DEFENSE SUPPLY AGENCY

Inter-Office Memorandum

DATE : 8 AUG 1975

SUBJECT: Declassification and Release of ATI Documents to NTIS 37

FROM : DDC-TST (Mr. Crossin/46814/jgy)

TO : DDC-PFP (Dansberger)
DDC-PFA (Sherrer)

1. The following Confidential ATI documents have been declassified and released to NTIS (DDC Form 68 to follow). Authority: Naval Surface Weapons Center notification dated 7 July 1975:

ATI-150 307	ATI-156 452
ATI-150 807	ATI-156 552

2. It is requested that your microfilm and all other records pertaining to these ATI documents be changed to reflect the above changes.

Richard A. Matthews

RICHARD A. MATTHEWS
Chief, Data Input &
Review Branch

UNCLASSIFIED

ATI - 150307

DEFENSE DOCUMENTATION CENTER

FOR

SCIENTIFIC AND TECHNICAL INFORMATION

CAMERON STATION ALEXANDRIA, VIRGINIA

CLASSIFICATION CHANGED
TO UNCLASSIFIED
FROM CONFIDENTIAL
PER AUTHORITY Naval Surface Weapons Center
Dated 7 July 1975

UNCLASSIFIED

(Unpublished Card) CONFIDENTIAL

ATI 150 307 (U. S. Military Organizations request copies from ASTIA-DSC. Others route requests to ASTIA-DSC thru BuOrd, Wash., D.C.)

U. S. Naval Proving Ground, Dahlgren, Va. (NPG Report No. 931)

Twenty-Ninth Partial Report on Bomb Fuzes - Research, Development Tests, and Reports of - Final Report on Electric Bomb Fuzes, Ex 200 Mod 3 and BSX-5 Boostering Tests of - and Appendixes A thru E

Hughes, A. N. 4 March'52 22pp tables, diagr., graph

Fuzes, Bomb
Fuzes, Electric

Ordnance and Armament (22)
Bomb and Depth Charges (7)

CONFIDENTIAL

Electric Bomb Fuzes, Ex 200 Mod 3 and
BSX-5 Boostering Tests of

PART A

SYNOPSIS

1. This test was conducted to compare air blast pressures for the standard 250 lb. G.P. bomb having a nose fuze and modified 250 lb. G.P. bombs having various athwartship fuzes.

2. The athwartships fuzes Ex 200 Mod 3 with either 1/2 or 1/3 size booster pellets and the BSX-5 detonated the modified 250 lb. G.P. bomb AN-M57 high order and produced blast pressures similar to the standard 250 lb. G.P. bomb AN-M57 having a nose fuze.

Electric Bomb Fuzes, Ex 200 Mod 3 and
BSX-5 Boostering Tests of

TABLE OF CONTENTS

Electric Bomb Fuzes, Ex 200 Mod 3 and
BSX-5 Boostering Tests of

PART B

INTRODUCTION

1. AUTHORITY:

This test was authorized by reference (a) and conducted under Task Assignment NPG-Re2b-20-1-52, reference (b).

2. REFERENCES:

a. BUORD Conf ltr NP9 Re2b-DBLaP:bjn Serial 23939 of 4 August 1951
b. NOL Conf ltr NP/NOL/X1-1(577)WA:ASW:gbh Serial 0894 of 22 May 1951
c. NPG Report No. 708 of 17 January 1951

3. BACKGROUND:

a. Reference (b) authorized the Naval Proving Ground to work directly with the Naval Ordnance Laboratory in the development of bomb fuzes.

b. Reference (c) reported on boostering tests of the Electric Bomb Fuze, Ex 200 Mod 2, for the Low Drag Bomb Ex 2 Mod 0. Changes in the fuze design and in the thickness of the fuze cavity liner in Low Drag bombs require that boostering tests be repeated. In addition, an initial test of the adequacy of the BSX-5 fuze booster for use in the athwartship fuze cavity of Low Drag bombs is required.

4. OBJECT OF TEST:

This test was conducted to compare air blast pressures for the standard 250 lb. G.P. bomb having a nose fuze and modified 250 lbs. G.P. bombs having various athwartship fuzes.

