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AD 844 396

IDEP FORM NO. 17:11-66 IDEP

GENERAL REPORT SUMMARY SHEET

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	5. ORIGINATOR'S REPORT NO. DTD-191	3.	DAY	MO.	YR.	
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4. ORIGINATOR'S REPORT TITLE STEAM DUCT PRESSURE TRANSDUCER ECS ITEM 8.17	6. TEST TYPE, ETC. DEVELOPMENT	REPT. COMPL.	18	1	68	

7. THIS TEST (SUPERSEDES) (SUPPLEMENTS) REPORT NO:

8. OUTLINE, TABLE OF CONTENTS, SUMMARY, OR EQUIVALENT DESCRIPTION:

MFGR: AIRESEARCH

The present Item 8.17 Steam Duct Pressure Transducer (P/N 837036-1) has been determined to be unacceptable because of its inability to maintain a stable calibration. A majority of the calibration shift problems have occurred during acceptance testing, but some units have been rejected after use in the field and during qual testing. The reasons for the shifts have been:

- Mechanical instability of the sensing diaphragm.
- Sensitivity to minor overpressurization of the sensing diaphragm.
- Corrosion of the diaphragm and the "E" core pole pieces caused by the moisture of the pressure media.
- Gain shifts caused by internal electronic instability.
- Calibration changes caused by pressure inlet fitting torque.

Because of the basic design problems associated with this unit it was deemed impractical to attempt to modify this design to obtain an acceptable transducer.

AiResearch has undertaken an extensive survey of other transducer manufacturers in an attempt to find an acceptable replacement. Test samples were obtained from six manufacturers that were judged to have a workable approach to this problem. A developmental test program was initiated and tests were conducted on the new transducers. Preliminary results of this testing have been transmitted to North American Rockwell by AiResearch Report No. DTD-183, dated 16 October 1967. Since that report, developmental testing has continued, and the development test results on one transducer type are very encouraging. The transducer is manufactured by the Pace-Wiancko Division of the Whittaker Corporation, North Hollywood, Calif. The results of this testing have indicated that the Pace-Wiancko transducer will meet or exceed the requirements for this application. As a result of the encouraging test results on the Pace-Wiancko transducer, a EDCP will be submitted to incorporate this transducer into the ECS system. Testing, however, will continue on both the Pace-Wiancko and transducers from other suppliers.

C9550

11. REPT. NO. 852.50.85.00-F1-30

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AIRESEARCH MANUFACTURING DIVISION
Los Angeles, California

852.50.85.10-F1-30

DEVELOPMENTAL DATA TRANSMITTAL
STEAM DUCT PRESSURE TRANSDUCER

ECS ITEM 8.17
NAR/SD PROJECT APOLLO
NAR P.O. M5J7XAZ-450029A

Report No. DTD-191 18 January 1968

Prepared by R. E. Durham

Approved J. P. Dahl

H. Nicolello

No. of Pages 84

APPENDIX A 16 Pages

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DEVELOPMENTAL DATA TRANSMITTAL
STEAM DUCT PRESSURE TRANSDUCER
ECS ITEM 8.17
NAR/SD PROJECT APOLLO
NAR P.O. M5J7XAZ-450029A

INTRODUCTION

The present Item 8.17 Steam Duct Pressure Transducer (P/N 837036-1) has been determined to be unacceptable because of its inability to maintain a stable calibration. A majority of the calibration shift problems have occurred during acceptance testing, but some units have been rejected after use in the field and during qual testing. The reasons for the shifts have been:

- Mechanical instability of the sensing diaphragm.
- Sensitivity to minor overpressurization of the sensing diaphragm.
- Corrosion of the diaphragm and the "E" core pole pieces caused by the moisture of the pressure media.
- Gain shifts caused by internal electronic instability.
- Calibration changes caused by pressure inlet fitting torque.

Because of the basic design problems associated with this unit it was deemed impractical to attempt to modify this design to obtain an acceptable transducer.

AiResearch has undertaken an extensive survey of other transducer manufacturers in an attempt to find an acceptable replacement. Test samples were obtained from six manufacturers that were judged to have a workable approach to this problem. A developmental test program was initiated and tests were conducted on the new transducers. Preliminary results of this testing have been transmitted to North American Rockwell by AiResearch Report No. DTD-183, dated 16 October 1967. Since that report, developmental testing has continued, and the development test results on one transducer type are very encouraging. The transducer is manufactured by the Pace-Wiancko Division of the Whittaker Corporation, North Hollywood, California. The results of this testing have indicated that the Pace-Wiancko transducer will meet or exceed the requirements for this application. As a result of the encouraging test results on the Pace-Wiancko transducer, a EDCP will be submitted to incorporate this transducer into the ECS system. Testing, however, will continue on both the Pace-Wiancko and transducers from other suppliers.

This report presents a summary of the development tests completed to date, on the Pace-Wiancko transducers. The testing was conducted from August 1967 through January 1968.

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SUMMARY

Based on the successful completion of the developmental testing at this time a design decision has been made to submit an EDCP to incorporate the improved Pace-Wiancko into the steam duct pressure transducer application. This transducer is identified by Part Number 836706-2.

The decision is based on the results of the development tests and design investigations completed to this date on five test specimens. The Pace-Wiancko design incorporates a stretched diaphragm that has proved to be exceptionally stable during pressure cycling tests. No major problems were encountered either with moisture or electronic instability. The transducer is insensitive to fitting torque since the pressure fitting is installed with a torque of 150 lb-in. and securely locked with a set screw.

To further increase the confidence level in this design, development tests are continuing. Further tests will include water testing, corrosive contaminate oxygen-humidity testing (CCOH), continued steam environment testing and disassembly.

TEST SPECIMENS

Five development test transducers were obtained from Pace-Wiancko for this testing. The units are identified by the following serial and part numbers:

Serial No.	Part Number
22319	837036-2
22320	837036-2
22321	837036-2
22322	837036-2
22323	836706-2*

Initial delivery was taken on Part No. 837036-2 Serial Nos. 22319 through 22322, and testing was started. Tests on those units indicated that some design changes were desirable in order to improve the transducer stability. The design changes as discussed later in this report were:

1. Modification of the "E" core magnetic circuit to reduce magnetic circuit leakage.

2. Increased the diaphragm movement from approximately 0.0005 to 0.001 inch.

3. Improved pressure fitting installation procedure.

4. EMI filtering to meet SS-1313-R, Rev. 1 requirements.

5. Modification of sensing chamber to provide more space for possible contamination.

6. Improved case sealing: silicone adhesive instead of a gasket.

* Purchased as an 8[illegible] but updated to an 836706-2 configuration with exception of improved electronic package sealing.

6. Improved case sealing: silicone adhesive instead of a gasket.

These changes have been incorporated into transducer S/N 22323, except for the improved case seal. The improved transducer design has been reidentified by Part Number 836706-2. Two transducers (S/N 22321 and 22322) are presently being reworked to incorporate the change. In other words, all of the tests included in this report were done on the initial configuration except for the tests conducted on unit S/N 22323, which had been revised to the new configuration.

The transducer has a double "E" core/diaphragm type pressure sensing element. The "E" cores are hermetically sealed under inconel covers. The case halves are made from passivated 416 type stainless steel, and the sensing diaphragm is made from 410 type stainless steel. To obtain a high degree of dimensional stability, the diaphragm is prestretched. This operation allows the diaphragm to be subjected to a considerable overpressure without calibration shift.

TEST DESCRIPTIONS

Five transducers were evaluated during this program. For clarity of presentation, the development tests and activities will be discussed separately for each transducer and not in the sequence in which the tests were done. Table 1 presents a summary of the tests completed to date on each test specimen. As shown on Table 1, a major portion of the test program has been completed on this unit. At the present time, the test program is continuing and the S/N 22323 is currently undergoing a water test. Future tests scheduled include further steam endurance testing where the transducer is operated while mounted on a steam generator, a corrosive contaminate oxygen-humidity test, and final disassembly inspection of the transducers.

Transducer 837036-2, S/N 22319 Testing

The S/N 22319 transducer was received from Pace-Wiancko and subjected to an initial calibration test. The results of this test and the results of the calibration test conducted by Pace-Wiancko are presented on Figure 1. The calibrations were quite similar and well within the ±200 mv acceptable limit.

1. Pressure Cycling

Following the initial calibration test the transducer was subjected to 20,000 working pressure cycles between 0.05 and 0.30 psia. Calibration checks were conducted at intervals during this test. The results of these intermediate calibration checks are presented on Figure 2. Although the transducer appears to be out of calibration at the 4,750 cycle calibration, test equipment error is suspected to have caused these high readings. A post calibration test showed that the transducer was within the allowable tolerances. The results of this test are presented on Figure 3.

A pressure test was conducted by subjecting the transducer to 500 pressure cycles between approximately 0 and 14.7 psia. Following this test the transducer remained within calibration limits as shown by Curve 1 of Figure 4.

2. Extreme Temperature Test

Following the pressure testing the transducer was tested for calibration at the extreme temperatures of 0, 150 and 200°F. Room temperature calibration checks were made after the 0 and 200°F extremes. The results of this testing are presented on Figure 4.

3. Water Test

The transducer was then subjected to a water test. The sensing cavity of the transducer was filled with tap water, drained and allowed to stand at room temperature for a five day period. Tap water was used for this test in order to simulate to some degree the contaminates that may be present in waste water. However, as found by later analysis, the contamination level of tap water is excessive.

Following the five day storage period, the transducer was subjected to a calibration test. The results of that test are presented on Figure 5. The transducer was found to exceed the 4 percent maximum allowable calibration shift below approximately .175 psia.

As a result of this out of tolerance operation, the transducer was disassembled and examined. The sensing chamber was found to contain brown deposits on the diaphragm as shown on Figure 6.

Chemical analysis showed that the contamination did not originate within the transducer. The contamination was apparently deposits caused by the tap water. It was concluded that the calibration shift was caused by the deposition of contaminates between the pole pieces and the diaphragm while stored at room pressure. As the pressure was decreased the deposition tended to inhibit movement of the diaphragm to the low pressure position. This resulted in a positive shift of the transducer calibration.

It should be pointed out that this test is felt to be too severe because of the excessive contamination contained in tap water. This test is presently being repeated with distilled water which provides more realistic conditions.

Transducer 837036-2, S/N 22320 Testing

Following receipt of this transducer a calibration test was conducted to insure that the unit was within acceptable limits. The results of this test are presented on Figure 7.

The transducer was subjected to an ATP test per ATP SS-1759-R, ICN F. The data sheets from this test (Figure 8) show that the unit met the requirements and was acceptable.

1. Evaporator Steam Duct Test

The transducer was installed in the steam duct of an evaporator being used in a subsystem test. The transducer successfully sensed low-pressure steam pressure for a period of 282 hours. Intermediate calibration tests showed that the unit was functioning successfully (see Figure 9). Following the 282 hour exposure, the transducer was removed and subjected to a ATP test. The data sheets are presented on Figure 10.

2. Temperature Test per SS-1625-R

The transducer was installed into a test setup and subjected to the temperature profile as shown on Figure 11. No damage or degradation was observed as a result of this test. The post-test calibration data sheet is shown on Figure 12.

3. Vibration Test per SS-1560-R

The transducer was installed into a vibration fixture and supplied pressure of approximately 8 mm Hg A. Photographs of the setup in each axis are shown on Figure 13. The transducer was subjected to random vibration inputs simulating launch, flight and high Q abort conditions. The inputs are presented on Figure 14. Data traces during vibration in the three axes are presented on Figure 15. The results of a post calibration test, conducted following vibration, are presented on Figure 16. The calibration showed that the transducer was within nominal requirements.

4. Shock Test per SS-1560-R

The transducer was subjected to a 78G shock test through the X+ axis. A photograph of the test setup is shown on Figure 17. The test was conducted at the Ogden Technology Laboratories, Inc., and their report is presented on Figure 18. A photograph of the shock calibration and impact shock trace is presented on Figure 19. A post test calibration check is presented on Figure 20. The transducer was within the required calibration limits.

5. Steam Endurance Test

A low pressure steam fixture was constructed to simulate the ECU evaporator steam environment in the pressure range between 5 and 10 mm Hg A. The fixture was capable of mounting up to eight transducers at one time, and could therefore expedite specimen exposures. The transducer was mounted on the fixture and was exposed to steam on a 24 hour a day basis. Performance was monitored on a continuous strip recording and was continuously within the nominal requirements. The transducers remained on the steam fixture in excess of 15 days, and a total of 360 hours were accumulated. Combining these hours with those accumulated on the previous evaporator steam test a total of 642 hours of life test cycles have been accumulated on this transducer.

6. Magnetic Field Effects

To determine the effect of a magnetic environment on the transducer operation, the transducer was mounted into a test setup and subjected to a magnetic field of 5 gauss. A calibration test was run at 0, 25, 50, 75, and 100 percent full scale, and at each level the magnetic field was changed from 0 to 5 to 0 gauss. A photograph of the test setup is shown on Figure 21. A data trace of this test is presented on Figure 22. The magnetic field resulted in no preceptable change in calibration at any level.

7. Attitude Test

An attitude test was performed to determine if the transducer is sensitive to any mounting attitude. The unit was pressurized to specific pressure levels within the calibration range. At each pressure level the transducer was calibration tested in both a + and - direction in the X, Y and Z axis. The results of this test are presented on Figure 23. No detrimental effects were observed and the unit was within calibration limits in all attitudes.

This transducer is presently awaiting further tests.

Transducer 837036-2, S/N 22321 Testing

After receipt of this transducer an ATP test was conducted per SS-1759-R, ICN F. The results of this test are presented on Figure 24. The transducer was out of calibration at the lower pressures. The transducer was returned to the supplier and a transformer was replaced, however, the calibration was still out of tolerance. A decision was made to retain this unit at AiResearch for development of the EMI filters since testing with S/N 22322 had revealed that the transducer did not meet the RF conducted susceptibility requirements. Discussion of that test is presented later in this report. Later failure analysis was to show that the shift was caused by a magnetic leakage problem.

1. EMI Test per SS-1313-R, Rev. 1

The transducers was modified with three separate EMI filter systems based on the findings from the EMI tests on transducer S/N 22322. The final fix was successful, and the test report from Genisco Technology Corporation is included in Appendix A of this report.

2. Modification

Following the successful completion of the EMI test the unit was returned to the supplier for failure investigation and modification. The failure report is presented on Figure 25. The failure report shows that a basic design modification was necessary to improve the transducer magnetic circuit design. The transducer is presently at the supplier being modified to the improved design and with other changes necessary to bring the transducer to the P/N 836706-2 configuration.

Transducer 837036-2, S/N 22322

Following receipt of this transducer from the supplier, a calibration check showed the transducer was acceptable. The calibration data is presented on Figure 26.

1. Evaporator Steam Duct Test

Following the initial calibration test, the unit was intalled in the steam duct used for system testing. A total of 167 hours were accumulated in this test setup. Following this test an ATP was completed and is presented on Figure 27.

2. EMI Test Per SS-1313-R, Rev. 1

The transducer was sent to Genisco Technology Corporation for EMI testing. As mentioned previously, the EMI was found to exceed the RF conducted susceptibility requirements. The data sheet from that test is presented on Figure 28. As a result of this test a filter system was developed that corrected the problem. The complete EMI test on transducer S/N 22321 is presented in Appendix A.

3. Steam Endurance Test

Following the EMI test the transducer was installed in the steam generator test fixture as previously described. The unit was functionally subjected to the steam environment for 216 hours or approximately 9 days. At this time the unit was removed from the steam fixture and subjected to an ATP checkout. The transducer exceeded the minimum allowable tolerance at all but the highest test pressure. The data sheets are presented on Figure 29. The unit was returned to the supplier and the sensing cavity was opened. No evidence of either corrosion or contamination was found. The transducer was given a detailed failure analysis.

4. Modification

As shown on Figure 25 the calibration shift was caused by the magnetic path problem as previously discussed. The calibration shift of both this transducer and transducer S/N 22321 are attributed to the same cause. This transducer is presently being updated to the 836706-2 configuration that eliminates magnetic flux leakage as discussed in Figure 25.

Transducer 836706-2, S/N 22323 Testing

This transducer configuration is revised to include the fixes determined to be necessary during the previous tests. The unit, however, did not incorporate a silicone adhesive for improved cover and electrical connector to case sealing. A gasket was used for this unit. The gasket is not considered to be a sufficient moisture barrier and the use of the silicone adhesive will ensure a positive seal.

1. Extreme Temperature Test

Before the start of this test, to check the repeatability of the transducer, two calibrations were made 24 hours apart. As shown on Figure 30 the two calibrations were very close. Three of the calibration points on the second calibration check were made following a proof pressure of 22.5 psia. This test illustrates the high pressure margin and the excellent stability of this transducer.

The transducer was then subjected to temperature extremes at 0, 150, and 200°F with intermediate room temperature calibration checks. These results are also shown on Figure 30. The calibration was well within the nominal range for all these tests.

2. Pressure Cycling Test

Following the temperature cycling test, the transducer was subjected to 20,000 working pressure cycles and 500 ambient range pressure cycles. Working pressure cycles were between 0.05 and 0.30 psia and ambient range cycles were between 0 and 14.7 psia. The results of the calibration check following this test were well within the acceptable limits (in a band of ±1.5%) and are shown on Figure 30.

3. Steam Endurance Test

The transducer was installed in the continuous steam generator and functionally subjected to 360 hours or over 15 days exposure. Following this exposure the unit was subjected to a post-test ATP calibration check. The data sheets, Figure 31 show the unit was within the nominal tolerances.

4. Water Test

The water soak test is presently in progress on this transducer. At this time the transducer has completed three out of four of the projected water soak cycles.

For this test, the transducer sense chamber is vacuum filled with distilled water and allowed to stand for approximately 48 hours. The water is then removed by heating to 150°F in a vacuum. The transducer is then checked for calibration shift.

Four water soak cycles as described above, are planned for this test. Three cycles are complete and the results are presented in the following figures:

Figure	Calibration
32	After first soak
33	After second soak
34	After third soak

The transducer is presently in its fourth and last cycle. As shown by the data sheets, the calibration has remained within acceptable limits.

CONCLUSIONS AND RECOMMENDATIONS

Based on the encouraging results of the testing completed to date, AiResearch has decided to submit an EDCP for the incorporation of the P/N 836706-2 Pace-Wiancko transducer in the Item 8.17 steam duct pressure application. At this time the transducer has proved its ability to retain a calibration within the required tolerance range.

The problems experienced with unit Serial Numbers 22321 and 22322 have apparently been successfully resolved by the changes incorporated for the 836706-2 configuration. The transducer, revised to that configuration, has been shown to remain stable and well within the required tolerance range.

The water soak tests, conducted on the new configuration, have not shown any indication of the extreme calibration drift that was experienced on the S/N 22319 transducer. This further supports the conclusion that the impurities contained in the tap water were a contributing cause of that calibration change.

The upward shift of the transducer output experienced on S/N 22321 and 22322 was attributed to an undesirable feature of the transducer magnetic circuit. The revised configuration, S/N 22323 incorporates an inconel ring around the "E" core whic provides a high reluctance path between the "E" core and the magnetically permeable stainless steel case half. In the previous design, magnetic leakage through the case half formed a part of the path through the diaphragm and back to the "E" core. This leakage path plus minute shifts within the "E" core assembly were the cause of the calibration shifts. The inconel ring used in the new design provides a high reluctance path that attenuates case half leakage and reduces the transducer sensitivity to these minute shifts within the "E" core assembly. The sensor output is increased by an appreciable factor because of the resulting magnetic field concentration. The output was further increased by increasing the diaphragm movement from 0.0005 to 0.001 inch.

This approach has been used as a fix for a similar instability problem experienced on a ΔP transducer for the Grumman LEM application. According to Pace-Wiancko that unit has been successfully qualified.

The transducer initially had an EMI problem having exceeded required limits in the radio frequency conducted susceptibility test. This problem was resolved by inclusion of an improved EMI filter system.

To further prove the integrity of the 836706-2 configuration, the development tests are continuing and will include further functional steam testing, corrosive contaminate oxygen-humidity testing, and disassembly inspection of the units following the test program.

TABLE I

PACE-WIANCKO TRANSDUCER
DEVELOPMENT TEST HISTORY

Inclusive Test Dates	Test	Remarks	Applicable Figure No.
Part Number 837036-2, S/N 22319			
1 to 30 Aug 1967	Initial Calibration Test	Passed	1
	Pressure Cycling Test	20,000 working pressure cycles, calibration test, and 500 ambient range cycles: Passed	2, 3, and 4
	Extreme Temperature Test	Calibration at 0, 150, and 200°F: Passed	4
	Water Test	Filled sense cavity with tap water and soaked for 5 days	-
	Calibration Test	Out of allowable calibration tolerance	5
	Disassembly	Contamination found in sensing chamber--unit scrapped	
Part Number 837036-2, S/N 22320			
10 Sept. 1967 to 3 Jan 1968	Initial Calibration Test	Passed	7
	ATP per SS-1759-R, ICN-F	Passed	8
	Evaporator Steam Duct Test	Ran a total of 282 hours under system test conditions. Passed two intermediate calibration tests	9
	ATP per SS-1759-R, ICN-F	Passed	10
	Temperature Test per SS-1625-R	Passed this test and post-test calibration check	11, 12
	Vibration Test per SS-1625-R	Vibration in 3 axes at launch flight and high Q abort	15
	Calibration Test	Passed	16
	Shock Test per SS-1560-R	78G shock in the X axis	19

TABLE I (Continued)

Inclusive Test Dates	Test	Remarks	Applicable Figure No.
Part Number 837036-2, S/N 22320 (Continued)			
	Calibration Test	Passed	20
	Steam Endurance Test	Ran a total of 360 hours on a steam generator. Unit operated within tolerance requirements	-
	Magnetic Field Effects Test	Exposed to a 0 to 5 gauss magnetic field to determine the effect on calibration. Passed with no preceptable effect	22
	Attitude	Determined the effect of attitude on calibration. Operation was within tolerance limits	23
Part Number 837036-2, S/N 22321			
28 Oct 1967 to present	ATP per SS-1759-R, ICN-F	Out of calibration tolerance limit. Returned to supplier. Unit not repaired--Returned to AiResearch for EMI tests	24
	EMI Test per SS-1313-R, Revision I	Transducer used to develop EMI filter system. Passed subsequent EMI test following modification	Appendix A
	Modification	Returned to supplier for failure analysis and modification to 836706-2 configuration	25
Part Number 837036-2, S/N 22322			
4 Oct 1967 to present	Evaporator Steam Duct Test	Ran a total of 167 hours under system test conditions	-
	ATP per SS-1759-R, ICN-F	Passed	27
	EMI Test per SS-1313-R, Revision I	Did not pass RF conducted test. The required filtering was developed using S/N 22321	28

TABLE I (Continued)

Inclusive Test Dates	Test	Remarks	Applicable Figure No.
Part Number 837036-2, S/N 22322 (Continued)			
	Steam Endurance Test	Ran a total of 216 hours on a steam generator. Unit was out of calibration on a subsequent ATP test.	29
	Modification	Returned transducer to supplier--opened chamber no contamination or corrosion noticed. Failure analysis conducted and unit is now being modifed to 836706-2 configuration.	25
Part Number 836706-2*, S/N 22323			
16 Nov 1967 to present	Initial Calibration	Passed	30
	Extreme Temperature Test	Passed	30
	Pressure Cycling Test	20,000 working cycles and 500 ambient range cycles	30
	Steam Endurance Test	Ran a total of 360 hours on a steam generator. Unit was within tolerance on a subsequent ATP	31
	Water Test	Filled sensing cavity with distilled water. Presently in fourth water soak	32, 33, and 34

* This transducer did not incorporate the silicone adhesive case sealing of this configuration, otherwise it is identical.

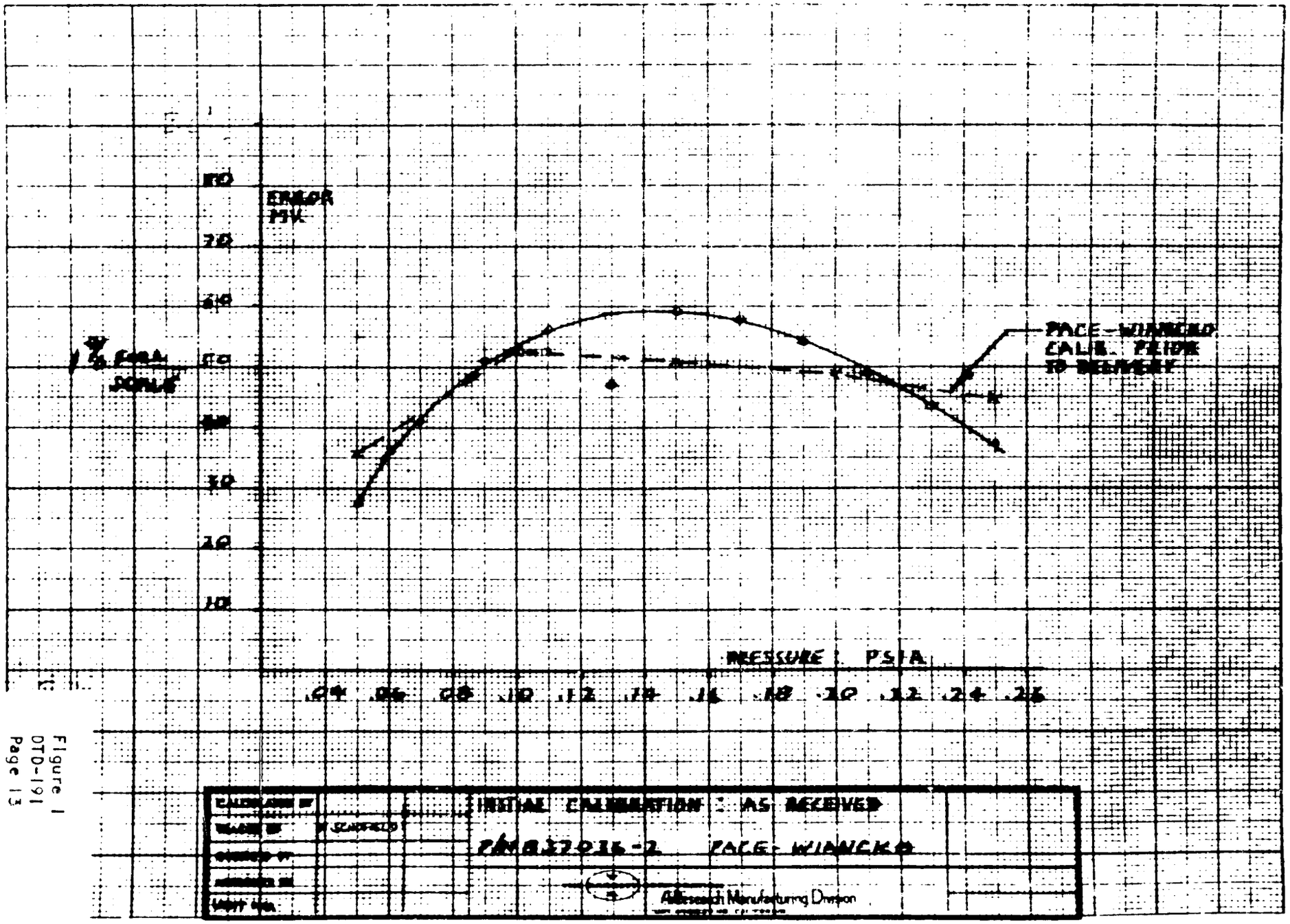

Figure 1
DTD-191
Page 13

DEVELOPMENT TEST
DATA SHEET

P/N 837036-2 S/N 22319

PRESSURE CYCLE TEST

PRESSURE RANGE .05 - .30 PSIA

CYCLES IN THOUSANDS	PRESSURE		OUTPUT - VOLTS			DATE
	PSIA	INS. Hg. A	NOMINAL	READ	ERROR MV	
	.05	.10180	0	.092	+ 92	
4,750	.15	.30541	2.5	2.688	+ 188	8-4-67
	.25	.50903	5.0	5.218	+ 218	
	.05	.10180	0	.048	+ 48	
6,000	.15	.30541	2.5	2.608	+ 108	8-4-67
	.25	.50903	5.0	5.073	+ 73	
	.05	.10180	0	0.055	+ 55	
7,002	.15	.30541	2.5	2.586	+ 86	8-5-67
	.25	.50903	5.0	5.048	+ 48	
	.05	.10180	0	0.058	+ 58	
8,000	.15	.30541	2.5	2.588	+ 88	8-5-67
	.25	.50903	5.0	5.050	+ 50	
	.05	.10180	0	.059	+ 59	
10,000	.15	.30541	2.5	2.590	+ 90	8-5-67
	.25	.50903	5.0	5.049	+ 49	
	.05	.10180	0	0.0558	+ 55.8	
15,145	.15	.30541	2.5	2.577	+ 77	8-7-67
	.25	.50903	5.0	5.028	+ 28	
	.05	.10180	0	0.047	+ 47	
20,000	.15	.30541	2.5	2.572	+ 72	8-8-67
	.25	.50903	5.0	5.029	+ 29	

