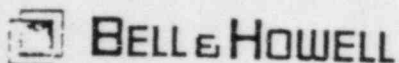


APPENDIX H

LEC TRANSDUCER SEISMIC TEST REPORT

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PDR ADOCK 05000361
P PDR



CEC DIVISION

360 SIERRA MADRE VILLA, PASADENA, CA 91109 TELEPHONE (213) 796-9381 TELEX: 67-5415

August 3, 1977

Mr. Jerry Fuller
General Electric Company
Valley Forge Space Tech. Center
P.O. Box 8555
Philadelphia, Pennsylvania 19101

Reference: Your Order A2800-U67247

Subject: Acceptance Test Procedure, B&H Model CEC 1000
Pressure Transducer.

Gentlemen:

Pursuant to our discussions, enclosed herewith is copy of the test procedure used during the development and subsequent production of the model CEC 1000 pressure transducer.

As noted in our discussions, the model CEC 1000 transducers pressure and strain sensing elements are extremely low in mass (natural frequency of approximately 15 KHz for the transducers of the referenced procurement) and will have negligible response to seismic motion.

In reviewing the data on file for the CEC 1000, I find recorded information to 50 Hz. I have requested that Q.A. pull a few 100 psi units from stock and perform the test procedure following the frequency data down to 5Hz. Just as soon as these tests are run, the data will be forwarded to you for your edification.

SO23-506-17-16-0

Should you have a question, please do not hesitate to contact me.


Very truly yours,



C. A. Toy
Sr. Product Specialist

CAT:cj
Enclosure

cc: Alan Stephens
United Controls Division, Envirotech Corp.
9419 Ann Street
Santa Fe Springs, CA 90670

 BELL & HOWELL

FOR

T.P. CEC 1000

PREPARED BY: E. Wong DATE 7/24/77
E. Wong, Sr. Quality Assurance Engineer
CHECKED BY: C. Schubert DATE 7-27-77
C. Schubert, Project Engineer
APPROVALS: G. Taylor DATE 7-29-77
G. Taylor, Manager Quality Assurance

_____ DATE _____
_____ DATE _____
_____ DATE _____
_____ DATE _____

SYM	REVISION	DATE	APPROVAL
		5023-50E-17-18-0	H-3

INSTRUMENTS DIVISION



BELL & HOWELL

PREPARED E. Wong

DATE 7/22/77

REV

CHECKED

DATE

T.P. CEC1000

DA

APPROVED

DATE

SHEET 1 OF 3

Vibration Test Procedure for
CEC1000 and CEC1000-0XXX Transducer, Pressure

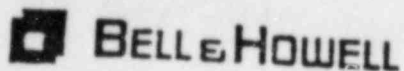
1.0 SCOPE

This document provides a vibration test procedure to be used by Bell & Howell, CEC Division. Selected transducers shall be subjected to the tests specified herein to show compliance with applicable CEC documents.

2.0 GENERAL TEST CONDITIONS

Unless other wise specified, all test performed herein shall be in the following conditions:

- 2.1 Test temperature $77 \pm 2^{\circ}\text{F}$.
- 2.2 Atmospheric pressure 28 to 32 inches of mercury.
- 2.3 Relative humidity 80% or less.
- 2.4 Excitation voltage: Per Product Specification.
- 2.5 All electrical connections to the unit under test will be made through a mating connector.
- 2.6 The test unit shall warm-up with excitation voltage applied for a minimum of 3 minutes prior to any functional test.
- 2.7 Adapter shall be used during test to preclude damage to the pressure fitting.
- 2.8 Tests shall be conducted in the sequence specified herein.



PREPARED E. Wong

DATE 7-22-77

REV

CHECKED

DATE

T.P. CEC1000

DAT

APPROVED

DATE

SHEET 2 OF 3

Vibration Test Procedure for
CEC1000 and CEC1000-0XXX Transducer, Pressure

3.0 ACCEPTANCE TEST

3.1 Sine Vibration

- 3.1.1 Mount the unit on the vibration table as shown in Figure 1 and subject the unit to a minimum of 2.5 minutes of constant sweep rate along the X axis (longitudinal axis) at the following vibration levels:

10 to 22 Hz at 0.5 inches $\pm 10\%$ double.
amplitued.

22 to 2000 Hz at 35g peak $\pm 10\%$.

- 3.1.2 Record the maximum output observed during vibration for 2 intermediate frequencies plus 10Hz and 2KHz.

- 3.1.3 The maximum output due to vibration shall not exceed the limits of the specifications set forth in the product specification for the instrument of test.

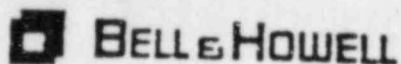
3.2 Calibration

- 3.2.1 The transducers shall be tested after vibration to the requirements of the applicable product. specifications for residual unbalance and insulation resistance. These tests shall be in addition to those tests normally performed as part of standard final acceptance tests.

