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TX-41, 4.4
Project No: ET-5159
Case No: 746.00
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SANDIA SYSTEMATIC DECLASSIFICATION REVIEW

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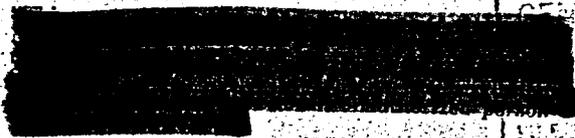
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CLASSIFICATION CHANGED TO: U
 AUTHORITY: W. C. Lays
 PERSON CHANGING MARKING & DATE: Emilda Selys 9/28/98
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Evaluation of Parachute Ejection Device
for TX-41 Weapon

Summary

Five shots were conducted on the parachute ejection system for the TX-41 weapon. Ten grain primacord was used in all shots except one. In this one shot, twenty grain primacord was used. The groove of the afterbody was damaged when twenty grain primacord was used. Proplex No. 8 detonators were used in these tests. Pressure readings in the afterbody were to be investigated in these shots but due to the frequencies of the unit and the pressure transducers used, "ringing effects" were encountered.



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Object of Test

The object of these tests was to evaluate the parachute ejection system under actual firing conditions.

Authorization for Test

This test was requested by Division 1218 in a Work Order Authorization dated April 25, 1958. Mr. S. L. Jeffers was the consultant.

Acknowledgments

Division 1611 wishes to acknowledge the participation and assistance of the following organizations in this test:

Division 5216 for camera coverage
Section 1614-1 for instrumentation services
Section 1613-4 for TV coverage and liaison services

Function of Object Tested

The parachute ejection system functions in the following manner. At the tail of the TX-41 afterbody a cover plate is secured. This cover plate is a protective cover for the parachute and the pilot chute. The cover plate fits in a groove in the afterbody and is held secure by means of shear pins. Primacord is placed in the groove of the afterbody. A detonator is connected to the primacord. The pilot chute is connected to the cover plate. Upon firing of the system the cover plate is blown from the afterbody which pulls the pilot chute into the air stream.

Summary of Past Tests

Prior tests on the ejection system of the TX-41 were performed utilizing a drogue gun method. (Reference Project No. ET-6056 published May 28, 1958.) The drogue gun method has been discontinued.

General Information

All shots were performed in Area III. Remote firing of the system was executed from Building 6540. All recording instrumentation was also located in Building 6540.

All shots described in this report were of Series III. Series I and II were previous tests conducted on the TX-41 parachute ejection system.

Fastax film coverage on various shots is available and may be obtained by contacting D. G. Ahlstrom, Division 1611.

It has been reported by the consultant that this system of ejecting the pilot chute has also been discontinued.

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Procedure and Results

Shot No. 1 - Two pressure transducers were used in this shot. The pressure transducers were attached to the afterbody. The purpose of the transducers was to determine what pressures were present in the afterbody upon firing of the parachute ejection system. Readings from the pressure transducers were recorded on a 535 scope. Figure 1 is a view showing the position of the pressure transducers on the afterbody.

Ten grain primacord was used in this test. Two Proplex No. 8 detonators were used to detonate the primacord.

The tail plate was ejected approximately 14 feet in a vertical direction upon firing of the system. Information recorded from the pressure transducers was unreliable due to a "ringing effect" encountered. Some of the rivets used to hold the plate supports to the tail plate tore loose (Figures 2 & 3) as a result of this test. The dent in one of the plate supports in Figures 2 and 3 occurred when the cover plate landed on the afterbody.

Shot No. 2 - Figure 4 is a view of the test set up prior to shot No. 2. A piece of rubber tubing was used in this test from the afterbody to the pressure transducers. The reason for using the rubber tubing was to try and reduce the ringing effect of the transducers obtained in shot No. 1.

Twenty grain primacord was used in this test. Two Proplex No. 8 detonators were used to detonate the primacord. The cover plate was ejected approximately 20 feet in a vertical direction. The ringing effect encountered in shot No. 1 in the pressure recordings was still present in this shot. The groove of the afterbody into which the primacord was placed was damaged upon firing of the primacord. Figures 5 and 6 are views of the afterbody showing the damage which occurred. The broken parts of the afterbody groove can be seen on the ground in front of the afterbody in Figure 5.

Shot No. 3 - One pressure transducer was used in this shot. Figure 6 is a view showing its position.

