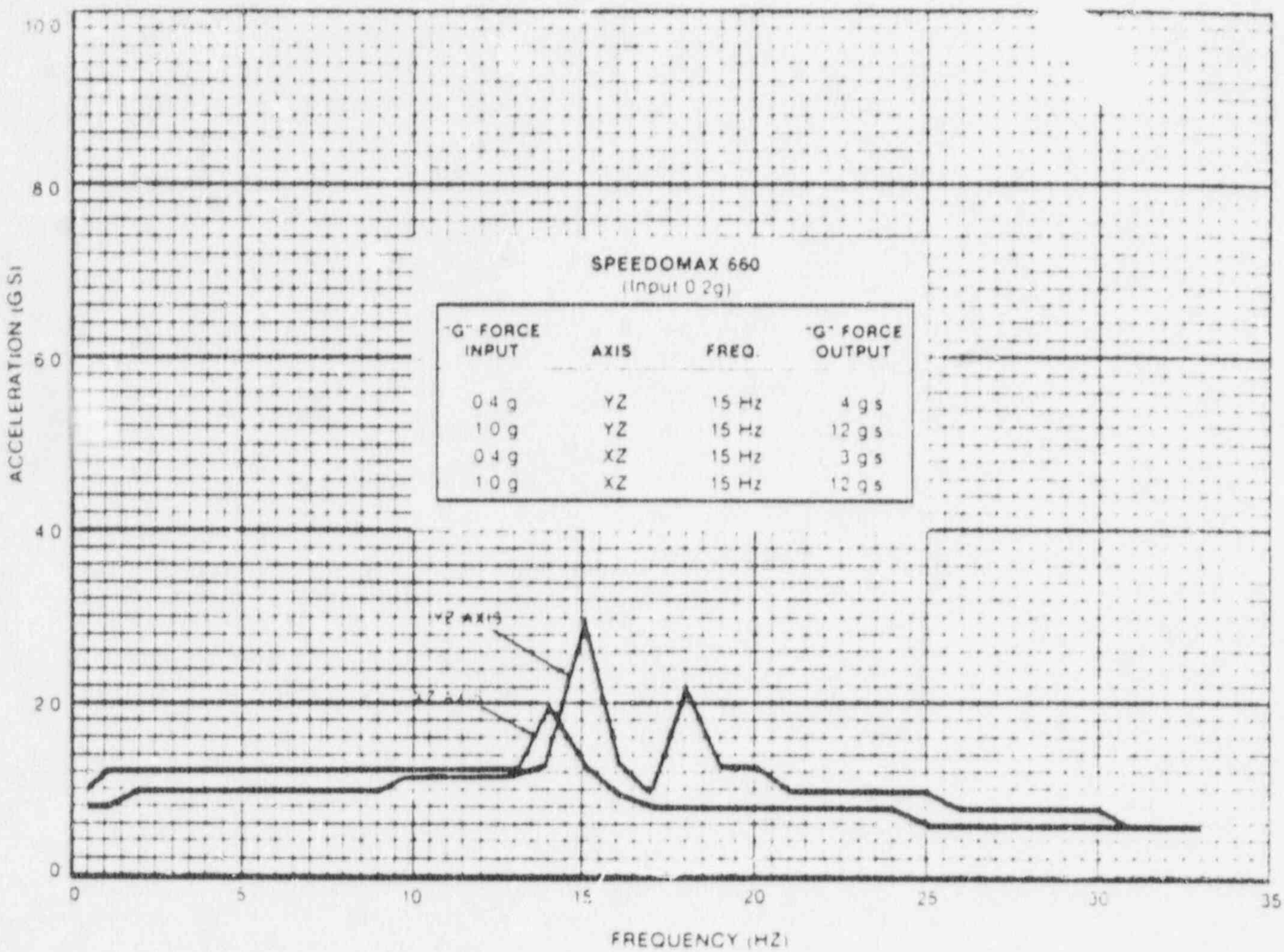
b) Y-Z Axis

[illegible] was observed at 5 Hz & 20 Hz

Endurance Testing:

