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AUTHORITY	
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NPG REPORT NO. 933

Fuzing System for XSAM-N-4, Guided Missile Dove; Testing of

PART A

SYNOPSIS

1. The "Dove" is an air-to-ground missile with short wings, having no self propulsion. It is approximately 24 inches in diameter by 5 feet in length, with air scoops in the nose and stabilizing fins on the tail section to control the flight. The Naval Ordnance Laboratory is developing the tail fuzing system for the warhead.

2. The object of these preliminary tests was to devise a satisfactory method of conducting plate impact tests of the XB-44A fuze when fired in simulated missiles from the Naval Proving Ground's 500 foot rocket launcher.

3. It was concluded that:

a. Satisfactory terminal velocities and impact conditions can be obtained by the use of rocket motors to propel the XB-44A fuze from the Naval Proving Ground's 500 foot launcher while it is installed in a 250 lb. G.P. bomb AN-M57-A1.

b. The XB-44A fuze, as tested during this program, did not function as a result of shock or vibration while in motion on the launcher and therefore was considered "launcher safe".

c. One-half inch STS plate appeared to provide the minimum retardation which would cause the XB-44A fuzes to function when tested under the impact conditions of this program. Of the seven fuzes tested:

- (1) Only two functioned in flight with a 250 ft. delay
- (2) One functioned after a heavy secondary impact
- (3) Two functioned in the recovery sandpile
- (4) Two did not function.

d. The propulsion carriage can be separated from the bomb before target impact by the use of a 3V25 motor Mk 7 secured in the carriage to function as a "retro-motor", if a minimum of 150 ft. is provided between the launcher muzzle and target.

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Fuzing System for XSAM-N-4, Guided Missile Dove; Testing of

PART B

INTRODUCTION

1. AUTHORITY:

Reference (a) authorized the Naval Proving Ground to perform such tests of the tail fuzing system for the XSAM-N-4, Guided Missile Dove, as might be requested by the Naval Ordnance Laboratory. Reference (b) established Task Assignment NPG-04-Re2b-33, later superseded by Reference (e) Task Assignment NPG-Re2b-34-1-52, to provide the necessary funds. References (c) and (d) outlined the test requirements.

2. REFERENCES:

- a. BUORD ltr NP9(Re2b-286 2)FLY:ss of 4 Apr 1949
- b. BUORD ltr NP30(Re2b)JWG:ss of 25 May 1950
- c. NOL ltr NP51/S71-S(3-615)TF:HLD Ser 01641 of 19 Dec 1950
- d. NOL ltr NP/NOL/X1-1(497)TF:HLD Ser 0802 of 4 May 1951
- e. BUORD Conf ltr NP9 Re2b-DB LaP:bjn Ser 23946 of 4 Aug 1951

3. BACKGROUND:

The "Dove" is an air-to-ground missile with short wings, having no self propulsion. It is approximately 24 inches in diameter by 5 feet in length, with air scoops in the nose and stabilizing fins on the tail section to control the flight. The Naval Ordnance Laboratory is developing the tail fuzing system for the warhead.

4. OBJECT OF TEST:

The object of these preliminary tests was to devise a satisfactory method of conducting plate impact tests of the XB-44A fuze when fired in simulated missiles from the Naval Proving Ground's 500 ft. rocket launcher.

5. PERIOD OF TEST:

- | | |
|-------------------------------------|---------------|
| a. Date Project Letter | 4 May 1951 |
| b. Date Necessary Material Received | 25 April 1951 |
| c. Date Commenced Test | 10 May 1951 |
| d. Test Completed | 29 May 1951 |

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Fuzing System for XSAM-N-4, Guided Missile Dove; Testing of

6. REPRESENTATIVES PRESENT:

H. L. Davis
R. Happick

Naval Ordnance Laboratory
Naval Ordnance Laboratory

PART C

DETAILS OF TEST

7. DESCRIPTION OF ITEM UNDER TEST:

a. The XB-44A construction and overall appearance is shown in Figures 1 and 2. It is a vane arming fuze with dual primers detonated upon impact by means of firing pins. A delay train provides for functioning after penetration of the target.

8. DESCRIPTION OF TEST EQUIPMENT:

Test Vehicles: Modified 250# G.P. Bombs AN-M57-A1 inert loaded

Launcher: Naval Proving Ground's 500 ft.

Target: 1/2" STS plate

Propulsion: Three 540 HVAR motors in carriage

Fuze Arming: 100# compressed air supply

Cameras: Bowen and Mitchell, operated at 90 and 100 frames/sec. respectively.