5. PERIOD OF TEST:

a.	Date of Project Letter	22 May 1951
b.	Date Necessary Material Received	17 July 1951
c.	Date Commenced Test	18 July 1951
d.	Date Completed Test	31 July 1951

6. REPRESENTATIVES PRESENT:

This test was witnessed in part by Mr. A. S. Will representing the Naval Ordnance Laboratory and Mr. D. K. Tower representing the Daystrom Electric Corporation.

PART C

DETAILS OF TEST

7. DESCRIPTION OF ITEM UNDER TEST:

a. Standard AN-M57 250 lb. G.P. Bomb:

Rounds Nos. 1, 5, 6, 10, and 13.10"9 diameter, 45"4 length, 0"27 wall thickness, 80/20 Tritonal loaded, and assembled with AN-M103 A1 nose fuze modified for static detonation.

b. Modified 250 lb. G.P. Bomb:

Eighteen of the standard 250 lb. G.P. bombs described above were modified when empty by forming a 3"00 diameter cavity athwartships and inserting a fuze cavity liner, 3"00 O.D., 2"781 I.D. $^{+.019}_{-.000}$. The bombs were modified by the Daystrom Electric Corporation and loaded with 80/20 Tritonal at the Naval Mine Depot, Yorktown, Virginia. A sketch of the modified bomb is shown in Figure 1. Thirteen of the eighteen modified bombs were used in this test.

c. The assembly and weights of the fuzes and bombs are as follows:

Electric Bomb Fuzes, Ex 200 Mod 3 and BSX-5 Boostering Tests of

Rd. No.	Bomb Ser. No.	Bomb Type	Fuze	*Pellet Size	Bomb Data: Empty Wt. (lbs)	Bomb Data: Charge Wt. (lbs)	Bomb Data: Total Wt. (lbs)	Charge Density
1	1	Std.	AN-M103-A1	-	116	134	250	1.67
2	11	Mod.	Ex 200-3	1/2	119	127	246	1.67
3	16	Mod.	Ex 200-3	1/3	118	129	247	1.67
4	8	Mod.	Ex 200-3	1/3	122	133	255	1.69
5	3	Std.	AN-M103-A1	-	118	131	249	1.67
6	2	Std.	AN-M103-A1	-	117	132	249	1.67
7	22	Mod.	BSX-5	-	121	130	251	1.67
8	17	Mod.	BSX-5	-	124	130	254	1.67
9	7	Mod.	BSX-5	-	122	131	253	1.69
10	6	Std.	AN-M103-A1	-	121	133	254	1.69
11	14	Mod.	Ex 200-3	1/3	136	127	263	1.68
12	20	Mod.	Ex 200-3	1/3	124	126	250	1.64
13	4	Std.	AN-M103-A1	-	117	132	249	1.66
14	24	Mod.	Ex 200-3	1/3	125	129	254	1.67
15	19	Mod.	Ex 200-3	1/3	123	128	251	1.70
16	23	Mod.	BSX-5	-	126	130	256	1.67
17	13	Mod.	BSX-5	-	127	127	254	1.67
18	19	Mod.	BSX-5	-	123	128	251	1.70

* Tetryl boosters for the Ex 200 Mod 3 fuzes were prepared using a pressure of 10,500 lbs. per square inch. The boosters were classified as follows:

Full size - 2"537 dia. x 1"616 high and weighing 211 grams
2/3 size - 2"537 dia. x 1"077 high and weighing 141 grams
1/2 size - 2"537 dia. x 0"808 high and weighing 105.5 grams
1/3 size - 2"537 dia. x 0"539 high and weighing 70.5 grams

Full size and 2/3 size boosters were not used in this test.

Each BSX-5 fuze contained a 117 gram torcidal tetryl booster and two M36 detonators which were off-center.

8. DESCRIPTION OF TEST EQUIPMENT:

a. Five Rochelle salt velocity gages.

b. Two Tourmaline gages.

c. Three Naval Ordnance Laboratory Indenter Gages.

d. One 35mm Fastax Camera.

e. Velocity Plates.