[illegible] g – No incident — [illegible]
[illegible]

c) **Accuracy after testing** [illegible]



9. Speedomax 660

Cat. No. 666-30-30-30-30-180-180-180-000-0240-0240-0240-6-055
Serial No. 71-11111-1-1
Range 0-10 mV
Accuracy ± 15% of span

a) X-Z Axis (All pen decks tied down.)
Resonance was observed at 15 Hz

Endurance Testing:

15 Hz @ .4 g—No incident. Accuracy ± 25%
15 Hz @ 1.0 g—No incident. Accuracy ± 75%

b) Y-Z Axis (All pen decks tied down.)
Resonance was observed at 15 Hz & 18 Hz

Endurance Testing:

15 Hz @ .4 g—No incident. Accuracy ± 25%
15 Hz @ 1.0 g—No incident. Accuracy ± 75%
18 Hz @ .4 g—No incident. Accuracy ± 25%
18 Hz @ 1.0 g—No incident. Accuracy ± 75%

c) Accuracy after testing ± 15%

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POOR ORIGINAL

SUBJECT: <u>TURBINE BYPASS VALVE SURVEILLANCE</u>

This subject is addressed in response to NRC Staff Question 212.64A.

L. F. Wooden
/dk
6-4-81

SUBJECT: FEEDWATER LEVEL 8 TRIP SURVEILLANCE

This subject is addressed in response to NRC Staff Question 212.64A.

L. F. Wooden
/dk
6-4-81

SUBJECT: Disposition of Certain Ommissions in Section 7.3 of the Fermi 2 FSAR

Edison considered the staff reviewers' requests that both the Containment Spray mode of the RHR System and the Main Steam Isolation Valve Leakage Control System be added to Section 7.3 of the FSAR.

The Containment Spray mode of the RHR System is discussed in FSAR Sections 5.5.7.3.3 and 6.2.1.3.2. No credit has been taken for this system in any safety analysis, therefore, a description of the system should not be included in Section 7.3.

The MSIV LCS was added subsequent to the initial authorship of the FSAR. A fairly complete discussion of the system and its safety design criteria can be found in Appendix 9A. Direct formal reference to Appendix 9A will be made in Section 7.3 of the FSAR as shown on the attachment.

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Attachment
6-4-81

7.3 ENGINEERED SAFETY FEATURE SYSTEMS

Included in this section are descriptions and analyses of the instrumentation and controls for the following ESF systems:

a. Emergency core cooling system

b. Primary containment and reactor vessel isolation control system

c. Emergency core cooling auxiliary system

d. Emergency equipment cooling water system

e. Main control room atmospheric control system

f. Standby gas treatment system

g. Standby power system

h. Post-LOCA combustible gas control system.

The format of this section departs from the Standard Format Guide in that the description and analysis are grouped together under each system heading rather than by descriptions and by analyses. ← Insert A

7.3.1 Emergency Core Cooling System

7.3.1.1 Design Basis Information

The design basis information for the ECCS, required by Section 3 of IEEE 279-1971, is provided in Subsection 7.1.2.1.3.

7.3.1.2 System Description

The ECCS includes the following subsystems:

a. High pressure coolant injection system (HPCI)

b. Automatic depressurization system (ADS)

c. Core spray system

d. Low pressure coolant injection (LPCI) mode of the RHR system.

The purpose of ECCS instrumentation and control is to initiate appropriate responses from the ECCS to ensure that the fuel is adequately cooled in the event of a design basis LOCA accident. The cooling provided by the system restricts the release of radioactive materials from the fuel by preventing or limiting the extent of fuel damage following situations in which reactor coolant is lost from the NSSS.

INSERT A

A discussion of the Main Steam Isolation Valve Leakage Control System is incorporated in Appendix 9A.

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6-4-81