CALIBRATED BY: NORM SCHOFIELD

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DEVELOPMENT TEST
DATA SHEET

P/N 837036-2 S/N 22319
(MFD BY PACE-WIANCKO)

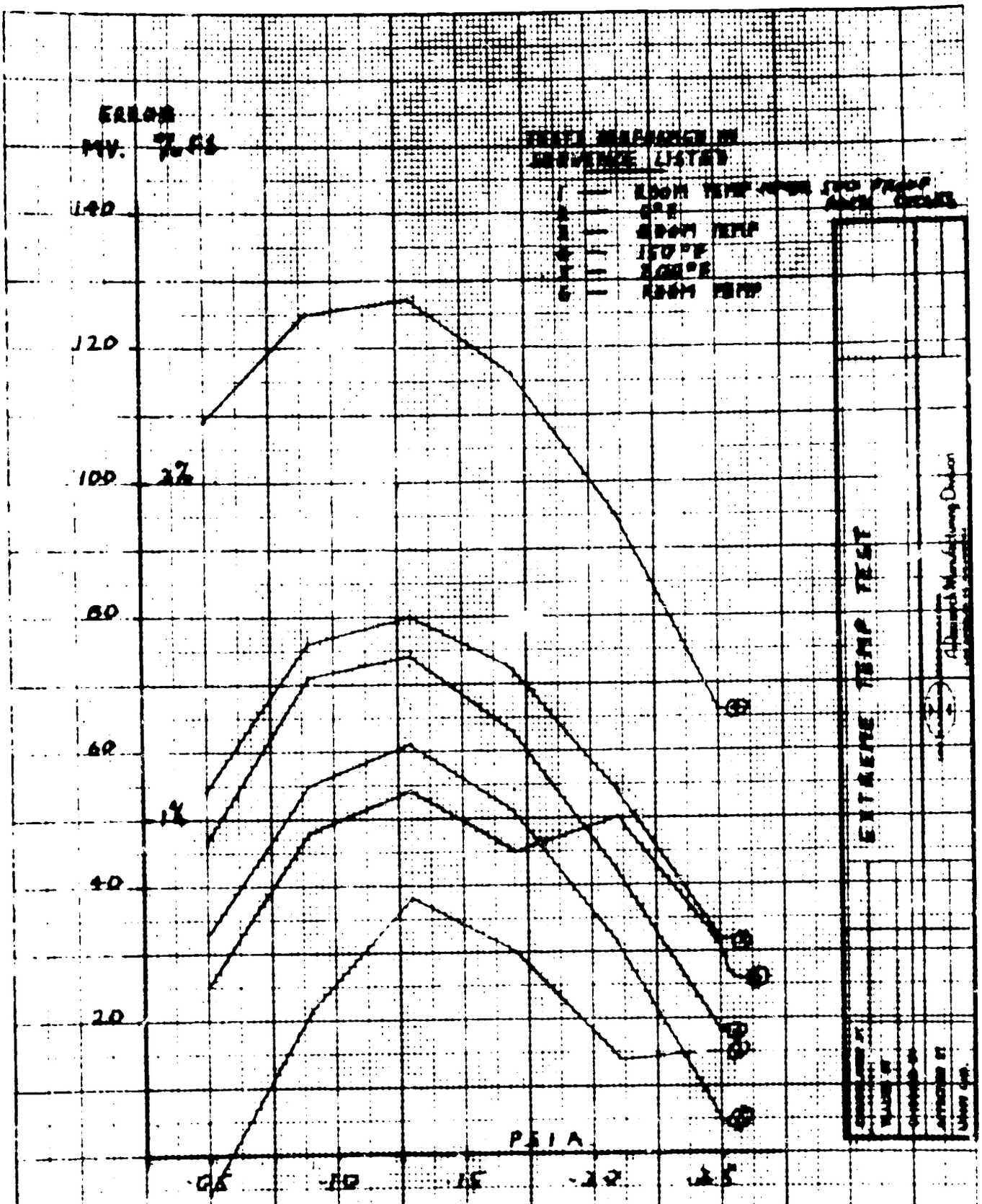
ACCURACY TEST

AFTER 20,000 SMALL RANGE CYCLES

BEFORE 500 PROOF PRESS. CYCLES

PSIA	In. Hg A	OUTPUT - VOLTS		
		NOMINAL	INC.	INC. ERROR
.05	.10180	0	0.039	+ 39
.07	.14253	0.50		
.09	.18325	1.0	1.055	+ 55
.11	.22397	1.5		
.13	.26469	2.0	2.057	+ 57
.15	.30541	2.5		
.17	.34614	3.0	3.062	+ 62
.19	.38686	3.5		
.21	.42758	4.0	4.045	+ 45
.23	.46830	4.5		
.25	.50903	5.0	5.022	+ 22

CALIBRATED BY: KEN WILKEN



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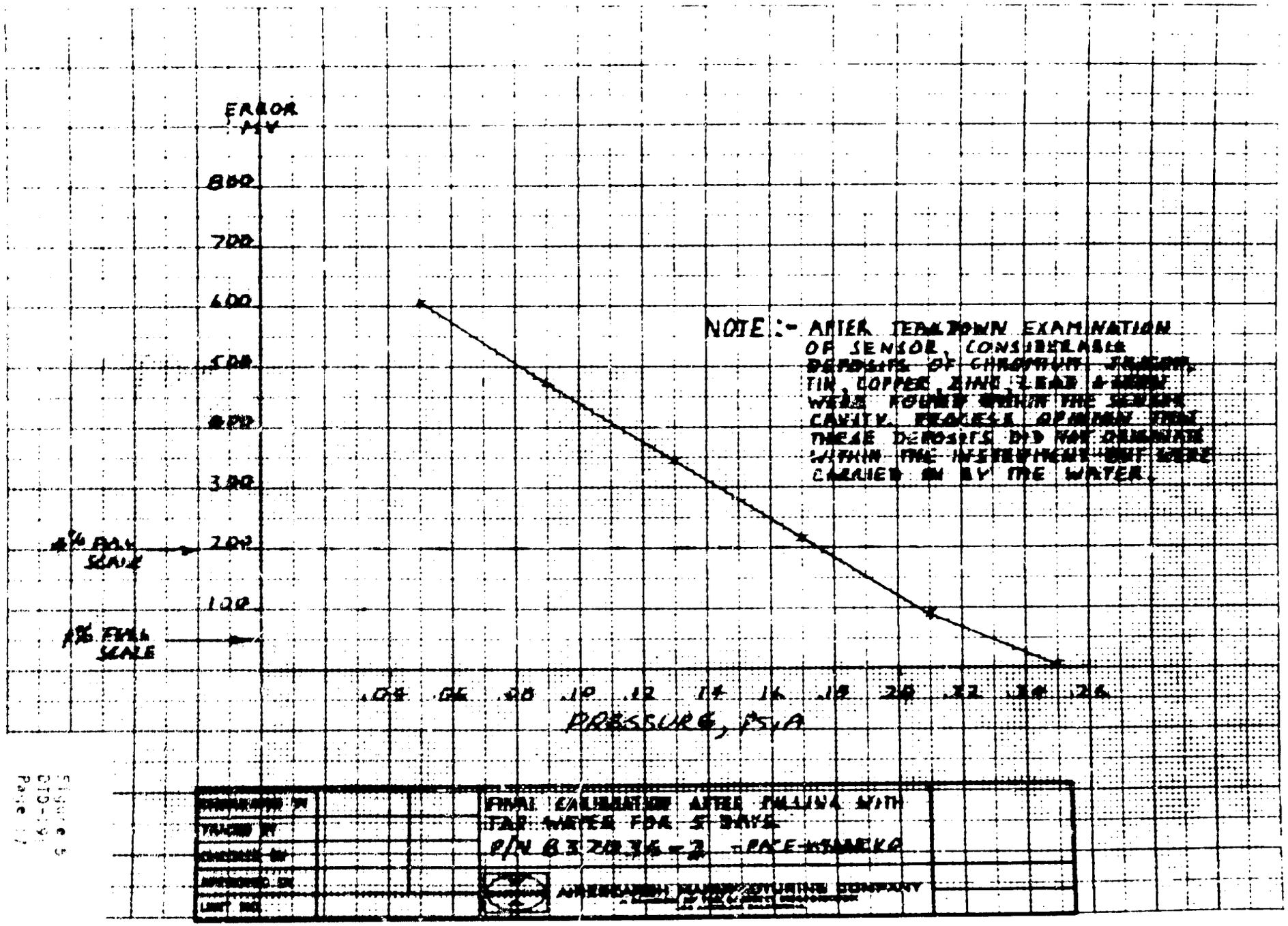

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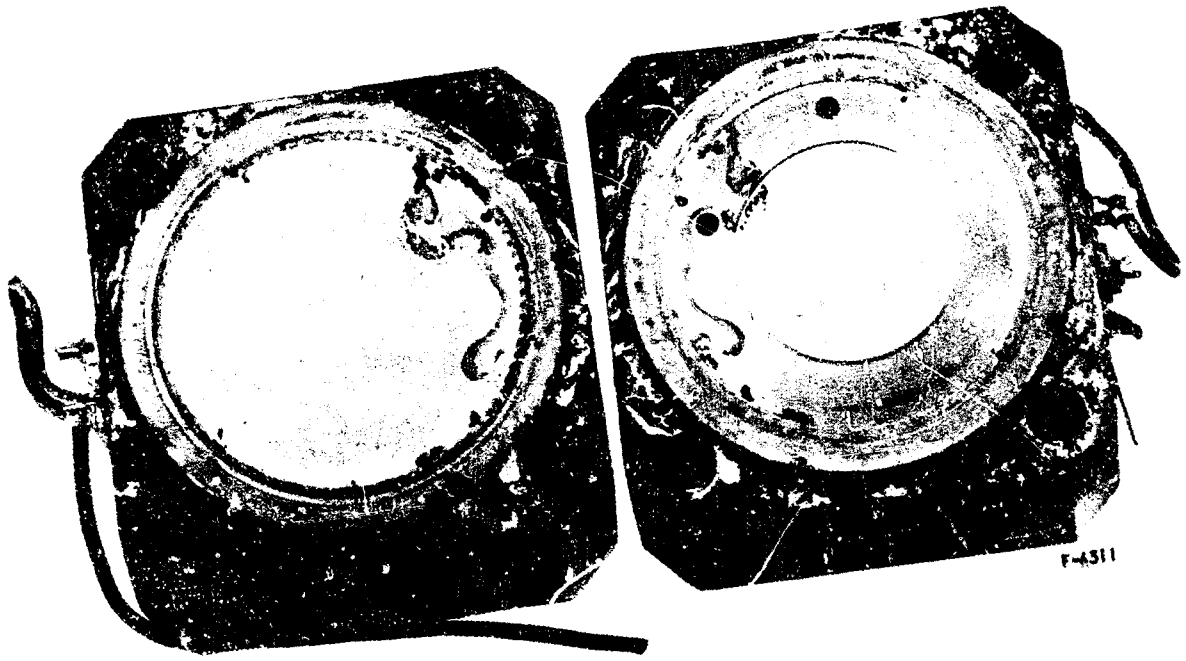

Figure 6. Transducer Disassembly Showing Deposits: P/N 837036-2, S/N 22319

DATE: 10 Sept 67

DEVELOPMENT TEST
DATA SHEET

P/N 837036-2 S/N 22320
(MFD BY PACE-WIANCKO)

INITIAL ACCURACY TEST

MM Hg.	PSIA	INS. Hg. A	OUTPUT - VOLTS NOMINAL	OUTPUT - VOLTS ACTUAL	ERROR, mv
2.58	.05	.10180	0	+ .032	+.32
3.62	.07	.14253	0.50	.543	+.43
4.65	.09	.18325	1.0	1.049	+ 49
5.69	.11	.22397	1.5	1.553	+ 53
6.72	.13	.26469	2.0	2.056	+ 56
7.75	.15	.30541	2.5	2.557	+ 57
8.79	.17	.34614	3.0	3.058	+ 58
9.82	.19	.38686	3.5	3.557	+ 57
10.86	.21	.42758	4.0	4.056	+ 56
11.89	.23	.46830	4.5	4.555	+ 55
12.92	.25	.50903	5.0	5.053	+ 53

CALIBRATED BY: N. SCHOFIELD

Interim Change Notice Letter: F
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ACCEPTANCE TEST
DATA SHEET

Use black ink. No erasures permitted.

STEAM DUCT PRESSURE TRANSDUCER 837036-2

NAA REF. SPEC. ME _____ NASA _____

Part Number 837036-2 S/N 22320

Date 9-13-67 Barometer 29.9 in. Hg abs Amb Temp 75 °F

Tested by A Cunningham Test Facility 1402

Examination of Product: Accept _____ Reject _____

Remarks: EWO-3404-20017-68-2153

Dimensional Check Verified: 9-13-67

Para. 4.6 Calibration Test (Prior To Proof Pressure Test) Accept 9-13-67 Reject ____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen input voltage	vdc	+28.0 ±0.5	+28.0
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	+0.0740
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	+1.2601
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.601
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref 75% of range	vdc	+3.7500 ±0.2000	+3.8530
Specimen pressure	mm Hg abs	12.929	12.929
Output voltage, Ref 100% of range	vdc	+5.0000 ±0.2000	+5.1010
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref. 75% of range	vdc	+3.7500 ±0.2000	+3.8521
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.6000
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	+1.3362
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	+0.0632

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STEAM DUCT PRESSURE TRANSDUCER 837036-2

P/N 837036-2
S/N 22320

NAA REF. SPEC. ME NASA

Proof Pressure Test (Nitrogen Gas Test Fluid): Accept 4-13-67 32113 Reject

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen pressure	psig	20.0 +0.2, -0	20.0
Time at pressure	minutes	3	3

External Leakage Test (Nitrogen Gas Test Fluid): Accept 4-13-67 32113 Reject

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen pressure	psig	6.0 +0.2, -0	6.0
Time at pressure	minutes	15	15
External leakage in 15 minutes	scc	0.5 max	0.0

Diode Test: Accept 4-13-67 32113 Reject

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen input voltage	vdc	+30.0 ±0.1	+30.0
Diode voltage (SWI at pos 2)	vdc	+1.0 max	0.0
Diode voltage (SWI at pos 1)	vdc	+1.0 max	0.0

Maximum Output Voltage Test: Accept 4-13-67 32113 Reject

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen output voltage	vdc	+6.5 max	+6.27

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ACCEPTANCE TEST DATA SHEET (CONT)

P/N 837036 2

STEAM DUCT PRESSURE TRANSDUCER 837036-2

S/N 22320

NAA REF. SPEC. ME NASA

Input Current Test: Accept 32113 9-13-67 Reject

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Input current (SW1 at pos 1)	ma	40 max	20
Input current (SW1 at pos 2)	ma	40 max	20

Calibration Test: Accept 32113 9-13-67 Reject

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen input voltage	vdc	+28.0 ±0.5	+28.0
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	+0.0682
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	+1.3410
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.6030
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref 75% of range	vdc	+3.7500 ±0.2000	+3.8570
Specimen pressure	mm Hg abs	12.929	12.929
Output voltage, Ref 100% of range	vdc	+5.0000 ±0.2000	+5.1060
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref. 75% of range	vdc	+3.7500 ±0.2000	+3.8626
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.6066
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	+1.3420
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	+0.0626

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ACCEPTANCE TEST DATA SHEET (CONT)
STEAM DUCT PRESSURE TRANSDUCER 837036-2

P/N 837036-2
S/N 22320

NAA REF. SPEC. ME _____ NASA _____

Calibration Test (cont)

STEP	TEST PARAMETER	UNITS	REQUIRED	ACTUAL
9c	Specimen pressure	mm Hg abs	5.171	5.171
	Output voltage	vdc	+1.2500 ±0.2000	+1.3450
11f	Pressure (PS2)	in. Hg abs	1.0 ±0.5	1.0
11g	Output voltage	vdc	+1.2500 ±0.2000	+1.3430
11h	Specimen pressure	mm Hg abs	5.171	5.171
13b	(1) Specimen pressure	mm Hg abs	5.171	5.171
	(2) Output voltage	vdc	+1.2500 ±0.2000	+1.3410
	(3) Pressure PS2	in. Hg abs	1.0 ±0.5	1.0
	(4) Time at test	hours	3	3

Input Voltage Variation Test: Accept 9-13-67 32113 Reject _____

INLET PRESSURE (mm Hg abs)		INPUT VOLTAGE (vdc)		OUTPUT VOLTAGE (vdc)	
REQUIRED	ACTUAL	REQUIRED	ACTUAL	REQUIRED	ACTUAL
2.586	2.586	+25.0 ±0.1	+25.0	0.0000 ±0.2000	+0.0580
	2.586	+30.0 ±0.1	+30.0	0.0000 ±0.2000	+0.0580
12.929	12.929	+25.0 ±0.1	+25.0	+5.0000 ±0.2000	+5.073
	12.929	+30.0 ±0.1	+30.0	+5.0000 ±0.2000	+5.072

Output Ripple Test: Accept 9-13-67 32113 Reject _____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Output ripple voltage	mv rms	10 max	1.8

Isolation Resistance Test: Accept 9-13-67 32113 Reject _____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Potential	vdc	100	100
Resistance	megohms	100 min	5.8 X 10^5

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ACCEPTANCE TEST DATA SHEET (CONT)
STEAM DUCT PRESSURE TRANSDUCER 837036-2

P/N 837036-2
S/N 22320

NAA REF. SPEC. ME _____ NASA _____

Insulation Resistance Test: Accept 32113 9-13-67 Reject _____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Potential	vdc	100	100
Resistance	megohms	50 min	1X10^5

Weight: _____ lb.

Remarks: _____

Test Specimen Status: Accept _____ Reject _____

By _____

Inspection: _____ AiResearch Q.C. _____ NAA Q.C. _____ DCAS-QAR

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DEVELOPMENT TEST
DATA SHEET

P/N 837036-2 S/N 22320

(MFD BY PACE-WIANCKO)

		OUTPUT - VOLTS			
PSIA	INS.Hg.A	NOMINAL	INITIAL ACCURACY AS RECEIVED 9-10-67	65 HOURS SYSTEM TEST INC. 5 START-RUN AND SHUT-DOWN CYCLES 9-25-67	174 HOURS TOTAL SYSTEM TEST INC. 15 START-RUN AND SHUT-DOWN CYCLES 10-11-67
.05	.10180	0	+ .032	+ .038	+ .048
.07	.14253	0.50	.543		
.09	.18325	1.0	1.049	1.055	1.060
.11	.22397	1.5	1.553		
.13	.26469	2.0	2.056	2.056	2.056
.15	.30541	2.5	2.557		
.17	.34614	3.0	3.058	3.051	3.064
.19	.38686	3.5	3.557		
.21	.42758	4.0	4.056	4.044	4.054
.23	.46830	4.5	4.555		
.25	.50903	5.0	5.053	5.034	5.036

CALIBRATED BY: N. SCHOFIELD

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ACCEPTANCE TEST
DATA SHEET

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STEAM DUCT PRESSURE TRANSDUCER 837036-~~7~~ 2-1

NAA REF. SPEC. ME NASA 0040000 22320

Part Number 837036-2-1 S/N 22320

Date 10-28-67 Barometer 29.9 in. Hg abs Amb Temp 74 °F

Tested by A Cunningham Test Facility 1402

Examination of Product: Accept ____ Reject ____

Remarks: EWO 3404-200117-69-2154

Dimensional Check Verified: 10-28-67

Para. 4.6 Calibration Test (Prior To Proof Pressure Test) Accept 32113 Reject ____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen input voltage	vdc	+28.0 ±0.5	+28.0
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	+0.0160
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	+1.2520
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.4750
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref 75% of range	vdc	+3.7500 ±0.2000	+3.6880
Specimen pressure	mm Hg abs	12.929	12.929
Output voltage, Ref 100% of range	vdc	+5.0000 ±0.2000	+4.8890
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref. 75% of range	vdc	+3.7500 ±0.2000	+3.6880
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.4720
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	+1.254
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	+0.0130

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ACCEPTANCE TEST DATA SHEET (CONT)

STEAM DUCT PRESSURE TRANSDUCER 837036-12-1

P/N 837036-2-1

S/N 22320

NAA REF. SPEC. ME

NASA 0040000022320

Proof Pressure Test (Nitrogen Gas Test Fluid): Accept 10-28-67 32113 Reject

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen pressure	psig	20.0 +0.2, -0	20.0
Time at pressure	minutes	3	3

External Leakage Test (Nitrogen Gas Test Fluid): Accept 10-28-67 32113 Reject

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen pressure	psig	6.0 +0.2, -0	6.0
Time at pressure	minutes	15	15
External leakage in 15 minutes	scc	0.5 max	0.0

Diode Test: Accept 10-28-67 32113 Reject

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen input voltage	vdc	+30.0 ±0.1	+30.0
Diode voltage (SWI at pos 2)	vdc	+1.0 max	0.0
Diode voltage (SWI at pos 1)	vdc	+1.0 max	0.0

Maximum Output Voltage Test: Accept 10-28-67 32113 Reject

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen output voltage	vdc	+6.5 max	6.26

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ACCEPTANCE TEST DATA SHEET (CONT)

P/N 837036-2-1

STEAM DUCT PRESSURE TRANSDUCER 837036-2-1 S/N 22320

NAA REF. SPEC. ME NASA 0040000 22320

Input Current Test: Accept 10-28-67 32113 Reject

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Input current (SWI at pos 1)	ma	40 max	19
Input current (SWI at pos 2)	ma	40 max	19

Calibration Test: Accept 32113 Reject

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen input voltage	vdc	+28.0 ±0.5	+28.0
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	+0.0270
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	+1.2600
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.4800
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref 75% of range	vdc	+3.7500 ±0.2000	+3.6900
Specimen pressure	mm Hg abs	12.929	12.929
Output voltage, Ref 100% of range	vdc	+5.0000 ±0.2000	+4.8900
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref. 75% of range	vdc	+3.7500 ±0.2000	+3.6900
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.4800
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	+1.2550
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	+0.0170

Interim Change Notice Letter: F
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ACCEPTANCE TEST DATA SHEET (CONT)

STEAM DUCT PRESSURE TRANSDUCER 837036-52-1

P/N 837036-2-1

S/N 22320

NAA REF. SPEC. NE

NASA 0040000 22320

Calibration Test (cont)

STEP	TEST PARAMETER	UNITS	REQUIRED	ACTUAL
9c	Specimen pressure	mm Hg abs	5.171	5.171
	Output voltage	vdc	+1.2500 ±0.2000	+1.2350
11f	Pressure (PS2)	in. Hg abs	1.0 ±0.5	1.0
11g	Output voltage	vdc	+1.2500 ±0.2000	+1.2370
11h	Specimen pressure	mm Hg abs	5.171	5.171
13b	(1) Specimen pressure	mm Hg abs	5.171	5.171
	(2) Output voltage	vdc	+1.2500 ±0.2000	1.2278
	(3) Pressure PS2	in. Hg abs	1.0 ±0.5	0.85
	(4) Time at test	hours	3	3

Input Voltage Variation Test: Accept_____ Reject_____

INLET PRESSURE (mm Hg abs)		INPUT VOLTAGE (vdc)		OUTPUT VOLTAGE (vdc)	
REQUIRED	ACTUAL	REQUIRED	ACTUAL	REQUIRED	ACTUAL
2.586	2.586	+25.0 ±0.1	25.0	0.0000 ±0.2000	+0.0049
	2.586	+30.0 ±0.1	30.0	0.0000 ±0.2000	+0.0050
12.929	12.929	+25.0 ±0.1	25.0	+5.0000 ±0.2000	+4.8507
	12.929	+30.0 ±0.1	30.0	+5.0000 ±0.2000	+4.8515

Output Ripple Test: Accept_____ Reject_____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Output ripple voltage	mv rms	10 max	1.9

Isolation Resistance Test: Accept_____ Reject_____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Potential	vdc	100	100
Resistance	megohms	100 min	[illegible]

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ACCEPTANCE TEST DATA SHEET (CONT) P/N 837036-2-1

STEAM DUCT PRESSURE TRANSDUCER 837036-32-1 S/N 22320

NAA REF. SPEC. ME NASA 0040000022320

Insulation Resistance Test: Accept_____ Reject_____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Potential	vdc	100	100
Resistance	megohms	50 min	9×10^4

Weight: _____ lb.