9. PROCEDURE:

a. Five Rochelle salt velocity gages were mounted in shock mounts on tripods approximately 4 feet from the ground and at approximately 10 foot intervals along a radius 45° from the beam spray of the detonation, with the nearest gage at 50' from the bomb.

b. Two Tourmaline gages were mounted edge on to the blast with a 10' interval between and along a radius 42° from the beam spray, with the first gage 50' from the bomb.

c. Three Naval Ordnance Laboratory Indenter Gages were placed by the Rochelle salt gage at 50 feet from the bomb. The positions of all the different gages in relation to the bomb and arena are shown in Figure 2.

d. The high-speed camera was placed to record fragment hits on 5' high mild steel velocity plates which were at 60 feet from the bomb and in polar angle zones 55° to 125°.

e. The bombs were detonated statically in the order listed in paragraph 7c.

10. RESULTS AND DISCUSSION:

a. All rounds except Round 18 detonated high order. Round No. 18, which was assembled with a BSX-5 fuze and a M36 detonator, did not detonate. A 5 lb. TNT charge was then placed on the forward part of this bomb and detonated. This caused the bomb to detonate high order.

b. Blast data are detailed in Table II and are summarized as follows:

Electric Bomb Fuzes, Ex 200 Mod 3 and
BSX-5 Boostering Tests of

Fuze	Booster Size	No. Rds. Fired	Rd. Nos.	Average Blast Pressure at 50' NOL Indenter Gages
AN-M103-A1	--	5	1,5,6,10,13	9.3 psi
*BSX-5	--	5	7,8,9,16,17	9.2 psi
Ex 200-3	1/2	1	2	9.2 psi
Ex 200-3	1/3	6	3,4,11,12,14,15	8.6 psi

* One round, No. 18, was not used in this average.

From the results summarized above, no significant differences in blast pressure between the four types of fuzes were indicated. The smaller booster (1/3 size) of the Ex 200 Mod 3 fuze produced pressures similar to those of the standard nose fuze which would indicate that a 1/3 size booster could be used satisfactorily in the athwartships fuze.

c. The median fragment beam spray (zone 55° to 125°) velocities of the various bombs detailed in Table I, are summarized as follows:

Fuze	Booster Size	No. Rds. Recorded	Rd. Nos.	Median Fragment Velocity (ft./sec.)
AN-M103-A1	-	4	5,6,10,13	5850
* BSX-5	-	4	7,8,9,17	5540
Ex 200-3	1/2	1	2	5100
Ex 200-3	1/3	6	3,4,11,12,14,15	5630

* One round, No. 18, was not used in this average.

PART D

CONCLUSIONS

11. The athwartships fuzes Ex 200 Mod 3 with either 1/2 or 1/3 size booster pellets and the BSX-5 detonated the modified 250 lb. G.P. bomb AN-M57 high order and produced blast pressures similar to the standard 250 lb. G.P. bomb AN-M57 having a nose fuze.

Electric Bomb Fuzes, Ex 200 Mod 3 and
BSX-5 Boostering Tests of

The tests upon which this report is based were conducted by:
M. BERGER, Lieutenant, USN, Fragmentation Officer
Terminal Ballistics Department

This report was prepared by:
A. N. HUGHES, Lieutenant, USN, Fragmentation Firing Officer
Terminal Ballistics Department

This report was reviewed by:
V. PHILIPCHUK, Fragmentation Officer
Terminal Ballistics Department
R. H. LYDDANE, Director of Research
Terminal Ballistics Department
W. B. ROBERTSON, Lieutenant Commander, USN,
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APPROVED: IRVING T. DUKE
Rear Admiral, USN
Commander, Naval Proving Ground

C. T. Mauro

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

CONFIDENTIAL NPG REPORT NO. 931

U. S. NAVAL PROVING GROUND
DAHLGREN, VIRGINIA

Twenty-Ninth Partial Report

on

Bomb Fuzes; Research, Development

Tests, and Reports of

- -

Final Report

on

Electric Bomb Fuzes, Ex 200 Mod 3 and

BSX-5 Boostering Tests of

This report is transmitted for your information and file. Additional information may be obtained by addressing:

Chief, Washington USAF Engineering Field Office
Room 4949, Main Navy Building
Washington 25, D .C.

The telephone extension is 62471 or 65568 on the Department of Defense Exchange.