9. PROCEDURE:

a. All fuzes were tested in modified 250# G.P. bombs. The fuzes were inserted in the tails of the bombs and protected by a heavy steel tube threaded to the bomb. A 1" x 2" hole was cut through the tube opposite the arming vane of the fuze to permit the insertion of an air hose used for remote arming prior to firing. Propulsion of the bombs was accomplished by the use of three 540 HVAR motors assembled in a special carriage as shown in Figure 3, and ignited simultaneously. Fuze functioning was indicated by the ignition of a cross axial, 350 gm. black powder smoke

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NPG REPORT NO. 933

Fuzing System for XSAM-N-4, Guided Missile Dove; Testing of

puff in a tube 8-1/2" long by 1" diameter, situated immediately forward of the fuze booster. The 1/2" STS target plates were set up 50 ft. from the muzzle of the launcher on initial rounds and 15 ft. on later shots,

b. The arming vane was secured to the fuze arming shaft at the launching site by means of a special coupling. After assembling the three 540 HVAR motors in their carriage the propulsion vehicle and bomb were placed in the launcher, in contact with each other. The smoke puff tube was inserted in the bomb and taped in place. A 1" diameter air hose, leading from a gasoline powered, field type compressor (capable of supplying 100 lb./sq.in. air pressure), was inserted in the slot in the protective tube enclosing the arming vane. A 50 lb./sq.in. stream of air, controlled from a remote location, was then directed against the vane while all personnel were under shelter. Before firing the arming stem was checked to see that it had withdrawn sufficiently to permit arming. A Bowen camera and two Mitchell cameras were used to record the flight of the round. Velocities were measured during the last 20 ft. of travel on the launcher. Rounds were recovered in a large sandpile.

10. RESULTS AND DISCUSSION:

a. Appendix (A) contains detailed records of the plate impacts. Appendix (B), Figure 4, is an excerpt from the Bowen films taken of round 7. Following is a brief summary of the results obtained - all rounds fired against 1/2" STS plate at 0° obliquity:

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Fuzing System for XSAM-N-4, Guided Missile Dove; Testing of

Rd. No.	Date	Impact No.	Impact Velocity ft./sec.	Fuze No.	Remarks	Results
1	5-10-51	39028	888	117	Questionable whether fuze was fully armed when round was fired.	No evidence of functioning in flight-when recovered fuze had functioned-smoke puff fired.
2	5-14-51	38991	883	118		"
3	5-16-51	38993	859	119	Target 15' from muzzle starting with this shot-50' on first two rounds.	No evidence of functioning in flight. Some black powder still in tube when recovered, no evidence of functioning.
4	5-16-51	38994	903	120		No evidence of functioning in flight. All black powder still in tube when recovered.
5	5-21-51	39020	643	121	Only two motors fired.	No functioning in flight-after going through target round glanced off wedge in butt with fuze functioning about 60 ft. behind butt.
6	5-21-51	39021	893	122		Fuze functioned approx. 250 ft. behind target.
7	5-22-51	39022	916	123		Fuze functioned approx. 245 ft. behind target.

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b. (1) While the propulsion method described above was satisfactory for the purpose of this test (it provided a combination of low acceleration and high striking velocity) it had one undesirable feature as far as future test programs were concerned. The propulsion motors remained in contact with the bomb all the way to the target. The sensitivity of the fuze upon impact, when installed in a 250 lb. G.P. bomb, was therefore an unknown quantity since the entire mass of the propulsion vehicle was helping to force the bomb through the target. Even though the bomb is not the ultimate vehicle for this fuze, it is obviously desirable to have the propulsion carriage separated from the bomb before impact to prevent damage to the fuze.

(2) Several separation methods were considered but the use of a retro-motor in the carriage appeared to be the quickest solution, involving a minimum of test firing. A 3W25 motor Mk 7 was installed in the upper part of the carriage directed oppositely to the three 5W0 motors. A set of contacts was provided to ignite the 3W25 motor 100 feet before reaching the muzzle of the launcher. Effective separation of the bomb and propulsion carriage in flight, Figure 5, approximately 150 ft. beyond the muzzle of the launcher, was thus obtained.

(3) The 5W0 HVAR motors used for propulsion (the only type available that would produce the desired striking velocity) burn for approximately 700 ft. The only launcher which will accommodate a 250 lb. G.P. bomb at the Naval Proving Ground is 500 ft. in length. Consequently the motors still have a considerable amount of thrust at the muzzle of the launcher and can not be effectively separated from the bomb for some distance beyond this point--a minimum of 150 ft. Erection of a target 150 ft., or further, beyond the muzzle precludes the possibility of bomb recovery when sufficient range for observation of fuze functioning is allowed behind the target, due to the short distance between the launcher and the edge of the river (550 ft.). The 1/4 second fuze delay after plate impact will result in functioning almost at the edge of the river and allow no room for a recovery sandpile. Therefore in future tests it will be necessary to sacrifice either the recovery of the bomb or the separation of the bomb and propulsion carriage.

Fuzing System for XSAM-N-4, Guided Missile Dove; Testing of

PART D

CONCLUSIONS

11. It was concluded that:

a. Satisfactory terminal velocities and impact conditions can be obtained by the use of rocket motors to propel the XB-44A fuze from the Naval Proving Ground's 500 ft. launcher while it is installed in a 250 lb. G.P. bomb AN-M57-A1.

b. The XB-44A fuze, as tested during this program, did not function as a result of shock or vibration while in motion on the launcher and therefore was considered "launcher safe".

c. One-half inch STS plate appeared to provide the minimum retardation which would cause the XB-44A fuzes to function when tested under the impact conditions of this program. Of the seven fuzes tested:

- (1) Only two functioned in flight with a 250 ft. delay
- (2) One functioned after a heavy secondary impact
- (3) Two functioned in the recovery sandpile
- (4) Two did not function

d. The propulsion carriage can be separated from the bomb before target impact by the use of a 3V25 motor Mk 7 secured in the carriage to function as a "retro-motor", if a minimum of 150 ft. is provided between the launcher muzzle and target.