Ten grain primacord was used in this test. One Proplex No. 8 detonator was used to detonate the primacord.

The tail plate was ejected approximately 15 feet in a vertical direction upon firing of the system. Records obtained from the pressure transducers still gave signs of ringing. Some of the rivets used to hold the plate supports tore loose as a result of this shot.

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Shot No. 4 - Two pressure transducers were used in this shot. Ten grain primacord and one Proplex No. 3 detonator was used in this test.

The tail plate was ejected approximately 9 feet. No pressure readings were obtained due to triggering difficulties encountered in the 535 scopes used to record the pressures.

Shot No. 5 - Two pressure transducers were used in this shot. Ten grain primacord and one Proplex No. 8 detonators were used in this test.

The tail plate was ejected approximately 9 feet in the test. No pressure readings were obtained. Triggering difficulties occurring with one transducer and ringing was still evident in the other transducer.

Conclusions

Due to the trouble encountered in obtaining pressure readings by means of pressure transducers a different method has been investigated which includes the use of a M-14 high intensity microphone system. In this system pressures are determined by sound level indicators. Pressure tests have been performed on the TK-46 afterbody utilizing the microphone system of determining pressures with excellent results.

Test Conducted by: *P. S. Young* - 1611-3

And: *D. G. Ahlstrom*
D. G. Ahlstrom - 1611-3

Approved by: *G. P. Barnett*
G. P. Barnett - 1611-3

LGA:1611-3:et

Encs. Figs. 1-7

Copy to:

