

PHILADELPHIA GEAR CORPORATION  
KING OF PRUSSIA, PENNA. 19406

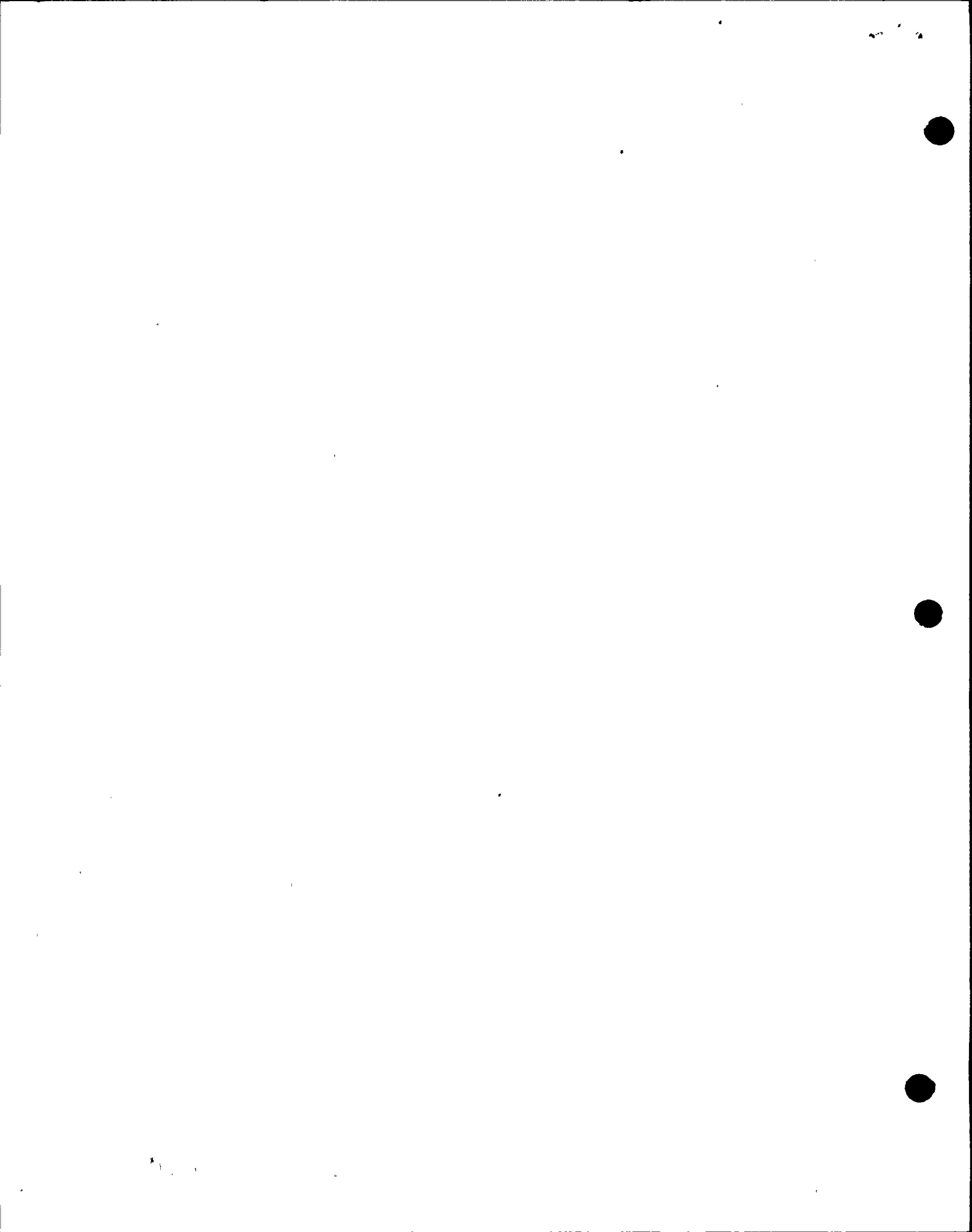
LIMITORQUE VALVE CONTROL

ADDENDUM NUMBER #I  
TEST OF LIMITORQUE VALVE OPERATOR  
TO MEET GENERAL REQUIREMENTS  
OF  
AN ELECTRIC VALVE ACTUATOR  
IN  
NUCLEAR REACTOR CONTAINMENT ENVIRONMENT  
REPORT OF JANUARY 2, 1969

- A. SHOCK & VIBRATION TEST
- B. TEST OF LIMIT SWITCH WITH MATERIAL CHANGE

APRIL 29, 1969

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A. SHOCK AND VIBRATION TEST:

The Limitorque Operator size SMB-0 with a 15 foot pound, 3 phase, 60 cycle, 440 volt motor, nameplate order #338164 was shipped to Lockheed Electronics Company environmental laboratory and tested on March 10, 1969.

