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E. Blinn  
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STATIC TEST OF SHAPED  
CHARGE HARDWARE

Organization 7300 Environmental Test Report

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## STATIC TEST OF SHAPED CHARGE HARDWARE

## Introduction

The object of this test was to qualify the shaped charge container and hardware for use and also to qualify the shaped charge container and hardware for centrifuge testing. The static loads (100% limit load) were applied to simulate a lateral load of 200G and a 50G longitudinal load on the fiberglass shaped charge housing. These loads were then increased to 137% limit load to qualify the shaped charge hardware for centrifuge testing.

This test was requested by J. A. Anderson, 1514, on March 13, 1967. The unit was ready for testing June 12, 1967, and the testing was completed June 13, 1967.

## Procedure and Results

A total of six tests were performed on the shaped charge container and hardware to qualify the container for use and for testing on the centrifuge. The description and results of each test are listed below.

Test No. 1 - Plastic Screws on Compression Side, 7000 Pounds Lateral and 1000 Pounds Longitudinal

A dummy shaped charge machined from aluminum was mounted in the shaped charge container which in turn was mounted to a Bayonet Nose fixture. A longitudinal load in the forward direction was applied to the dummy shaped charge simultaneously with a lateral load. The lateral load was applied by means of a wire mesh strap with the center of the strap at Station 29.0. (See Figure 1 for a photograph of the test setup with the exception that the plastic screws were in tension and not in compression).

A dial indicator was mounted to measure the lateral movement of the shaped charge container with respect to the static jig. (See Figure 1 for the location of the dial indicator).

The two loads (7000 pounds lateral and 1000 pounds longitudinal) were applied simultaneously and in increments with deflection readings taken at each increment of load.

The shaped charge container withstood the load satisfactorily even though numerous popping noises were heard during the loading.

Table I gives the load versus deflection data for this test.

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Test No. 2 - Plastic Screws In Tension, 5430 Pounds Lateral Load and 1000 Pounds Longitudinal

This test was run in almost the exact manner as Test No. 1 except the lateral load was applied in a direction 180° from the direction it was applied in Test No. 1. This placed the plastic screws on the tension side of the container. (See Figure 1 for test setup).

The two loads (5430 pounds lateral and 1000 pounds longitudinal) were applied simultaneously and in increments with deflection readings taken at each increment of load.

The shaped charge hardware withstood the load satisfactorily and very few popping noises were heard.

Table II gives the load versus deflection data for this test.

Test No. 3 - 3000 Pounds Longitudinal Load Only

A longitudinal load in the forward direction was applied to the dummy shaped charge. There was no indication of failure or yielding in the shaped charge hardware. There was no deflection data taken during this test.

Test No. 4 - Plastic Screws In Compression, 9600 Pounds Lateral and 1350 Pounds Longitudinal

This test was a repeat of Test No. 1 except the magnitude of the loads was increased.

At a lateral load of 4000 pounds and a longitudinal load of 1350 pounds one of the plastic screws failed and fell out of the shaped charge containers.

The test was successfully completed to the desired loads of 9600 pounds lateral and 1350 pounds longitudinal. After the test was completed it was found that all the plastic screws had failed except two and these two appeared to be cracked. It was not certain when these screws failed, during this test or during one of the previous tests. (See Figure 3 for photograph of location of broken screws).

Table III gives the load versus deflection for this test.

Test No. 5 - Broken Plastic Screws on the Tension Side 9600 pounds Lateral Load and 1350 Pounds Longitudinal

This test was a repeat of Test No. 2 except the magnitude of the loads were increased and the broken plastic screws were not replaced. (See Figure 2 for location of broken plastic screws). There were no deflection readings taken during this test.

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The shaped charge hardware withstood the 9600 pounds lateral load and 1350 pounds longitudinal load with no signs of failure or yielding even through the plastic screws were omitted.

Test No. 6 - Static Test of Fuze Attachment

A dummy fuze was attached to the nose of the shaped charge container in the same manner as the actual fuze would be attached.