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Fuzing System for XSAM-N-4, Guided Missile Dove; Testing of

The tests upon which this report is based were conducted by:
F. W. KASDORF, Firing Director, Rocket Battery,
Terminal Ballistics Department

This report was prepared by:
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Terminal Ballistics Department

This report was reviewed by:
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APPROVED: IRVING T. DUKE
Rear Admiral, USN
Commander, Naval Proving Ground


C. T. MAURO
Captain, USN
Ordnance Officer
By direction

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NPG REPORT NO. 933

**U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA**

Fifth Partial Report

on

**Combat Air Operations Guided Missile Fuzes;
Research, Development, Tests and Reports of**

Second Partial Report

on

**Fuzing System for XSAM-N-4,
Guided Missile Dove; Testing of**

**Project No.: NPG-Re2b-34-1-52
Copy No.: 21
No. of Pages: 9**

Date:

MAR 20 1952

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IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 39028IMPACT DATE 10 MAR 1951NPG TEST NO CORE 1001OBJECT SENSITIVITY TEST OF XB-44A FUZE IN 25LB.G.P. BOMB WITH SMOKE PUFF LOADINGReference: NPG Wt. Impact No. 933 dated
Reference: BuOrd ltr. NP9(R226-226-2) FLY dated 4 APR. 1949
Task Assignment No. NPG-R226-34-1-52 dated 4 AUG. 1951

PLATE TARGET

Gage 0.50 Class STS
Maker CARNEGIE
No. Group
Dimensions OBLIQUITY 0°PENETRATION COMPLETEThickness at impact No. of impact on plate Dist. from nearest impact Dist. from near edges and Impact area Spall: Front Back Dish Spur Cracks Punching (thrown) (started) Back button (thrown) (started) Bulge Through opening

G. P. Bomb ROCKET

HEAD: Cal. Type G.P. BombMark Mod No. Wt. 258.95Maker DALLot No. Filler: Type VERTM. Wt. Fuzes + 1.95 SMOKE PUFFXB-44A FUZE # 117Boosters Wt. of head (as fired) 258.95MOTOR: Cal. 5" Mk. 2 Mod 3Motor temp. 90° Wt. 98.60COMPLETE ROUND: Mark Mod Wt. (as fired) 337.55Wt. (burned) OTHER INFORMATION MOTORS (3)GRAIN: MK. 18-0BLN: RMDA-230-H HSLAUNCHER 1A50 Rocket Launcher

ROCKET PERFORMANCE

Flight Velocity, f/s: MEAN 888 Residual Fuze functioning IN SMOKEExplosive action (High Order) (Low Order) (None) Distance of burst behind plate Condition of recovered round Head was in (EFFECTIVE) (INEFFECTIVE) condition. REMARKS: Photo No. Signed F. W. KasdorfF. W. KASDORF, LtC.R.O. E76 6-5-12Confidential
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APPENDIX A

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IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

IMPACT NO. 39991

IMPACT DATE 24 May 1951

NPG TEST NO. C10E 10622

OBJECT LAUNCHER SENSITIVITY TEST OF XR-44A FUSE IN TEST
G.P. BOMB INERT LOADED EXCEPT FOR BOMB. SMOKE PUFF
Reference: NPG Report No. 933 dated _____
Reference: BuOrd ltr. NP9(R-26-286-2)FLU dated 4 APR 1949
Task Assignment No. NPG-R-26-34-1-52 dated 4 AUG 1951

PLATE TARGET

Gage 0.50 Class STS
Maker _____
No. _____ Group _____
Dimensions _____

OBLIQUITY _____

PENETRATION

Thickness at impact _____
No. of impact on plate _____
Dist. from nearest impact _____
Dist. from near edges _____ and _____
Impact area _____
Spall: Front _____ Back _____
Dish _____ Spur _____
Cracks _____
Punching (thrown) (started) _____
Back Button (thrown) (started) _____
Bulge _____
Through opening _____

G.P. BOMB

ROCKET

HEAD: Cal. _____ Type G.P. BOMB
Mark _____ Mod _____ No. _____ Wt. 256.95
Maker NOI
Lot No. _____
Filler: Type NOI
Fuzes XR-44A NO. 113
Boosters _____
Wt. of head (as fired) 356.95

MOTOR: Cal. 5' Mk. 2 Mod 3
Motor temp. 90° Wt. 78.20

COMPLETE ROUND: Mark _____ Mod _____
Wt. (as fired) 335.15
Wt. (burned) _____

OTHER INFORMATION NOTES (3)
GAIN: MK 12.0
ALN: Rm 20, 830-H-15
LAUNCHER 1050 ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight _____ Velocity, f/s: MEAN 443 Residual _____
Fuze functioning IN SANDPILE
Explosive action (High Order) (Low Order) (None) _____
Distance of burst behind plate _____
Condition of recovered round _____
Head was in (EFFECTIVE) (~~INCOMPLETE~~) condition.