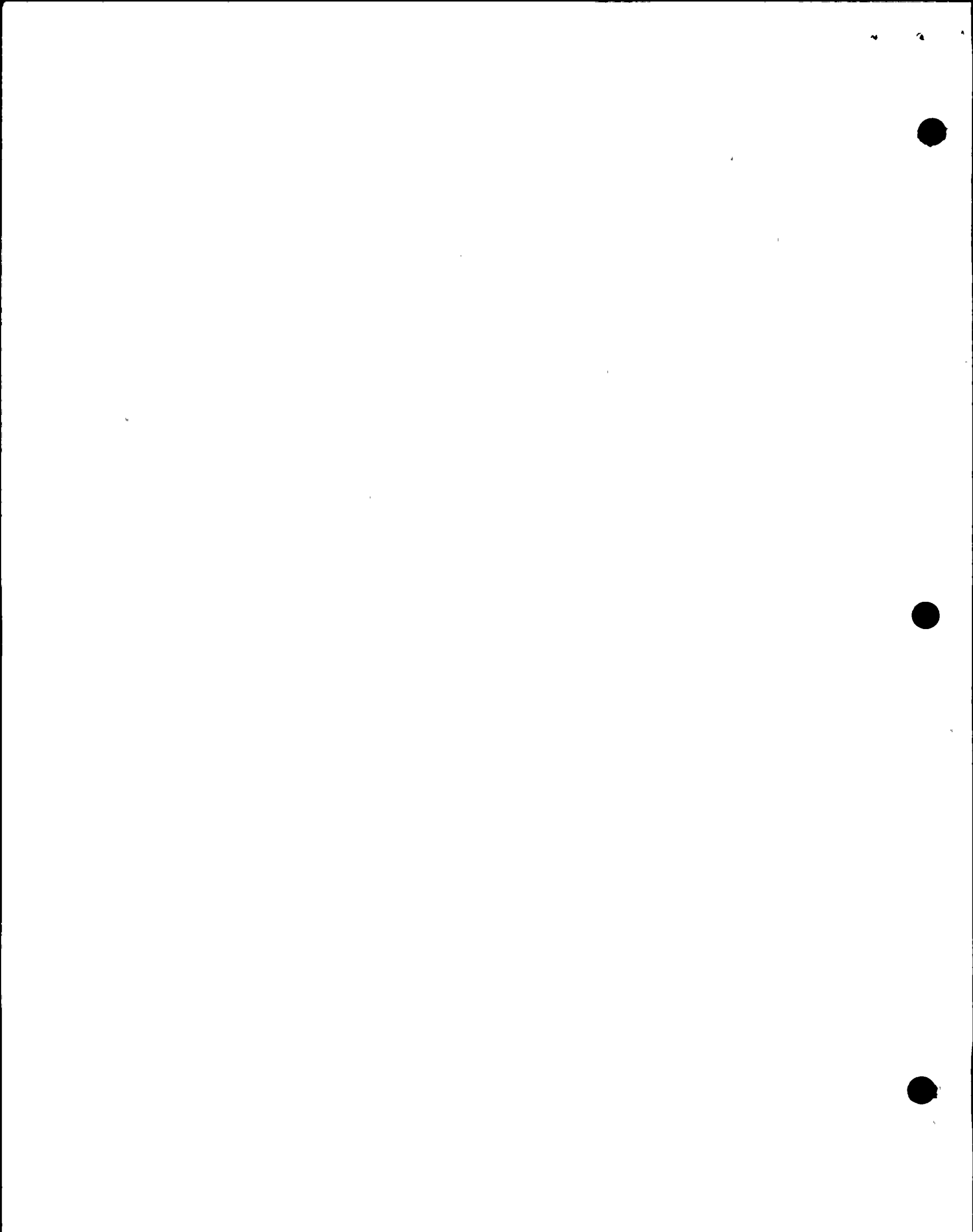
Test Procedure

The test specimen was secured to a vibration machine and subjected to five cycles of vibration in both the vertical axis and the horizontal axis. Each cycle consisted of two minutes of vibration at a frequency of thirty-five (35) cps and an acceleration level of three (3) "G's", followed by one minute of no vibration.

Vibration scans were also conducted in both axis of vibration between five to thirty-five cps to determine the presence of any resonances.

Visual inspections for evidence of any external physical damage were conducted throughout the vibration testing. The vibration test was completed with no visual evidence of any external physical damage. No resonances were detected during the vibration scans.

The above is included in Lockheed Electronics Company Test Report #2268-4618.