Project No.: NPG-Re2b-20-1-52 Date:
Copy No.: 28
No. of Pages: 8

MAR 4 1952

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NP9-46960

16 JULY 1951

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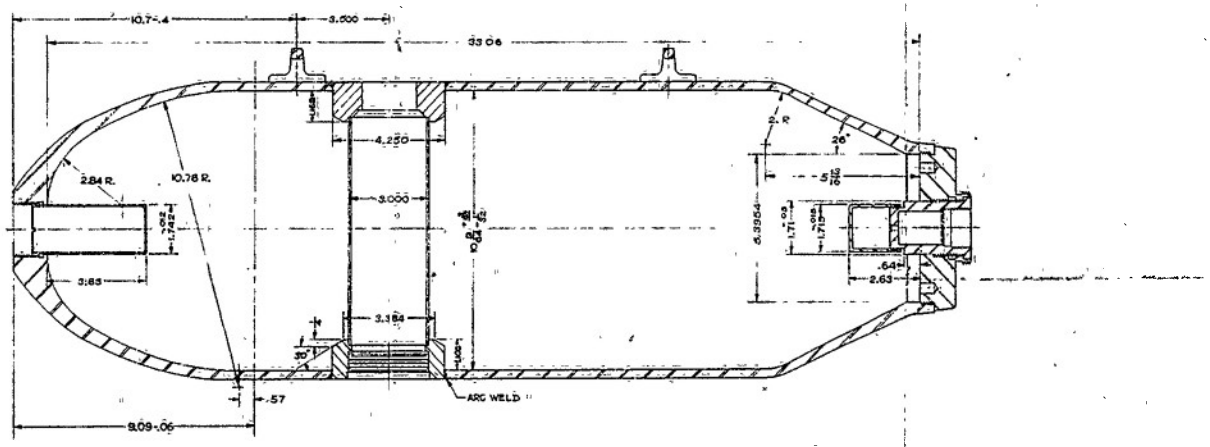
SECURITY INFORMATION

Outline Drawing of modified 250 lb. C. P. Bomb AN-M57 showing position of Athwartships Fuze Cavity.

Figure 1

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON FRACTIONS ±
DECIMALS .XX ±
ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL

FREDERICK HART & CO. INC. POUGHKEEPSIE, N. Y.
DRAWN JJF DATE 8-8-51
CHECK DATE
APPVD. DATE
BUORD. DEPT. OF THE NAVY APPROVED
LOADS AS DIRECTED BY THE CHIEF OF ORDNANCE

CENTER SECTION OF 250 # G.P. BOMB SHOWING FUZE LINER IN PLACE

SCALE 1/2 | UNIT WT. | JOB ORDER

FREDERICK HART & CO. INC. POUGHKEEPSIE, N. Y.
DRAWING No. 4504-1920
DEPARTMENT OF THE NAVY
BUREAU OF ORDNANCE
WASHINGTON, D. C.
BUORD DRAWING NO.

#11933

Electric Bomb Fuzes, Ex 200 Mod 3 and
BSX-5 Boostering Tests of

TABLE I

FRAGMENT VELOCITY DATA

35mm Fastax Camera — 2910 frames per sec
Rd. 2 Modified 250 lb. G.P. Bomb — 80/20 Tritonal
Fuze: Ex 200 Mod 3 with 1/2 size booster
Total Weight 246 lbs. — Filler Weight 127 lbs.

Frame in Which Hit Occurred	No. Fragments	Velocity (f/s)
29	1	6020
30	9	5820
31	4	5630
32	6	5460
33	1	5290
34	5	5140
35	1	4990
36	8	4850
37	1	4720
38	6	4590
39	3	4480
40	5	4370
41	2	4260
42	1	4160
Median		5100
Average		5070

Electric Bomb Fuzes, Ex 200 Mod 3 and
BSX-5 Boostering Tests of

TABLE I (Continued)

35mm Fastax Cameras — 2850 frames per sec.
Rd. 3 Modified 250 lb. G.P. Bomb — 80/20 Tritonal
Fuze: Ex 200 Mod 3 with 1/3 size booster
Total Weight 247 lbs. — Filler Weight 129 lbs.