A lateral load of 100 pounds and a longitudinal load of 25 pounds (200% limit load) was applied to the dummy fuze simultaneously. (See Figure 3 for photograph of the test setup).

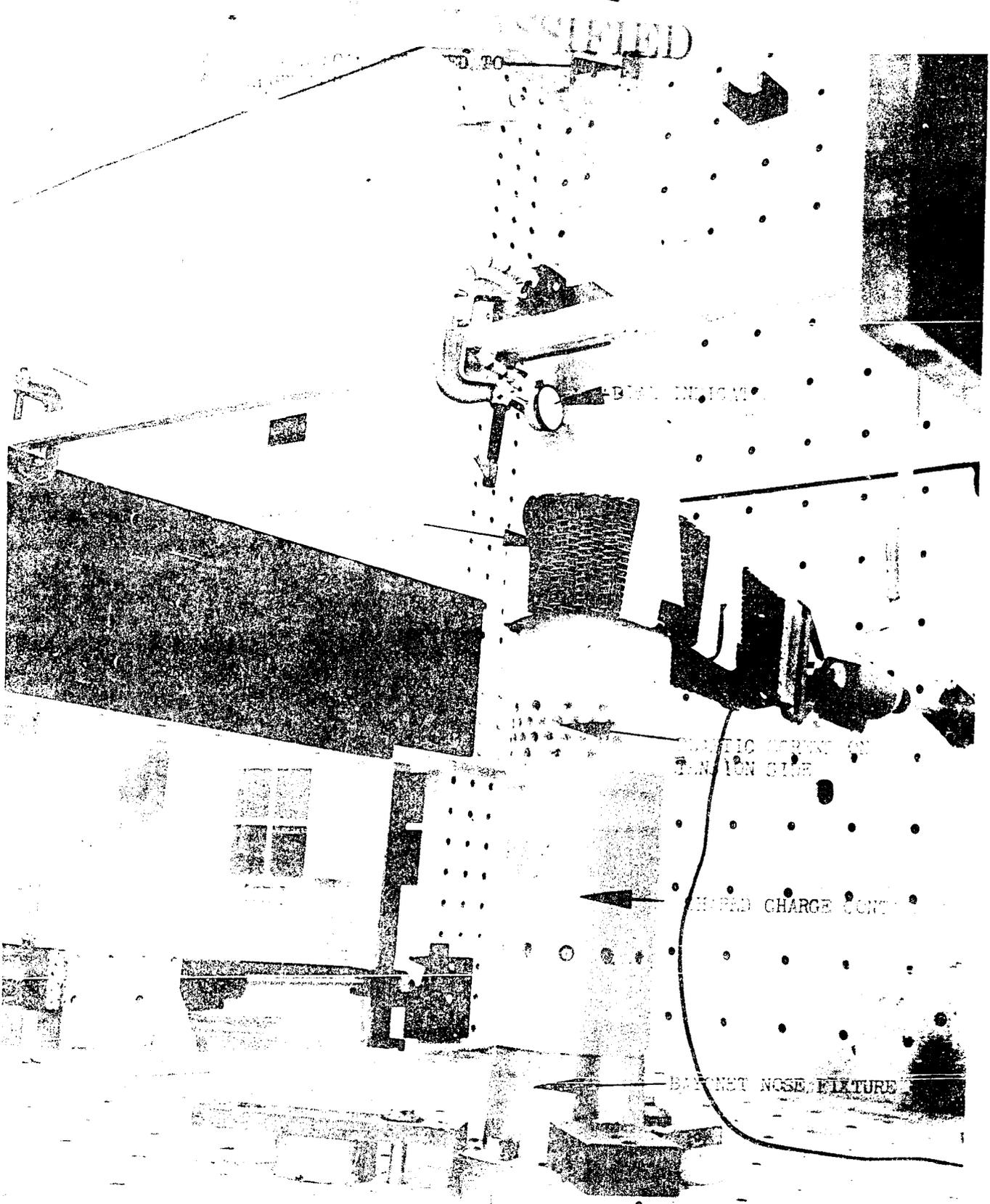
There was no indication of failure or yielding during this test.

