<table>
<thead>
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<th>UNCLASSIFIED</th>
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<td>LIMITATION CHANGES</td>
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<tr>
<td>TO: Approved for public release, distribution unlimited</td>
</tr>
<tr>
<td>FROM: Distribution authorized to DoD only; Test and Evaluation; MAR 1952. Other requests shall be referred to Naval Proving Ground, Dahlgren VA.</td>
</tr>
</tbody>
</table>

**AUTHORITY**

31 Mar 1964, DoDD 5200.10; USNSWC ltr dtd 7 Jul 1975

THIS PAGE IS UNCLASSIFIED
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-Al.

   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 3W25 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.
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/S71-8(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
Fusing 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-Al inert loaded
Launcher: Naval Proving Ground's 500 ft.
Target: 1/2" STS plate
Propulsion: Three 5VO 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 fuses 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 5VO 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
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 500 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:
## Fusing System for XSAM-N-4, Guided Missile Dove; Testing of Impact Rd. Impact Velocity Fuze

<table>
<thead>
<tr>
<th>Rd.</th>
<th>Date</th>
<th>Impact No.</th>
<th>Velocity</th>
<th>Fuze No.</th>
<th>Remarks</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5-10-51</td>
<td>39028</td>
<td>888</td>
<td>117</td>
<td>Questionable whether fuse was fully armed when round was fired.</td>
<td>No evidence of functioning in flight—when recovered fuse had functioned—smoke puff fired.</td>
</tr>
<tr>
<td>2</td>
<td>5-14-51</td>
<td>38991</td>
<td>883</td>
<td>118</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>5-16-51</td>
<td>38993</td>
<td>859</td>
<td>119</td>
<td>Target 15 ft. from muzzle starting with this shot—50 ft. on first two rounds.</td>
<td>No evidence of functioning in flight. Some black powder still in tube when recovered, no evidence of functioning.</td>
</tr>
<tr>
<td>4</td>
<td>5-16-51</td>
<td>38994</td>
<td>903</td>
<td>120</td>
<td></td>
<td>No evidence of functioning in flight. All black powder still in tube when recovered.</td>
</tr>
<tr>
<td>5</td>
<td>5-21-51</td>
<td>39020</td>
<td>643</td>
<td>121</td>
<td>Only two motors fired.</td>
<td>No functioning in flight—after going through target round glanced off wedge in butt with fuze functioning about 60 ft. behind butt.</td>
</tr>
<tr>
<td>6</td>
<td>5-21-51</td>
<td>39021</td>
<td>893</td>
<td>122</td>
<td></td>
<td>Fuze functioned approx. 250 ft. behind target.</td>
</tr>
<tr>
<td>7</td>
<td>5-22-51</td>
<td>39022</td>
<td>916</td>
<td>123</td>
<td></td>
<td>Fuze functioned approx. 245 ft. behind target.</td>
</tr>
</tbody>
</table>
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 3425 motor Mk 7 was installed in the upper part of the carriage directed oppositely to the three 540 motors. A set of contacts was provided to ignite the 3425 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 540 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.
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-Al.

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.
Fusing 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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Terminal Ballistics Department
W. B. ROBERTSON, Lieutenant Commander, USN,
Terminal Ballistics Batteries Officer,
Terminal Ballistics Department
R. T. RUBLE, Lieutenant Commander, USN,
Terminal Ballistics Officer,
Terminal Ballistics Department
C. C. BRAMBLE, Director of Research, Ordnance Group

APPROVED: IRVING T. DUKE
Rear Admiral, USN
Commander, Naval Proving Ground

C. T. MAURO
Captain, USN
Ordnance Officer
By direction
Fifth Partial Report
on
Combat Air Operations Guided Missile Fuses;
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

CONFIDENTIAL
SECURITY INFORMATION
IMPACT RECORD

U.S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

IMPACT NO.: 39026
IMPACT DATE: 10 MAR 1951

PROJECT TEST NO.: CONF-51

OBJECT:
SENSITIVITY TEST OF 1/8 HUR FUSE IN 2569.