Frame in Which Hit Occurred	No. Fragments	Velocity (f/s)
27	4	6330
28	5	6110
29	3	5900
30	5	5700
31	5	5520
33	3	5180
34	3	5030
35	3	4890
36	1	4750
38	3	4500
Median		5670
Average		5520

Electric Bomb Fuzes, Ex 200 Mod 3 and
BSX-5 Boostering Tests of

TABLE I (Continued)

35mm Fastax Camera — 2910 frames per sec.
Rd. 4 Modified 250 lbs. G.P. Bomb — 80/20 Tritonal
Fuze: Ex 200 Mod 3 with 1/3 size booster
Total Weight 255 lbs. — Filler Weight 133 lbs.

Frame in Which Hit Occurred	No. Fragments	Velocity (f/s)
28	4	6240
29	6	6020
30	4	5820
31	9	5630
32	6	5460
34	4	5140
35	2	4990
36	5	4850
37	2	4720
38	2	4590
39	2	4480
41	2	4260
42	1	4160
Median		5530
Average		5360

Electric Bomb Fuzes, Ex 200 Mod 3 and
BSX-5 Boostering Tests of

TABLE I (Continued)

35mm Fastax Camera - 2850 frames per sec.
Rd. 5 Standard 250 lb. G.P. Bomb 80/20 Tritonal
Fuze: AN-M 103-A1
Total Weight 249 lbs. Filler Weight 131 lbs.

Frame in Which Hit Occurred	No. Fragments	Velocity (f/s)
25	2	5840
26	8	6580
27	7	6330
28	5	6110
29	6	5900
30	2	5700
31	1	5520
32	2	5340
34	1	5030
36	1	4750
37	2	4620
38	1	4500
39	2	4380
41	1	4170
42	2	4070
43	2	3980
45	2	3800
Median		6000
Average		5620

Electric Bomb Fuzes, Ex 200 Mod 3 and
BSX-5 Boostering Tests of

TABLE I (Continued)

35mm Fastax Camera — 3000 frames per sec.
Rd. 6 Standard 250 lbs. G.P. Bomb — 80/20 Tritonal
Fuze: AN-M 103-A1
Total Weight 249 lbs. — Filler Weight 132 lbs.

Frame in Which Hit Occurred	No. Fragments	Velocity (f/s)
27	7	6670
28	1	6430
29	5	6210
30	4	6000
31	3	5810
33	2	5450
34	2	5290
35	4	5140
36	1	5000
37	4	4860
39	3	4620
41	1	4390
42	2	4290
43	2	4190
Median		5700
Average		5540

Electric Bomb Fuzes, Ex 200 Mod 3 and
BSX-5 Boostering Tests of

TABLE I (Continued)

35mm Fastax Camera — 2700 frames per sec.
Rd. 7 Modified 250 lbs. G.P. Bomb — 80/20 Tritonal
Fuze: BSX-5
Total Weight 251 lbs. — Filler Weight 130 lbs.

Frame in Which Hit Occurred	No. Fragments	Velocity (f/s)
26	2	6230
27	7	6000
28	9	5790
29	7	5590
30	2	5400
31	4	5230
32	4	5060
33	1	4910
34	2	4760
35	5	4630
36	1	4500
39	1	4150
Median		5600
Average		5420

Electric Bomb Fuzes, Ex 200 Mod 3 and
BSX-5 Boostering Tests of

TABLE I (Continued)

35mm Fastax Camera — 2970 frames per sec.

Rd. 8 Modified 250 lbs. G.P. Bomb — 80/20 Tritonal

Fuze: BSX-5

Total Weight 254 lbs. — Filler Weight 130 lbs.

Frame in Which Hit Occurred	No. Fragments	Velocity (f/s)
29	3	6140
30	6	5940
31	4	5750
32	8	5570
33	3	5400
34	4	5240
35	4	5090
36	2	4950
37	1	4820
39	2	4570
40	2	4460
41	2	4350
42	2	4240
Median		5500
Average		5330

Electric Bomb Fuzes, Ex 200 Mod 3 and
BSX-5 Boostering Tests of

TABLE I (Continued)

35mm Fastax Camera — 2850 frames per sec.
Rd. 9 Modified 250 lbs. G.P. Bomb — 80/20 Tritonal
Fuze: BSX-5
Total Weight 253 lbs. — Filler Weight 131 lbs.