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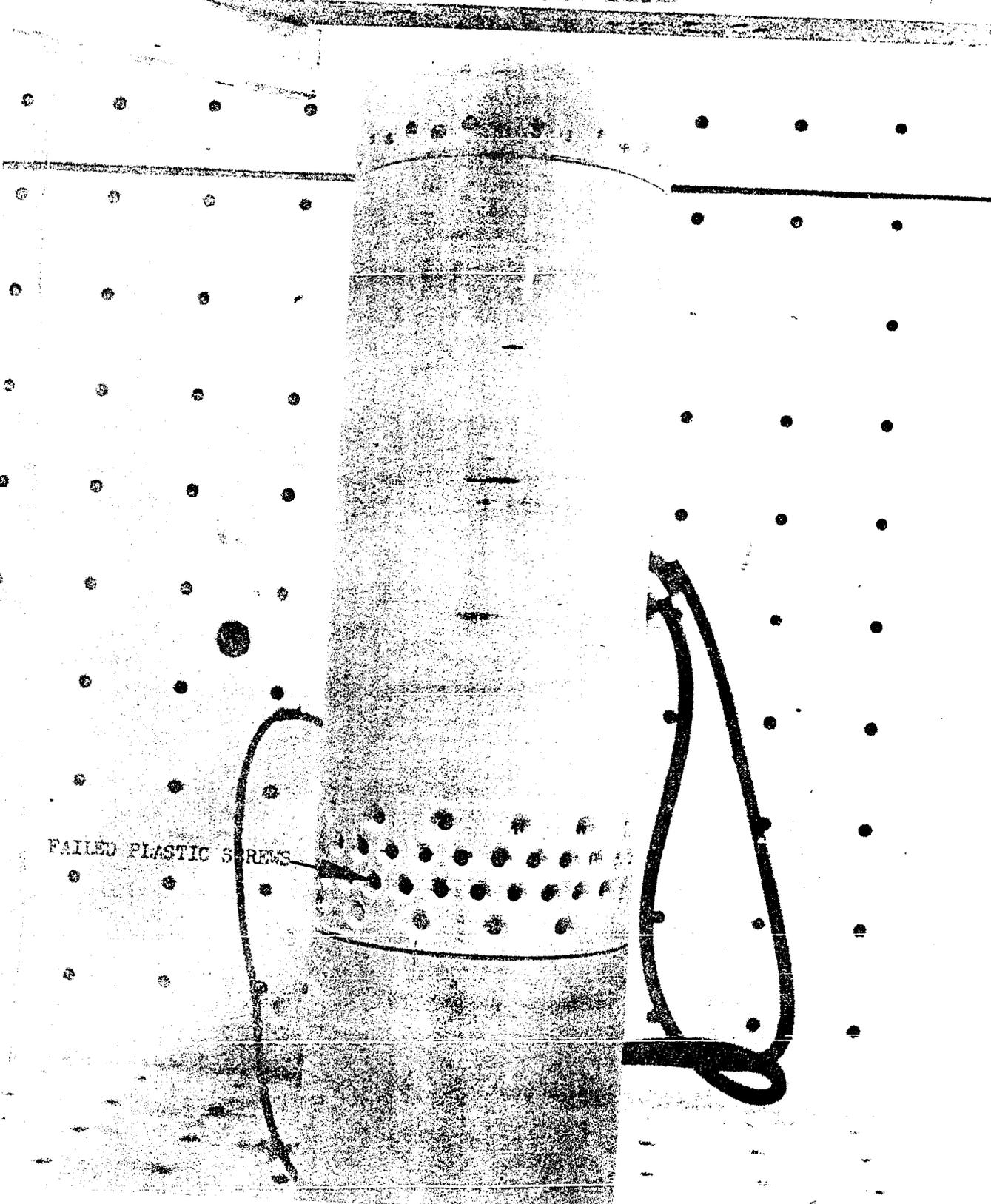
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