REMARKS: _____

Photo No. _____

Signed F.W. Kador
F.W. KADOR, Lt
CDR. ETC. 65-12

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APPENDIX A
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IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

IMPACT NO. 38793

IMPACT DATE 5-16-51

NPG TEST NO. _____

OBJECT EMULSIFIC TEST OF XB-44A FUSE IN 250# TUBET LOADED

Boards vs 1/2" STS Plate AT 0°

Reference: NPG Report No. 933 dated _____

Reference: BuOrd ltr. NP9(Rc26-286-2)FL4 dated 4 APR 1949

Task Assignment No. NPG-Rc26-34-1-52 dated 4 AUG 1951

PLATE TARGET

Gage 1/2" Class STS
Maker _____
No. _____ Group _____
Dimensions _____

OBLIQUITY 0°

PENETRATION COMPLETE

Thickness at impact 5
No. of impact on plate _____
Dist. from nearest impact _____
Dist. from nearest edges _____ and _____
Impact area 4
Spall: Front _____ Back _____
Dish _____ Spur _____
Cracks 10
Punching (thrown) (started) _____
Back Button (thrown) (started) _____
Bulge _____
Through opening _____

G. P. Bomb ROCKET

HEAD: Cal. _____ Type G. P. Bomb
Mark _____ Mod _____ No. _____ Wt. 258 lbs

Maker NOL

Lot No. _____

Filler: Type VERMICULITE Wt. _____

Fuzes 15 SACKS OFF

XB-44A No. 119

Boosters _____

Wt. of head (as fired) 258 lbs

MOTOR: Cal. 5" Mk. 2 Mod 3

Motor temp. 70° Wt. 78.30#

COMPLETE ROUND: Mark _____ Mod _____

Wt. (as fired) 337.25#

Wt. (burned) _____

OTHER INFORMATION MOTORS (3)

GRAIN: MK 18-6

PN: RMDA-230-A-45

LAUNCHER 1050' ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight _____ Velocity, f/s: MEAN 859 Residual _____

Fuze functioning NONE

Explosive action (High Order) (Low Order) (None) _____

Distance of burst behind plate _____

Condition of recovered round _____

Head was in (EFFECTIVE) (~~INEFFECTIVE~~) condition.

REMARKS: _____

Photo No. _____

Signed F. W. Kasdorf
F. W. KASDORF
CAR. ENG. GS-12

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APPENDIX A
Page No. 3

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLOREN, VIRGINIAIMPACT NO. 38994IMPACT DATE 5-16-51

NPG TEST NO. _____

OBJECT BAUSTIC TEST OF XB-44A FUZE IN 250# THERT
LOADED BOMBS VS 1/2" STS PLATE AT 0° ORLReference: NPG REP. Report No. 933 dated _____Reference: BuOrd ltr. NP9 (Re 26-286-2) FL4 dated 4 APR. 1949Task Assignment No. NPG-Re 26-34-1-52 dated 4 AUG. 1951

PLATE TARGET

G. P. Bomb ROCKET

Gage 1/2" Class STS

Maker _____

No. _____ Group _____

Dimensions _____

OBLIQUITY 0°PENETRATION COMPLETE

Thickness at impact _____

No. of impact on plate _____

Dist. from nearest impact _____

Dist. from near edges _____ and _____

Impact area _____

Spall: FRONT MEASUREMENTSDisplacement MEASUREMENTS Spur _____

Cracks _____

Punching (thrown) (started) _____

Back Button (thrown) (started) _____

Bulge _____

Through opening _____

HEAD: Cal. _____ Type G. P. BombMark _____ Mod _____ No. _____ Wt. 261.95#Maker NOL

Lot No. _____

Filler: Type VERMICULATEFuzes 4-95 SMOKE PUFFXB-44A No. 120

Boosters _____

Wt. of head (as fired) 261.95#MOTOR: Cal. 5" Mk. 2 Mod 3Motor temp. 70° Wt. 79.40#

COMPLETE ROUND: Mark _____ Mod _____

Wt. (as fired) 341.35#

Wt. (burned) _____

OTHER INFORMATION PICTURES (3)GRAIN: MK 18-2ALN: KMDA-230-H-45LAUNCHER LOS0 ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight _____ Velocity, f/s: MEAN Striking 903 Residual _____Fuze functioning NONE

Explosive action (High Order) (Low Order) (None) _____

Distance of burst behind plate _____

Condition of recovered round _____

Head was in (EFFECTIVE) (~~INEFFECTIVE~~) condition.