Remarks: _____

Test Specimen Status: Accept_____ Reject_____

By_____

Inspection: _____ _____ _____
AiResearch Q.C. NAA Q.C. DCAS-QAR

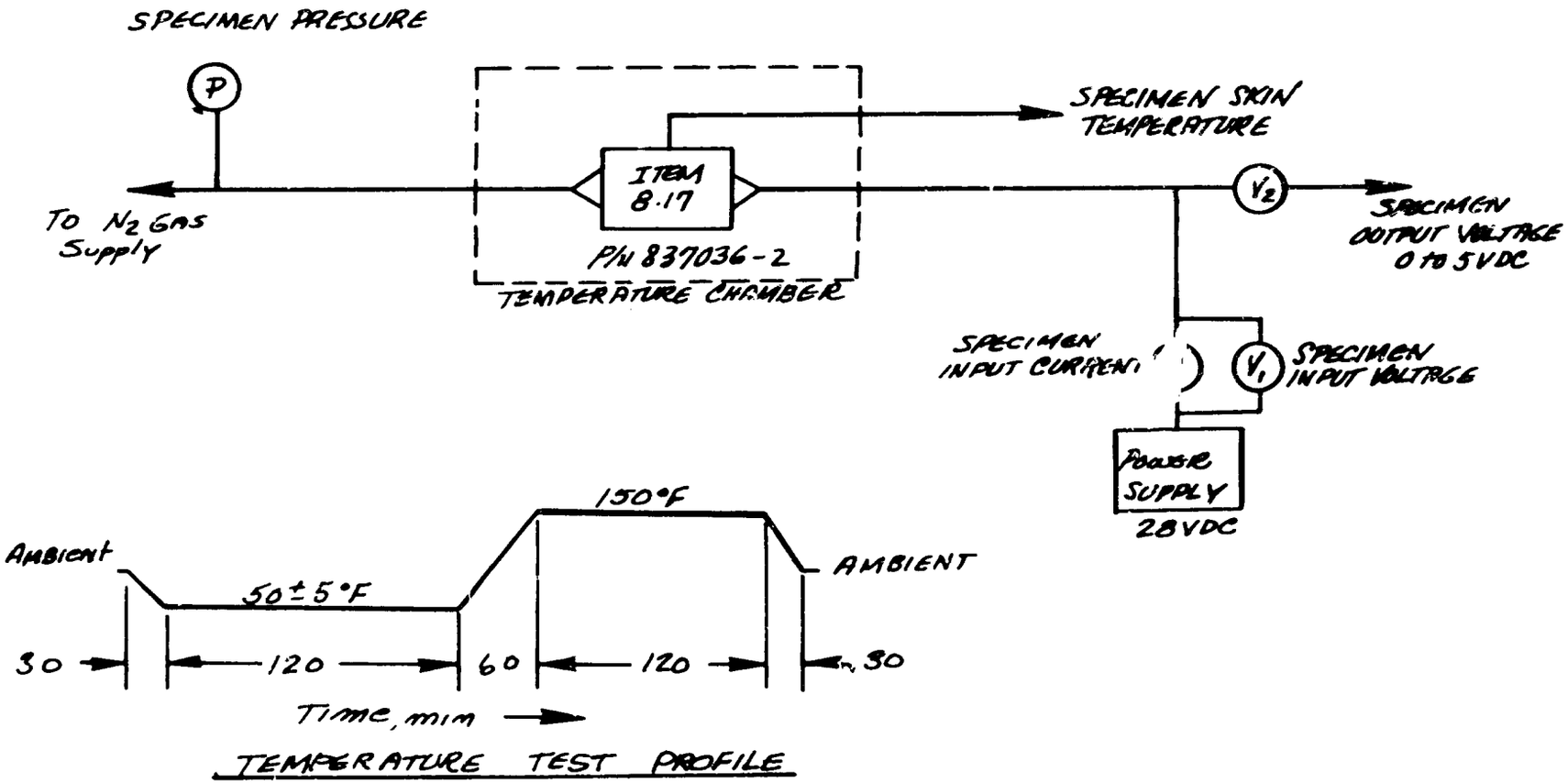

Figure 11. Temperature Test Setup

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Effective Date: 22 May 1967

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ACCEPTANCE TEST
DATA SHEET

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STEAM DUCT PRESSURE TRANSDUCER 837036-2-2-1

NAA REF. SPEC. ME _____ NASA _____

Part Number 837036-2-1 S/N 22320

Date 11-2-67 Barometer 29.9 in. Hg abs Amb Temp 24 °F

Tested by A Cunningham Test Facility 1402

Examination of Product: Accept _____ Reject _____

Remarks: _____

Dimensional Check Verified: _____ 11-2-67

Para. 4.6 Calibration Test (Prior To Proof Pressure Test) Accept 32 x 3 Reject ____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen input voltage	vdc	+28.0 ±0.5	+28.0
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	-0.0120
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	+1.2240
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.4500
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref 75% of range	vdc	+3.7500 ±0.2000	+3.6690
Specimen pressure	mm Hg abs	12.929	12.929
Output voltage, Ref 100% of range	vdc	+5.0000 ±0.2000	+4.8860
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref. 75% of range	vdc	+3.7500 ±0.2000	+3.6670
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	2.4450
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	+1.2230
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	-0.0150

AIRESEARCH MANUFACTURING DIVISION
Los Angeles, California

Figure 12
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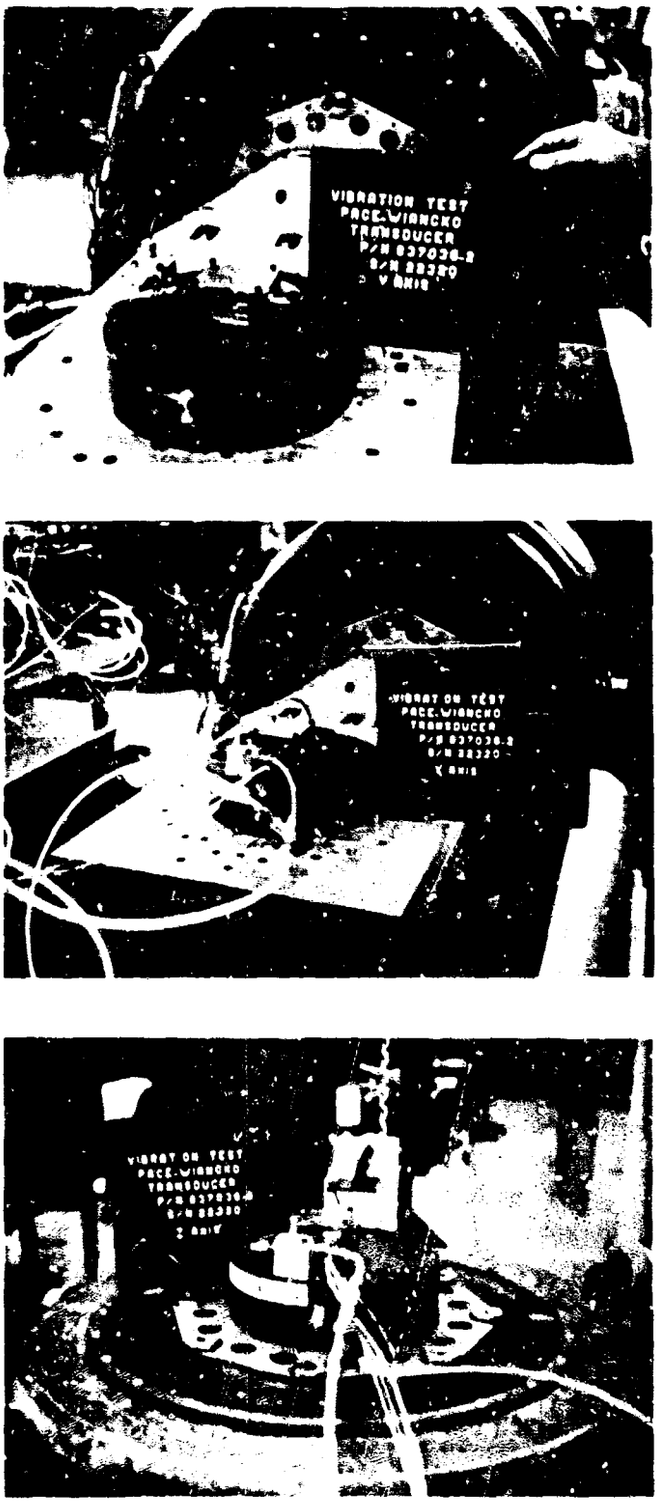


F-8621

Figure 13. Vibration Test Setup
P/N 837036-2, S/N 22320

VIBRATION TEST RANDOM SPECTRUM
80 FILTER ANALYSIS
ZONE I-C/M ATMOSPHERIC FLIGHT LEVEL

SHEET 1. OF 9.

FORM 2105 DATE Nov-2-1967 START TIME

PART NAME Pike-Wiancko Transducer P/N 837036-2 S/N 22520. EWO NO. 3404-200117-69-2154 PROCEDURE NO. 55-1625-2. PARAGRAPH NO. 5d

FIXTURE NO. T-602637. VIBRATION SYST. NO. 1. CONTROL ACCEL ENDEVCO M/N 2233 S/N 66-72 AMBIENT CONDITIONS: PRESS. 29.85"Hg TEMP. 77°F REL. HUMID. 68%.

TEST AXIS Y TOTAL MINUTES: REQUIRED 2.5, ACTUAL 2.5 INPUT G RMS. REQUIRED 5.0, ACTUAL 5.0 FILTER BAND WIDTH 25 CPS FIRST FILTER CENTER FREQ. 25 CPS

APOLLO TEST ENGINEER J. LIPAGE VIBRATION TECHNICIAN T. WAKLEY AIRESEARCH QC NAA DCAS-QAR

CROSSTALK: AXIS G RMS, AXIS G RMS; SPECIMEN: G RMS REMARKS

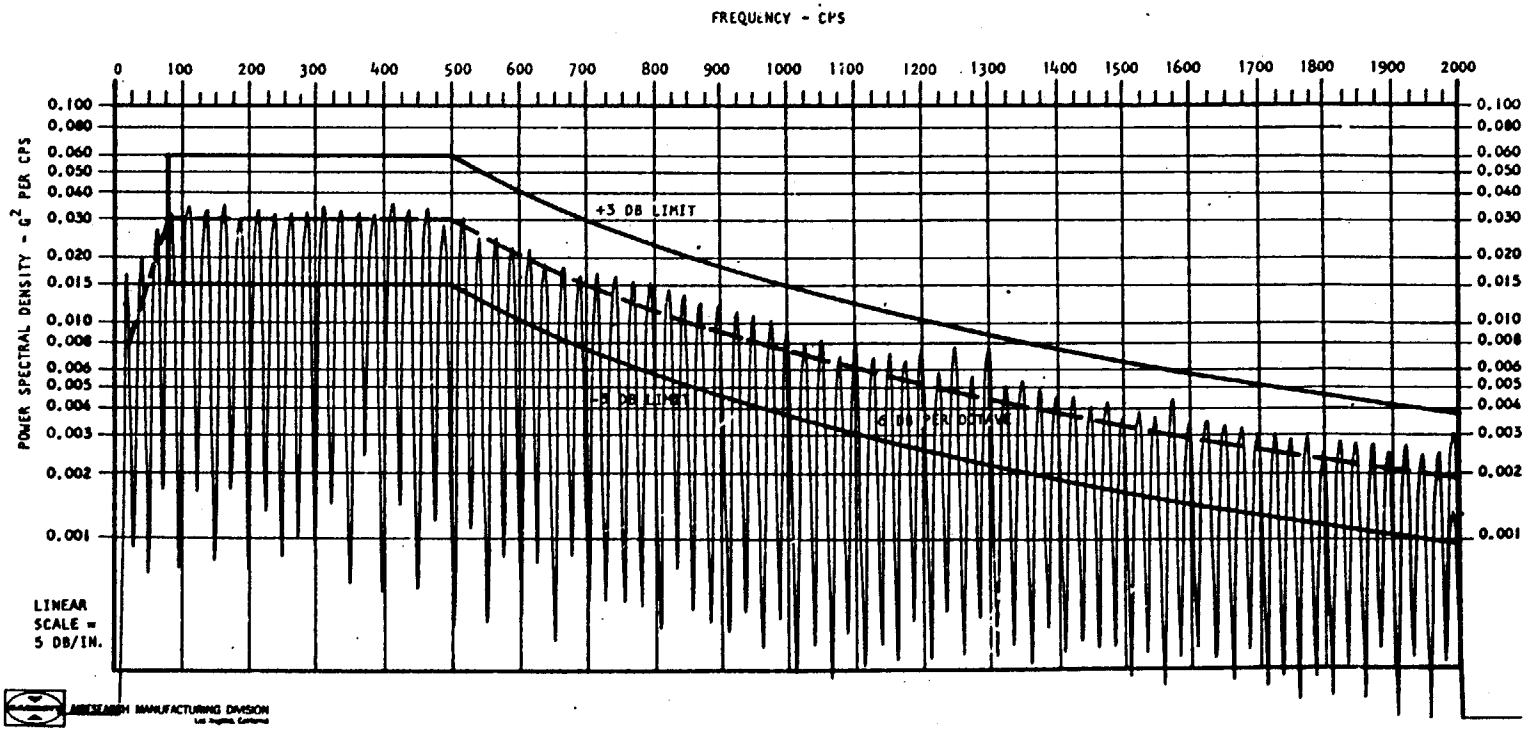


Figure 14. Y Axis Vibration Spectrum-Launch

AIRESEARCH MANUFACTURING DIVISION
Los Angeles, California

Figure 14 (Page 1 of 9)
DTD-191
Page 34

VIBRATION TEST RANDOM SPECTRUM

80 FILTER ANALYSIS

ZONE I-C/M SPACE FLIGHT LEVEL

SHEET 2 OF 9

DATE NOV-8-1967 START TIME

PART NAME PICE-WANCKO TRANSDUCER P/N 837036-2 S/N 22320. EWO NO. 3404-20047-69-2154 PROCEDURE NO. SS-1625-R PARAGRAPH NO. 5.4

FIXTURE NO. T-601637 VIBRATION SYST. NO. 1 CONTROL ACCEL ENDEVCO M/N 2233 S/N GC-72 AMBIENT CONDITIONS: PRESS. 29.85" Hg TEMP. 77°F REL. HUMID. 68%

TEST AXIS Y TOTAL MINUTES: REQUIRED 12.5, ACTUAL 12.5 INPUT G RMS: REQUIRED 2.4, ACTUAL 2.4 FILTER BAND WIDTH 25 CPS FIRST FILTER CENTER FREQ. 25 CPS

APOLLO TEST ENGINEER L.H. LAPIKE VIBRATION TECHNICIAN T. WAKLEY AIRESEARCH QC NAA DCAS-QAR

CROSSTALK: AXIS G RMS, AXIS G RMS; SPECIMEN: G RMS REMARKS

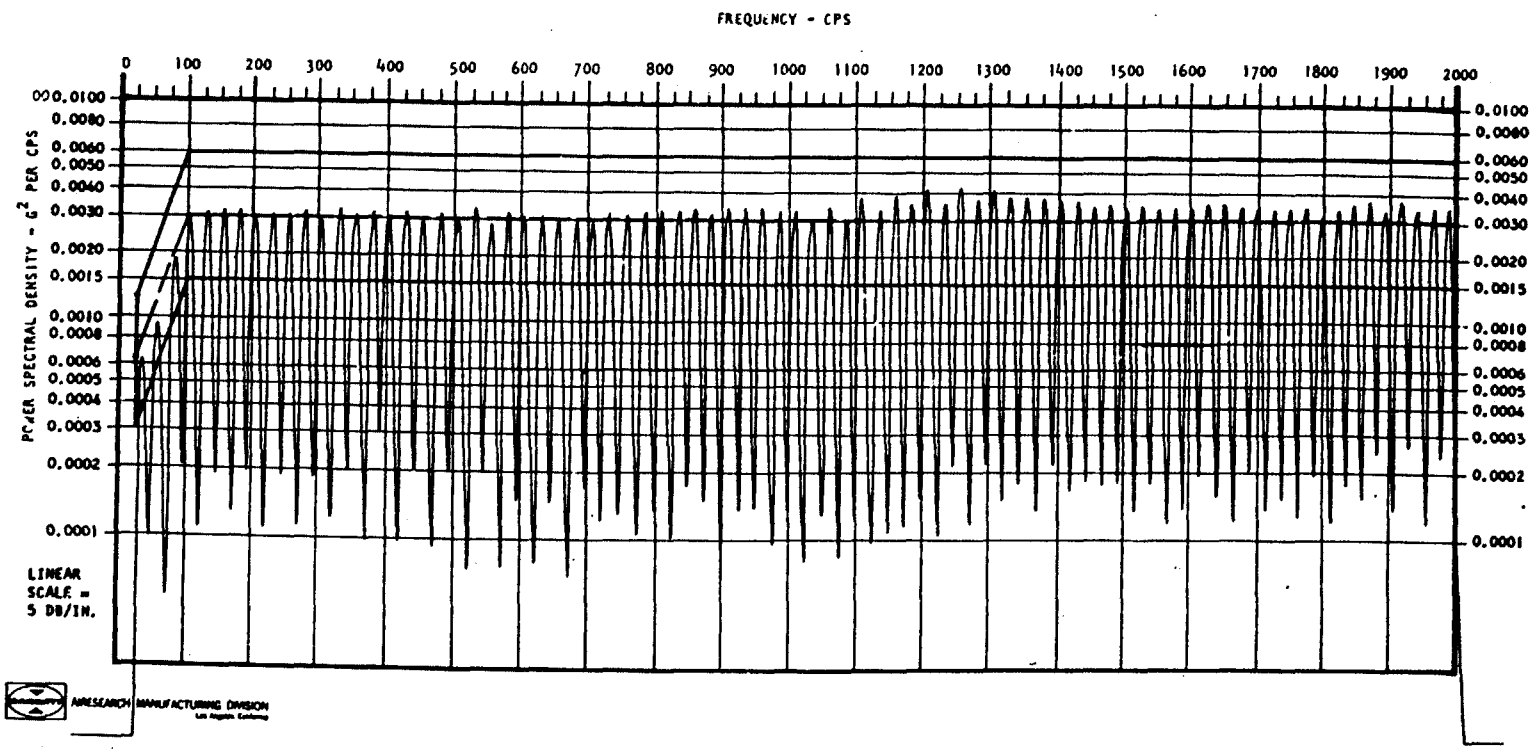


Figure 14. Y Axis Vibration Spectrum-Flight

VIBRATION TEST RANDOM SPECTRUM

80 FILTER ANALYSIS

ZONE I-C/M HI-Q ABORT LEVEL

SHEET 3 OF 9

FORM 2107

DATE May-2-1967 START TIME

PART NAME Pace-Wianco Transducer P/N 837036-2 S/N 22320 EWO NO. 8408-20047-69-2154 PROCEDURE NO. SS-1625-R PARAGRAPH NO. 5.4

FIXTURE NO. T-602637 VIBRATION SYST. NO. 1 CONTROL ACCEL ENDEVCO M/N 2233 S/N GC-72 AMBIENT CONDITIONS: PRESS. 29.89" Hg TEMP. 77°F REL. HUMID. 63%

TEST AXIS Y TOTAL MINUTES: REQUIRED 2.5, ACTUAL 2.5 INPUT G RMS: REQUIRED 7.7, ACTUAL 7.7 FILTER BAND WIDTH 25 CPS FIRST FILTER CENTER FREQ. 25 CPS

APOLLO TEST ENGINEER L.H. LAPAGE VIBRATION TECHNICIAN T. WAKLEY AIRESEARCH QC NAA DCAS-QAR

CROSSTALK: AXIS G RMS, AXIS G RMS; SPECIMEN: G RMS REMARKS

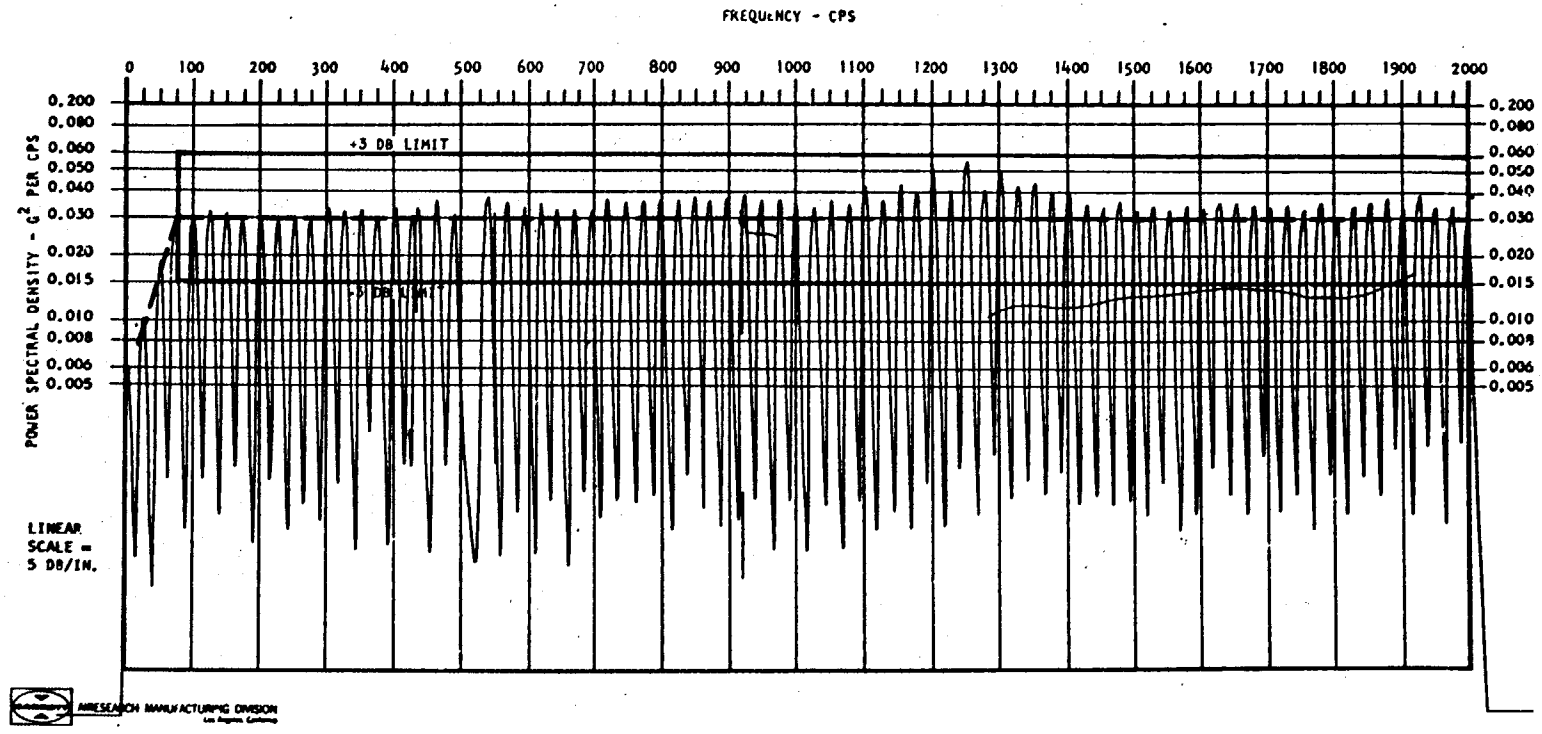


Figure 14. Y Axis Vibration Spectrum-High Q Abort

VIBRATION TEST RANDOM SPECTRUM

80 FILTER ANALYSIS

ZONE I-C/M ATMOSPHERIC FLIGHT LEVEL

SHEET 4 OF 9

FORM 2105 DATE NOV-8-1967 START TIME

PART NAME Pace-Wanood Transducer P/N 837036-2 S/N 22320 EWO NO. 2404-20987-69-9154 PROCEDURE NO. SS-1625-R PARAGRAPH NO. 5.4

FIXTURE NO. T-602637 VIBRATION SYST. NO. 1 CONTROL ACCEL ENDEVCO M/N 2253 S/N GC-72 AMBIENT CONDITIONS: PRESS. 29.85"Hg TEMP. 77°F REL. HUMID. 63%

TEST AXIS X TOTAL MINUTES: REQUIRED 2.5, ACTUAL 2.5 INPUT G RMS: REQUIRED 5.0, ACTUAL 5.0 FILTER BAND WIDTH 25 CPS FIRST FILTER CENTER FREQ. 25 CPS

APOLLO TEST ENGINEER L.H. LaPage VIBRATION TECHNICIAN T. Wakley AIRESEARCH QC NAA DCAS-QAR

CROSSTALK: AXIS G RMS, AXIS G RMS; SPECIMEN: G RMS REMARKS

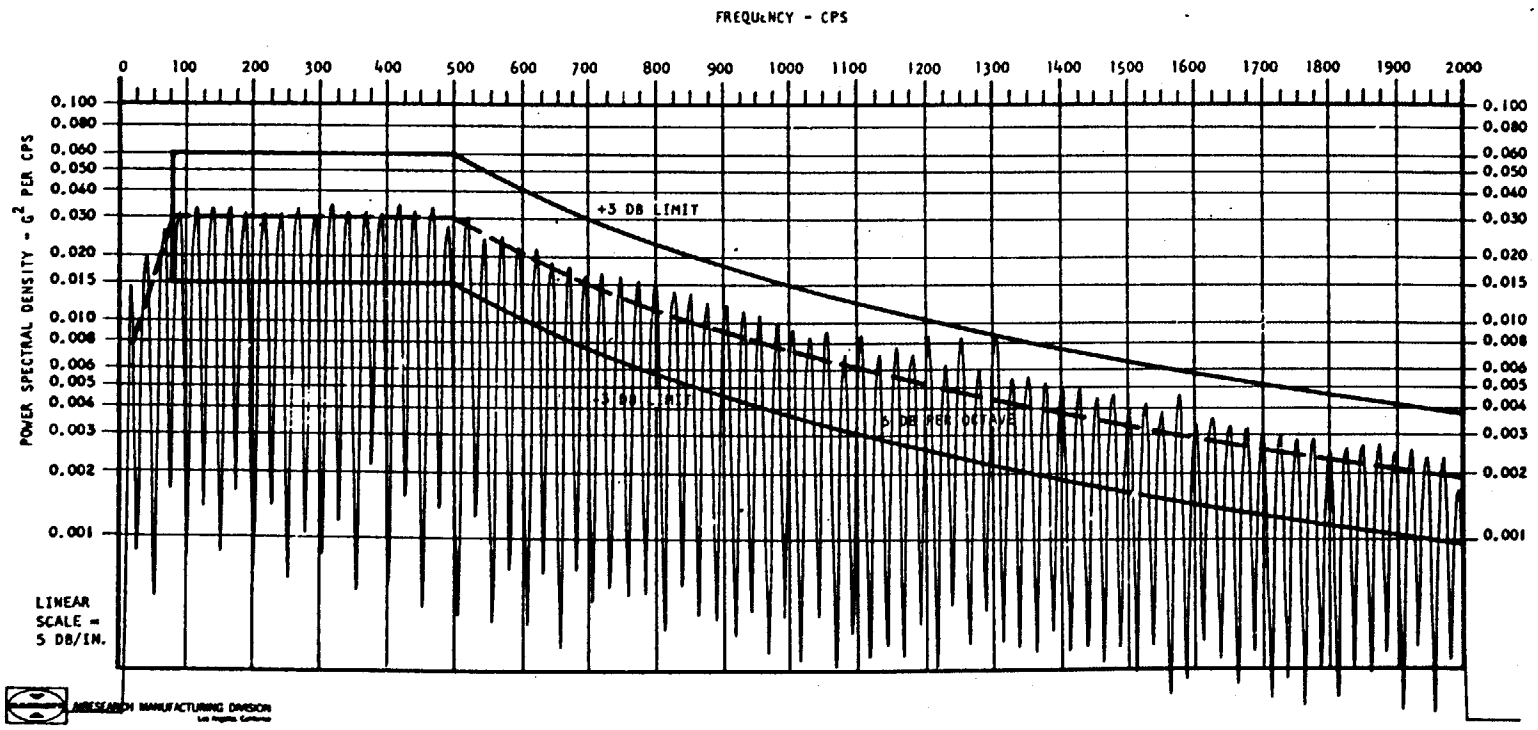


Figure 14. X Axis Vibration Spectrum-Launch

VIBRATION TEST RANDOM SPECTRUM
80 FILTER ANALYSIS
ZONE I-C/M SPACE FLIGHT LEVEL

SHEET 5 OF 9

DATE NOV-2-1967 START TIME

PART NAME PACE-WIANCKO TRANSDUCER P/N 837036-2. S/N 22320. EWO NO. 2404-20017-69-2154 PROCEDURE NO. SS-1625-R PARAGRAPH NO. 5.4

FIXTURE NO. T-602637. VIBRATION SYST. NO. 1. CONTROL ACCEL ENDEVCO M/N 2233. S/N GC-72. AMBIENT CONDITIONS: PRESS. 29.85" Hg TEMP 77°F. REL. HUMID. 63%.