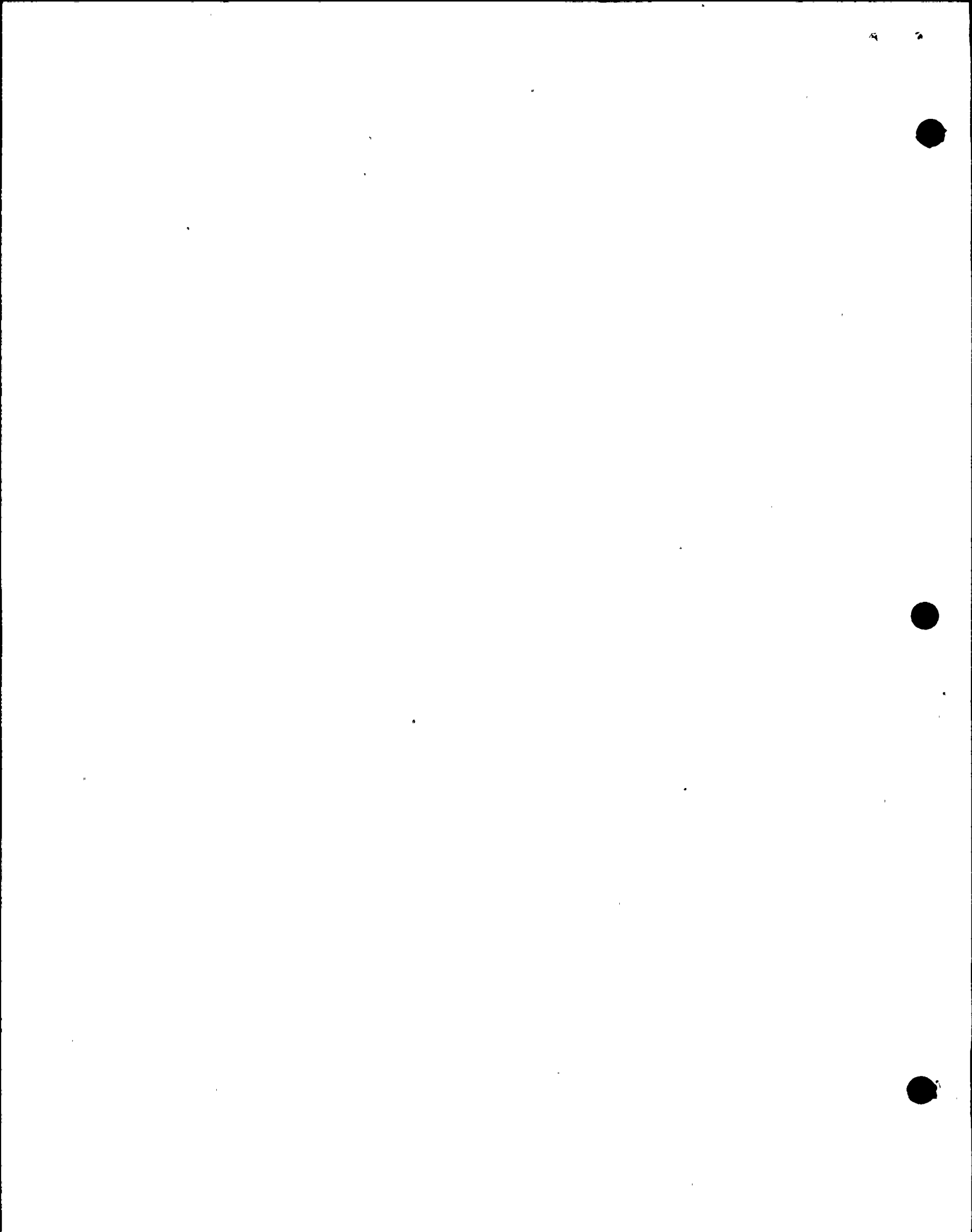
April 29, 1969

The previous shock and vibration test of a Limitorque Operator was extended to 1 G and 25 cps. The above test extended the level to 3 G's at 35 cps.

B. TEST OF GEARED LIMIT SWITCH WITH MATERIAL CHANGE:

On the previous test of a Limitorque Operator as submitted January 2, 1969, a failure occurred due to the action of the chemical spray on the material of the gear frame of the geared limit switch. This caused the premature failure of the geared limit switch. The gear frame material has been changed as previously recommended and an additional test of this revised geared limit switch has been conducted at The Franklin Institute Research Laboratories in Philadelphia, Pennsylvania on April 9 through April 16, 1969. The geared limit switch was placed in the same environmental chamber as the previous test and was used in conjunction with starting and stopping an electric motor also in the test chamber. The environment consisted of a seven day test wherein the geared limit switch was exposed to high steam pressure, temperature and chemical environment similar to the previous test.

The new geared limit switch successfully completed the test with no sign of wear or deterioration due to the steam pressure,



April 29, 1969

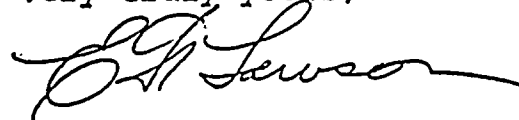
temperature or chemical environment. The test was completely satisfactory in every respect.

CONCLUSION:

The material change of the geared limit switch has been noted and will be included on all Limatorque Operators subjected to this environmental condition when specified.

This information is submitted as an addendum to our Test Report dated January 2, 1969.

Very truly yours,



Edward F. Lawson  
Sales Manager  
Limatorque Division

EFL/sls