REMARKS: _____

Photo No. _____

Signed F. W. KaadoryF. W. KAADORYORD ENG GS-12Confidential
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Page No. 4

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

IMPACT NO. 39020

IMPACT DATE 21 MAY 1951

NPG TEST NO. CODE 10687

OBJECT LAUNCHER SENSITIVITY TEST OF XB-44 FUZE

IN 250 LB. G.P. BOMB

Reference: NPG REP. 74.933 dated 4 APR 1947
Reference: BuOrd ltr. NPTCR-21-286-2) FL4 dated 4 APR 1947
Task Assignment No. NPG-Rep 21-34-1-52 dated 4 JUL 1951

PLATE TARGET

G.P. BOMB

ROCKET

Gage 1.50 Class STS
Maker CARNEGIE
No. Group
Dimensions

OBLIQUITY 0°

PENETRATION COMPLETE
Thickness at impact
No. of impact on plate
Dist. from nearest impact
Dist. from nearest edges and
Impact area
Spall: Front Back
Dish Spur
Cracks
Punching (thrown) (started)
Back Button (thrown) (started)
Bulge
Through opening

HEAD: Cal. Type G.P. Bomb
Mark ANM57 Mod A1 No. Wt. 258.0*
Maker
Lot No.
Filler: Type INERT Wt.
Fuzes

XB-44 FUZE #121
Boosters
Wt. of head (as fired) 258.0*

MOTOR: Cal. 5" Mk. 2 Mod 3
Motor temp. 90° Wt. 79.10*

COMPLETE ROUND: Mark Mod
Wt. (as fired) 339.16*
Wt. (burned)

OTHER INFORMATION MOTORS (3)
ALN: R7710A-230-H.45
GRAIN: MK 18-0
LAUNCHER 1050' ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight Velocity, f/s: MEAN 643 Residual
Fuze functioning ON SECONDARY IMPACT - HIT HEAVY WEDGE IN BUTT
Explosive action (High Order) (Low Order) (None)
Distance of burst behind plate
Condition of recovered round
Head was in (EFFECTIVE) (INEFFECTIVE) condition.

REMARKS:

Photo No. Signed F.W. KASDORF, Lt.
ORO. ETC. ES-12

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IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

IMPACT NO. 39021

IMPACT DATE 21 MAY 1951

NPG TEST NO. CODE 10687

OBJECT LAUNCHER SENSITIVITY TEST OF XB-44 FUZE

IN 250 LB. G.P. Bomb

Reference: NPG Report No. 933 dated 4 APR 1951
Reference: BuOrd ltr. NPG(Re 26-284-2)FLU dated 4 APR 1951
Task Assignment No. NPG-Re 26-34-1-52 dated 4 APR 1951

PLATE TARGET

G.P. Bomb ROCKET

Gage C.50 Class STS
Maker CARNEGIE
No. - Group -
Dimensions -

HEAD: Cal. - Type G.P. Bomb
Mark ANM57 Mod 91 No. - Wt. 251.00 #
Maker -
Lot No. -
Filler: Type INERT Wt. -
Fuzes -

OBLIQUITY 0°

PENETRATION COMPLETE
Thickness at impact -
No. of impact on plate -
Dist. from nearest impact -
Dist. from near edge 5 and -
Impact area -
Spall: Front COMPLETE Back -
Dish COMPLETE Spur -
Cracks COMPLETE
Punching (thrown) (started) -
Back Button (thrown) (started) -
Bulge -
Through opening -

XB-44 FUZE #122
Boosters -
Wt. of head (as fired) 251.00 #
MOTOR: Cal. 5" Mk. 2 Mod 2
Motor temp. 90° Wt. 79.55 #
COMPLETE ROUND: Mark - Mod -
Wt. (as fired) 390.55 #
Wt. (burned) -

OTHER INFORMATION MOTORS (3)
ALN: RMDA-230-H-45
GRAIN: MK 18-0
LAUNCHER 1050' ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight MEAN Velocity, f/s: 893 Residual -
Fuze functioning 250 FT BEHIND TARGET
Explosive action (High Order) (Low Order) (None)
Distance of burst behind plate -
Condition of recovered round -
Head was in (EFFECTIVE) (INEFFECTIVE) condition.

REMARKS: -

Photo No. -

Signed F.W. KASDORF
F.W. KASDORF, Lt
ORD. ENG. 85-12

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IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 39022IMPACT DATE 22 May 1951NPG TEST NO. CODE 10687

OBJECT LAUNCHER SENSITIVITY TEST OF XB-44 FUZE
IN 250 LB. G.P. BOMB INERT LOADED
 Reference: NPG Report No. 933 dated _____
 Reference: BuOrd ltr. NP9(Rc26-22L-2)FL4 dated 4 APR 1949
 Task Assignment No. NP9-Rc26-34-1-52 dated 4 AUG 1951

PLATE TARGET

Gage 0.50 Class STS
 Maker CARNEGIE
 No. _____ Group _____
 Dimensions _____

OBLIQUITY 0°

PENETRATION COMPLETE
 Thickness at impact _____
 No. of impact on plate _____
 Dist. from nearest impact _____
 Dist. from near edges _____ and _____
 Impact area _____
 Spall: Front AL Back _____
 Dish GU Spur _____
 Cracks AL
 Punching (thrown) (started) _____
 Back Button (thrown) (started) _____
 Bulge _____
 Through opening _____

G.P. BOMB ROCKET

HEAD: Cal. _____ Type G.P. Bomb
 Mark 57 Mod 91 No. _____ Wt. 255.0*
 Maker _____
 Lot No. _____
 Filler: Type INERT Wt. _____
 Fuzes XB-44 FUZE # 123
 Boosters _____
 Wt. of head (as fired) 255.0*

MOTOR: Cal. 5" Mk. 2 Mod 3
 Motor temp. 90° Wt. 79.85*
 COMPLETE ROUND: Mark _____ Mod _____
 Wt. (as fired) 334.85*
 Wt. (burned) _____

OTHER INFORMATION

ALT: PRICE-230-H45
GRAIN: MK 18-0
 LAUNCHER 1050' ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight _____ Velocity, f/s: Striking 916 Residual _____
 Fuze functioning 245 FT. BEHIND TARGET
 Explosive action (High Order) (Low Order) (None) _____
 Distance of burst behind plate _____
 Condition of recovered round _____
 Head was in (EFFECTIVE) (~~INEFFECTIVE~~) condition.