TEST AXIS X TOTAL MINUTES: REQUIRED 12.5, ACTUAL 12.5 INPUT G RMS: REQUIRED 2.4, ACTUAL 2.4 FILTER BAND WIDTH 25 CPS FIRST FILTER CENTER FREQ. 25 CPS

APOLLO TEST ENGINEER L.H. LAPAGE VIBRATION TECHNICIAN T. WAKLEY AIRESEARCH QC NAA DCAS-QAR

CROSSTALK: AXIS G RMS, AXIS G RMS; SPECIMEN: G RMS REMARKS

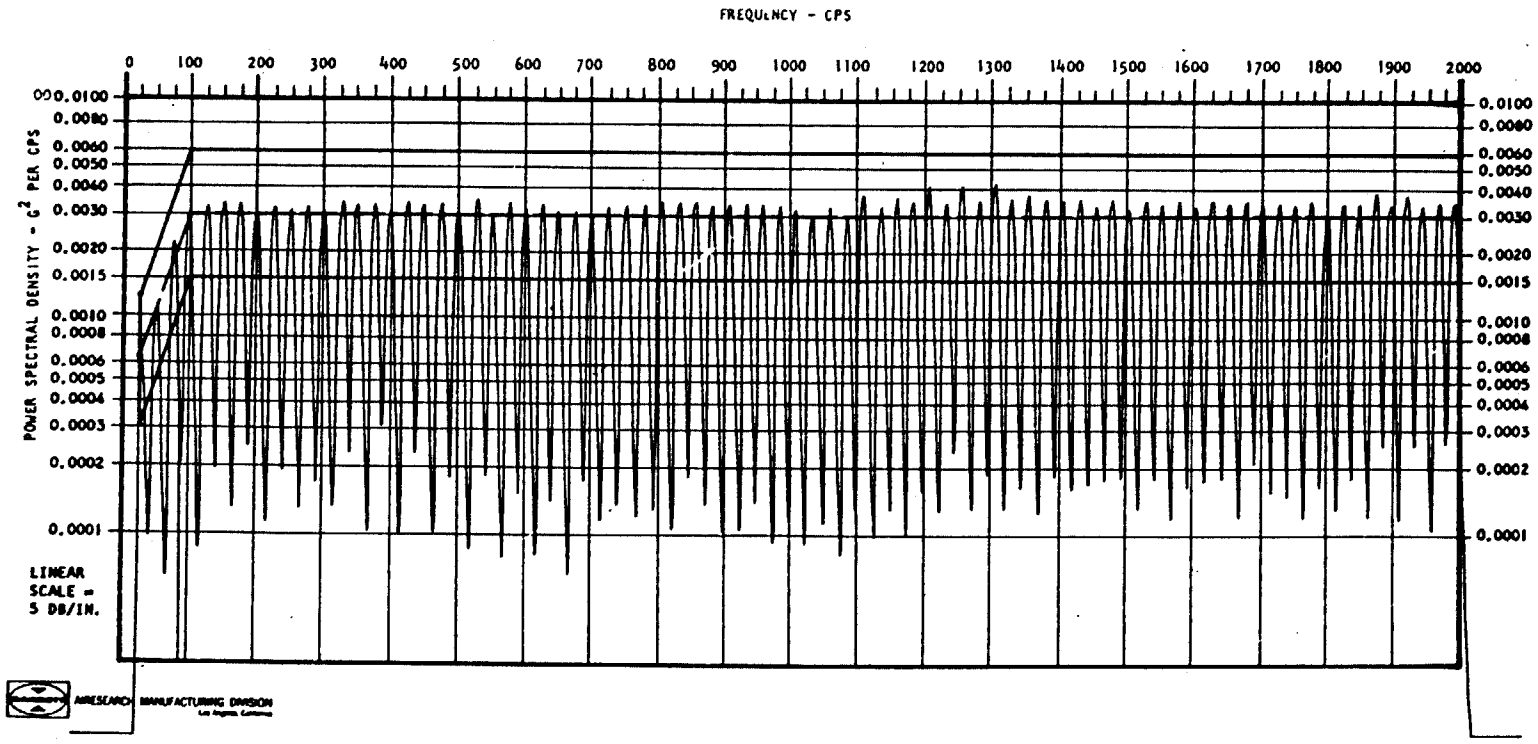


Figure 14. X Axis Vibration Spectrum-Flight

VIBRATION TEST RANDOM SPECTRUM
80 FILTER ANALYSIS
ZONE I-C/M HI-Q ABORT LEVEL

SHEET 6 OF 9

FORM 2107

DATE Nov-2-1967 START TIME

PART NAME Pace-Wiancko Transducer P/N 337036-2 S/N 22320 EWO NO. 3404-20017-69-2154 PROCEDURE NO. SS-1625-R PARAGRAPH NO. 5.4

FIXTURE NO. T-602637 VIBRATION SYST. NO. 1 CONTROL ACCEL ENDEVCO M/N 2233 S/N GC-72 AMBIENT CONDITIONS: PRESS. 29.85" Hg TEMP. 77°F REL. HUMID. 63%

TEST AXIS X TOTAL MINUTES: REQUIRED 2.5, ACTUAL 2.5 INPUT G RMS: REQUIRED 7.7, ACTUAL 7.7 FILTER BAND WIDTH 25 CPS FIRST FILTER CENTER FREQ. 25 CPS

APOLLO TEST ENGINEER L.I. LaPage VIBRATION TECHNICIAN T. WAKLEY AIRESEARCH QC ____ NAA ____ DCAS-QAR ____

CROSSTALK: ____ AXIS ____ G RMS, ____ AXIS ____ G RMS; SPECIMEN: ____ G RMS ____ REMARKS ____

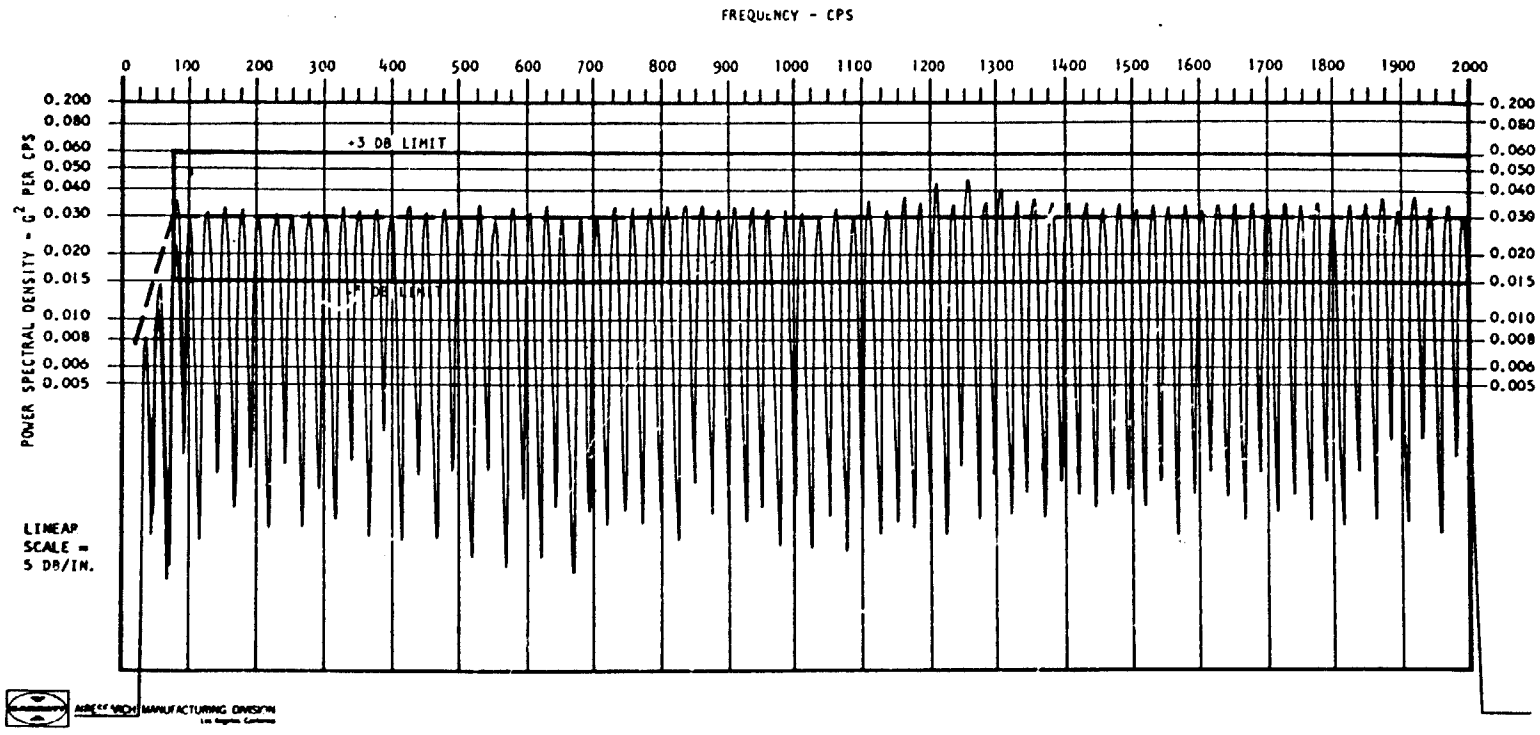


Figure 14. X Axis Vibration Spectrum-High Q Abort

VIBRATION TEST RANDOM SPECTRUM

80 FILTER ANALYSIS

ZONE I-C/M ATMOSPHERIC FLIGHT LEVEL

SHEET 7 OF 9

DATE Nov-2-1967 START TIME

FORM 2105

PART NAME Pace-Wincko Transducer P/N 837036-2 S/N 22320 EWO NO. 3404-70097-69-2154 PROCEDURE NO. SS-1625-R PARAGRAPH NO. 5.4

FIXTURE NO. T-602657 VIBRATION SYST. NO. 1 CONTROL ACCEL ENDEVCO M/N 2282 S/N 6C-72 AMBIENT CONDITIONS: PRESS. 29.85"Hg TEMP. 77°F REL. HUMID. 62%

TEST AXIS Z TOTAL MINUTES: REQUIRED 2.5, ACTUAL 2.5 INPUT G RMS: REQUIRED 5.0, ACTUAL 5.0 FILTER BAND WIDTH 25 CPS FIRST FILTER CENTER FREQ. 25 CPS

APOLLO TEST ENGINEER L.H. LADICE VIBRATION TECHNICIAN T. WAKLEY AIRESEARCH QC NAA DCAS-QAR

CROSSTALK: AXIS C RMS, AXIS G RMS; SPECIMEN: G RMS REMARKS

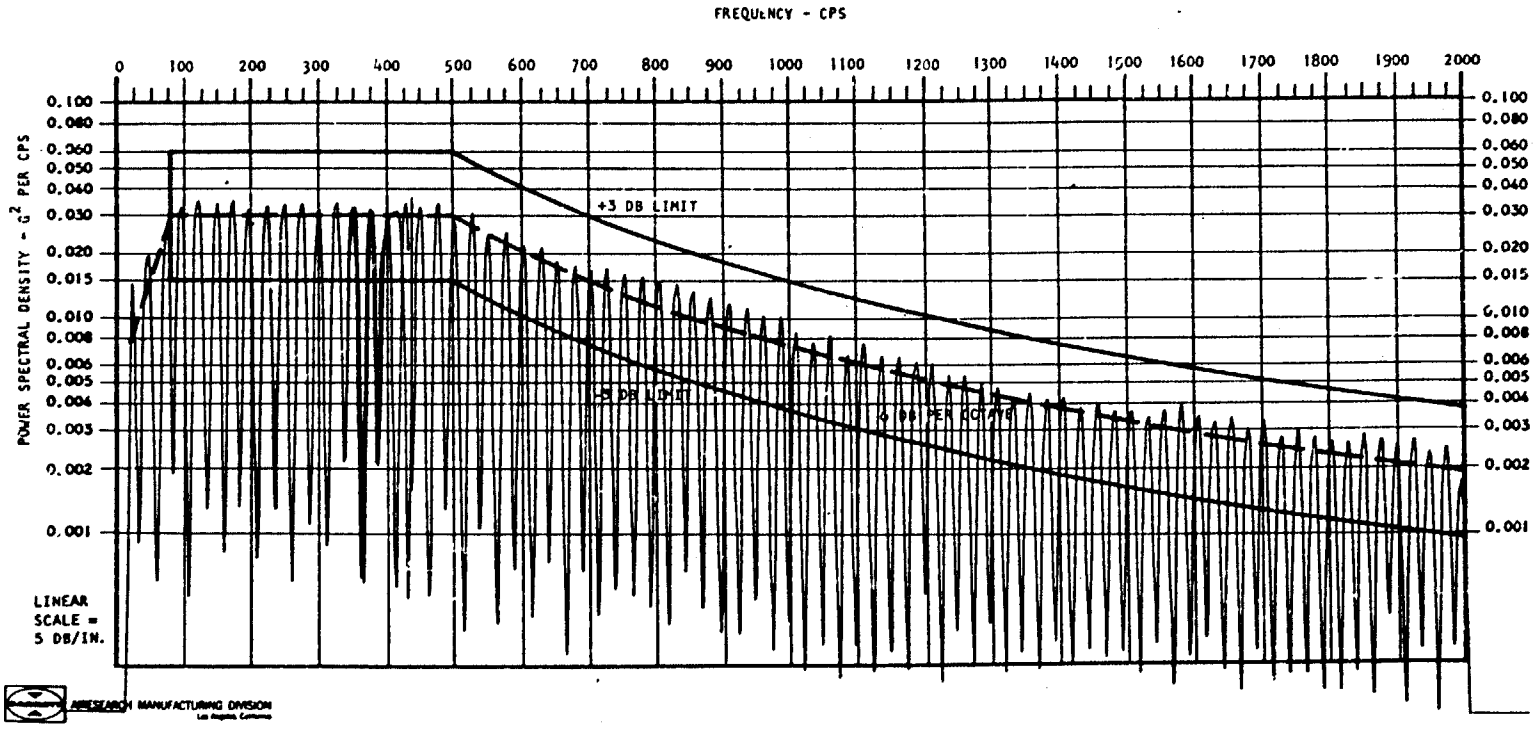


Figure 14. Z Axis Vibration Spectrum-Launch

VIBRATION TEST RANDOM SPECTRUM

80 FILTER ANALYSIS

ZONE I-C/M SPACE FLIGHT LEVEL

SHEET 8 OF 9

DATE Nov. 2-1967 START TIME

PART NAME Pace-Wiancko Transducer P/N 837036-2 S/N 22380 EWO NO. 3464-200117-69-2164 PROCEDURE NO. SS-1625-R PARAGRAPH NO. 6.4

FIXTURE NO. T-602657 VIBRATION SYST. NO. 1 CONTROL ACCEL ENDEVCO M/N 2223 S/N 6C-72 AMBIENT CONDITIONS: PRESS. 29.85" Hg TEMP. 77°F REL. HUMID. 68%

TEST AXIS Z TOTAL MINUTES: REQUIRED 12.5, ACTUAL 12.5 INPUT G RMS: REQUIRED 2.4, ACTUAL 2.4 FILTER BAND WIDTH 25 CPS FIRST FILTER CENTER FREQ. 25 CPS

APOLLO TEST ENGINEER L.H. Lapides VIBRATION TECHNICIAN T. WAKLEY AIRESEARCH QC NAA DCAS-QAR

CROSSTALK: AXIS G RMS, AXIS G RMS; SPECIMEN: G RMS REMARKS

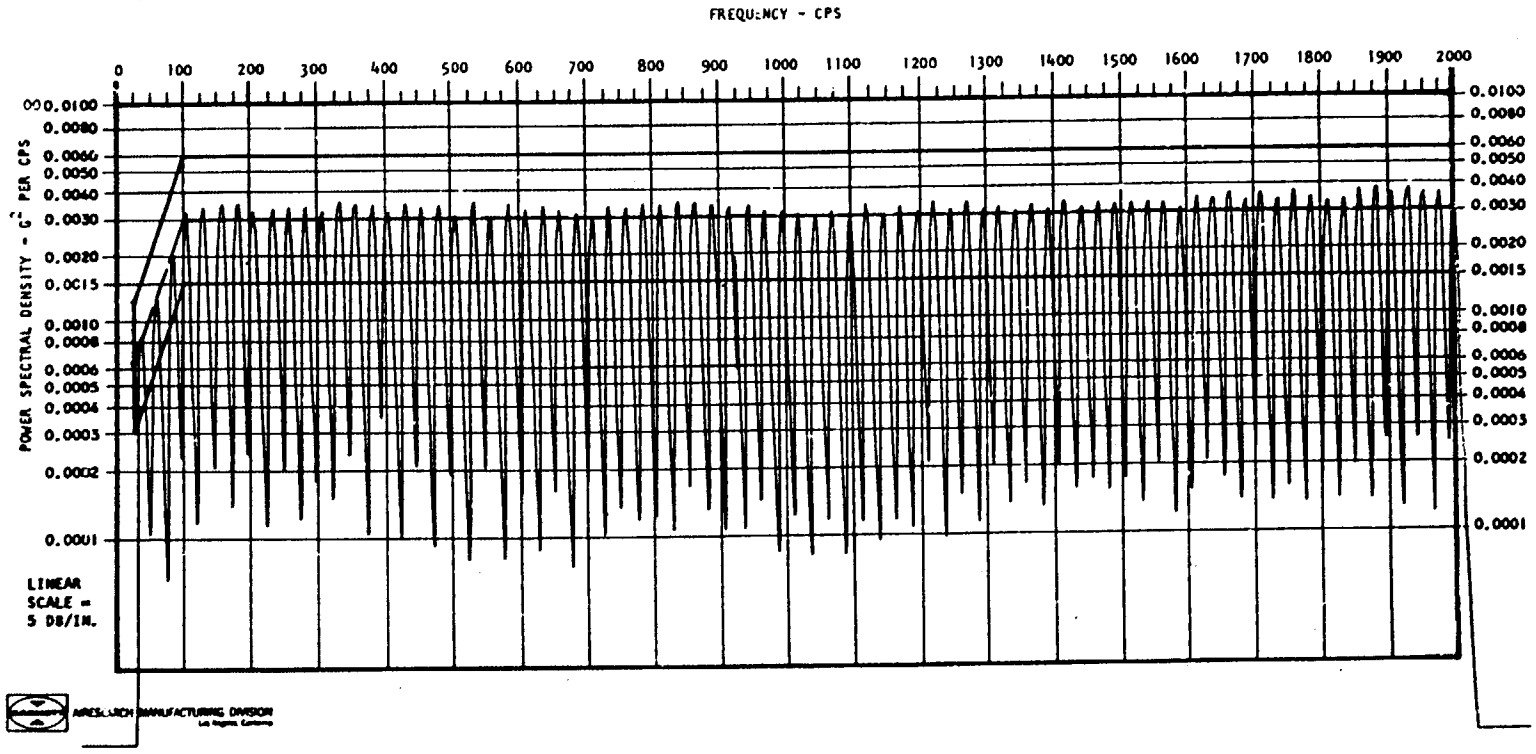


Figure 14. Z Axis Vibration Spectrum-Flight

VIBRATION TEST RANDOM SPECTRUM
80 FILTER ANALYSIS
ZONE I-C/M HI-Q ABORT LEVEL

FORM 2107

SHEET 1 OF ____

DATE NOV-2-1967 START TIME ____

PART NAME PACE-WIANCKO TRANSDUCER P/N 837036-2 S/N 22320 EWO NO. 8404-200117-69-2164 PROCEDURE NO. SE-1625-R PARAGRAPH NO. 5.4

FIXTURE NO. T-602687 VIBRATION SYST. NO. 1 CONTROL ACCEL ENDEVCO M/N 2253 S/N QC-72 AMBIENT CONDITIONS: PRESS. 29.85"Hg TEMP 77°F REL. HUMID. 68%

TEST AXIS Z TOTAL MINUTES: REQUIRED 2.5, ACTUAL 2.5 INPUT G RMS: REQUIRED 7.7, ACTUAL 7.7 FILTER BAND WIDTH 25 CPS FIRST FILTER CENTER FREQ. 25 CPS

APOLLO TEST ENGINEER L.H. LAPAGE VIBRATION TECHNICIAN TERRY WAKLEY AIRESEARCH QC ____ NAA ____ DCAS-QAR ____

CROSSTALK: ____ AXIS ____ G RMS, ____ AXIS ____ G RMS; SPECIMEN: ____ G RMS ____ REMARKS ____

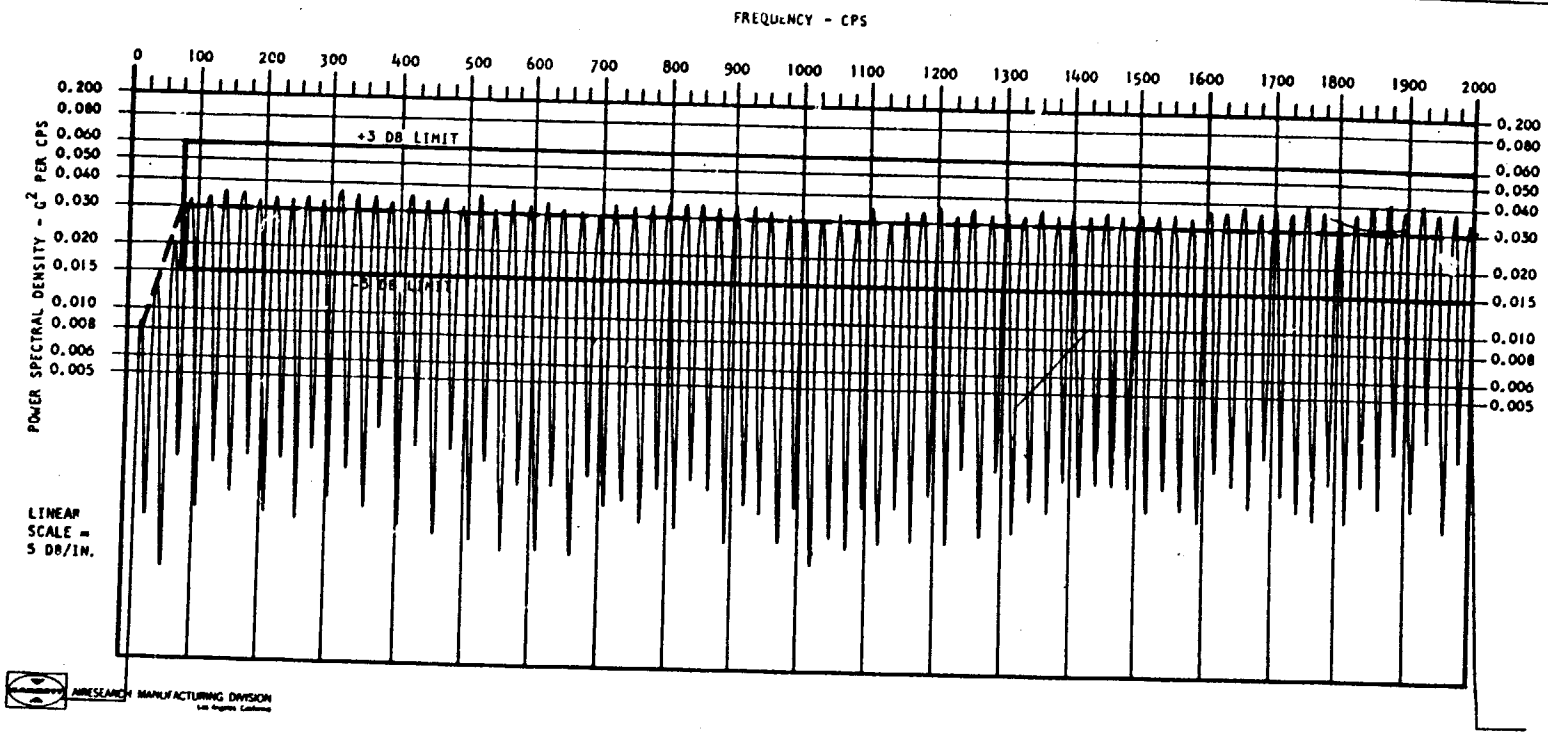
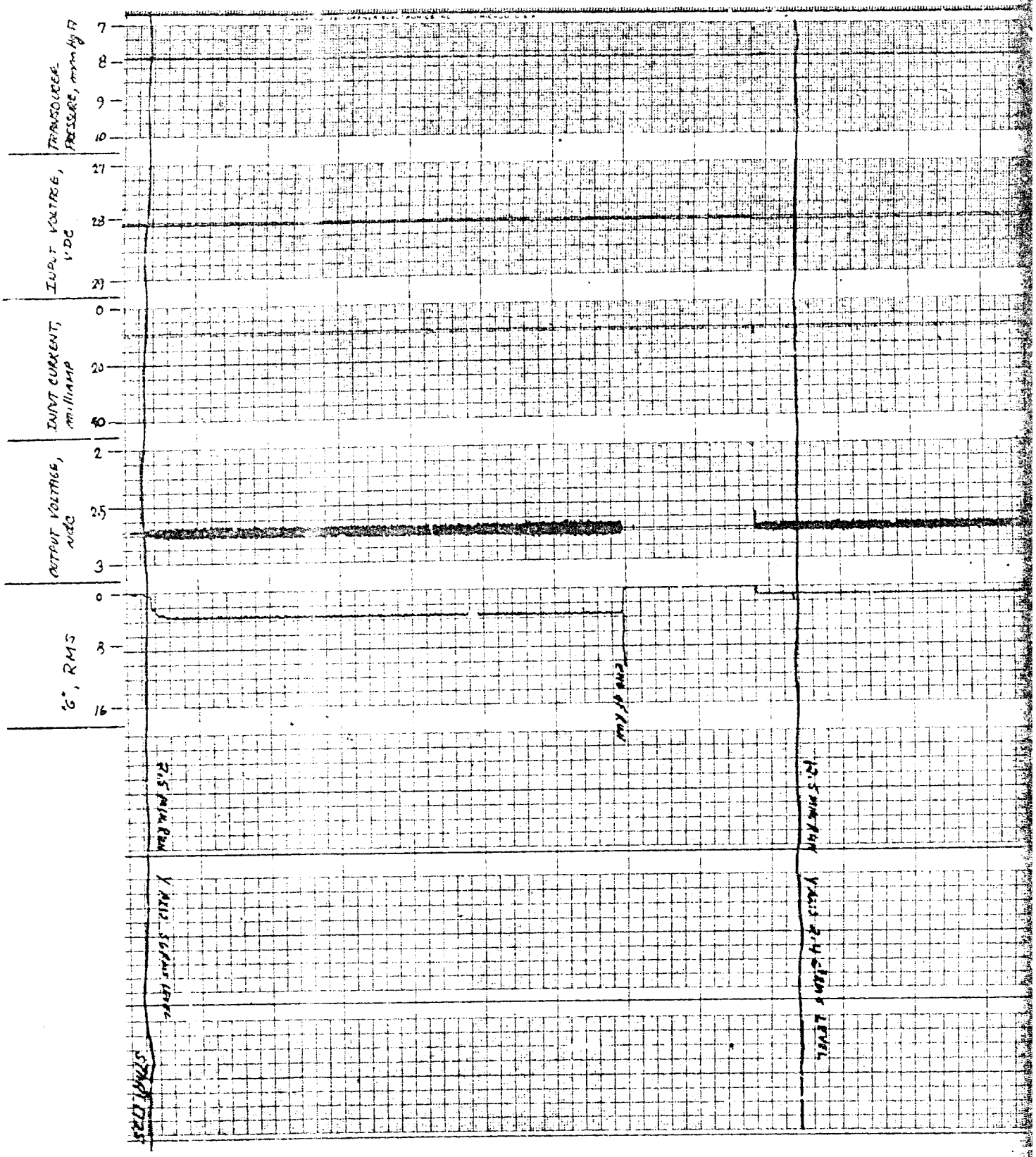
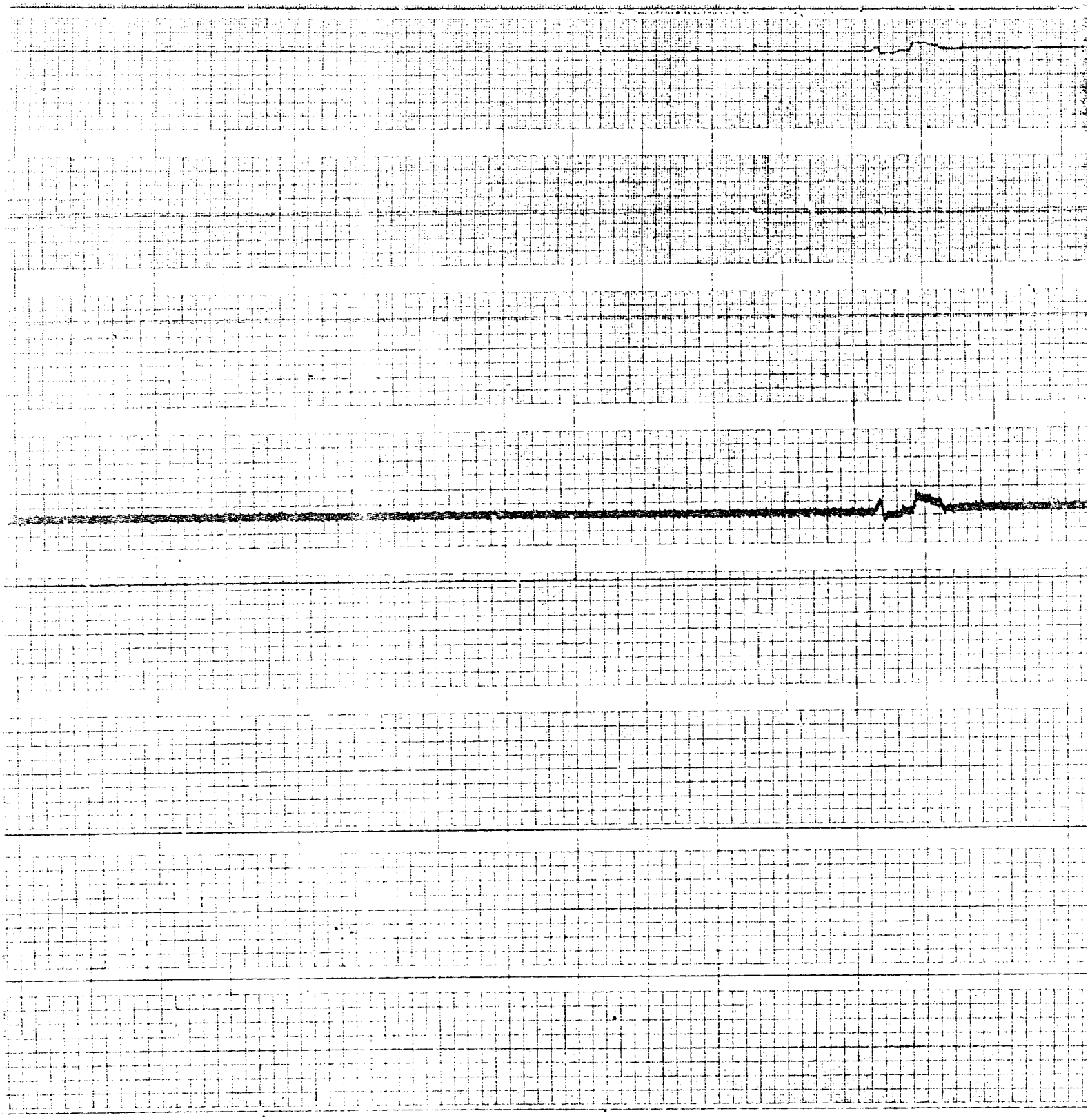


Figure 14. Z Axis Vibration Spectrum-High Q Abort



CARRETT AIRESEARCH MANUFACTURING DIVISION
Los Angeles, California

A



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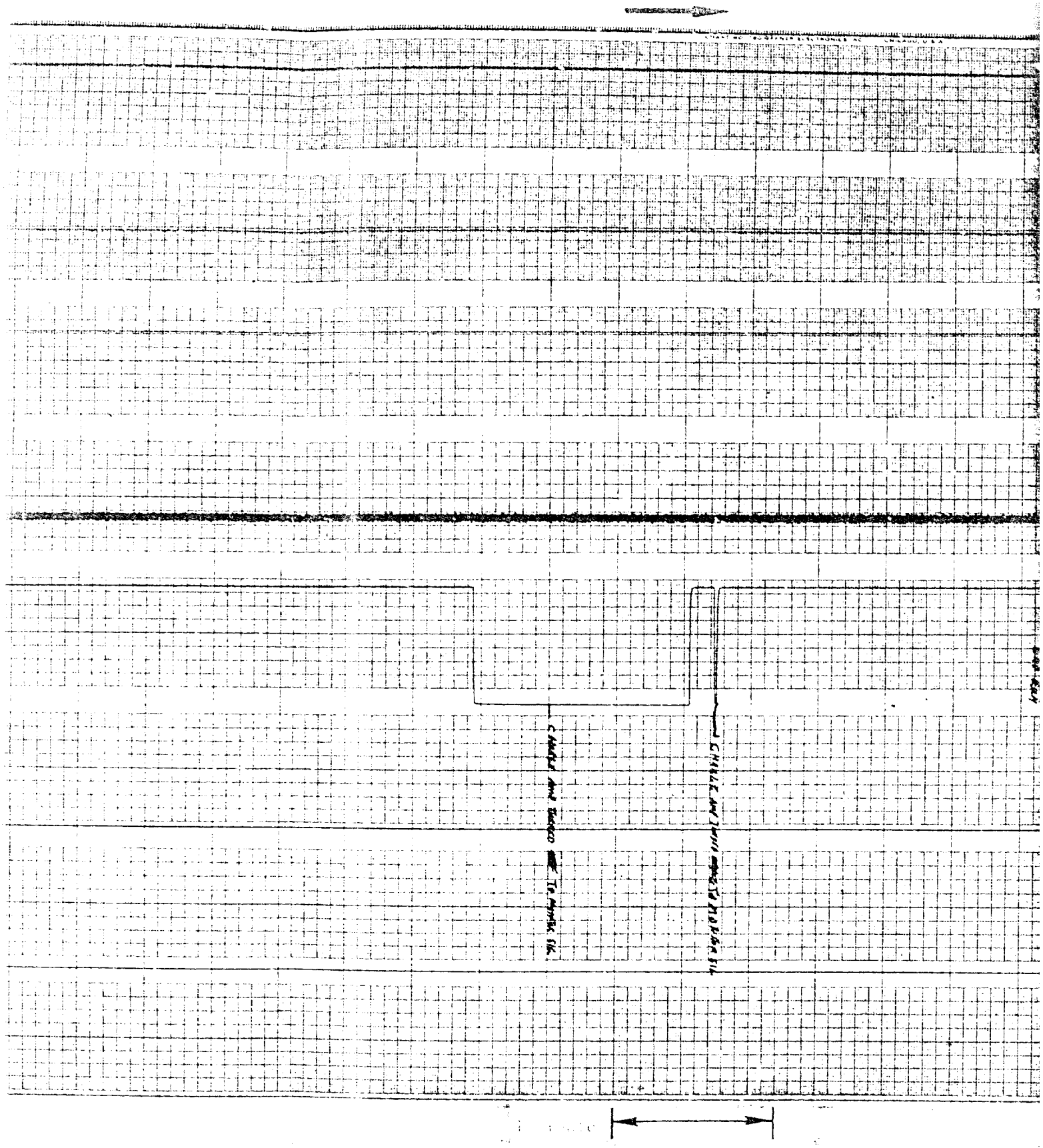
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CHARLIE AND JULIET TO MONTAUK SIG.