Frame in Which Hit Occurred	No. Fragments	Velocity (f/s)
28	2	6110
29	2	5900
30	5	5700
31	8	5520
32	2	5340
33	2	5180
34	1	5030
35	2	4890
36	3	4750
37	2	4620
38	3	4500
39	2	4380
40	1	4280
41	1	4170
42	1	4070
Median		5350
Average		5160

Electric Bomb Fuzes, Ex 200 Mod 3 and
BSX-5 Boostering Tests of

TABLE I (Continued)

35mm Fastax Camera — 3000 frames per sec.
Rd. 10 Standard 250 lbs. G.P. Bomb — 80/20 Tritonal
Fuze: AN-M 103-A1
Total Weight 254 lbs. — Filler Weight 133 lbs.

Frame in Which Hit Occurred	No. Fragments	Velocity (f/s)
26	2	6920
27	2	6670
28	10	6430
29	1	6210
30	5	6000
31	5	5810
32	6	5630
33	5	5450
34	3	5290
35	3	5140
36	4	5000
37	2	4860
38	3	4740
39	1	4620
40	2	4500
41	2	4390
42	2	4290
43	1	4190
Median		5650
Average		5560

Electric Bomb Fuzes, Ex 200 Mod 3 and
BSX-5 Boostering Tests of

TABLE I (Continued)

35mm Fastax Camera — 2910 frames per sec.
Rd. 11 Modified 250 lbs. G.P. Bomb — 80/20 Tritonal
Fuze: Ex 200 Mod 3 with 1/3 size booster
Total Weight 263 lbs. — Filler Weight 127 lbs.

Frame in Which Hit Occurred	No. Fragments	Velocity (f/s)
30	3	5820
31	2	5630
32	5	5460
33	8	5290
34	4	5140
35	1	4990
36	2	4850
37	1	4720
41	1	4260
42	2	4160
Median		5330
Average		5200

Electric Bomb Fuzes, Ex 200 Mod 3 and
BSX-5 Boostering Tests of

TABLE I (Continued)

35mm Fastax Camera — 2970 frames per sec.
Rd. 12 Modified 250 lbs. G.P. Bomb — 80/20 Tritonal
Fuze: Ex 200 Mod 3 with 1/3 size booster
Total Weight 250 lbs. — Filler Weight 126 lbs.

Frame in Which Hit Occurred	No. Fragments	Velocity (f/s)
27	5	6600
28	6	6360
29	3	6140
30	7	5940
31	7	5750
32	4	5570
33	1	5400
35	2	5090
36	1	4950
37	2	4820
Median		6020
Average		5890

Electric Bomb Fuzes, Ex 200 Mod 3 and
BSX-5 Boostering Tests of

TABLE I (Continued)

35mm Fastax Camera — 2910 frames per sec.
Rd. 13 Standard 250 lbs. G.P. Bomb — 80/20 Tritonal
Fuze: AN-M 103-A1
Total Weight 249 lbs. — Filler Weight 132 lbs.

Frame in Which Hit Occurred	No. Fragments	Velocity (f/s)
26	5	6720
27	7	6470
28	6	6240
29	4	6020
30	1	5820
31	3	5630
32	1	5460
33	2	5290
34	4	5140
35	2	4990
36	1	4850
37	2	4720
38	1	4590
Median		6050
Average		5860

Electric Bomb Fuzes, Ex 200 Mod 3 and
BSX-5 Boostering Tests of

TABLE I (Continued)

35mm Fastax Camera — 2910 frames per sec.
Rd. 14 Modified 250 lbs. G.P. Bomb — 80/20 Tritonal
Fuze: Ex 200 Mod 3 with 1/3 size booster
Total Weight 254 lbs. — Filler Weight 129 lbs.

Frame in Which Hit Occurred	No. Fragments	Velocity (f/s)
27	3	6470
28	3	6240
29	7	6020
30	1	5820
31	2	5630
32	3	5460
33	2	5290
34	1	5140
35	2	4990
37	1	4720
38	2	4590
40	1	4370
41	1	4260
42	2	4160
Median		5720
Average		5490

Electric Bomb Fuzes, Ex 200 Mod 3 and
BSX-5 Boostering Tests of

TABLE I (Continued)

35mm Fastax Camera — 2970 frames per sec.
Rd. 15 Modified 250 lbs. G.P. Bomb — 80/20 Tritonal
Fuze: Ex 200 Mod 3 with 1/3 size booster
Total Weight 251 lbs. — Filler Weight 128 lbs.