G.P. BOMBS WITH SMOKE FUSE LOADING

Reference: NPO 5TH 31 MAR 1951 dated
Reference: BuOrd ltr. NP (RQ-91-2) dated 4 APR 1949
Task Assignment No. NPG (RQ-91-2) dated 4 AUG 1951

PLATE TARGET

Gage: 0.170
Class: S15

Maker: CARNEGIE
No.: Group:
Dimensions:

OBLIQUITY: 0°

PEMORENATION: COMPLETE

Thickness at impact
No. of impact on plate
Dist. from nearest impact
Dist. from near periphery and impact area
Spall: Front
Dish
Cracks:

PUNCHING (thrown) (started)
Back: Button
Bulge: Through opening

HEAD: Cal. Type: G.P. Bomb
Mark: Mod.: No.: Wt.: 255.5 lbs

Maker: NAL
Lot No.: 117
Filler: Type: V290
Wt. Fuzes: 1/8 HUR SMOKE FUSE
Boosters: Wt. of head (as fired) 255.5 lbs

MOTOR: Cal. 5" Mk. 2 Mod. 3
Motor temp. 90° Wt. 99.6 lbs

COMPLETE ROUND: Wt. (as fired) 335.5 lbs
Wt. (burned)

OTHER INFORMATION:

MOTORS (3)
R.M.: 2100
R.M.: 2100
LAUNCHER (2):

ROCKET PERFORMANCE

Flight Velocity, f/s: DUGAN 798 Residual

Fuse functioning: IN SANGHA

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

Distance of burst behind plate

Condition of recovered round

Head was in (EFFECTIVE) (INOPERATIVE) condition

REMARKS:

Photo No. Signed

Confidential
Security Information

APPENDIX A
Page 11 of
IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

IMPACT NO. 38991

IMPACT DATE 4 AUG 1957

NPG TEST NO. N.P.G.-15-4687

OBJECT: LAUNCHER-LOADED EXPLODING SMOKE PUFF

Reference: NPG Ltr. N.P.G.-461 dated 5 AUG 1956
Reference: BuOrd ltr. N.B.O.G.-12-88-M-2 dated 4 APR 1951
Task Assignment No. N.A. B-2-6-1-51 dated 4 AUG 1951

PLATE TARGET

Gage: 0.50 Class: STS

Maker: ____________

No.: ____________

Dimensions: ____________

OBLIQUITY: ____________

PEENETRATION

Thickness at impact: ____________

No. of impact at plate: ____________

Dist. from nearest impact: ____________

Dist. from near edges: ____________

Impact area: ____________

Spall: Front: ____________ Back: ____________

Dish: ____________ Spur: ____________

Cracks: ____________

Punching (thrown) (started): ____________

Back Button (thrown) (started): ____________

Bulge: ____________

Through opening: ____________

ROCKET PERFORMANCE

Flight: ____________

Velocity, f/s: ____________

Fuze functioning: ____________

Explosive action: High Order Low Order None

Distance of burst behind plate: ____________

Condition of recovered round: ____________

Head was in (EFFECTIVE) (IN Effective) condition.

REMARKS: ____________

Signed: F.W. Kassoff

Photo No. ____________

Confidential

Security Information

APPENDIX A

Page 7 of 12
NAVORD FORM 1883 (New 3/43)

IMPACT RECORD

U.S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

IMPACT NO. 38193

IMPACT DATE 5-16-51

NPG TEST NO. 

OBJECT

Project 15 1/2" STS CLATE AT 20° 0' 