C

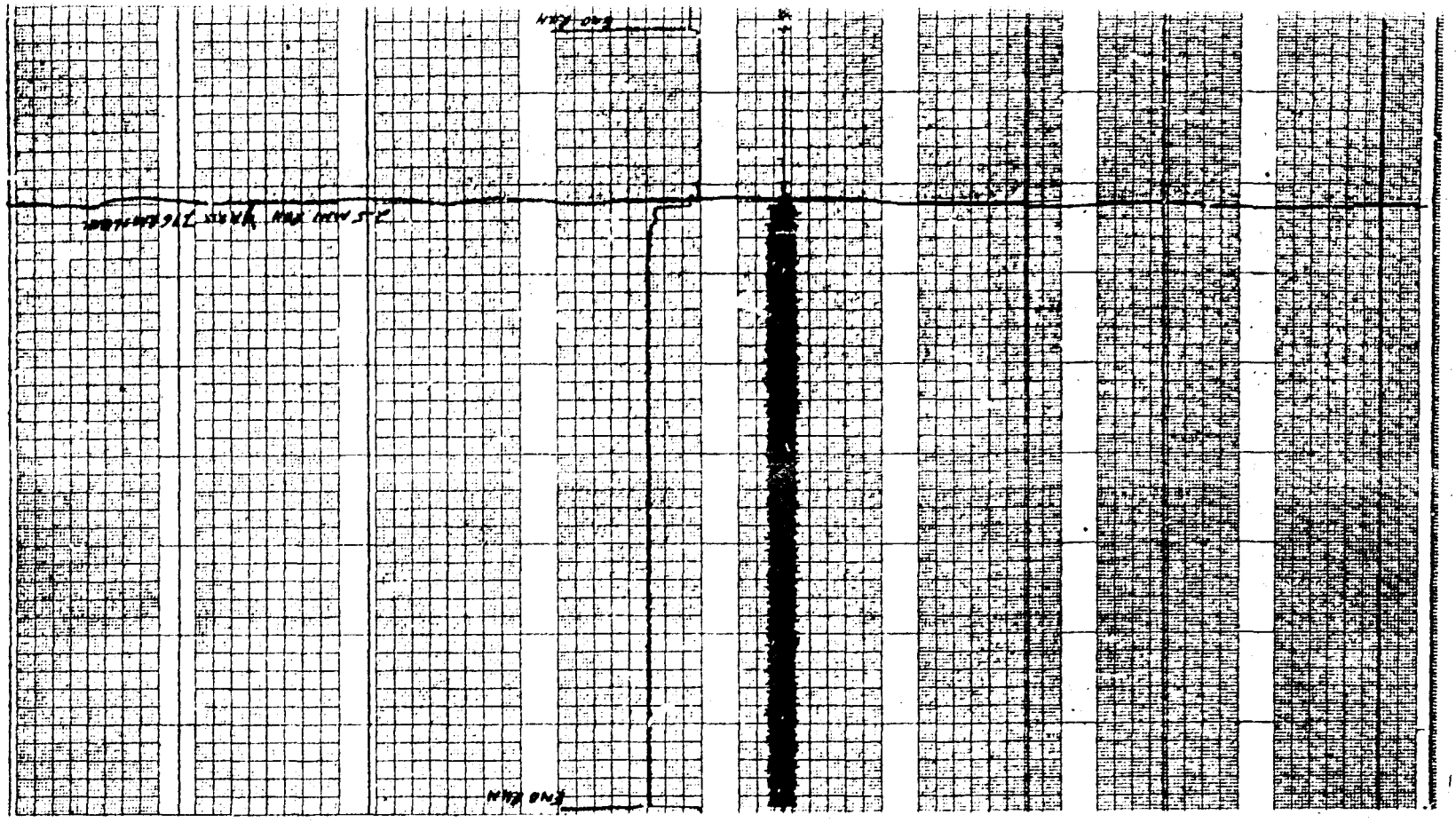
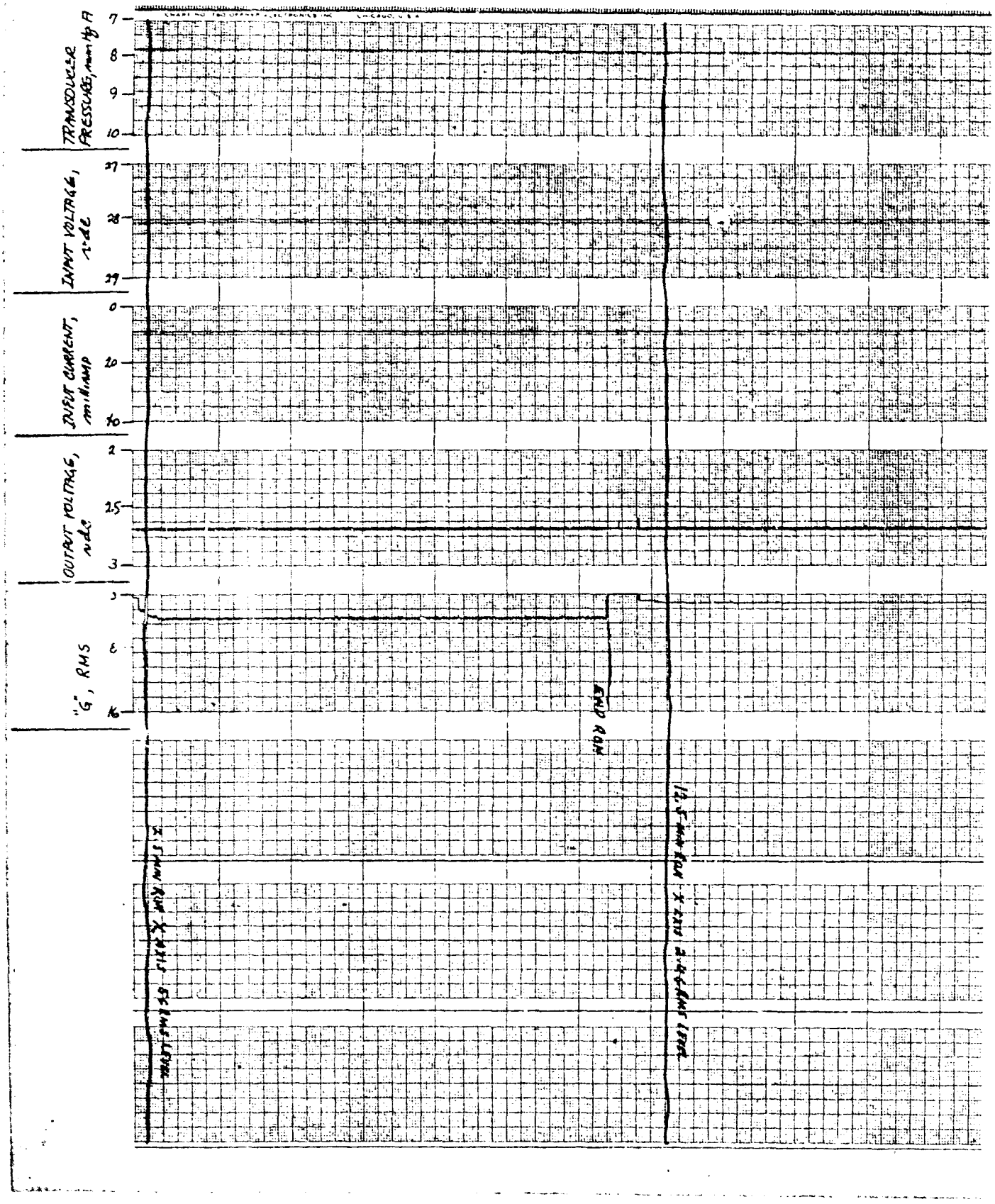


Figure 15. Y Axis Vibration Test Results. P/N 837036-2, S/N 22320

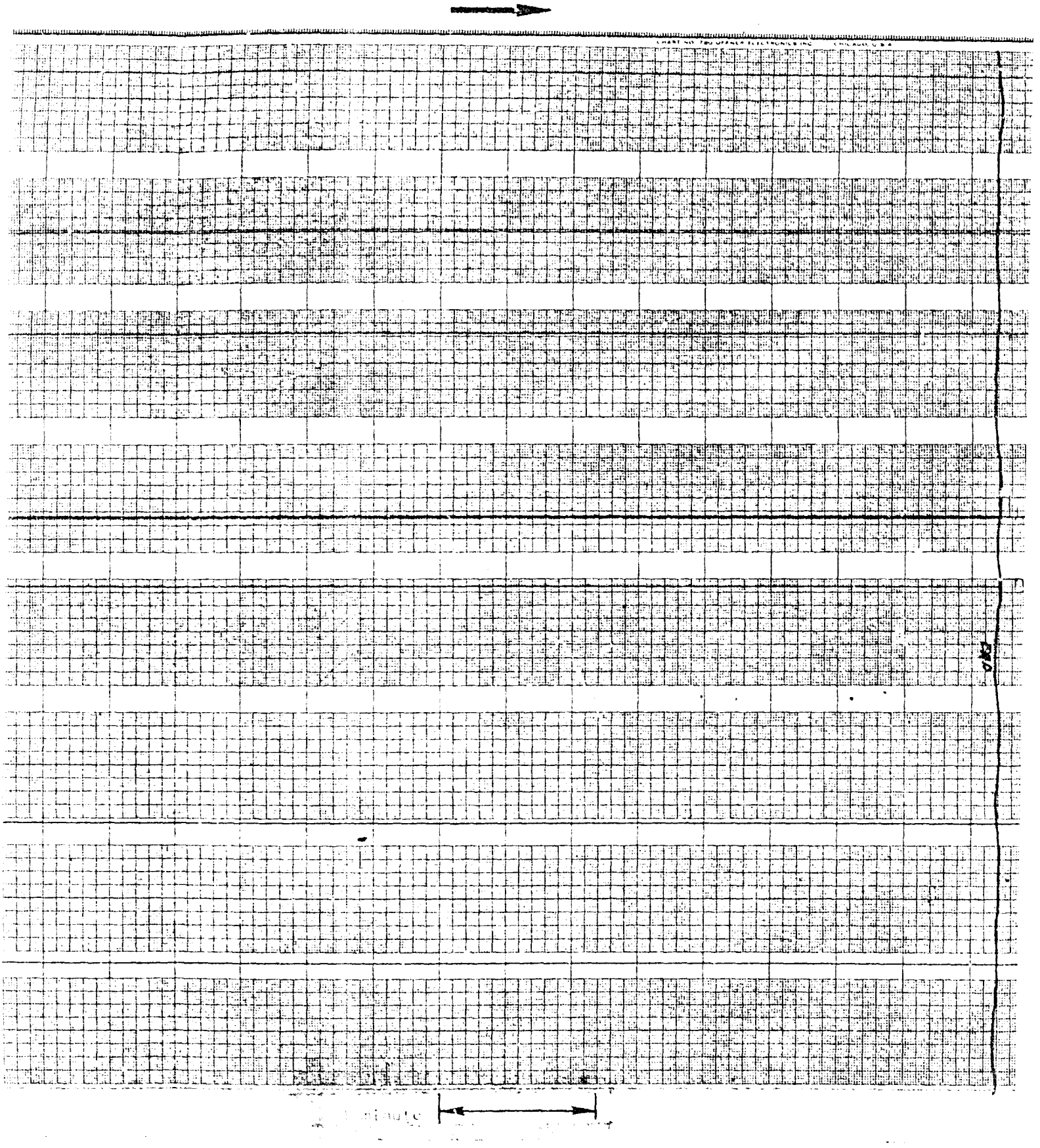
Best Available Copy



GARRETT AIRESEARCH MANUFACTURING DIVISION
Los Angeles, California

A

B



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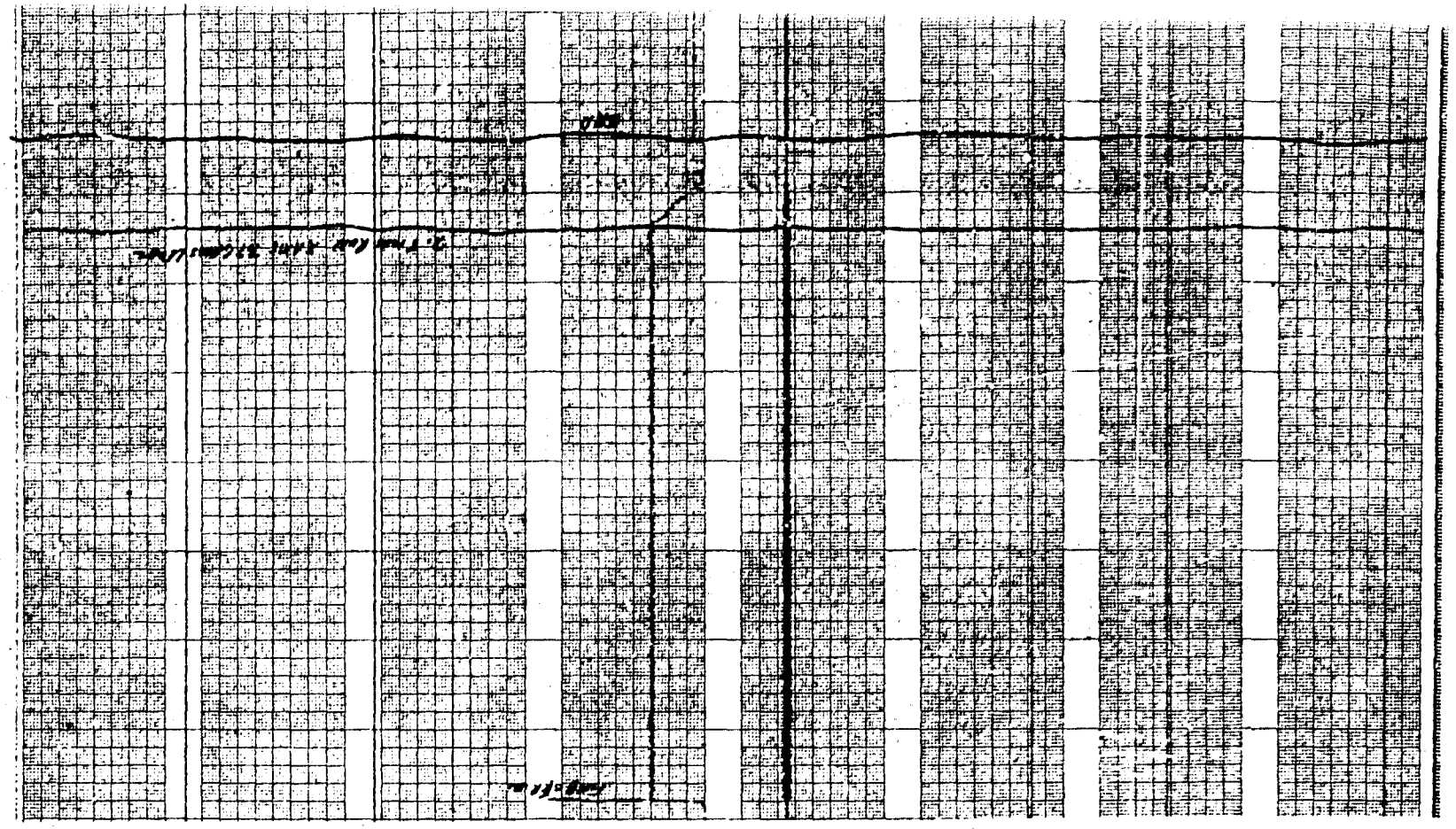
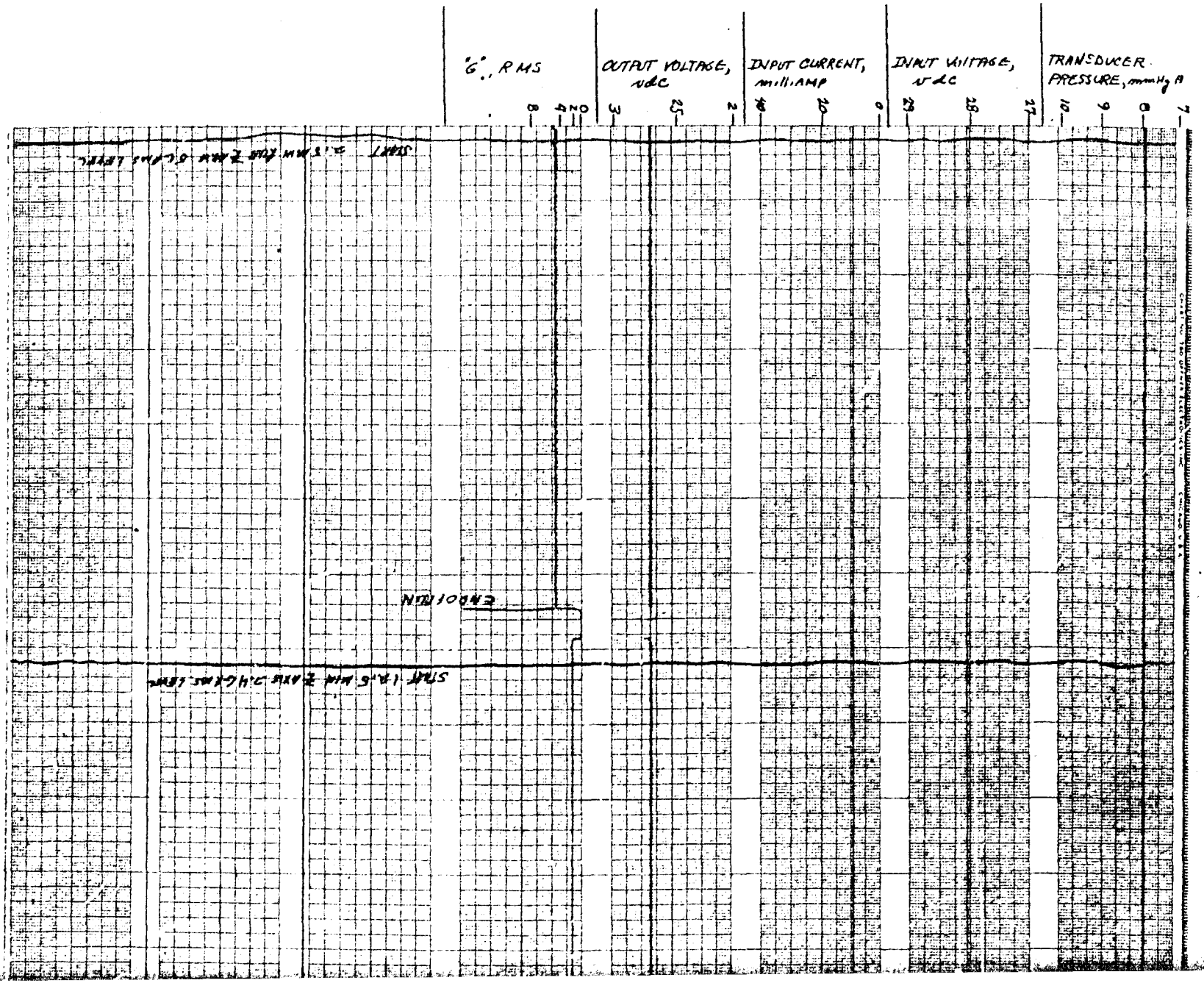


Figure 15. X Axis Vibration Test Results. P/N 837036-2. S/N 22320

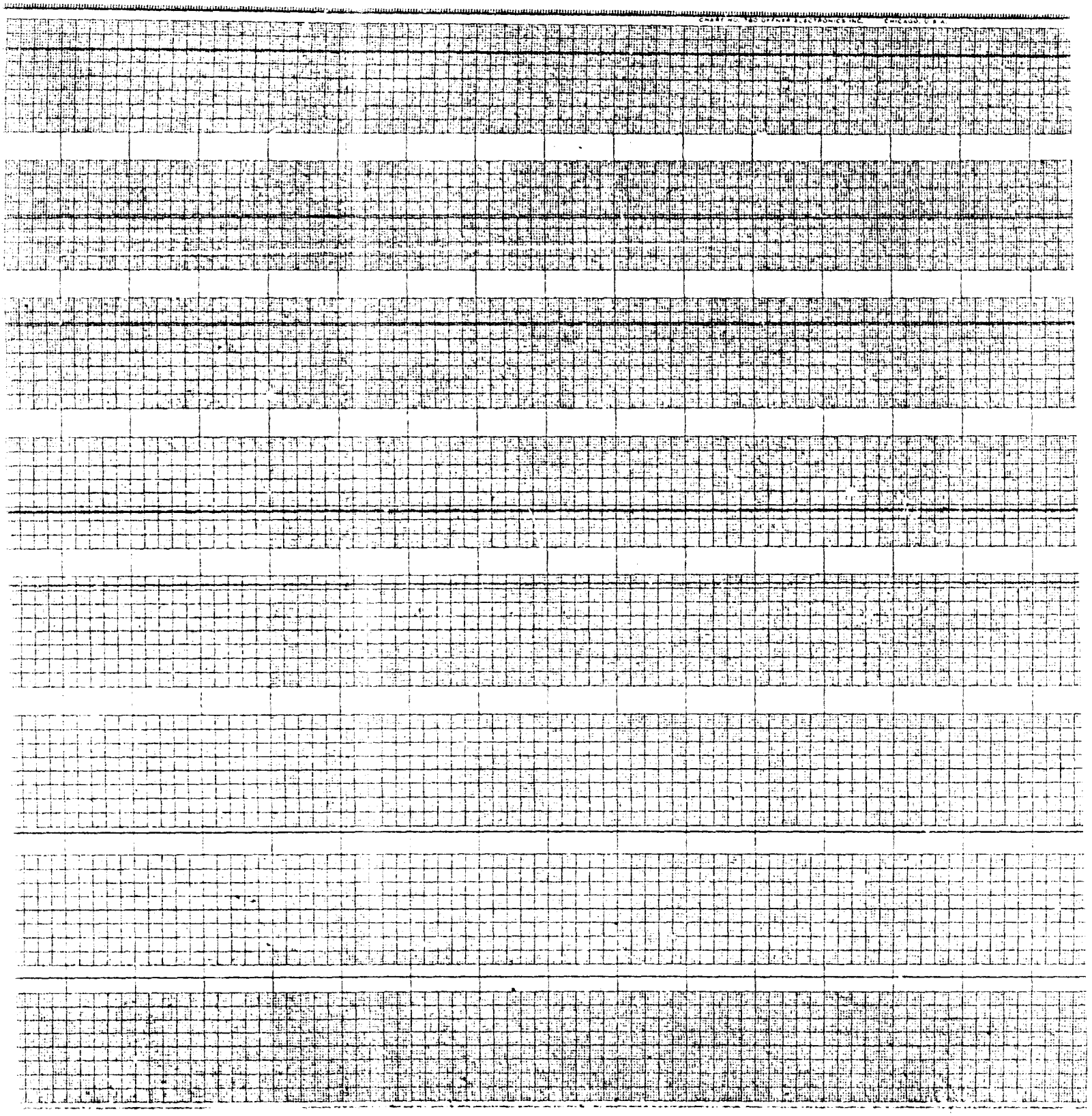
Best Available Copy



GARRETT

AIRESEARCH MANUFACTURING DIVISION

Los Angeles, California



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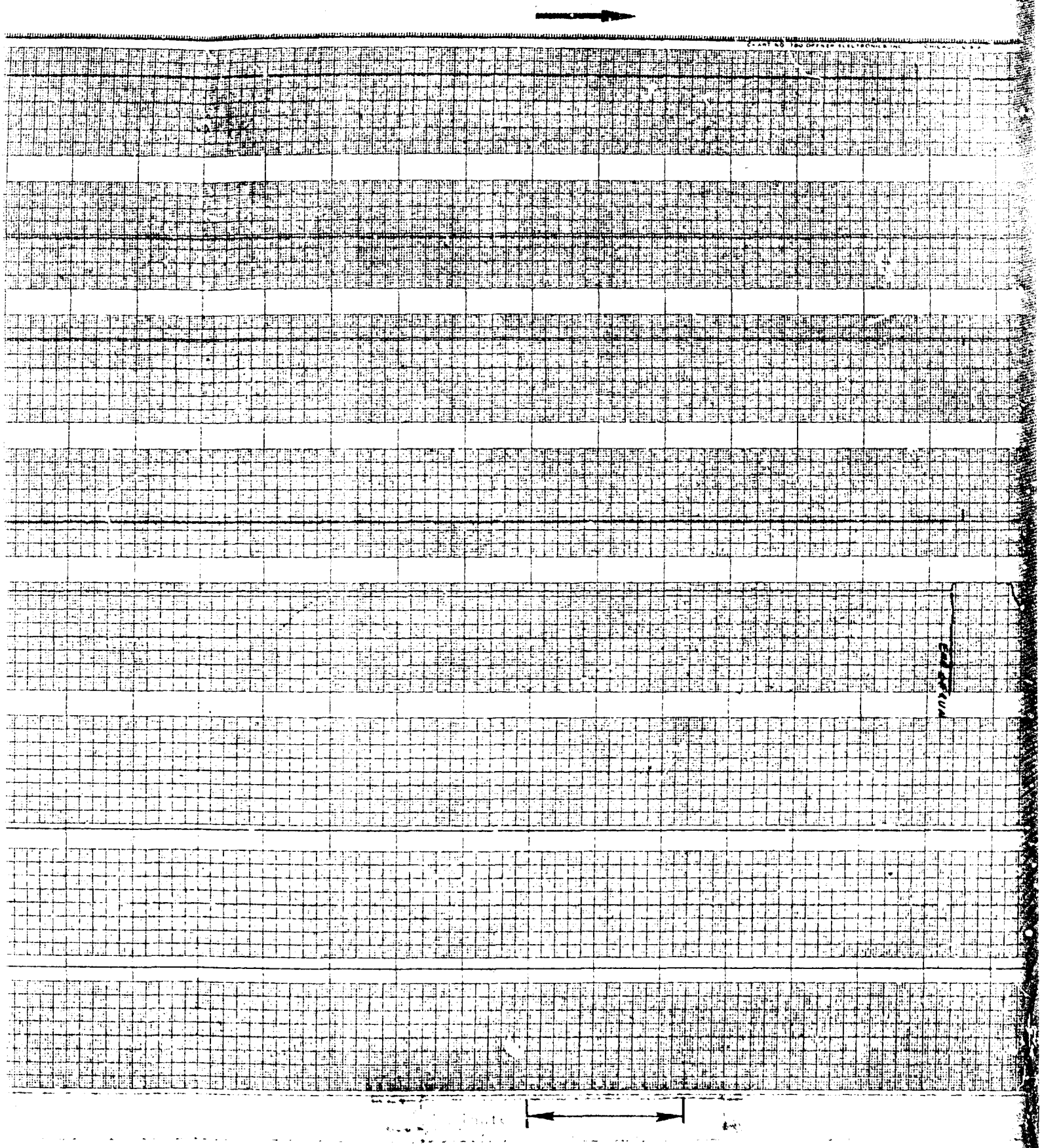