Frame in Which Hit Occurred	No. Fragments	Velocity (f/s)
29	1	6140
30	4	5940
31	4	5750
32	5	5570
33	4	5400
34	3	5240
35	1	5090
36	2	4950
37	1	4820
38	2	4690
39	1	4570
40	2	4460
Median		5500
Average		5360

Electric Bomb Fuzes, Ex 200 Mod 3 and
BSX-5 Boostering Tests of

TABLE I (Continued)

35mm Fastax Camera — 2910 frames per sec.
Rd. 17 Modified 250 lbs. G.P. Bomb — 80/20 Tritonal
Fuze: BSX-5
Total Weight 254 lbs. — Filler Weight 127 lbs.

Frame in Which Hit Occurred	No. Fragments	Velocity (f/s)
28	6	6240
29	5	6020
30	5	5820
31	3	5630
32	2	5460
33	2	5290
35	2	4990
39	1	4480
40	2	4370
42	2	4160
45	1	3880
47	3	3710
Median		5700
Average		5340

Electric Bomb Fuzes, Ex 200 Mod 3 and
BSX-5 Boostering Tests of

TABLE II

250 lb. Bomb, Peak Blast Pressure at 50 Feet

Date	Det.	Rochelle Salt Gages NOL 6-channel	NOL Indenter Gages
7/18/51	1		9.6
"	2		9.2
7/23/51	3	10.8	9.4
"	4		9.5
"	5	11.0	10.0
"	6		9.9
7/25/31	7		9.4
"	8		9.8
"	9		10.8
7/30/51	10	11.0	9.5
"	11		7.65
"	12		7.4
7/31/51	13		7.7
"	14		8.8
"	15		8.8
"	16		8.0
"	17		8.1
"	18		*8.4

* Detonated by 5 lb. TNT booster charge due to malfunction of fuze.