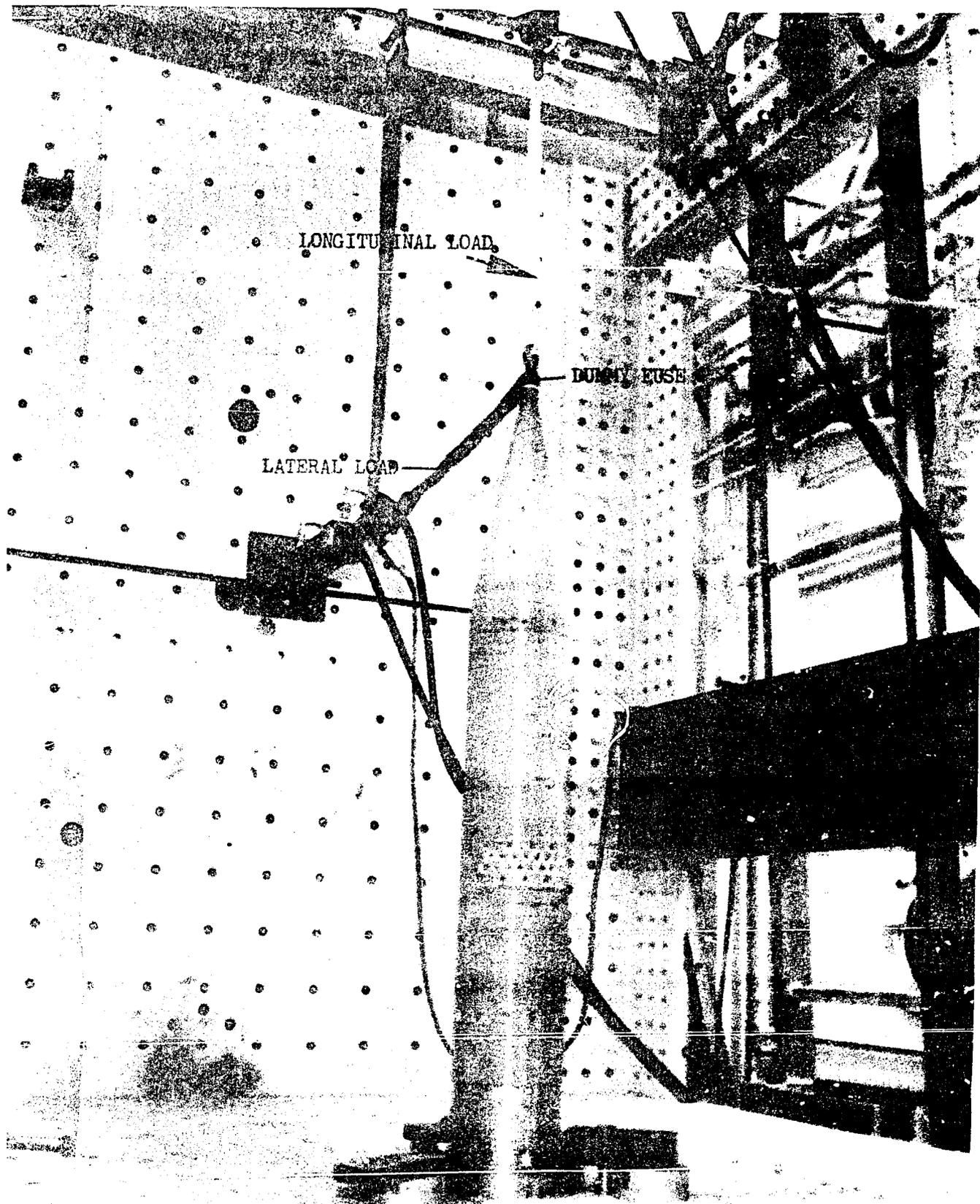
FAILED PLASTIC SCREWS

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