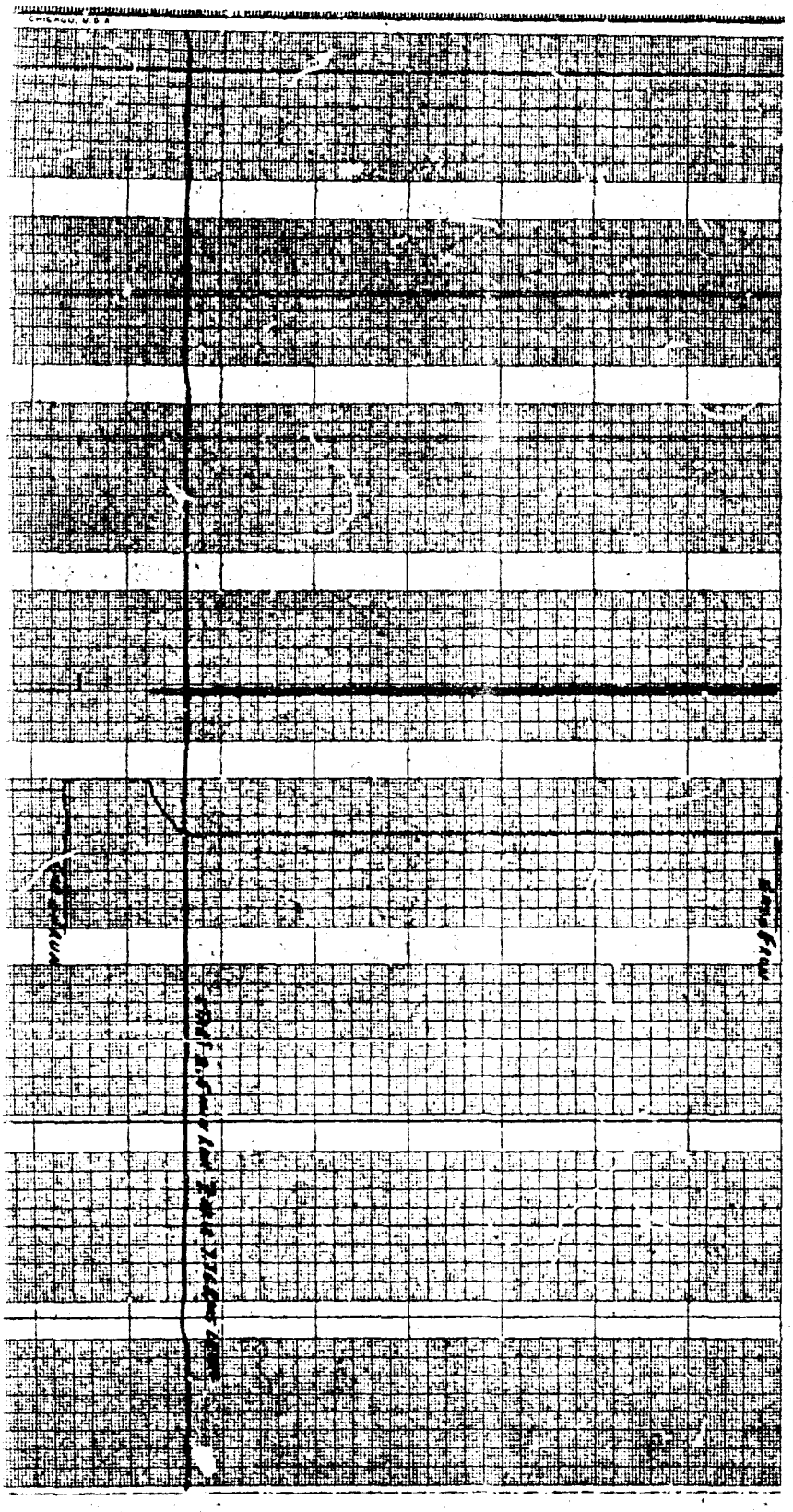


Figure 15 Z Axis Vibration Test Results, P/N 837036-2, S/N 22320

Best Available Copy

Interim Change Notice Letter: F
ATP No.: SS-1789-R
Effective Date: 23 May 1967

SS-1789-R
Data Sheet
1 of 5

ACCEPTANCE TEST
DATA SHEET

Use black ink. No erasures permitted.

STEAM DUCT PRESSURE TRANSDUCER 837036-(2-1

NAA REF. SPEC. NE NASA 004000022320

Part Number 837036-1-2 S/N 22320

Date 11-3-67 Barometer 29.9 in. Hg abs Amb Temp 74 °F

Tested by A Cunningham Test Facility 1402

Examination of Product: Accept _____ Reject _____

Remarks: EWO-3404-200117-67-2154
Verification Test

Dimensional Check Verified: 11-3-67

Para. 4.6 Calibration Test (Prior To Proof Pressure Test) Accept 324 Reject ____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen input voltage	vdc	+28.0 ±0.5	+28.0
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	-0.0060
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	+1.2320
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.47
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref 75% of range	vdc	+3.7500 ±0.2000	+3.6900
Specimen pressure	mm Hg abs	12.929	12.929
Output voltage, Ref 100% of range	vdc	+5.0000 ±0.2000	+4.9980
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref. 75% of range	vdc	+3.7500 ±0.2000	+3.6900
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.465
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	+1.2330
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	-0.0020

F-8622

Figure 17. Shock Test Setup
P/N 837036-2,
S/N 22320

MONTEREY PARK, DIVISION

OGDEN TECHNOLOGY LABORATORIES, INC.

Subsidiary of Ogden Corporation

873 MONTEREY PASS ROAD, MONTEREY PARK, CALIFORNIA 91754
TELEPHONE: 213 – 289-4425 TWX: 213 – 288-3123

21 NOVEMBER 1967

OGDEN TECHNOLOGY LABORATORIES REPORT NUMBER 22400

AIRESEARCH PURCHASE ORDER NUMBER 418-56664-7

A. TEST: DEVELOPMENTAL SHOCK

B. SAMPLE: TRANSDUCER
PART NUMBER 837036-2
SERIAL NUMBER 22320

C. SPECIFICATION: AIRESEARCH QUALIFICATION TEST PROCEDURE IMPACT SHOCK TEST, NO. SS-1560-R, DATED 4 OCTOBER 1967, PARAGRAPH 5.6 AND FIGURE 2

D. RESULTS: THIS IS TO CERTIFY THAT THE SAMPLE WAS SUBJECTED TO THE SHOCK TEST IN ACCORDANCE WITH THE ABOVE SPECIFICATION.

SINCE AIRESEARCH PERSONNEL PERFORMED ALL OF THE OPERATIONAL TESTS, OGDEN TECHNOLOGY LABORATORIES CANNOT CERTIFY THAT THE SAMPLE PASSED OR FAILED.

OGDEN TECHNOLOGY LABORATORIES

D. E. KARR
OPERATIONS MANAGER

SUBSCRIBED AND SWORN TO BEFORE ME THIS 21ST DAY OF NOVEMBER 1967

OFFICIAL SEAL
NORMA F. SOLOMON
NOTARY PUBLIC CALIFORNIA
PRINCIPAL OFFICE IN
ORANGE COUNTY

NORMA F. SOLOMON, NOTARY PUBLIC IN AND FOR THE COUNTY OF ORANGE, STATE OF CALIFORNIA. MY COMMISSION EXPIRES MARCH 6, 1971.

J. L. MEDIAK
QUALITY CONTROL

Figure 18 (page 1 of 3
DTD-191
Page 48

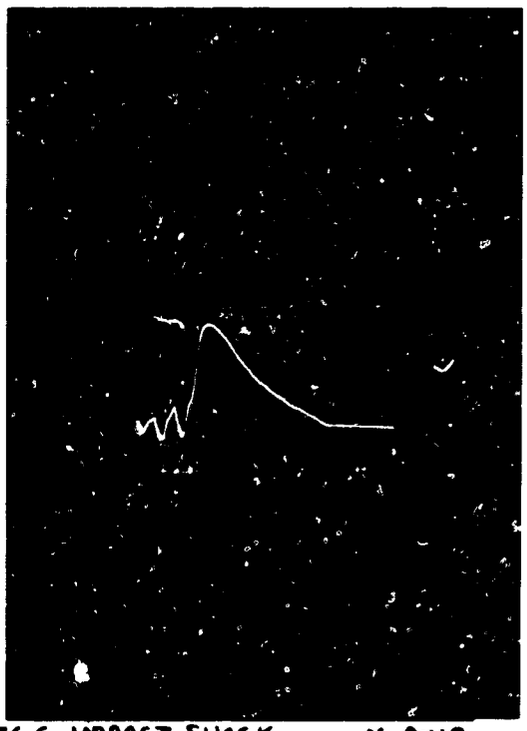
DATE STARTED: 11/9/67	PARTS TEST DATA	TEST ENGINEER: [illegible]
DATE COMPLETED: 11/9/67	SPECIMEN DESCRIPTION: [illegible]	GROUP LEADER:
TEMPERATURE: RTNR	TEST: SHOCK	SPECIFICATION LIMITS:
HUMIDITY: N/A	VENDOR: Assembly MC	

TIME	G	H	D	AXIS	No. SHOCKS	SAMPLE	COMMENT
	75		[illegible]	X-	1	1	SPECIFIED
							UNIT S [illegible]
[illegible]	75	21"	[illegible]	X+	1	1	
							[illegible]

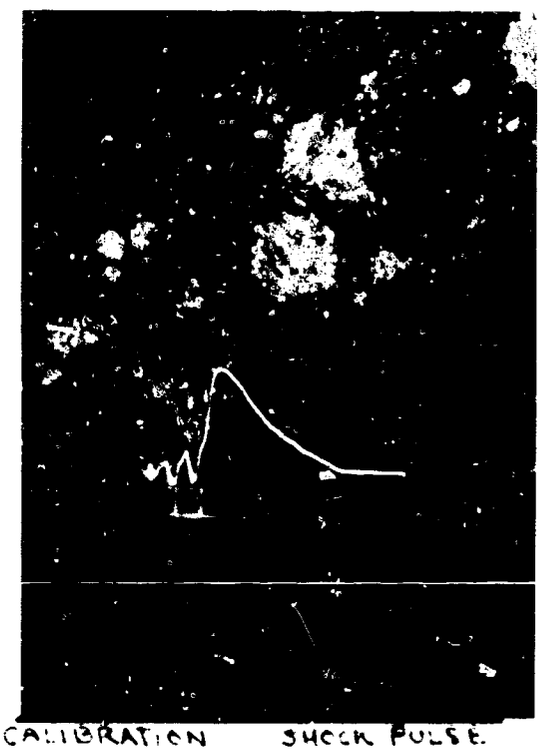
Figure 18 (page 2 of 3)
DTD-191
Page 49

EQUIPMENT LIST

DESCRIPTION	SYMBOL	UNIT	APPARATUS	CALIBRATION DUE DATE
SHOCK TEST				
SHOCK	--	--	TEKTRONIX OSCILLOSCOPE, MODEL 564, S.N. 003708	3/3/68 6 MONTHS
			ENDEVCO AMPLIFIER, MODEL 2614, S.N. FC12	1/11/68 3 MONTHS
			ENDEVCO ACCELEROMETER, MODEL 2213, S.N. JA26	1/11/68 6 MONTHS
			ROTOTEST LOW PASS FILTER, RTL NO. E-3854	3/13/68 12 MONTHS
			BARRY CONTROLS SHOCK MACHINE, TYPE 15575, S.N. 064, RTL NO. F-7076-1	BEFORE USE



76G IMPACT SHOCK X AXIS



CALIBRATION SHOCK PULSE F-8023

Figure 19. Shock Pulse Trace, P/N 837036-2, S/N 22320
Time base = 2ms/cm, Amplitude = 20g/cm
Vertical value = 76g, Horizontal value = 10 ms

Interim Change Notice Letter: F
ATP No.: SS-1759-R
Effective Date: 22 May 1967

SS-1759-R
Data Sheet
1 of 5

ACCEPTANCE TEST
DATA SHEET

Use black ink. No erasures permitted.

STEAM DUCT PRESSURE TRANSDUCER 837036-2

NAA REF. SPEC. ME NASA 004000022320

Part Number 837036-2 S/N 22320

Date 11-10-67 Barometer 29.9 in. Hg abs Amb Temp 74 °F

Tested by A Cunningham Test Facility 1402

Examination of Product: Accept ____ Reject ____

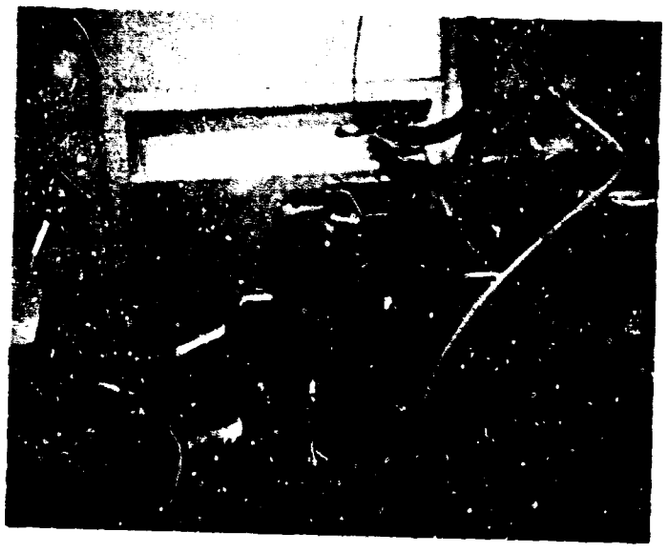
Remarks: EWO 3404-200117-69-2154

Dimensional Check Verified: 11-10-67

Para. 4.6 Calibration Test (Prior To Proof Pressure Test) Accept 32 Reject ____

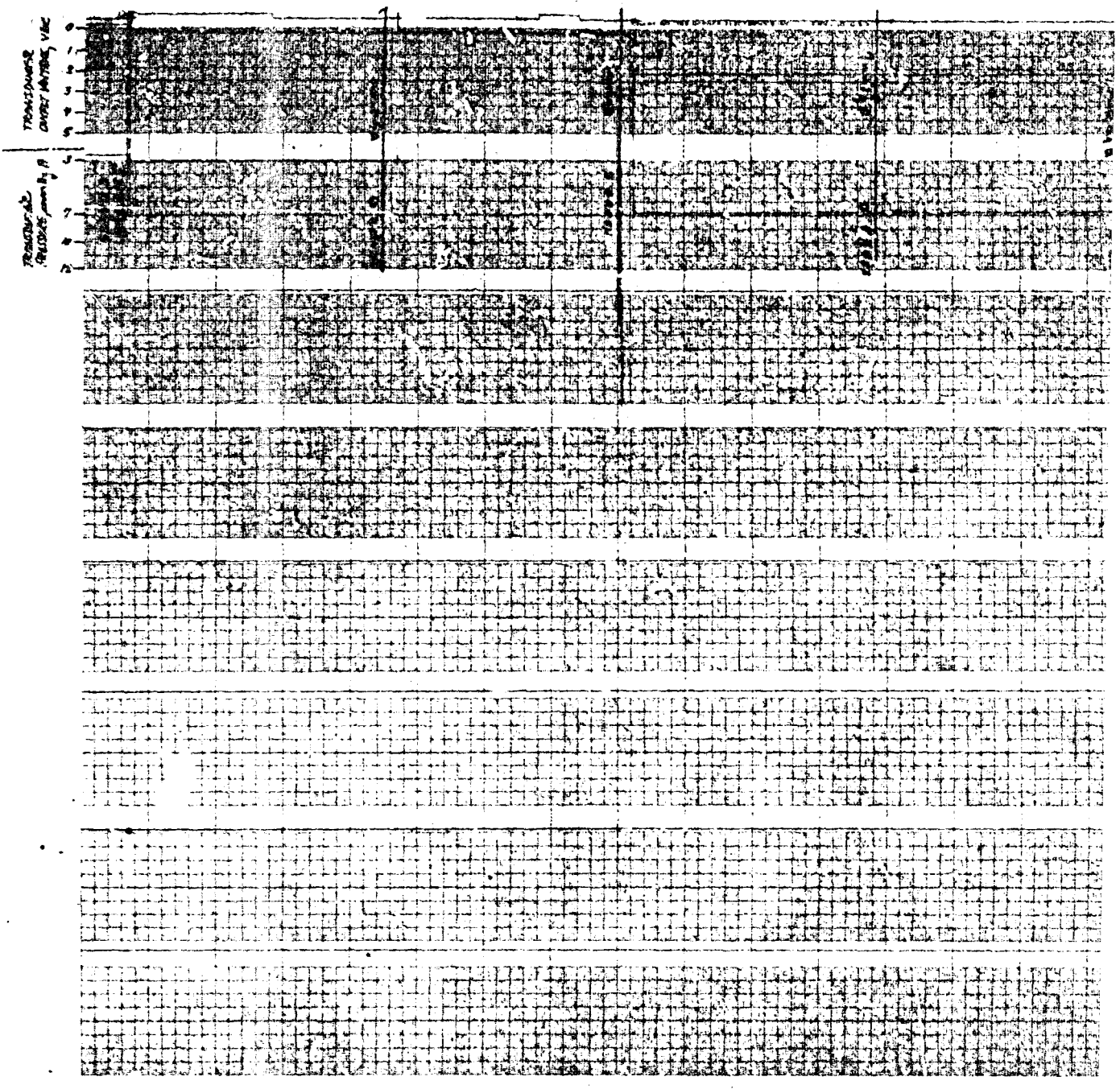
TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen input voltage	vdc	+28.0 ±0.5	+28.0
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	-0.0060
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	+1.2310
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.4530
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref 75% of range	vdc	+3.7500 ±0.2000	+3.668
Specimen pressure	mm Hg abs	12.929	12.929
Output voltage, Ref 100% of range	vdc	+5.0000 ±0.2000	+4.8820
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref. 75% of range	vdc	+3.7500 ±0.2000	+3.6670
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.4520
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref [illegible] of range	vdc	+1.2500 ±0.2000	+1.230
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	-0.0040

AIRESEARCH MANUFACTURING DIVISION

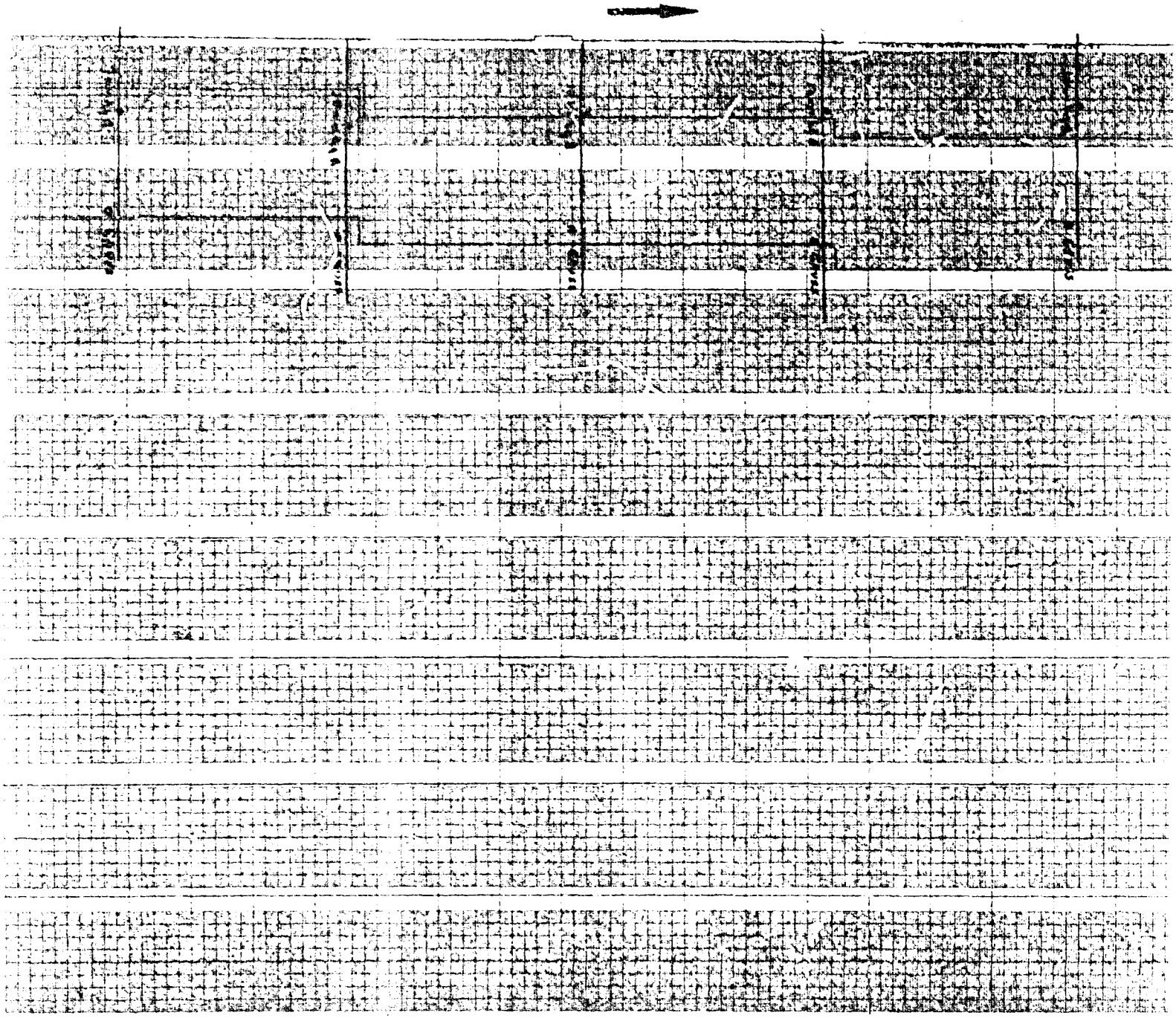


F-8620

Figure 21. Magnetic Field Effects Test
P/N 837036-2, S/N 22320



A



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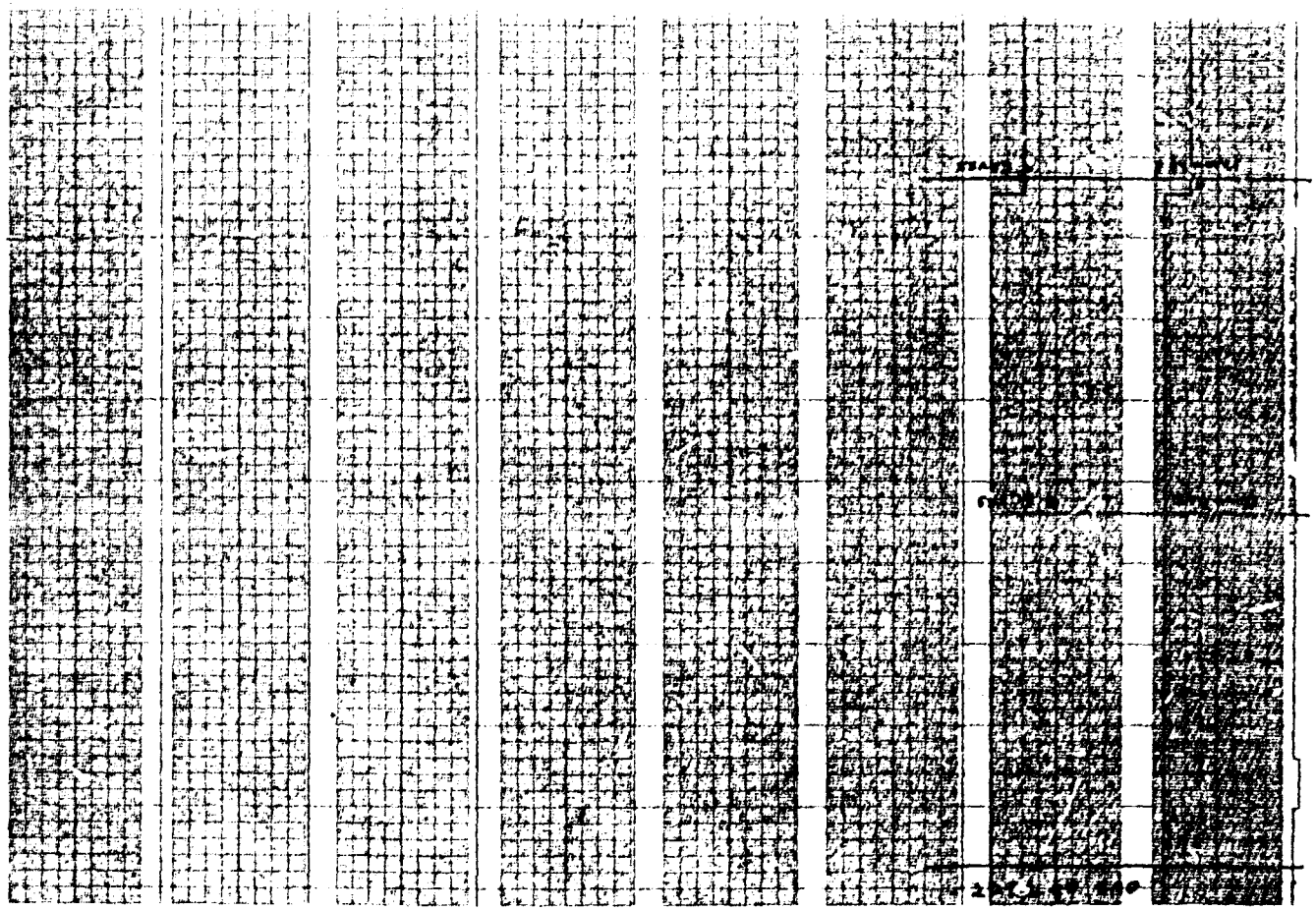

Figure 23. Magnetic Field Effect. P/N 837086-2, S/N 22320

Best Available Copy

DEVELOPMENT TEST
DATA SHEET

P/N 837036-2, S/N 22320
(MFG. BY PACE-WIANCKO)

ATTITUDE TEST RESULTS

Pressure MM Hg A	Attitude	Actual Output vdc	Acceptable Output vdc
3	X-	0.231	0.200 ±0.2
3	X+	0.228	
3	Y-	0.231	
3	Y+	0.227	
3	Z-	0.229	
3	Z+	0.222	0.200 ±0.2
7	X-	2.194	2.133 ±0.2
7	X+	2.189	
7	Y-	2.222	
7	Y+	2.110	
7	Z-	2.117	
7	Z+	2.114	2.133 ±0.2
10	X-	3.630	3.584 ±0.2
10	X+	3.639	
10	Y-	3.635	
10	Y+	3.627	
10	Z-	3.622	
10	Z+	3.617	3.584 ±0.2
12	X-	4.579	4.551 ±0.2
12	X+	4.570	
12	Y-	4.585	
12	Y+	4.580	
12	Z-	4.600	
12	Z+	4.594	4.551 ±0.2

Figure 23
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Interim Change Notice Letter: F
ATP No.: SS-1759-R
Effective Date: 22 May 1967

SS-1759-R
Data Sheet
1 of 5

ACCEPTANCE TEST
DATA SHEET

Use black ink. No erasures permitted.

STEAM DUCT PRESSURE TRANSDUCER 837036-2-1

NAA REF. SPEC. NE NASA 004 000022321

Part Number 837036-2-1 S/N 22321

Date 12-28-67 Barometer 29.9 in. Hg abs Amb Temp 74 °F

Tested by A Cunningham Test Facility 1402

Examination of Product: Accept____ Reject____

Remarks: EWO 3404-200117-69-2454

Dimensional Check Verified: ____

Para. 4.6 Calibration Test (Prior To Proof Pressure Test) Accept____ Reject 10-28-67

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen input voltage	vdc	+28.0 ±0.5	+28.0
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	+0.4600 *
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	+1.6170 *
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.7690 *
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref 75% of range	vdc	+3.7500 ±0.2000	+3.9190
Specimen pressure	mm Hg abs	12.929	12.929
Output voltage, Ref 100% of range	vdc	+5.0000 ±0.2000	+5.0770
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref. 75% of range	vdc	+3.7500 ±0.2000	+3.9270
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.775 *
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	+1.6000 *
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	+0.4210 *

* Out of spec Readings

AIRESEARCH MANUFACTURING DIVISION
Los Angeles, California

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Page 56

WHITTAKER CORPORATION
PACE WIANCKO DIVISION
12838 SATICOY AVE.
NORTH HOLLYWOOD, CALIF.