P. E. Jockle, Jr., 1218

Attn: S. L. Jeffers

W. A. Gardner, 1610

G. C. McDonald, 2530

D. Williams, Jr., 1611

R. C. Cawerke, 2552

D. S. Dreesen, 5522

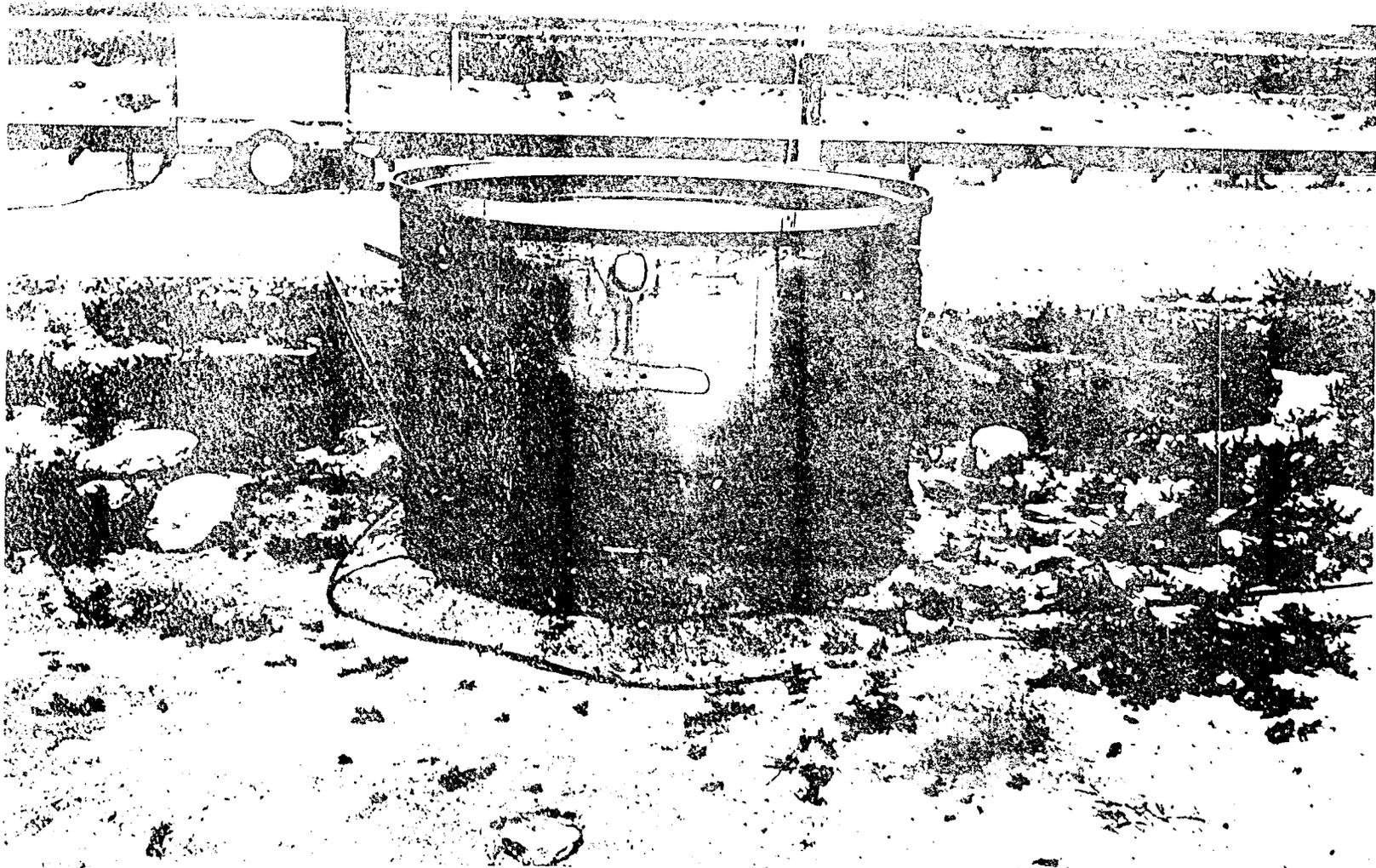
C. L. Gomel, 5523 *Paul Sprad 1613*

L. R. Myers, 1613-4

R. K. Smeltzer, 7221-3

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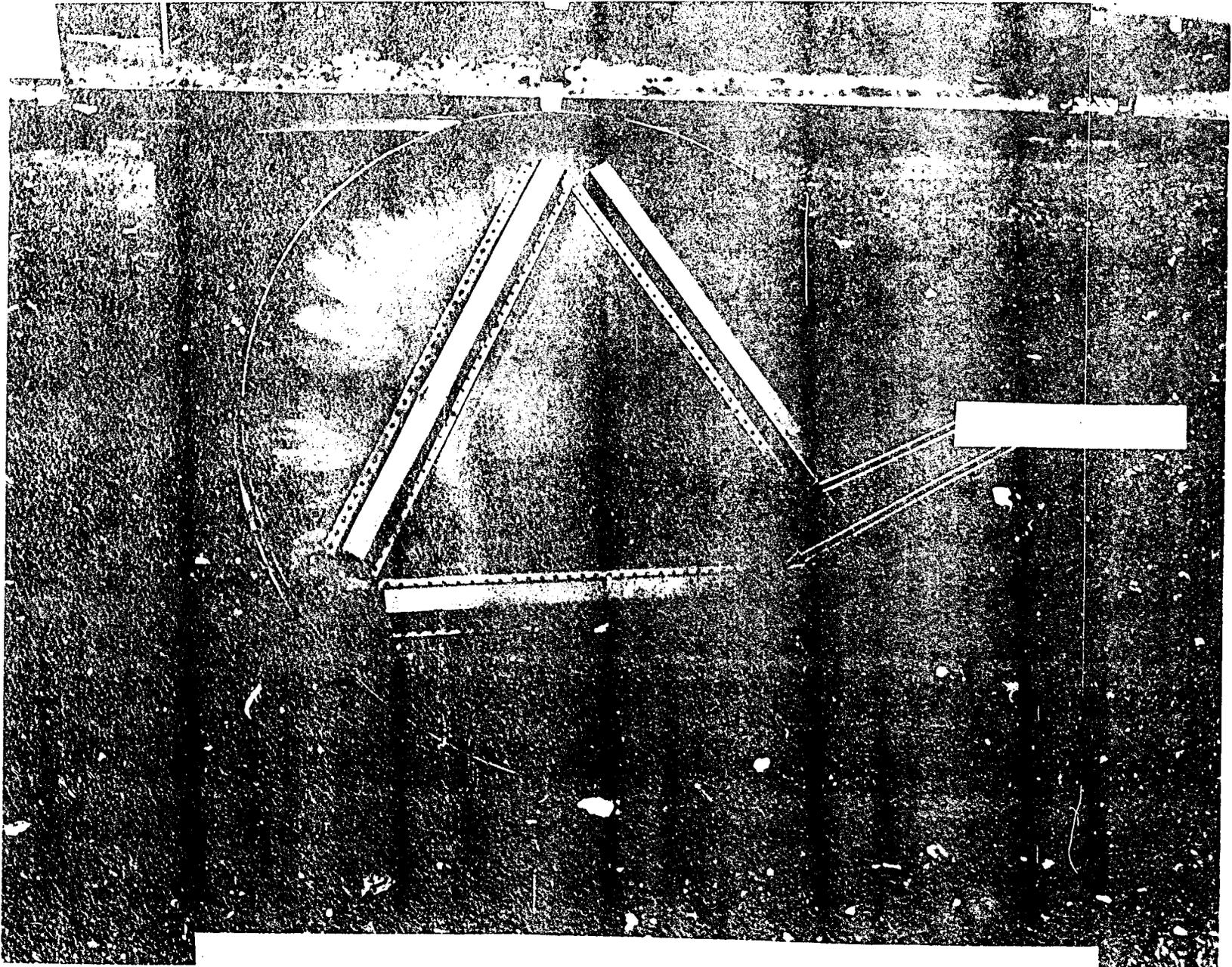