REMARKS:

Photo No. NP9-47019

Signed

F. W. KASDORF
F. W. KASDORF, Lt
ORD. ENG. GS-12

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APPENDIX A

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIAIMPACT NO. 39047IMPACT DATE 29 MAY 1951NPG TEST NO. CODE 16690

OBJECT SEPARATION TEST OF ROCKET CARRIAGE AND
250 LB. E.P. INERT LOADED MOTOR USING 3-5" MOTORS AND
 Reference: NPG ITR ONE 3.25" RETRO MOTOR dated 11 May 1951
 Reference: NOTE ltr. NIP/NOL VI-1(234) WASH DC dated 11 May 1951
 Task Assignment No. NPG-25-17026-20 dated 15 Feb 1950

PLATE TARGET

Gage 0.959 Class STS
 Maker LUKENS
 No. 21 Group STS-6-2
 Dimensions 85" X 348"

OBLIQUITY 0°PENETRATION COMPLETE

Thickness at impact _____
 No. of impact on plate _____
 Dist. from nearest impact _____
 Dist. from near edges _____ and _____
 Impact area _____
 Spall: Front _____ Back _____
 Dish _____ Spur _____
 Cracks _____
 Punching (thrown) (started) _____
 Back Button (thrown) (started) _____
 Bulge _____
 Through opening _____

ROCKET

GP BOMB
 HEAD: Cal. _____ Type E.P. BOMB
 Mark ANM57 Mod AI No. _____ Wt. _____
 Maker _____
 Lot No. _____
 Filler: Type INERT Wt. _____
 Fuzes NONE

Boosters _____
 Wt. of head (as fired) 36.25

MOTOR: Cal. 5" Mk. 2 Mod 3
 Motor temp. 90° Wt. 79.05

COMPLETE ROUND: Mark _____ Mod _____
 Wt. (as fired) _____
 Wt. (burned) _____

OTHER INFORMATION MOTORS (4)
5.0: ALN: RMDA-230-H45 GRAIN: MK130
3.25: ALN: RMDA-400-NECH-45 " MK130
LAUNCHER 1050 ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight _____ Velocity, f/s: MEAN Striking 839 Residual _____
 Fuze functioning NO FUZE IN THIS BOMB
 Explosive action (High Order) (Low Order) (None) _____
 Distance of burst behind plate _____
 Condition of recovered round _____
 Head was in (EFFECTIVE) (INEFFECTIVE) condition.

REMARKS: SOME SEPARATION - BOMB HAD GOOD FLIGHT, METALS
IN VERTICAL POSITION AT TARGET DUE TO OFF CENTER RETRO MOTOR

Photo No. NP9-47020

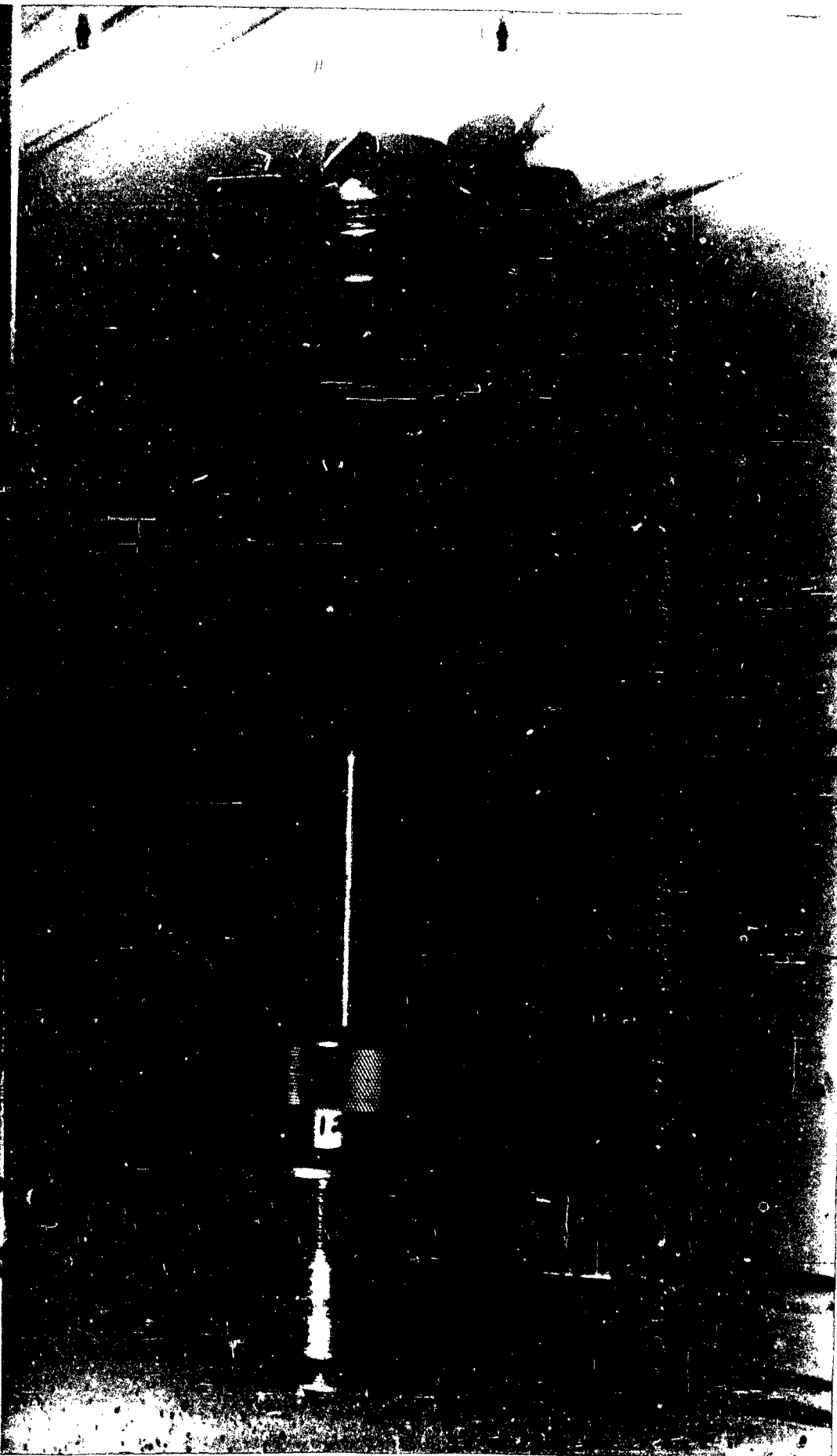
Signed F.W. Kasdorf
F.W. KASDORF, Lt
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APPENDIX A