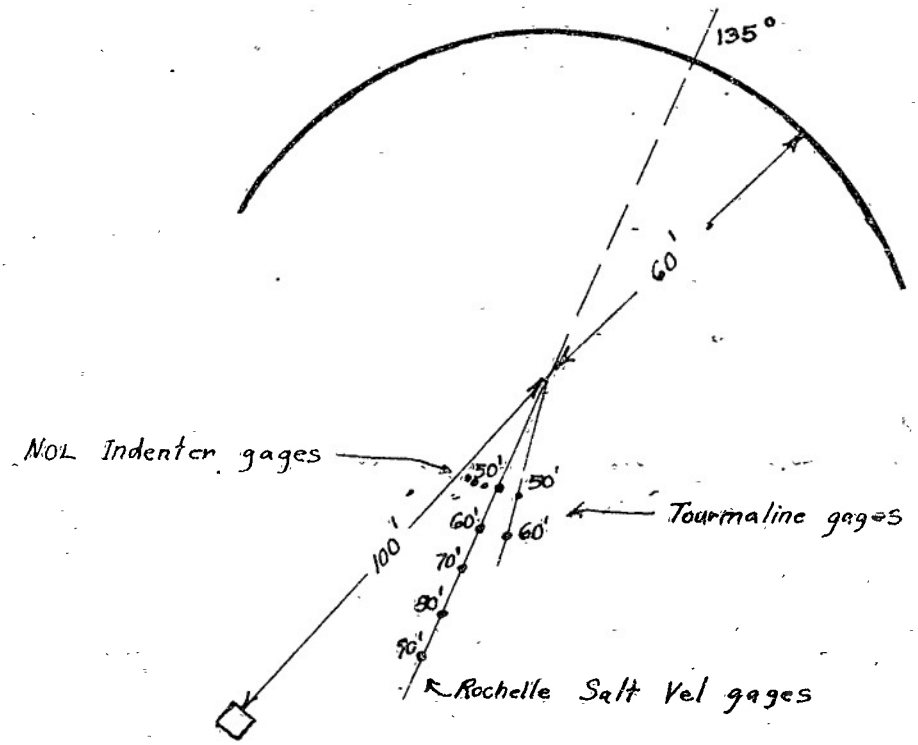
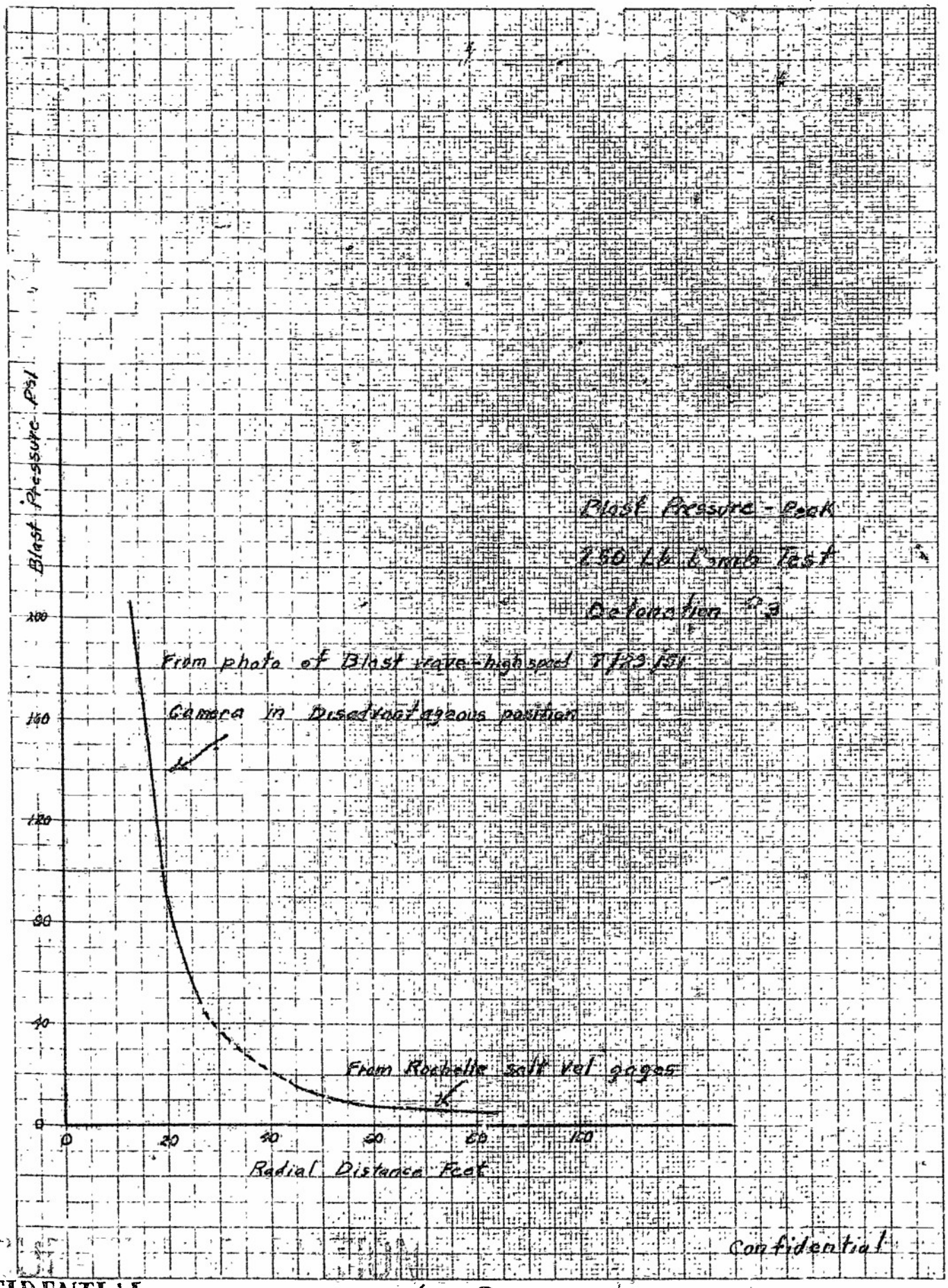


Diagram of test Arena
For 250# Bomb Detonation
7-23-51

APPENDIX D

Figure 2



KEUFFEL & ESSER CO.
Millimeters, 3 mm. lines accented em. lines heavy
MADE IN U.S.A.

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Appendix D

Figure #3

Electric Bomb Fuzes, Ex 200 Mod 3 and
BSX-5 Boostering Tests of

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