FORM NO. FR-1 PAGE 1
Report No.
FR-66-67

FAILURE REPORT

PW PART NO.	PART NAME:	SERIAL NO.
601555	Transducer, Pressure, Absolute	22321 & 22322
CUSTOMER:	CUSTOMER PART OR DWG. NO.	
Airesearch	837036-2-1 Rev. L	

CUSTOMER O.C. DOCUMENT NO. (INCLUDE REVISION NO.)

DATE OF FAILURE:

POINT OF FAILURE; I.E. IN-PROCESS, ACCEPT., TEST, etc.

Airesearch

NATURE OF FAILURE: (COMPARE WITH ALLOWABLE TOL. LIMITS)

Positive shift in output.

TEST CONDITION, PREVIOUS HISTORY AND OPERATING TIME/NO. OF CYCLES (INDICATE TOTAL IN HOURS AND TENTHS)

N/A

FAILURE CAUSE:

Failure was verified.

IMMEDIATE DISPOSITION:

Perform failure analysis to determine cause and essablish corrective action.

REPORTED BY [signature] 12-28

(ATTACH ADDITIONAL PAGES IF NECESSARY)

APPROVED BY [signature]

FAILURE ANALYSIS REQ'D XX NOT REQ'D [ ]

AIRESEARCH MANUFACTURING DIVISION

Figure 25 (page 1 of 2)
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WHITTAKER CORPORATION
PACE WIANCKO DIVISION
12838 SATICOY STREET
NORTH HOLLYWOOD, CALIF.

FORM NO. FR-2 PAGE 1

Report NO. FR-66-67

FAILURE ANALYSIS

PART NO. 601555 SERIAL NO. 22321 22322 CUSTOMER P/N 837036-2-1 "L"

CUSTOMER S/N N/A CUSTOMER Airesearch

ANALYSIS: The upward shift of the transducers output has been explained as an undesirable feature of the magnetic circuit that was used. Magnetic leakage through the case half formed a part of the path through the diaphragm back to the "E" core. Minor shifts in the "E" core position due to instability in the potting compound would cause a reading offset.

CORRECTIVE ACTION: S/N 22323 incorporates an inconel ring around the "E" core which provided a high reluctance path between the "E" core and the magnetically permeable stainless case half. In the new design the inconel ring provides a high reluctance path that removes case half leakage from the magnetic circuit and reduces the reading sensitivity to movement of the "E" core. As a result of the concentration of the magnetic field the output of the pickup is increased by a noticeable factor. In addition to this the movement of the diaphragm in S/N 22323 has been increased from approx. .0005 to .001 inch. This has increased output.

ANALYSIS PREPARED BY: _____ Title _____ Date _____

ANALYSIS APPROVED BY: _____ Title _____

Figure 25 (page 2 of 2)

DEVELOPMENT TEST
DATA SHEET

P/N 837036-2 S/N 22322

(MFD BY PACE WIANCKO)

PRESSURE		OUTPUT VOLTS	
PSIA	INS Hg. A	NOMINAL	INITIAL CALIB. 10-4-67
.05	.10180	0	+ .060
.07	.14253	.5	.586
.09	.18325	1.0	1.091
.11	.22397	1.5	1.595
.13	.26469	2.0	2.094
.15	.30541	2.5	2.594
.17	.34614	3.0	3.091
.19	.38686	3.5	3.593
.21	.42758	4.0	4.089
.23	.46830	4.5	4.584
.25	.50903	5.0	5.073

Interim Change Notice Letter: F
ATP No.: SS-1739-R
Effective Date: 22 May 1967

SS-1739-R
Data Sheet
1 of 5

ACCEPTANCE TEST
DATA SHEET

Use black ink. No erasures permitted.

STEAM DUCT PRESSURE TRANSDUCER 837036-2-1

NAA REF. SPEC. NE NASA 0040000022322

Part Number 837036-2-1 S/N 22322

Date 11-1-67 Barometer 29.9 in. Hg abs Amb Temp 74 °F

Tested by ACunningham Test Facility

Examination of Product: Accept Reject

Remarks: Per EWO 3404-200117-69-2154
Functional Verification

Dimensional Check Verified:

Para. 4.6 Calibration Test (Prior To Proof Pressure Test) Accept 10-1-67 Reject

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen input voltage	vdc	+28.0 ±0.5	+28.0
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	+0.1030
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	+1.3370
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.5560
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref 75% of range	vdc	+3.7500 ±0.2000	+3.7620
Specimen pressure	mm Hg abs	12.929	12.929
Output voltage, Ref 100% of range	vdc	+5.0000 ±0.2000	+4.9190
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref. 75% of range	vdc	+3.7500 ±0.2000	+3.7600
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.5570
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	+1.3400
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	+0.1030

Interim Change Notice Letter: F
ATP No.: SS-1759-R
Effective Date: 22 May 1967

SS-1759-R
Data Sheet
2 of 5

ACCEPTANCE TEST DATA SHEET (CONT)

STEAM DUCT PRESSURE TRANSDUCER 837036-2-1

P/N 837036-2-1

S/N 22322

NAA REF. SPEC. NE

NASA 0040000 22322

Proof Pressure Test (Nitrogen Gas Test Fluid): Accept 32113 11-1-67 Reject

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen pressure	psig	20.0 +0.2, -0	20.0
Time at pressure	minutes	3	3

External Leakage Test (Nitrogen Gas Test Fluid): Accept 32113 11-1-67 Reject

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen pressure	psig	6.0 +0.2, -0	6.0
Time at pressure	minutes	15	15
External leakage in 15 minutes	scc	0.5 max	0.0

Diode Test: Accept 32113 11-1-67 Reject

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen input voltage	vdc	+30.0 ±0.1	+30.0
Diode voltage (SWI at pos 2)	vdc	+1.0 max	0.0
Diode voltage (SWI at pos 1)	vdc	+1.0 max	0.0

Maximum Output Voltage Test: Accept 32113 11-1-67 Reject

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen output voltage	vdc	+6.5 max	+5.556

Interim Change Notice Letter: F
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Effective Date: 22 May 1967

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ACCEPTANCE TEST DATA SHEET (CONT)

P/N 837036-2-1

STEAM DUCT PRESSURE TRANSDUCER 837036-2-1

S/N 22322

NAA REF. SPEC. ME _____ NASA _____

Input Current Test: Accept _____ Reject _____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Input current (SWI at pos 1)	ma	40 max	17.5
Input current (SWI at pos 2)	ma	40 max	0.0 *

Calibration Test: Accept 37477 Reject _____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen input voltage	vdc	+28.0 ±0.5	+28.0
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	[illegible]490
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	+1.3880
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.6000
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref 75% of range	vdc	+3.7500 ±0.2000	+3.8000
Specimen pressure	mm Hg abs	12.929	12.929
Output voltage, Ref 100% of range	vdc	+5.0000 ±0.2000	+4.9550
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref. 75% of range	vdc	+3.7500 ±0.2000	+3.7980
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.5980
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	+1.3800
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	+0.1460

* No current reading point

Interim Change Notice Letter: F
ATP No.: SS-1759-R
Effective Date: 22 May 1967

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Data Sheet
4 of 5

ACCEPTANCE TEST DATA SHEET (CONT)
STEAM DUCT PRESSURE TRANSDUCER 837036-2-1

P/N 837036-2-1
S/N 22322

NAA REF. SPEC. MF _____ NASA 004000022322

Calibration Test (cont)

STEP	TEST PARAMETER	UNITS	REQUIRED	ACTUAL
9c	Specimen pressure	mm Hg abs	5.171	5.171
	Output voltage	vdc	+1.2500 ±0.2000	+1.3660
11f	Pressure (PS2)	in. Hg abs	1.0 ±0.5	1.0
11g	Output voltage	vdc	+1.2500 ±0.2000	+1.3620
11h	Specimen pressure	mm Hg abs	5.171	5.171
13b	(1) Specimen pressure	mm Hg abs	5.171	5.171
	(2) Output voltage	vdc	+1.2500 ±0.2000	1.3459
	(3) Pressure PS2	in. Hg abs	1.0 ±0.5	0.75
	(4) Time at test	hours	3	3

Input Voltage Variation Test: Accept _____ Reject _____

INLET PRESSURE (mm Hg abs)		INPUT VOLTAGE (vdc)		OUTPUT VOLTAGE (vdc)	
REQUIRED	ACTUAL	REQUIRED	ACTUAL	REQUIRED	ACTUAL
2.586	2.586	+25.0 ±0.1	25.0	0.0000 ±0.2000	+0.1171
	2.586	+30.0 ±0.1	30.0	0.0000 ±0.2000	+0.1165
12.929	12.929	+25.0 ±0.1	25.0	+5.0000 ±0.2000	4.9086
		+30.0 ±0.1		+5.0000 ±0.2000	4.9090

Output Ripple Test: 11-1-67 Accept 3747V Reject _____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Output ripple voltage	mv rms	10 max	1.9

Isolation Resistance Test: 11-1-67 Accept 3747V Reject _____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Potential	vdc	100	100
Resistance	megohms	100 min	4.2 x 10^4

AIRESEARCH MANUFACTURING DIVISION

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Effective Date: [redacted]

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ACCEPTANCE TEST DATA SHEET (CONT)

STEAM DUCT PRESSURE TRANSDUCER 837036-2-1

P/N 837036-2-1

S/N 22322

NAA REF. SPEC. NE

NASA 00400002232 2

Insulation Resistance Test: Accept 4-1-67 Reject

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Potential	vdc	100	100
Resistance	megohms	50 min	2.6×10^4

Weight: _____ lb.

Remarks: _____

Test Specimen Status: Accept _____ Reject _____

By _____

Inspection: _____ _____ _____

AiResearch Q.C. NAA Q.C. DCAS-QAR

ENGINEERING TEST DATA

Type Test: RF Cond. Susceptibility Page

Cust. No. Pressure Transducer Cust. and No. Airesearch

Drawing P/N 601555-1 Specification SS-1313-R

Project Test Order

Conducted by Grandfield Approved/Witnessed by

Date 11-11-67 Date

Miscellaneous 100,000 u.v., .15 – 10,000 MC applied to each input 28VDC power line using the LISN. 400~ 30% Modulation used.

Test and Requirements: HP-606 (SE587/4) S/N A153 Cal Due 2-7-68
HP-608E S/N 710-00545 (4-25-68), HP-612A S/N 533-04204 (3-15-68)
HP-614A S/N A211-03092 (4-10-68) HP-616B S/N 148-01241 (4-11-68)
HP-618B S/N 151-02920 (3-13-68) HP-620A S/N 216-02566 (4-11-68)

+28V Line.			−28V Line		
Freq. MC.	Output DC Voltage	Output Ripple RMS.	Freq. MC.	Output DC Voltage	Output Ripple. RMS.
.15	3.68	9.9 mv.	.15	3.68	9.9 mv.
1.26		11.3 "	1.26	"	12.0 "
52.9		13.07 "	52.9	"	13.0 "
78.0		14.14 "	78.0	"	14.2
121.0		14.0 "	121.0	"	14.2
151.0		12.7 "	151.0	"	13.0
172.0		15.55 "	172.0	"	15.75
	No Notable change of DC output Voltage	9.9		"	9.9
		"		"	"
		"		"	"
		"		"	"
		"		"	"
		"		"	"
		"		"	"
		"		"	"
		"		"	"
		"		"	"
		"		"	"
		"		"	"
		"		"	"
		"		"	"
10,000		"	10,000	"	"

Form 21 A.R.

Interim Change Notice Letter: F
ATP No.: SS-1759-R
Effective Date: 22 May 1967

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ACCEPTANCE TEST
DATA SHEET

Use black ink. No erasures permitted.

STEAM DUCT PRESSURE TRANSDUCER 837036-2-1

NAA REF. SPEC. ME NASA 0640000022322

Part Number 837036-2-1 S/N 22-322

Date 12-12-67 Barometer 29.9 in. Hg abs Amb Temp 74 °F

Tested by ACunningham Test Facility 1402

Examination of Product: Accept ____ Reject ____

Remarks: Devi Findings only
Verification of out of Tollerance Condition
During Steam Test.

Dimensional Check Verified: ____

Para. 4.6 Calibration Test (Prior To Proof Pressure Test) Accept ____ Reject ✓

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen input voltage	vdc	+28.0 ±0.5	+28.0
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	+0.2600
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	+1.5280
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.7820
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref 75% of range	vdc	+3.7500 ±0.2000	+4.0160
Specimen pressure	mm Hg abs	12.929	12.929
Output voltage, Ref 100% of range	vdc	+5.0000 ±0.2000	+5.186
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref. 75% of range	vdc	+3.7500 ±0.2000	+4.0160
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.7810
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	+1.5260
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	+0.2580

[illegible]

AIRESEARCH MANUFACTURING DIVISION
Los Angeles California

Figure 29 (page 1 of 3)
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Data Sheet
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ACCEPTANCE TEST DATA SHEET (CONT)
STEAM DUCT PRESSURE TRANSDUCER 837036-2-1

P/N 837036-2-1
S/N 22-322

NAA REF. SPEC. NE _____ NASA _____

Calibration Test (cont)

STEP	TEST PARAMETER	UNITS	REQUIRED	ACTUAL
9c	Specimen pressure	mm Hg abs	5.171	
	Output voltage	vdc	+1.2500 ±0.2000	
11f	Pressure (PS2)	in. Hg abs	1.0 ±0.5	
11g	Output voltage	vdc	+1.2500 ±0.2000	
11h	Specimen pressure	mm Hg abs	5.171	
13b	(1) Specimen pressure	mm Hg abs	5.171	
	(2) Output voltage	vdc	+1.2500 ±0.2000	
	(3) Pressure PS2	in. Hg abs	1.0 ±0.5	
	(4) Time at test	hours	3	

Input Voltage Variation Test: Accept _____ Reject _____

INLET PRESSURE (mm Hg abs)		INPUT VOLTAGE (vdc)		OUTPUT VOLTAGE (vdc)	
REQUIRED	ACTUAL	REQUIRED	ACTUAL	REQUIRED	ACTUAL
2.586		+25.0 ±0.1		0.0000 ±0.2000	
		+30.0 ±0.1		0.0000 ±0.2000	
12.929		+25.0 ±0.1		+5.0000 ±0.2000	
		+30.0 ±0.1		+5.0000 ±0.2000	

Output Ripple Test: Accept _____ Reject _____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Output ripple voltage	mv rms	10 max	

Isolation Resistance Test: Accept 32113 12-12-67 Reject _____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Potential	vdc	100	110
Resistance	megohms	100 min	1.6×10^5

Interim Change Notice Letter: F
ATP No.: SS-1780-R
Effective Date: [illegible]

SS-1780-R
Data Sheet
[illegible] of [illegible]

ACCEPTANCE TEST DATA SHEET (CONT)
STEAM DUCT PRESSURE TRANSDUCER 857036-1

P/N _____
S/N 22-322

NAA REF. SPEC. ME _____ NASA _____

Insulation Resistance Test: Accept 32-113 12-12-67 Reject _____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Potential	vdc	100	100
Resistance	megohms	50 min	1×10^5

Weight: _____ lb.

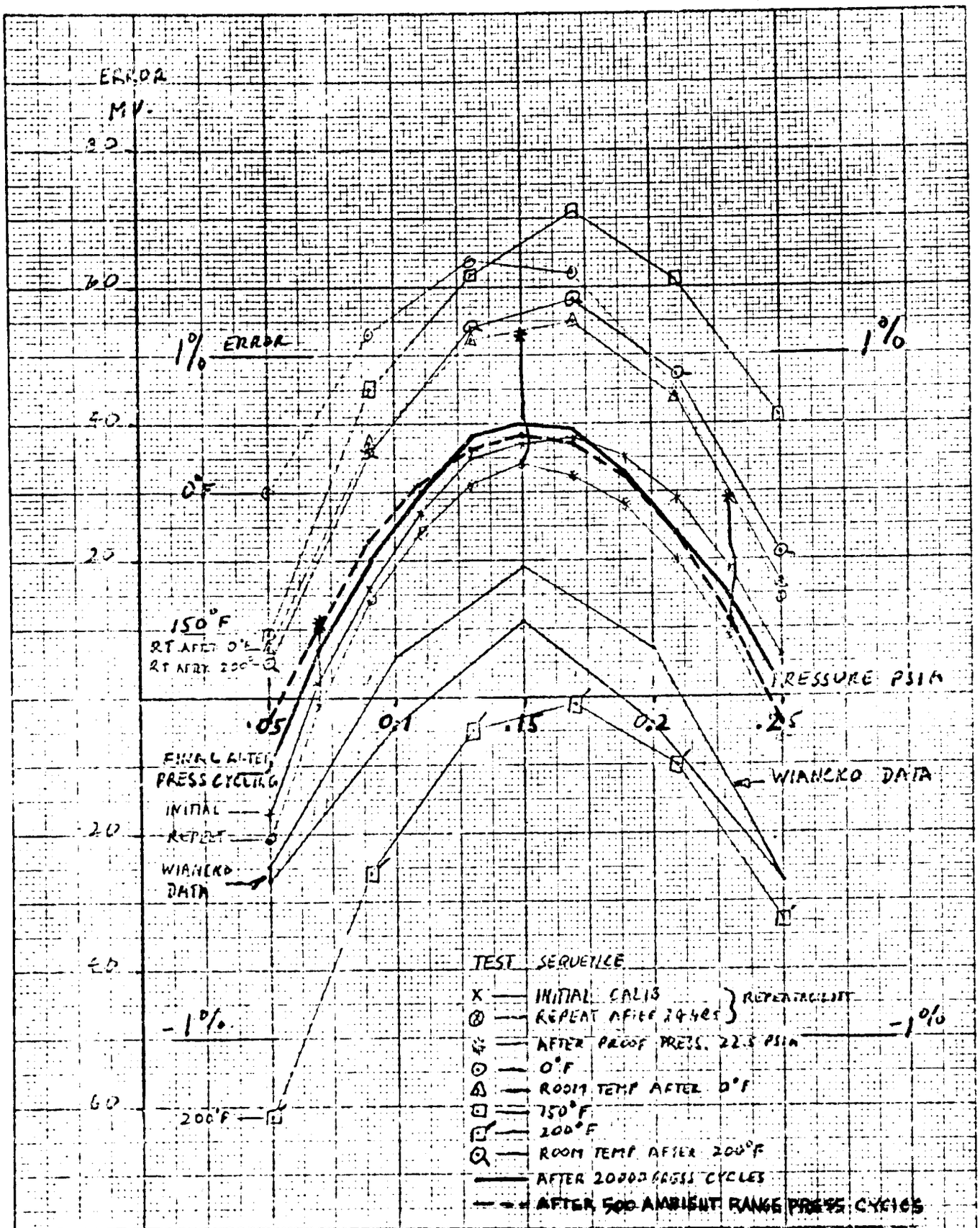
Remarks: _____

Test Specimen Status: Accept _____ Reject _____

By _____

Inspection: _____ AiResearch Q.C. _____ NAA Q.C. _____ DCAS-QAR

AIRESEARCH MANUFACTURING DIVISION



DEVELOPMENT TEST DATA

P/N 1837035-2

WIANCKO P/N 601555 (RELIEVED CAVITY)
S/N 22323

Figure 30
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Interim Change Notice Letter: F
ATP No.: SS-1759-R
Effective Date: 22 May 1967

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1 of 5

ACCEPTANCE TEST
DATA SHEET

Use black ink. No erasures permitted.

STEAM DUCT PRESSURE TRANSDUCER 837036-1

NAA REF. SPEC. ME NASA 204000022323

Part Number 837036-1 S/N 22323

Date 12-68 Barometer 29.92 in. Hg abs Amb Temp 70 °F

Tested by J. Robel Test Facility 1402

Examination of Product: Accept____ Reject____

Remarks:

Dimensional Check Verified:

Para. 4.6 Calibration Test (Prior To Proof Pressure Test) Accept____ Reject____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen input voltage	vdc	+28.0 ±0.5	
Specimen pressure	mm Hg abs	2.586	
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	
Specimen pressure	mm Hg abs	5.171	
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	
Specimen pressure	mm Hg abs	7.757	
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	
Specimen pressure	mm Hg abs	10.343	
Output voltage, Ref 75% of range	vdc	+3.7500 ±0.2000	
Specimen pressure	mm Hg abs	12.929	
Output voltage, Ref 100% of range	vdc	+5.0000 ±0.2000	
Specimen pressure	mm Hg abs	10.343	
Output voltage, Ref. 75% of range	vdc	+3.7500 ±0.2000	
Specimen pressure	mm Hg abs	7.757	
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	
Specimen pressure	mm Hg abs	5.171	
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	
Specimen pressure	mm Hg abs	2.586	
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	

AIRESEARCH MANUFACTURING DIVISION
Los Angeles, California

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ACCEPTANCE TEST DATA SHEET (CONT)
STEAM DUCT PRESSURE TRANSDUCER 837036-1

P/N 837036-2-1
S/N 22223

NAA REF. SPEC. ME NASA 80400022223

OK TO TEST 1-2-78 H.Q

Proof Pressure Test (Nitrogen Gas Test Fluid): Accept ✓ Reject

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen pressure	psig	20.0 +0.2, -0	20.0
Time at pressure	minutes	3	3

External Leakage Test (Nitrogen Gas Test Fluid): Accept ✓ Reject

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen pressure	psig	6.0 +0.2, -0	6.0
Time at pressure	minutes	15	15
External leakage in 15 minutes	scc	0.5 max	0.0

Diode Test: Accept Reject

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen input voltage	vdc	+30.0 ±0.1	
Diode voltage (SW1 at pos 2)	vdc	+1.0 max	
Diode voltage (SW1 at pos 1)	vdc	+1.0 max	

Maximum Output Voltage Test: Accept Reject

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen output voltage	vdc	+6.5 max	

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ACCEPTANCE TEST DATA SHEET (CONT)

P/N 837036-2-1

STEAM DUCT PRESSURE TRANSDUCER 837036-1

S/N 22323

NAA REF. SPEC. ME

NASA 00400022323

Input Current Test:

Accept _____ Reject _____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Input current (SWI at pos 1)	ma	40 max	
Input current (SWI at pos 2)	ma	40 max	

Calibration Test:

Accept 1-3-68 Reject _____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen input voltage	vdc	+28.0 ±0.5	+28.0
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	-0.0470
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	+1.2450
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.5170
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref 75% of range	vdc	+3.7500 ±0.2000	+3.7640
Specimen pressure	mm Hg abs	12.929	12.929
Output voltage, Ref 100% of range	vdc	+5.0000 ±0.2000	+4.9900
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref. 75% of range	vdc	+3.7500 ±0.2000	+3.7580
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.5140
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	+1.2430
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	-0.0440

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ACCEPTANCE TEST DATA SHEET (CONT)
STEAM DUCT PRESSURE TRANSDUCER 837036-1

P/N 837036-2-1
S/N 22323

NAA REF. SPEC. ME NASA 004000022323

Calibration Test (cont)

OK FT130
1-3-'68
QC 58

STEP	TEST PARAMETER	UNITS	REQUIRED	ACTUAL
9c	Specimen pressure	mm Hg abs	5.171	5.171
	Output voltage	vdc	+1.2500 ±0.2000	+1.2430
11f	Pressure (PS2)	in. Hg abs	1.0 ±0.5	1.0
11g	Output voltage	vdc	+1.2500 ±0.2000	1.2430
11h	Specimen pressure	mm Hg abs	5.171	5.171
13b	(1) Specimen pressure	mm Hg abs	5.171	5.171
	(2) Output voltage	vdc	+1.2500 ±0.2000	1.241
	(3) Pressure PS2	in. Hg abs	1.0 ±0.5	0.9
	(4) Time at test	hours	3	3

Input Voltage Variation Test: Accept_____ Reject_____

INLET PRESSURE (mm Hg abs)		INPUT VOLTAGE (vdc)		OUTPUT VOLTAGE (vdc)	
REQUIRED	ACTUAL	REQUIRED	ACTUAL	REQUIRED	ACTUAL
2.586		+25.0 ±0.1		0.0000 ±0.2000	
		+30.0 ±0.1		0.0000 ±0.2000	
12.929		+25.0 ±0.1		+5.0000 ±0.2000	
		+30.0 ±0.1		+5.0000 ±0.2000	

Output Ripple Test: Accept_____ Reject_____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Output ripple voltage	mv rms	10 max	

F 1-3-'68
QC 58

Isolation Resistance Test: Accept_____ Reject_____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Potential	vdc	100	100
Resistance	megohms	100 min	8.5×10^4

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ACCEPTANCE TEST DATA SHEET (CONT)
STEAM DUCT PRESSURE TRANSDUCER 837036-1

P/N _____

S/N _____

NAA REF. SPEC. ME _____ NASA _____

Insulation Resistance Test: Accept _____ Reject _____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Potential	vdc	100	
Resistance	megohms	50 min	

Weight: _____ lb.

Remarks: _____

_____

Test Specimen Status: Accept F 1-3-68 Reject _____

By _____

QC 58

Inspection: Charles Brown N/A _____
AiResearch Q.C. NAA Q.C. DCAS-QAR

AIRESEARCH MANUFACTURING DIVISION

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ACCEPTANCE TEST
DATA SHEET

Use black ink. No erasures permitted.

STEAM DUCT PRESSURE TRANSDUCER 837056-1 -2-1

NAA REF. SPEC. NE 449-0059-0001 NASA 004000022323

Part Number 837036-2 S/N 22-323

Date 1-8-68 Barometer 2992 in. Hg abs Amb Temp 72 °F

Tested by L. Jenkins Test Facility 1402

Examination of Product: Accept____ Reject____

Remarks:

Dimensional Check Verified:

Para. 4.6 Calibration Test (Prior To Proof Pressure Test) Accept____ Reject____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen input voltage	.dc	+28.0 ±0.5	
Specimen pressure	mm Hg abs	2.586	
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	
Specimen pressure	mm Hg abs	5.171	
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	
Specimen pressure	mm Hg abs	7.757	
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	
Specimen pressure	mm Hg abs	10.343	
Output voltage, Ref 75% of range	vdc	+3.7500 ±0.2000	
Specimen pressure	mm Hg abs	12.929	
Output voltage, Ref 100% of range	vdc	+5.0000 ±0.2000	
Specimen pressure	mm Hg abs	10.343	
Output voltage, Ref. 75% of range	vdc	+3.7500 ±0.2000	
Specimen pressure	mm Hg abs	7.757	
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	
Specimen pressure	mm Hg abs	5.171	
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	
Specimen pressure	mm Hg abs	2.586	
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	

Interim Change Notice Letter: F
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ACCEPTANCE TEST DATA SHEET (CONT)
STEAM DUCT PRESSURE TRANSDUCER 837036-2-1

P/N 837036-2-1
S/N 22-323

NAA REF. SPEC. ME 444-0059-0001 NASA 004000022323

Proof Pressure Test (Nitrogen Gas Test Fluid): Accept ___ Reject ___

1-8-68

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen pressure	psig	20.0 +0.2, -0	20
Time at pressure	minutes	3	3

External Leakage Test (Nitrogen Gas Test Fluid): Accept ___ Reject ___

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen pressure	psig	6.0 +0.2, -0	6
Time at pressure	minutes	15	15
External leakage in 15 minutes	scc	0.5 max	0.0

Diode Test: Accept ___ Reject ___

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen input voltage	vdc	+30.0 ±0.1	
Diode voltage (SW1 at pos 2)	vdc	+1.0 max	
Diode voltage (SW1 at pos 1)	vdc	+1.0 max	

Maximum Output Voltage Test: Accept ___ Reject ___

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen output voltage	vdc	+6.5 max	

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ACCEPTANCE TEST DATA SHEET (CONT)

P/N 837036-2-1

STEAM DUCT PRESSURE TRANSDUCER 837036-1 -2-1

S/N 22-323

NAA REF. SPEC. ME 449-0059-0001 NASA 0040000022323

Input Current Test: Accept_____ Reject_____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Input current (SWI at pos 1)	ma	40 max	
Input current (SWI at pos 2)	ma	40 max	

Calibration Test: Accept QC 58 Reject_____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen input voltage	vdc	+28.0 ±0.5	28.0
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	-0.1108
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	+1.1832
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.4517
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref 75% of range	vdc	+3.7500 ±0.2000	+3.6920
Specimen pressure	mm Hg abs	12.929	12.929
Output voltage, Ref 100% of range	vdc	+5.0000 ±0.2000	+4.9094
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref. 75% of range	vdc	+3.7500 ±0.2000	+3.6919
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.4473
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	+1.1812
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	-0.1097

CALIBRATION RUN AFTER FIRST DISTILLED WATER EXPOSURE.