Reference: NPG LT. Report No. 933 dated 

Reference: BuOrd ltr. NPG (Rev.-28-2) Flt. dated 1 APR. 1944 

Task Assignment No. NPG (Rev.-28-1-75) dated 4 AUG 1951 

PLATE TARGET

Gage 1/2" Class STS

Maker —

No. —

Dimensions —

OBLIQUITY 0°

PENETRATION Complete

Thickness at impact —

No. of impact on plate —

Dist. from nearest impact —

Dist. from next edges and Impact area —

Spall: Front —

Dish —

Crack —

Punching (thrown) (started) —

Back Button (thrown) (started) —

Bulge —

Through opening —

ROCKET PERFORMANCE

FUSE: Mean Velocity, f/s: Striking 8.58 Residual 0

FUSE 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. Kaeser

Confidential Security Information

APPENDIX A

3/4 in. No 3
# IMPACT RECORD

**U.S. NAVAL PROVING GROUND**

**Dahloren, Virginia**

**IMPACT NO.** 38994

**IMPACT DATE** 5-16-51

**NPG TEST NO.**

## OBJECT

**Bolistic Test of VB-4414 Fuse in 250# Init.**

**Loaded Bombs** 15 1/2" Sts Plate at 0° OA.

**Reference:**
- NPG 174 dated
- BuOrd 16-2 dated 4 APR 1949
- NPG- Re 26-24-1-52 dated 4 AUG 1951

## PLATE TARGET

<table>
<thead>
<tr>
<th>OBEIQUITY</th>
<th>0°</th>
</tr>
</thead>
</table>

## PENETRATION

**COMPLETE**

**Thickness at Impact**

**No. of impact on plate**

**Dist. from nearest impact**

**Dist. from near edges**

**Impact area**

**Spall:**

**Displacement:**

**Cracks:**

**Punching (thrown) (started)**

**Back Button (thrown) (started)**

**Bulge**

**Through opening**

## HEAD:

**Cal.**

**Type:** C.P. Bomb

**Maker:** NOL

**Lot No.:**

**Filler:** Type 1

**Fuses:** VB-4414 No. 120

**Boosters:**

**Wt. of head (as fired):** 261.25#

**Motor:**

**Cal. 5" Mark 2 Mod 3**

**Motor temp.:** 70°. Wt. 19.40#

**COMPLETE ROUND:**

**Wt. (as fired):** 341.35#

**Wt. (burned):**

**OTHER INFORMATION**

**Grain:** 8X18-5

**Hull:** RND-230 H-45

**LAUNCHER:** 105O Rocket Launcher

## ROCKET PERFORMANCE

**MEAN VELOCITY**

**Velocity, f/s:** Striking 90.3 Residual

**Pulse 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. Kaadrop

**Security Information**

APPENDIX A

Page No. 4
NAVORD FORM 1883 (New 3/42)

IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

IMPACT NO. 39220

IMPACT DATE 21 MAY 1951

NPG TEST NO. CODE 6687

OBJECT LAUNCHER, SENSITIVITY TEST OF XB-44 FUZE

IN 250 LB. G. P. BOMB

Reference: NPG ltr. dated 21 MAY 1953

Reference: BuOrd ltr. dated 4 APR 1951

Task Assignment No. NPG-ke-26-34-1-52

LAUNCHER, SENSITIVITY TEST OF XB-44 FUZE

IMPACT NO. 39220

OBJECT LAUNCHER, SENSITIVITY TEST OF XB-44 FUZE

IN 250 LB. G. P. BOMB

Reference: NPG ltr. dated 21 MAY 1953

Reference: BuOrd ltr. dated 4 APR 1951

Task Assignment No. NPG-ke-26-34-1-52

Plate Target

Gage 6-50 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

Craigs -

Piercing (thrown) (started) -

Back Button (thrown) (started) -

Bulge -

Through opening -

Rocket Performance

Flight Velocity, f/s: Striking 643 Residual

Pierce 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) (INDEFFECTIVE) condition.

Remarks:

Photo No. Signed F.W. Kradel

Confidential Security Information

APPENDIX A
**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-YY Fuse

**In 250 lb. G.P. Bomb**

Reference: NPG dated
Reference: BuOrd ltr. dated

Task Assignment No. dated

---

**Plate Target**

Gage: 0.50 Class: STS

Maker: MARKERIE

No. Group:

Dimensions:

OBLIQUITY: 0°

---

**Penetration**

COMPLETE

Thickness at impact:

No. of impact on plate:

Dist. from nearest impact:

Dist. from near edges:

Impact area:

Spall: From:

Dish:

Crack:

Punching (thrown) (started):

Back Button (thrown) (started):

Bulge:

Through opening:

---

**Head:**

Cal. Type: G.P. Bomb

Mark: AM-57 Mod A1 No. 1 Wt. 251.00#

Maker:

Lot No.:

Filler: Type: INERT Wt.:

Fuses: XB-YY Fuse #122

Boosters:

Wt. of head (as fired): 351.00#

**Motor:**

Cal. 5" Mk. 3 Mod 2

Motor temp. 90° Wt. 79.55#

**Complete Round:**

Mark Mod

Wt. (as fired): 380.55#

Wt. (burned):