44-38861-1000



NP9-46089

Test vehicle for B-44A fuze. Fired from NPG 500 ft. Launcher in 250# G. P. inert loaded bomb. Fuze functioning indicated by cross-axial smoke puff in tail of bomb. Compressed air used to prearm fuze. Three 5"O rocket motors Mk 2 used for propulsion.

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Figure 3



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 RP9-47019
 Functioning test of M-44A fuze. Fired from RPG 500 ft. launcher with 15 ft. 5" O. VAR motors for propulsion vs 1/2" STE plate at 0° obliquity 15 feet from muzzle of launcher.

(over page)

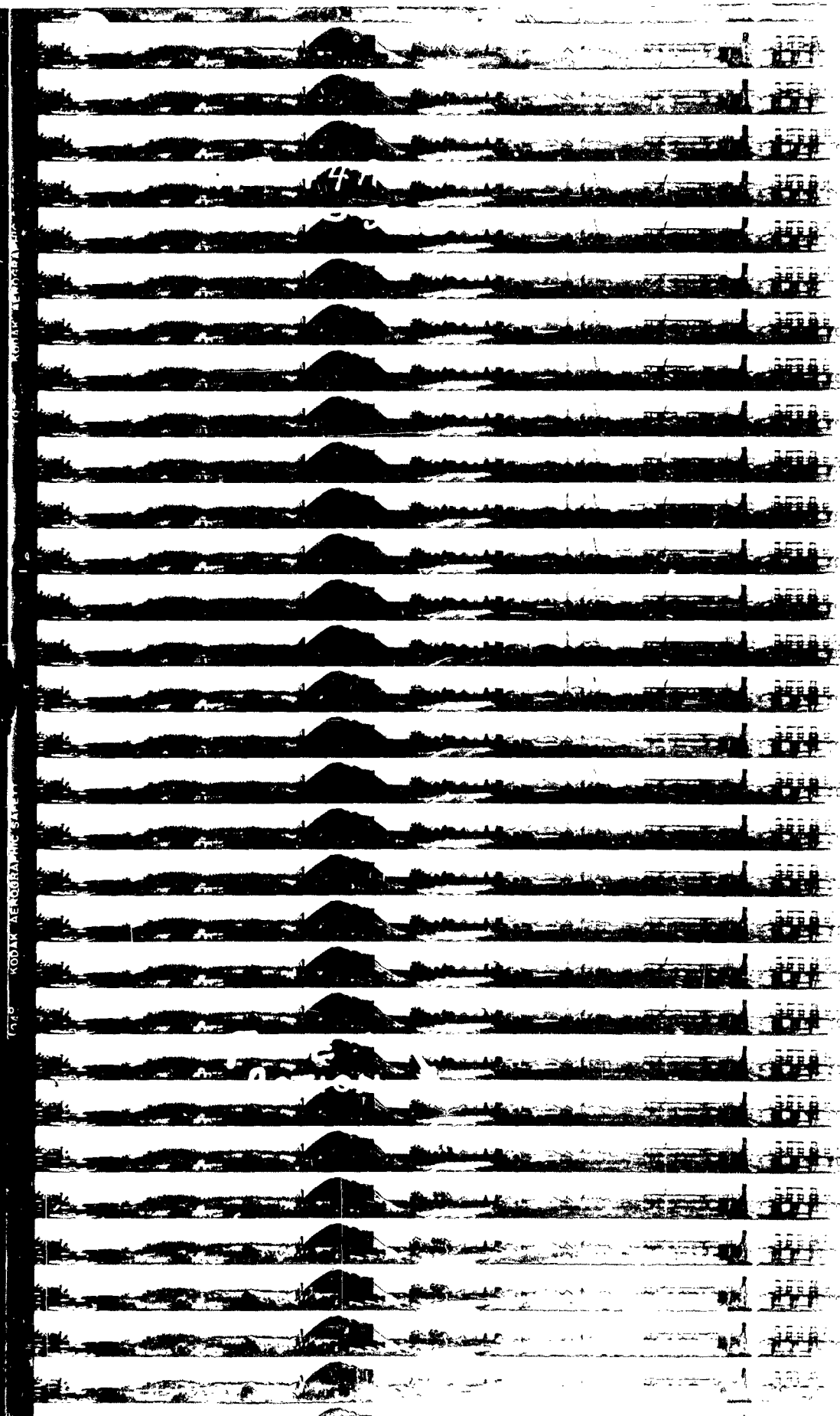


Figure 4

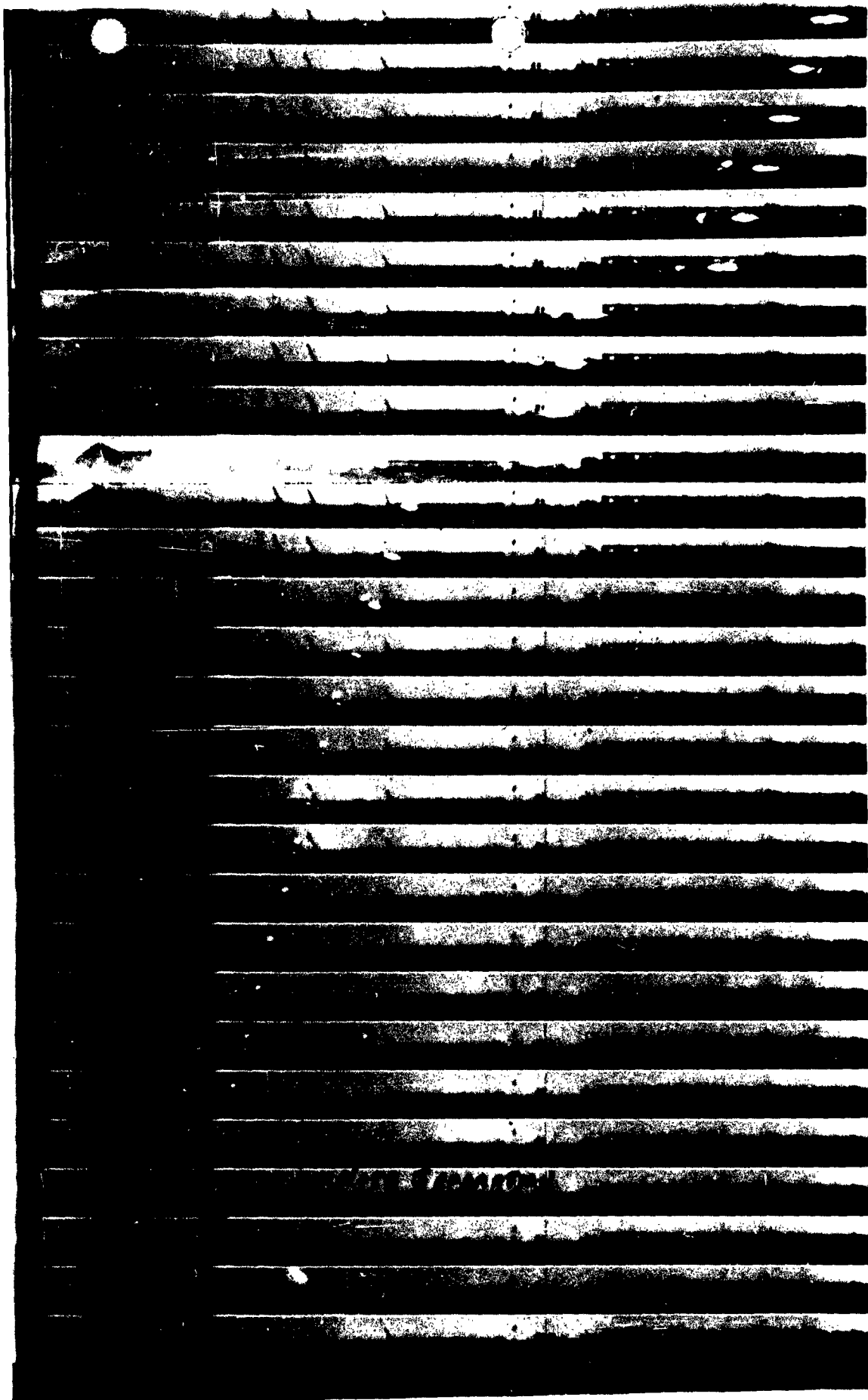
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THE CHIEF OF NAVAL OPERATIONS

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20 May 1951

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