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ACCEPTANCE TEST DATA SHEET (CONT)
STEAM DUCT PRESSURE TRANSDUCER 837036-1

P/N 837036-2-1
S/N 22-323

NAA REF. SPEC. ME 449-0059-0001 NASA 004000022323

Insulation Resistance Test: Accept QC 58 Reject _____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Potential	vdc	100	100
Resistance	megohms	50 min	1.5×10^5

Weight: _____ lb.

Remarks: FT stamp entered by mistake by technician HQ

Test Specimen Status: Accept QC 58 Reject _____

By _____

Inspection: QC 58 [signature]
AiResearch Q.C. NAA Q.C. DCAS-QAR

AIRESEARCH MANUFACTURING DIVISION
a Garrett company

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ACCEPTANCE TEST
DATA SHEET

Use black ink. No erasures permitted.

STEAM DUCT PRESSURE TRANSDUCER 837036-1

NAA REF. SPEC. NE 1 NASA 00400002232 3

Part Number 837036-2 S/N 22323

Date 1-12-68 Barometer 29.92 in. Hg abs Amb Temp 70 °F

Tested by J. Kobel Test Facility 1402

Examination of Product: Accept (A) Reject

Remarks: RESEARCH

Dimensional Check Verified: (A)

Para. 4.6 Calibration Test (Prior To Proof Pressure Test) Accept (A) 1-12-68 Reject

OK TO TEST 1-12-68 (A)

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen input voltage	vdc	+28.0 ±0.5	+28.0
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	-0.0930
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	+1.1980
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.4700
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref 75% of range	vdc	+3.7500 ±0.2000	+3.7100
Specimen pressure	mm Hg abs	12.929	12.929
Output voltage, Ref 100% of range	vdc	+5.0000 ±0.2000	+4.9300
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref. 75% of range	vdc	+3.7500 ±0.2000	+3.7100
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.4660
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	+1.1960
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	-0.1005

AMPLISEARCH MANUFACTURING DIVISION

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ACCEPTANCE TEST DATA SHEET (CONT)
STEAM DUCT PRESSURE TRANSDUCER 837036-1

P/N 837036-2
S/N 22323

NAA REF. SPEC. ME NASA 0040000022323

Proof Pressure Test (Nitrogen Gas Test Fluid): Accept 1-12-68 (A) 41166 Reject

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen pressure	psig	20.0 +0.2, -0	20.0
Time at pressure	minutes	3	3

External Leakage Test (Nitrogen Gas Test Fluid): Accept 1-12-68 41180 Reject

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen pressure	psig	6.0 +0.2, -0	6.0
Time at pressure	minutes	15	15
External leakage in 15 minutes	scc	0.5 max	0.0

Diode Test: Accept Reject

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen input voltage	vdc	+30.0 ±0.1	N/A
Diode voltage (SWI at pos 2)	vdc	+1.0 max	
Diode voltage (SWI at pos 1)	vdc	+1.0 max	

Maximum Output Voltage Test: Accept Reject

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen output voltage	vdc	+6.5 max	N/A

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Effective Date: 22 May 1967

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ACCEPTANCE TEST DATA SHEET (CONT)
STEAM DUCT PRESSURE TRANSDUCER 837036-1

P/N 837036-2
S/N 22323

NAA REF. SPEC. ME NASA 004000022323

Calibration Test (cont)

STEP	TEST PARAMETER	UNITS	REQUIRED	ACTUAL
9c	Specimen pressure	mm Hg abs	5.171	
	Output voltage	vdc	+1.2500 ±0.2000	
11f	Pressure (PS2)	in. Hg abs	1.0 ±0.5	
11g	Output voltage	vdc	+1.2500 ±0.2000	
11h	Specimen pressure	mm Hg abs	5.171	N/A
13b	(1) Specimen pressure	mm Hg abs	5.171	
	(2) Output voltage	vdc	+1.2500 ±0.2000	
	(3) Pressure PS2	in. Hg abs	1.0 ±0.5	
	(4) Time at test	hours	3	

Input Voltage Variation Test: Accept_____ Reject_____

INLET PRESSURE (mm Hg abs)		INPUT VOLTAGE (vdc)		OUTPUT VOLTAGE (vdc)	
REQUIRED	ACTUAL	REQUIRED	ACTUAL	REQUIRED	ACTUAL
2.586		+25.0 ±0.1		0.0000 ±0.2000	
		+30.0 ±0.1		0.0000 ±0.2000	N/A
12.929		+25.0 ±0.1		+5.0000 ±0.2000	
		+30.0 ±0.1		+5.0000 ±0.2000	

Output Ripple Test: Accept_____ Reject_____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Output ripple voltage	mv rms	10 max	N/A

Isolation Resistance Test: Accept (A) 4/1/86 Reject_____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Potential	vdc	100	100
Resistance	megohms	100 min	7.5×10^5

AIRESEARCH MANUFACTURING DIVISION

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Interim Change Notice Letter: F
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ACCEPTANCE TEST DATA SHEET (CONT)
STEAM DUCT PRESSURE TRANSDUCER 837036-1

P/N 837036-2
S/N 22323

NAA REF. SPEC. ME _____ NASA 004000022323

Insulation Resistance Test: 1-12-68 Accept ✓ Reject _____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Potential	vdc	100	
Resistance	megohms	50 min	2.0×10^5

Weight: _____ lb.

Remarks: _____

Test Specimen Status: Accept ✓ Reject _____

By [illegible]

Inspection: _____ AiResearch Q.C. _____ NAA Q.C. _____ DCAS-QAR

Interim Change Notice Letter: F
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Effective Date: 22 May 1967

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ACCEPTANCE TEST
DATA SHEET

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STEAM DUCT PRESSURE TRANSDUCER 837036-2-1

NAA REF. SPEC. NE MASA 0040000 25323

Part Number 837036-2-1 S/N 22-323

Date 1-16-68 Barometer 29.9 in. Hg abs Amb Temp 74 °F

Tested by ACunningham Test Facility 1402

Examination of Product: Accept _____ Reject _____

Remarks: _____

Dimensional Check Verified: 1-16-68

Para. 4.6 Calibration Test (Prior To Proof Pressure Test) Accept 3211 Reject ____

TEST PARAMETER	UNITS	REQUIRED	ACTUAL
Specimen input voltage	vdc	+28.0 ±0.5	+28.0
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	-0.0680
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	+1.2210
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.4900
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref 75% of range	vdc	+3.7500 ±0.2000	+3.7300
Specimen pressure	mm Hg abs	12.929	12.929
Output voltage, Ref 100% of range	vdc	+5.0000 ±0.2000	+4.9500
Specimen pressure	mm Hg abs	10.343	10.343
Output voltage, Ref. 75% of range	vdc	+3.7500 ±0.2000	+3.7300
Specimen pressure	mm Hg abs	7.757	7.757
Output voltage, Ref 50% of range	vdc	+2.5000 ±0.2000	+2.4870
Specimen pressure	mm Hg abs	5.171	5.171
Output voltage, Ref 25% of range	vdc	+1.2500 ±0.2000	1.2100
Specimen pressure	mm Hg abs	2.586	2.586
Output voltage, Ref 0% of range	vdc	0.0000 ±0.2000	-0.0740

APPENDIX A

This Appendix contains:

ELECTROMAGNETIC INTERFERENCE TEST
REPORT FOR P/N 837036-2, S/N 22321,
DATED 12-2-67 (15 PAGES)

GENISCO TECHNOLOGY CORPORATION

ENGINEERING TEST DATA

Type Test CONDUCTED INTERF 28VDC CURRENT PROBE Page (1)

Part No. 837036-2 Cust. and No. AI RESEARCH

Rating S/N 22321 Specification SS-1313-R

Project Test Order 10741

Conducted by N Herring Approved/Witnessed by

Date 12-2-'67 Date

Miscellaneous NM 40 A S/N 352-10

CAL DUE 1-27-'68

Test and Requirements: steady state mode of operation

EQUIPT Vac Gauge reading: 10 mm of mercury, Cal. due 12-25-67

output 4 VDC.

BROADBAND.

READING IN DB/1μa/MC

	FREQ IN CPS	METER INDICATED DB	ATTENUATOR FACTOR DB	CORRECTION FACTOR DB/MC	CORRECTED VALUE DB/μamp/MC		SPEC LIMIT
—	30-15000 cps	20	20	2+34	76		100
+	30-15000 cps	19	20	2+34	75		100
		NO	NARROW	BAND	READINGS	DETECTED	

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GENISCO TECHNOLOGY CORPORATION

ENGINEERING TEST DATA

Type Test Conducted CP 28VDC INPUT Page (2)

Part No. 837036-2 Cust. and No. AiRESEARCH

~~Rating~~ S/N 22321 Specification SS-1313-R

Project Test Order 10741

Conducted by N. Horting Approved/Witnessed by

Date 12-6-'67 Date

Miscellaneous NM10A S/N 239-15 Cal due 2-1-'68

Test and Requirements: steady state mode of operation output 4VDC vacuum gauge reading: 10 mm of mercury Calibrated: 10-24-'67, DUE: 12-25-'67 BROADBAND

FREQ IN KC	METER INDICATED	ATTENUATOR FACTOR	CORRECTION FACTOR	CORRECTED VALUE		spec limit
15	3	0	91.5	94.5		154
26	3	1	79.5	82.5		143
30	3		77.5	80.5		140
50	4		71.0	75.0		129
60	8		69.0	77.0		125
100	21		60.5	81.5		114
120	21		59.5	80.5		110
140	15		59.5	74.5		106
150	11	0	59.0	70.0		105
15	3	0	91.5	94.5		154
26	2		79.5	81.5		143
30	2		77.5	79.5		140
50	4		71.0	75.0		129
60	7		69.0	76.0		125
100	21		60.5	81.5		114
120	22		59.5	81.5		110
140	15		59.5	74.5		106
150	11	0	59.0	70.0		105

+ line

Return line

GENISCO TECHNOLOGY CORPORATION

ENGINEERING TEST DATA

Type Test Conducted Page (3)

Current Probe 28VDC input

Part No. 837036-2 Cust. and No. AIRESEARCH

~~Rating~~ S/N 22321 Specification SS-1313-R

Project Test Order 10741

Conducted by W Horsting Approved/Witnessed by

Date 12-6-'67 Date

Miscellaneous

NM10 A. S/N 250-20. Cal due

Test and Requirements: steady state mode of operation
output 4 VDC
Vacuum gauge reading: 10 mm of mercury
Cal. due 12-25-'67
narrowband reading

	Freq in KC	meter INDICATED	ATTENUATOR FACTOR	CORRECTED VALUE			SPEC LIMIT
+ line A	19	21	0	21			78
	38	10	↑	10			68.9
	58	5	↓	5			63.0
	114	16	0	16			51.0
Return line D	19	21	0	21			78.0
	38	10	↑	10			68.9
	58	3	↓	3			63.0
	112	16	0	16			54.0

GENISCO TECHNOLOGY CORPORATION

ENGINEERING TEST DATA

Type Test CONDUCTED INTERF. 28VDC LISN Page (4)

Part No. 837036-2 Cust. and No. AIRESEARCH

~~Rating~~ S/N 22321 Specification SS-1313-R

Project Test Order 10741

Conducted by N. Horsting Approved/Witnessed by

Date 12-2-'67 Date

Miscellaneous NM-20B S/N 235-19
Cal. due 2-27 '68

Test and Requirements steady state mode of operation
output 4 VDC
vacuum gauge reading: 10 mm OF MERCURY
Calibrated: 10-24-'67, DUE 12-25-'67

BROADBAND READING

FREQ IN MC	+A INPUT LINE METER READING DB	-D INPUT LINE METER READING DB	ATTENUATOR FACTOR DB	LISN FACTOR DB/10 MHZ	DB/10 MHZ CORRECTED VALUE A +	D -	1313 R SPEC LIMITS
.15	14	13	0	49.5	63.5	62.5	115
.25	19	19		45.5	64.5	64.5	108
.30	18	18		45	63	63	106
.50	18	17		43	61	60	99
.60	24	22		42	66	64	97
1.00	15	13		42	57	55	90
1.25	20	18		41.5	61.5	59.5	89
2.00	7	6		41.5	48.5	47.5	81
2.50	12	10		41.5	53.5	51.5	
4.00	11	13		40.5	51.5	53.5	
5.00	15	15			55.5	55.5	
6.00	13	15			53.5	55.5	
10.00	14	15			54.5	55.5	
13.55	13	13			52.5	53.5	
20.00	12	12			52.5	52.5	
22.50	9	7			49.5	47.5	
25.00	5	6	0	40.5	45.5	46.5	81

NO NARROW BAND READINGS DETECTED

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GENISCO TECHNOLOGY CORPORATION

ENGINEERING TEST DATA

Type Test Radiated Interf. 28VDC input Page 5

Part No. 837036-2 Cust. and No. AIRESEARCH

~~Rating~~ S/N 22321 Specification SS

Project Test Order 10741

Conducted by W Horsting Approved/Witnessed by

Date 12-4-'67 Date

Miscellaneous

Test and Requirements: steady state mode of operation
output 4V DC
vacuum gauge reading: 10 mm of mercury
Gauge Cal due: 12-25-'67

	FREQ in KC	METER INDICATED DB	ATTENUATOR FACTOR DB	antenna correction factor DB/MHZ	Corrected value DB/1μv/MHZ		spec. limits
Broadband	15	9	0	78.5	87.5		97
	26	3		71.5	74.5		92
	35	4		69.5	73.5		89.6
	40	6		69.0	75.0		88
	65	11		66.5	77.5		84
	100	8		65.5	73.5		80
	125	5	0	65.5	70.5		79
narrowband	19	35	20	—	55		78
	39	25	0	—	25		68.3
	97	23	20	—	43		56
	136	23	20	—	43		51.2

Scanning from 15KC - 150KC, readings were found at the indicated Frequencies.

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GENISCO TECHNOLOGY CORPORATION

ENGINEERING TEST DATA

Type Test RADIATED BROADBAND Page

Part No. 837036-2 Cust. and No. AIRESEARCH

~~Rating~~ S/N 22321 Specification SS-1312-R

Project Test Order 10741

Conducted by N. Hornberg Approved/Witnessed by

Date 12-4-'67 Date

Miscellaneous NM 20B S/N 35-19
CAL DUE 2-27-'68

Test and Requirements: READING TAKEN 1 FOOT FROM TEST SAMPLE USING 41" ROD ANTENNA AND GROUND STRAP CONNECTED TO GROUND PLANE AND METER
ALL BROADBAND READINGS
NO CW (NARROWBAND) INTERFERENCE DETECTED

FREQ. MHZ	METER INDICATED DB	ATTENUATOR FACTOR DB	CORRECTION FACTOR DB/MHZ	CORRECTED VALUE DB/100/MHZ		SPEC. LIMIT
.15	13	0	49.5	62.5		77
.20	18		45.5	63.5		75.2
.30	19		45.0	64.0		73
.50	21		43.0	64.0		70
.60	17		42.0	59.0		70
1.00	13		42.0	55		69.2
1.25	13		41.5	54.5		69.7
2.00	16		41.5	57.5		68.9
2.50	16		41.5	57.5		68.5
4.00	11		40.5	51.5		68
5.00	14			54.5		68
6.00	14			54.5		67.6
10.00	15			55.5		67.0
13.50	12			52.5		66.9
20.00	12			52.5		66.2
22.50	7			47.5		66.0
25.00	6	0	40.5	46.5		66.00

steady state mode of operation
output 4 VDC
vacuum gauge reading: 10 mm of mercury
Gauge cal. due: 12-25-67

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GENISCO TECHNOLOGY CORPORATION

ENGINEERING TEST DATA

Type Test Radiated INTERF 28VDC INPUT **Page** 7

Part No. 837036-2 Cust. and No. AIRESEARCH

~~Rating~~ S/N 22321 Specification SS-1313-R

Project Test Order 10741

Conducted by N Horsting Approved/Witnessed by

Date 12-4-'67 Date

Miscellaneous NM20B S/N 235-19

CAL DUE 2-27-'68

Test and Requirements: 41" ROD ANTENNA

Scan FROM .15 MC TO 25 MC

NARROWBAND READINGS

FREQ IN MHZ	METER INDICATED DB	ATTENUATOR FACTOR DB/MHZ	CORRECTED VALUE DB/100 MHZ			1313 R SPEC LIMITS
.29	37	0	37			23
.33	35		35			
.6	32		32			
.9	27		27			
1.2	26		26			
1.95	23		23			
2.35	17		17			23
3.55	12		12			22.5
4.00	10		10			22.0
8.00	11		11			19.7
9.8	21		21			19.0
16.5	16		16			17.4
24.0	7	0	7			16.0

VOID

Void

NOTE: After disconnecting the Simpson VOM leads, radiation from these leads came to an end. Therefore, [illegible] not narrow band signals are detected anymore, while scanning through the frequency range .15 - 25 MHZ.

GENISCO TECHNOLOGY CORPORATION

ENGINEERING TEST DATA

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Type Test RADIATED INTERE BROADBAND **Page** 28VDC INPUT

Part No. 837036-2 Cust. and No. AIRESEARCH

~~Rating~~ S/N 22321 Specification SS-1313-R

Project Test Order 10741

Conducted by N. Hosting Approved/Witnessed by

Date 12-4-67 Date

Miscellaneous NM 30A S/N 246-28, CAL. DUE 2-14-68

Test and Requirements: USING 35 MC DIPOLE ANTENNA 1 FOOT AWAY FROM TEST SAMPLE.

steady state mode of operation
output 4VDC
Vacuum gauge reading: 10 mm of Hg
Cal. due: 12-25-67

BROAD BAND READINGS

FREQ IN MC	METER INDICATED DB	ATTENUATOR FACTOR DB	CORRECTION FACTOR DB/MHZ	CORRECTED VALUE DB/1Kc/MHZ		CS 1313 R SPEC LIMIT
30	0	0	20+8	28		47
40	5			33		50.4
50	0			28		51
80	13			41		52.6
120	3			31		54
160	10			38		54.5
250	16			44		56
300	17			45		56.8
350	17			45		57
400	17	0	28	45		57.5

NO CW DETECTED FROM 25 - 400 MC

NM 52 S/N 376-13 Cal due 12-12-67

NO CW DETECTED FROM 400 - 1000 MC

GENISCO TECHNOLOGY CORPORATION

ENGINEERING TEST DATA

Type Test CONDUCTED C.P. 28VDC Page 9

Part No. 837036-2 Cust. and No. AIRESEARCH.

Rating P/N 22 321 Specification SS-1313-R

Project Test Order 10741

Conducted by N. Horning Approved/Witnessed by

Date 12-4-'67 Date

Miscellaneous NM20B P/N 235-19
Cal due 2-27-'68

Test and Requirements: C.P around each output line

With the C.P. around each output line, no narrow band signals were detected. The scanned freq range ran from .15 - 25 MC

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GENISCO TECHNOLOGY CORPORATION

ENGINEERING TEST DATA

Type Test Conducted C.P. Interference MODE INPUT Page 10

Part No. 837036-2 Cust. and No. AIRESEARCH

~~Rating~~ A/N 22321 Specification SS-13-13-R

Project Test Order 10741

Conducted by N. Horsting Approved/Witnessed by

Date 12-7-'67 Date

Miscellaneous 11MIU.A. S/N 239-15
Cal DUE 2-1-'68

Test and Requirements: C.P around each one of output lead.
steady state mode of operation
vacuum gauge reading 10 mm of mercury
Gauge Cal due 12-25-'67

BROAD BAND READING

FREQ IN KHZ	meter INDICATED BROWN	meter INDICATED BLUE	ATTENUATION FACTOR	CORRECTION FACTOR	CORRECTED VALUE BROWN	CORRECTED VALUE BLUE		spec limit
14	0	2	0	91.5	91.5	93.5		156
20	2	0	↑	84.0	86.0	84.0		148
26	2	0		79.5	81.5	79.5		143
40	2	1		74.0	76.0	75.0		134
60	0	0		69.0	69.0	69.0		124
80	10	9		64.5	74.5	73.5		118
100	8	8		62.5	70.5	70.5		114
125	0	1		60.5	60.5	61.5		108.8
150	2	1	0	59.0	61.0	60.0		104.5

no narrowband signals detected

GENISCO TECHNOLOGY CORPORATION

ENGINEERING TEST DATA

Typo Test CONDUCTED SUSCEPTIBILITY Page 11

Part No. 837036-2 Cust. and No. AIRESEARCH

~~Rating~~ S/N 22321 Specification SS 1313-R

Project Test Order 10741

Conducted by W. Horsting Approved/Witnessed by

Date 12-1-'67 Date

Miscellaneous

Test and Requirements: SIGNAL FED THROUGH BOTH LISN ON INPUT LINE
steady state mode of operation
vac. gauge reading 10 mm of mercury
gauge cal. due 12-25-'67

TYPE 545A OSCILLOSCOPE
S/N 033091
CAL DUE 3-18-'68

SIGNAL GENERATORS.

(1) 606 OR SG-582/U
S/N A153. CAL DUE 2-7-'68

(2) MODEL 612E, S/N 710 00548
CAL DUE 5-22-'68

(3) MODEL 612A S/N 533 04704
CAL DUE 3-15-'68

(4) MODEL 614A S/N 211-03092
CAL DUE 4-10-'68

(5) MODEL 616B S/N 148-01241
CAL DUE 4-11-'68

(6) MODEL 620A S/N 216 02566
CAL DUE 4-11-'68

(7) MODEL 618B S/N 151-02920
CAL DUE 3-13-'68

RESULTS: NO CHANGE IN OUTPUT RIPPLE
NO CHANGE IN DC OUTPUT LEVEL

Test conducted over the freq. range of 0.15-10 GHZ

GENISCO TECHNOLOGY CORPORATION

ENGINEERING TEST DATA

Type Test Audio susceptibility **Page** 12

Part No. 837036-2 Cust. and No. HiResearch

~~Rating~~ S/N 22321 Specification SS-1313-R

Project Sto Johnson Test Order 10741

Conducted by W. Horsting Approved/Witnessed by

Date 12-7-'67 Date

Miscellaneous

Test and Requirements:

no change in output indication (DC and ripple)

Type 545 oscilloscope
S/N 033091
Cal. due 2-3-'68

Model 400H vacuum tube voltmeter
S/N 4-00204
Cal. due 1-12-'68

Audio Isolation transformer
Mc. Intosh Amplifier

512 Oscillator

steady state make of operation
vacuum gauge reading 10 mm of mercury
output voltage 4V 28
input " 28 VDC

TECHNOLOGY CORPORATION

ENGINEERING TEST DATA

Type Test RF radiated susceptibility Page 13

Part No. 837036-2 Cust. and No. AIRESEARCH

Rating P/N 2-2 32-1 Specification SS 1313R

Project Test Order 10741

Conducted by N. Herbling Approved/Witnessed by

Date 12-7-67 Date

Miscellaneous

Test and Requirements: steady state mode of operation
output 4V DC
Vacuum gauge reading: 10 mm of mercury
Gauge Cal due: 12-25-67

FREQ in	METER INDICATED	ATTENUATOR FACTOR				
	FREQ. COVERED FROM 0.15 MHZ - 10 GHZ					
	no change in output indications					

SIMPSON VOM
TYPE 545A OSCILLOSCOPE
P/N 053091 . CAL DUE 3-18-68

SIGNAL GENERATORS:
(1) 606 OR SG-582/U P/N A153 . CAL DUE 2-7-68
(2) MODEL 608A P/N 710-00548 . P/N ~~710-00548~~ CAL DUE 5-22-68
(3) " 612A P/N 533-04704 . CAL DUE 3-15-68
(4) " 614A P/N 211-03092 . CAL DUE 4-10-68
(5) " 616B P/N 141-01241 CAL DUE 4-11-68
(6) " 620A P/N 216-02566 CAL DUE 4-11-68
(7) " 618B P/N 151-02920 CAL DUE 3-13-68

ANTENNA'S: ALL THE ANTENNA'S SPECIFIED IN SPEC. SS-1313R

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TECHNOLOGY CORPORATION

ENGINEERING TEST DATA

Type Test AF induced susceptibility Page 14

Part No. 837036-2 Cust. and No. AIRESEARCH

Rating o/N 29.321 Specification SS 1313R

Project Test Order 10741

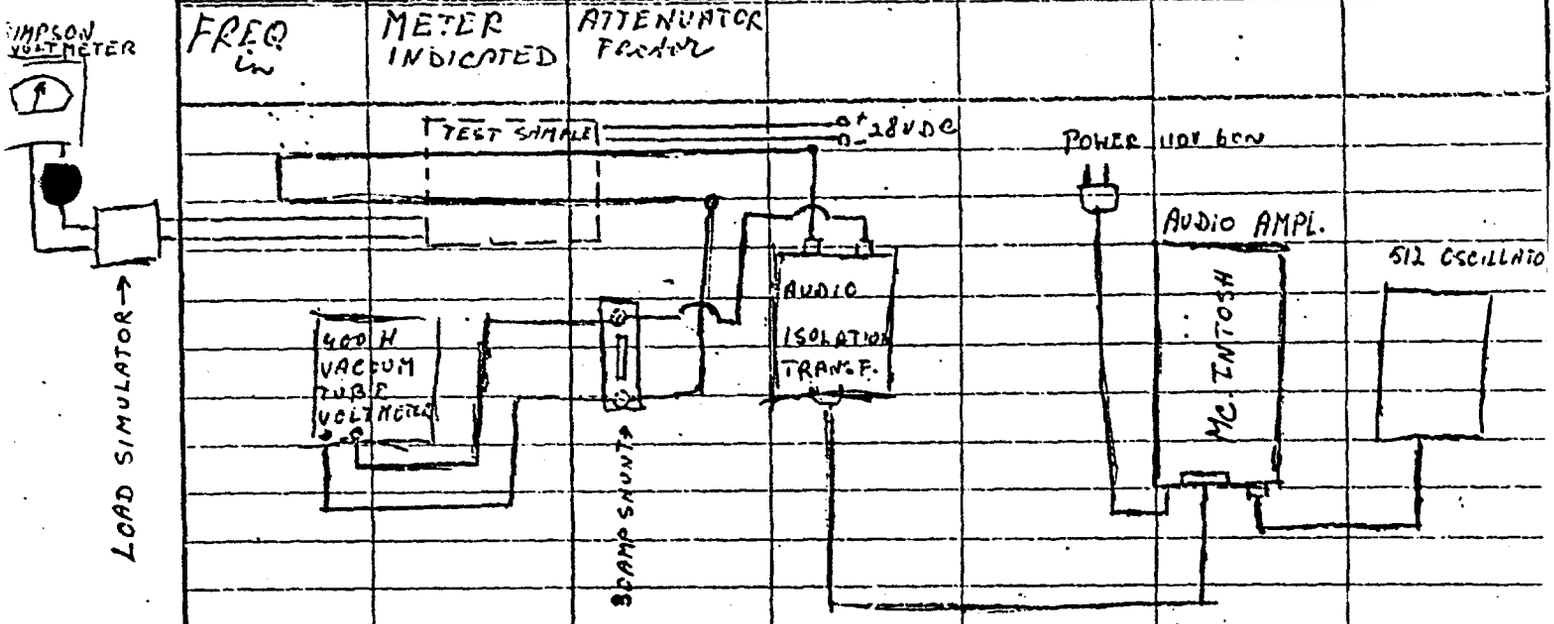
Conducted by W Horsting Approved/Witnessed by

Date 12-7-'67 Date

Miscellaneous

Test and Requirements: steady state mode of operation
output 4V DC
vacuum gauge reading: 10 mm of mercury
Gauge Cal. due: 12-25-'67

FREQ in	METER INDICATED	ATTENUATOR FACTOR				



RESULT: no change in output indication

Test specimen subjected to 800~ magnetic field
Wire carrying 10 Amp.

Best Available Copy

TECHNOLOGY CORPORATION

ENGINEERING TEST DATA

Type Test Transient Conducted Susceptibility Page 15

Part No. 837036-2 Cust. and No. AIRESEARCH

Rating S/N 22321 Specification SS-1313 E

Project Test Order 10741

Conducted by N. Horsting Approved/Witnessed by

Date 12-7-'67 Date

Miscellaneous

Test and Requirements: steady state mode of operation
output 4V DC
vacuum gauge reading: 10 mm of mercury
Gauge Cal. due: 12-25-'67

FREQ in	METER INDICATED	ATTENUATOR Factor				
	no change in output indications					
TYPE	545A oscilloscope S/N 033091 Cal. DUE 3-18-'68					
	Transient Generator supply					
	Transient susceptibility generator battery					

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