S023-506-17-18-0

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INSTRUMENTS DIVISION



PREPARED E. Wong

DATE 7/22/77

REV

CHECKED

DATE

T.P. CEC1000

DATE

APPROVED

DATE

SHEET 3 OF 3

Vibration Test Procedure for
CEC1000 and CEC1000-0XXX Transducer, Pressure

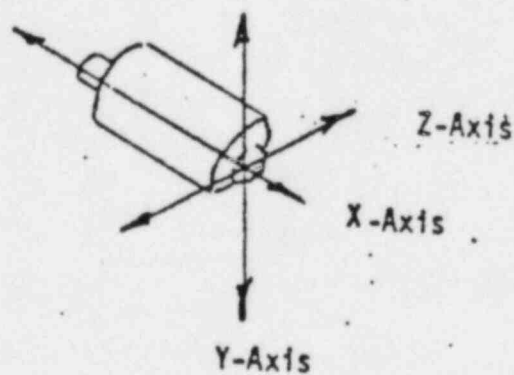
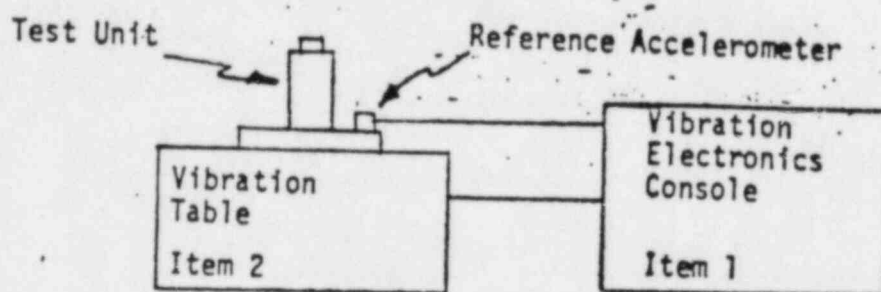
4.0 EQUIPMENT LIST

<u>Item</u>	<u>Description</u>	<u>Manufacturer and Model</u>	<u>Accuracy</u>	<u>Calibration Level</u>
1.	Vibration Electronic Console	Unholtz Dickie		6 months
2.	Vibration Table	Unholtz Dickie, 206H	+5.0%	6 months
3.	Pressure System	CEC. TDE 4		2 months
4.	Pressure Standard	L&N 3760	+0.025%	3 months
4a.	Servo Amplifier	CEC, 1-164		3 months
5.	Digital Voltmeters (2)	L&N 2760	+0.0025%	3 months
6.	Insulation Resistance Checker	General Radio 1862-B	+2%	9 months
7.	Differential Multimeter	Fluke, 853A	+3%	12 months
8.	Auto Transformer	Powerstat, BP57517	---	---
9.	DC Power Supply	Fluke, 382A	0.01%	6 months
10.	Load Resistor (16 to 22 Ω , 75 watts)	---	---	---
11.	Temperature Chamber	Delta Design MK 2800		
12.	Thermometer	H.P., 28010A	+0.1°C	12 months
13.	Latching Network	CEC, 369432-X1-1	---	---
14.	AC-DC Meter	Fluke, 883	+0.1%	3 months

NOTE: 1. Equipment calibrations are in accordance with the requirements of MIL-C-45662.

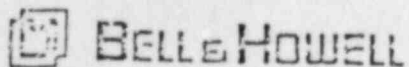
2. Equipment with equivalent accuracy or better may be substituted.

FIGURE 1
VIBRATION TEST SETUP



NOTE: Test specimen is mounted with the pressure fitting threaded into the test fixture.

8023-508-17-18-0



CEC DIVISION

360 SIERRA MADRE VILLA, PASADENA, CA 91109 TELEPHONE (213) 796-9381 TELEX 67-5415

September 19, 1977

General Electric
Valley Forge Special Test Center
Post Office Box 8555
Philadelphia, Pennsylvania 19101

Attention: Jerry Fuller

Reference: Your order A2800-U67247

Subject: Pressure Transducer Vibration response below 50 Hz

Three each of Bell & Howell CEC 1000 Pressure Transducers have been subjected to vibration from 5 through 50 Hz at 0.5 in D.A. from 5 to 37 Hz and 35g from 37 to 50 Hz.

All three units were calibrated before and after the vibration tests and no change in the units performance was detected. The maximum output due to vibration was 0.3 mV p at 50 Hz or 0.03 % FRO/g.

Very truly yours,

C. Toy
St. Product Specialist

CT:st

BELL & HOWELL

engineering test laboratory

SHEET 1 OF 1
DATE 9-15-77

TYPE NO. <u>CEC 1000</u>	PROJECT ENG. <u>J</u>	CHARGE NO. <u>X-462013</u>
SERIAL NO. <u>NOTED</u>	TEST TECH. <u>R ATKINSON</u>	QC ENG. <u>E. WONG</u>
RANGE <u>NOTED</u>	EXCITATION <u>10.0VDC</u>	

35°C .5" D.A. (CROSS AXIS AT 37 Hz)

S/N	3046		3620	3620
R.H.	5051		200A	200A
FREQ.				
Hz	SENS. AXIS	CROSS AXIS	CROSS AXIS	SENS. AXIS
5	0.5	0.4	0.4	0.5
10	0.5	0.5	0.45	0.5
15	0.6	0.5	0.5	0.55
20	0.7	0.6	0.6	0.6
30	0.8	0.7	0.7	0.7
40	0.9	0.8	0.8	0.8
50	0.9	0.8	0.8	0.8
940	1.2	970	0.9	
N.L.	0.3	0.3	0.3	0.3

8023-508-17-18-0

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