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VIBRATION TESTS OF RADIOISOTOPE FIELD POWER SUPPLIES (SNAP-15C) (U)

Organization 7300 Environmental Test Report

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T-90288

VIBRATION TESTS OF RADIOISOTOPE FIELD POWER SUPPLIES (SNAP-15C)

Introduction

This test was performed to demonstrate the mechanical capabilities of a SNAP-15C Power Supply consisting of the thermo-electric system, the insulation system and the voltage converter when subjected to sine vibration tests simulating a handling vibration environment.

The requested vibration environment is as follows:

Test Ref: MIL-STD-810, Method 514-6

Frequency	Amplitude
5 - 26	1.36
26 - 52	0.036 inch double amplitude
52 - 500	5g

The sinusoidal vibration load shall be applied in each of three mutually perpendicular axes for one sweep at two octaves/minute sweep rate.

Testing on this work order followed testing on T-90287 (mechanical shock).

Three units were originally tested on October 27, 1964 and one unit was tested February 19, 1965.

All monitoring was performed by Minnesota Mining and Manufacturing Company personnel, and the information was retained by them.

This test was requested by Minnesota Mining and Manufacturing Company on October 13, 1964. J. E. Bear, 7331, was the Test Project Engineer and P. S. Young, 7332, was the Test Coordinator. The test items were received at the time of testing and the test was completed February 19, 1965.

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Procedure and Results

Three power supplies were submitted for sinusoidal vibration testing on October 27, 1964, and one unit on February 19, 1965. All units had been subjected to mechanical shock prior to the vibration test.

The fixture shown in Figures 1, 2, and 3 of T-90287 was used for the vibration test as well as mechanical shock.

The units tested October 27, 1964 were subjected to vibration cycling from 5 to 500 cps in one 4-minute one-half cycle (ascending frequencies only) using the following inputs:

Frequency Range (cps)	Double Amplitude or Constant Acceleration
5 to 7	.625 inch DA*
7 to 26	1.34 g
26 to 52	0.036 inch DA
52 to 500	5 g

*Maximum capability of vibration machine

Each unit experienced vibration cycling in the longitudinal axis and in one transverse axis. The change in the requested test plan was at the request of the 3-M Company personnel.

Vibration was conducted in the same manner on February 19, except the unit was cycled once in a 3.5-minute one-half cycle from 7 to 500 cps.

An input of .625 inch double amplitude could not be attained through the frequency range of 5 to 7 cps. The test was therefore started at 7 cps.

Minnesota Mining and Manufacturing Company personnel performed all monitoring and the material and information was retained by them at the completion of testing.

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