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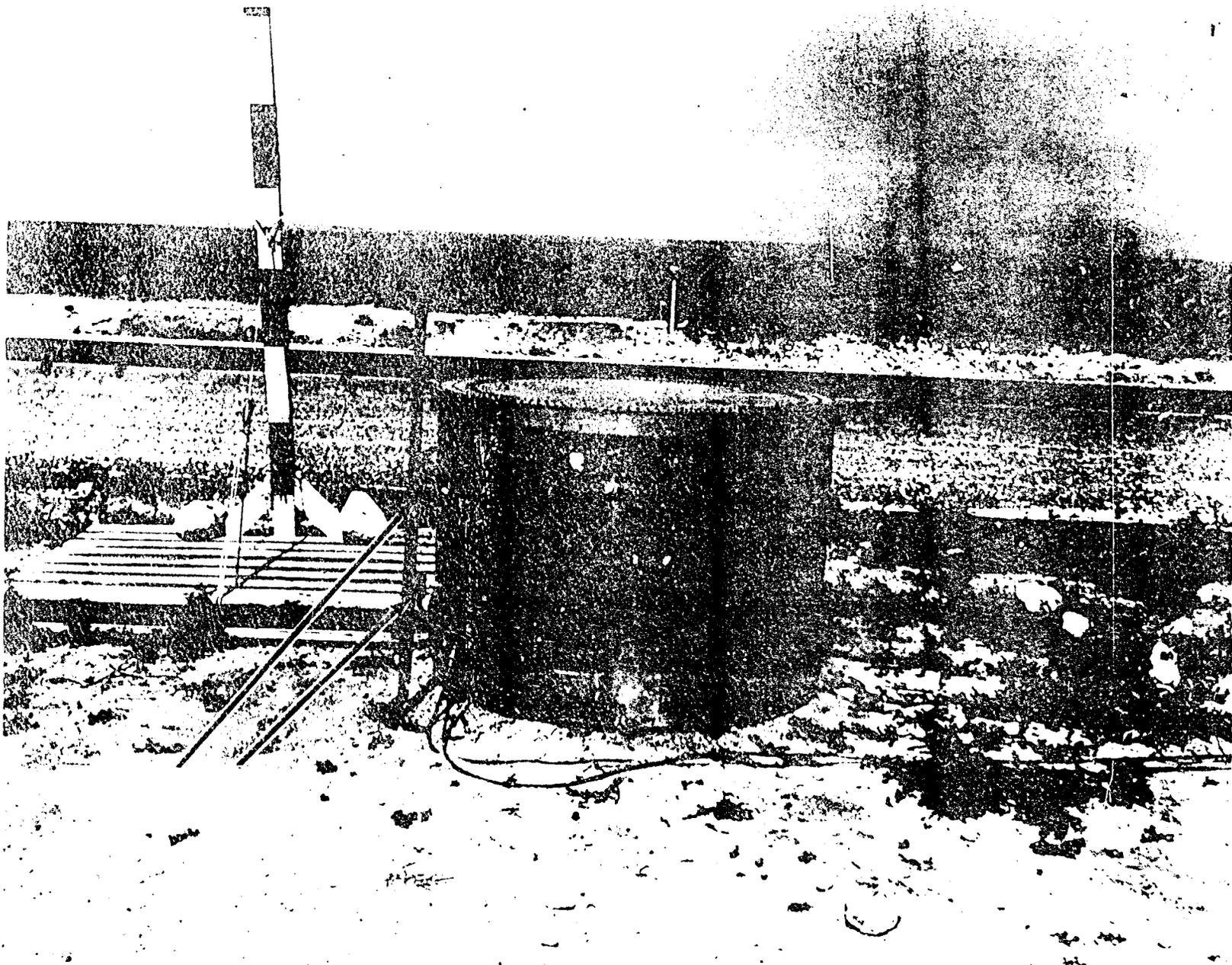