**Other Information:**

Actors (3)

ALN: RHIOA-230-H-45

GRAIN: Mk. 15-D

**Launcher:**

1050: Rocket Launcher

---

**Rocket Performance**

Flight Velocity, f/s: Striking 893 Residual

Fuse 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. Kasdorpe, Lt

ORD. ENG. 65-12

---

Confidential Security Information

Page No. 1

APPENDIX A
**IMPACT RECORD**

**U.S. NAVAL PROVING GROUND**

**DAHLGREN, VIRGINIA**

**IMPACT NO.** 39022

**IMPACT DATE** 22 May 1951

**NPG TEST NO.** CODE 10697

---

### OBJECT

**LAUNCHER SENSITIVITY TEST OF XR-44 FUZE**

- **IN 350 LB. G.P. BOTTLE INERT LOADED**

---

### REFERENCE

- **NPG TEST No. 933** dated
- **BuOrd ltr.** dated 1 APR 1949
- **Task Assignment No.** dated 4 AUG 1951

---

### PLATE TARGET

**G.A.P. BOMB**

<table>
<thead>
<tr>
<th>Cage No.</th>
<th>Class</th>
<th>No.</th>
<th>Dimensions</th>
<th>OBliquity</th>
<th>Penetration</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.50</td>
<td>575</td>
<td></td>
<td></td>
<td>0°</td>
<td>COMPLETE</td>
</tr>
</tbody>
</table>

**HEAD:**

- **Cal.**
- **Type:** G.A.P. BOMB
- **Mark:** No. 62
- **Wt.:** 2.55 lbs

---

### ROCKET

**HEAD:**

- **Cal.**
- **Type:** G.A.P. BOMB
- **Mark:** No. 62
- **Wt.:** 2.55 lbs

---

### ROCKET PERFORMANCE

- **Flight Velocity, f/s:** STRIKING 916 Residual
- **Explosive action:** 245 FT. BEHIND TARGET
- **Distance of burst behind plate:** Condition of recovered round
- **Head was in (EFFECTIVE) (INEFFECTIVE) condition.**

---

### REMARKS:

---

**Photo No.** NP2-47019

**Signed** F.W. KASDOL

**Security Information**

---
IMPACT RECORD

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

IMPACT NO. 39047

IMPACT DATE 29 MAY 1951

NPG TEST NO. CODE 11620

OBJECT: SEPARATION TEST OF ROCKET CARriage AND
50 L.F. E.X. INERT LOADED ROUND USING 3.5" MOTORS AND

Reference: NPG, ltr. 2, dated


Task Assignment No. NPG-27-1-36 dated 15 FEB 1957

PLATE TARGET

Gage 0.959 Class 5/5
Maker LUKENS
No. 91 Group 5/5-1-2
Dimensions 95" X 948"

OBLIQUITY

PENETRATION COMPLETE

Thickens at impact
No. of impact on plate
Dist. from nearest impact
Dist. from near edges
Impact area
Spall: Front Back

Dish Spur

Cracks

Punching (thrown) (started)

Back Button (thrown) (started)

Bulge

Through opening

ROCKET

HEAD: Cal. Type G.P. Bomb
Mark and Mod. 59 No. Wt. -

Maker

Lot No.

Filler: Type INERT Wt. -

Fuzes NONE

Boosters -

Wt. of head (as fired) 36.75

MOTOR: Cal. 5" Mk. 2 Mod. 7
Motor temp. 90° Wt. 79.05

COMPLETE ROUND: Mark Mod

Wt. (as fired)

Wt. (burned)

OTHER INFORMATION

LAUNCHER: 1451 ROCKET LAUNCHER

ROCKET PERFORMANCE

Flight Velocity, f/s: Starting 229 Residual

Puze 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) (PREFERRED) condition.

REMARKS: SOME SEPARATION - BOMB HAD GOOD FLIGHT, MET MELS

IN VERTICAL POSITION AT TARGET DUE TO OFF CENTER RETRO MOTOR

Photo No. NPG-47020 Signed F.W. KAEDER
Confidential

Security Information
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 540 rocket motors Mk 2 used for propulsion.

Figure 3
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Fuzing System for XSAM-N-4, Guided Missile Dove; Testing of

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