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U.S. NAVAL PROVING GROUND, DAHLGREN, VA. (NPG REPORT NO.
225)

TENTH PARTIAL REPORT ON WATER DISCRIMINATING ELECTRIC
BOMB FUZE, XB-31A, DEVELOPMENT OF - FINAL REPORT ON JETTISON
TEST OF WATER DISCRIMINATING BOMB NOSE FUZE XB-31A ON
WATER TARGET - AND APPENDIXES A AND B.

L.G. HANSEN (SUBMITTER) 10 FEB 29 9PP. TABLE

ORDNANCE AND ARMAMENT (22) FUZES - ARMING
AMMUNITION (1) FUZES, BOMB
FUZES - TESTING

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U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

REPORT NO. 225

WATER DISCRIMINATING ELECTRIC BOMB FUZE,
XB-31A, DEVELOPMENT OF

Partial
10th Partial Report

JETTISON TEST OF THE
WATER DISCRIMINATING BOMB NOSE FUZE XB-31A
ON WATER TARGET

FINAL Report

Copy No. 19

Task

Assignment NPG-25-R225-227-1

Classification CONFIDENTIAL

Jettison Test of Water Discriminating Bomb Nose Fuze XB-31A
on Water Target

PART A

SYNOPSIS

1. Six Bomb Nose Fuzes, XB-31A, assembled in TNT loaded AN-M64, 500 lb. bombs. were dropped on a water target from an aircraft flying at 15,000 feet to determine the safety of the nose fuze when dropped in an unarmed condition.

2. It is concluded that the six fuzes tested, successfully withstood the jettison test.

Jettison Test of Water Discriminating Bomb Nose Fuze XB-31A
on Water Target
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Jettison Test of Water Discriminating Bomb Nose Fuze XB-31A
on Water Target
-----PART BINTRODUCTION

1. AUTHORITY:

This test was directed by reference (a) under Task Assignment No. NPG-25-Re2b-227, authorized by reference (b).

2. REFERENCES:

- a. NOL Conf. ltr. NP/51/F41-6(40-63) dated 3 Dec. 1948.
- b. BuOrd ltr. F41-6(18)(Re2b-227) dated 13 Dec. 1947.
- c. NPG Conf. Report No. 161 dated 28 Dec. 1948.
- d. NPG restr. ltr. F41-6(11)/L5-2(R 71486) dated 27 Aug. 1947.
- e. NPG restr. ltr. F41-6(11)/L5-2(R 70701) dated 29 April 1947.
- f. NPG restr. ltr. F41-6(11)/L5-2(R 70401) dated 13 March 1947.
- g. NPG Report No. 8 dated 12 April 1948.
- h. NPG Report No. 185 dated 11 January 1949.
- i. NPG ltr. F41-6(11)/L5-2(P 70128) dated 27 Jan. 1947.
- j. NPG ltr. F41-6(11)/L5-2(P 70534) dated 25 March 1947.
- k. NPG Report No. 39 dated 2 June 1948.

3. BACKGROUND:

References (d) through (h) report previous drop tests on water of the subject fuze, assembled in the General Purpose Bomb, AN-M64. References (i), (j), and (k) are reports submitted on gun firing tests of this fuze. Reference (c) reported that one Bomb Nose Fuze, XB-31A, assembled in a TNT loaded AN-M64, 500 lb. bomb dropped in an unarmed condition on water from 15,000 feet functioned .20 seconds after impact.

4. OBJECT OF TEST:

This test was conducted to determine whether the Bomb Nose Fuze, XB-31A, with a minor structural modification, is safe in the unarmed position when dropped on water from an altitude of 15,000 feet.

Jettison Test of Water Discriminating Bomb Nose Fuze XB-31A
on Water Target

5. PERIOD OF TEST:

a. Date of Project Letter	3 December 1948
b. Date Necessary Material Received	5 January 1949
c. Date Commenced Test	7 January 1949
d. Test Completed	7 January 1949
e. Partial Reports Submitted	See references (c) through (k).

6. REPRESENTATIVE PRESENT:

Mr. W. N. Hurley

Naval Ordnance Laboratory

PART CDETAILS OF TEST

7. DESCRIPTION OF ITEM UNDER TEST:

a. The XB-31A Water Discriminating Bomb Nose Fuzes tested and reported herein were constructed on the same principles as the fuze used in the jettison test reported in reference (c) with the following change in the pole piece and magnet shaft assembly:

(1) The silver soldered joint which secured the magnet shaft to the pole piece was modified by replacing the silver soldered joint with a tapered bushing.

b. The nose fuzes were assembled in TNT loaded AN-M64, 500 lb. bombs. Each fuze was locked in the unarmed position.

c. Tail fuzes, M116, with 8-15 second delay detonators were installed in the bombs to insure detonation.

8. DESCRIPTION OF TEST EQUIPMENT:

a. All drops were made from a TBM-3E type aircraft.

b. Two High Speed Mitchell cameras with 4" lenses were used to photograph all drops.

c. A pontoon target was located in the channel of the Potomac River in approximately 100' of water.

Jettison Test of Water Discriminating Bomb Nose Fuze XB-31A
on Water Target

9. PROCEDURE:

a. Six bombs with nose and tail fuzes installed were dropped into water from a true altitude of 15,000 feet and at airspeeds of 120 knots indicated.

b. Fuze delays were determined from the camera film, and by stop watches.

10. RESULTS AND DISCUSSION:

a. The six nose fuzes, XB-31A, successfully withstood the impacts without detonating. All bombs were detonated by the M116 tail fuzes.

b. Appendix (A) contains detailed data on all drops.

PART D

CONCLUSIONS

11. The six Water Discriminating Bomb Nose Fuzes, XB-31A, successfully withstood the jettison test.

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Jettison Test of Water Discriminating Bomb Nose Fuze XB-31A
on Water Target

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NPG REPORT NO. 225

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U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

Tenth Partial Report

on

Water Discriminating Electric
Bomb Fuze, XB-31A, Development of

- - - - -

Final Report

on

Jettison Test of
Water Discriminating Bomb Nose Fuze XB-31A
on Water Target

Project No.: NPG-25-Re2b-227-1

Date:

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Jettison Test of the Water Discriminating Bomb Nose Fuze XB-31A
on Water TargetTABLE ITABULATED DATA

<u>Date</u>	<u>Drop No.</u>	<u>Target</u>	<u>Altitude of Release (Ft.)</u>	<u>IAS (Knots)</u>	<u>Fuze No.</u>	<u>Approx. Striking Velocity (ft/sec)</u>	<u>Fuze Delay Time (Sec)</u> <u>Nose Tail</u>
1/7/49	1	Water	15,000	120	70	897	Did not function 11.1
"	2	"	"	"	69	"	" 10.5
"	3	"	"	"	64	"	" 10.0
"	4	"	"	"	68	"	" 10.3
"	5	"	"	"	65	"	" 10.1
"	6	"	"	"	67	"	" 12.3

Jettison Test of the Water Discriminating Bomb Nose Fuze XB-31A
on Water Impact
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