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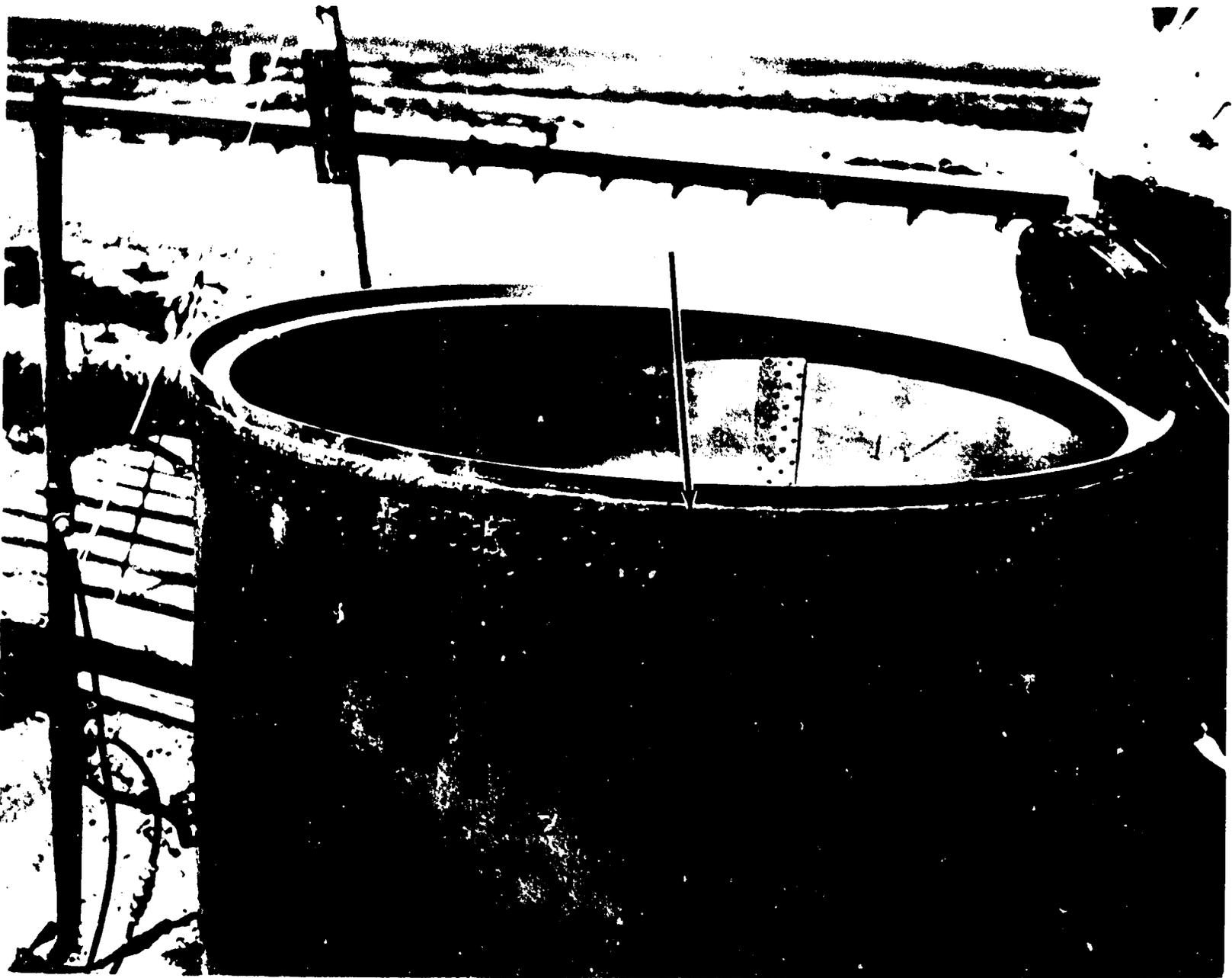


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