AD NUMBER
AD492043
CLASSIFICATION CHANGES
TO: unclassified
FROM: restricted
LIMITATION CHANGES
TO: Approved for public release, distribution unlimited
FROM: Distribution authorized to U.S. Gov't. agencies and their contractors; Administrative/Operational Use; 09 MAR 1949. Other requests shall be referred to Springfield Armory [Army], Springfield, MA.
AUTHORITY
E.O. 10501 5 Nov 1953; USAWC ltr 13 Jul 1972

AD 492 043

X12807

492043

[redacted]

SPRINGFIELD ARMORY

RESEARCH AND DEVELOPMENT

ORDNANCE DEPARTMENT U.S.A.

MEMORANDUM REPORT

PROJECT TITLE NONE

PROJECT NO. NONE

REPORT TITLE FUNCTION TEST OF EXPERIMENTAL CARBINE BLANK, CAL..30 AMMUNITION

SPRINGFIELD, MASSACHUSETTS

ITEM .30 AMM. DATE 9 Mar.1949 SA-MR 20-2104

Springfield Armory

[redacted]

[redacted]

SPRINGFIELD ARMORY

UNCLASSIFIED

~~RESEARCH AND DEVELOPMENT DIVISION~~

(9) MEMORANDUM REPORT, (14) SA-MR-20-2104

(10) L. O. Spaulding.

LOSpaulding/jg

(11) 9 Mar[redacted]49,

(12) 8p.

~~SUBJECT~~:

(6) Function test of Experimental Carbine Blank Caliber .30 Ammunition.

OBJECT:

To determine if the subject lots of ammunition will function the Carbine, Cal..30, M2, satisfactorily in conjunction with an experimental blank fire attachment.

SUMMARY:

Two experimental lots of Carbine Blank Cal..30 ammunition, one lot crimped with three segmental crimp and one lot crimped with a five segmental crimp, were each fired 500 rounds in a Cal..30 Carbine, M2, having an experimental blank fire attachment. Various port openings were tried in the blank fire attachment to determine the optimum level of performance. Best results were obtained with the lot of blank ammunition having the three segmental crimp and a .155 opening in the nozzle of the blank fire attachment.

REFERENCE:

F.A. 471.43/371-1
S.A. 471.43/4
J.O. 7875-9410
(Project No. TS2-2025)

MATERIAL:

1. Ammunition.

   a. Cartridges, Carbine, Cal..30, M1 Ball, Lot E.C. S-25638

   b. Cartridges, Carbine, Blank, Cal..30 Experimental, Lot F.A. X30-1237 Loaded and assembled with 18.5 grains IMR4809 and 0.5 grains of 60 m/m mortar ignition powder, and crimped with a three segmental crimp.

(22/450)

[redacted]

UNCLASSIFIED

MATERIAL: (Continued) [redacted]

1. c. Cartridges, Carbine, Blank, Cal..30 Experimental, Lot F.A. X30-1238 loaded with the same powder and charge as Lot F.A. X30-1237 and crimped with a five segmental crimp.

2. Carbine, Caliber .30, M2, Serial Number 7071309.

3. Experimental blank fire attachment for the Carbine, Cal..30, M2 (Photograph 6828SA).

4. Watchmaster time recorder.

5. Range facilities.

PROCEDURE AND RESULTS:

A Carbine, Cal..30, M2, was function fired 105 rounds with ball ammunition to determine the function efficiency of the weapon. Two 15 round bursts gave rates of fire of 763 and 785 S.P.M. There were no malfunctions.

The experimental blank fire attachment was then assembled to the weapon, (the diameter of the port opening in the nozzle was .155) and 500 rounds of lot F.A. X30-1237 fired. Rates of fire for two 15 round bursts were each 730 S.P.M. Malfunctions consisted of 3 failures to feed, 1 short recoil and one 12 o'clock jam. The flash at the muzzle, occurring when the round was fired, was a bright white and was approximately 5 inches in diameter and 8 inches long. An objectionable feature of having unburnt powder blow back into the operators face while firing was noted, which required the operator to wear glasses for safety.

500 rounds of lot F.A. X30-1238 were fired. Rates of fire for two 15 round bursts were each 700 S.P.M. Malfunctions consisted of 7 failures to eject, 1 short recoil, 1 failure to feed and 5 stubs at 6 o'clock. Flash noticed with this ammunition was about the same as with the previous lot. Powder blow-back with this ammunition was more noticeable than with the previous lot, which necessitated the operator wearing a face shield for protection.

On the basis of the above data, it appeared desirable to open the port in the nozzle of the attachment in even increments until such time as the blow-back had been eliminated or the weapon would not function properly. Table I gives this procedure in detail.

In brief, the results of the above procedure did not reduce the blow-back of unburnt powder, the five crimp cartridge (F.A. X30-1238) remaining more objectionable than the [redacted]

PROCEDURE AND RESULTS: (Continued)

three crimp cartridge (F.A. X30-1237). It was also noted that as the nozzle port was opened up (from .155 through .170 in .005 increments) and until such time as the weapon did not function efficiently, lot F.A. X30-1237 gave best results from the standpoint of functioning.

CONCLUSIONS:

From data obtained in this test, it is concluded that lot F.A. X30-1237 is the better of the two experimental lots of Carbine, Blank, Cal..30 ammunition because:

1. Although there is powder blow-back which requires the operator to wear glasses for safety, the intensity (volume and force) is less severe with the three crimp ammunition (F.A. X30-1237) than with the five crimp ammunition (F.A. X30-1238).

2. The weapon level of performance is better with the three crimp ammunition.

It is also concluded that with the experimental blank fire attachment used in this test, a nozzle opening of .155 performs the most satisfactorily.

RECOMMENDATIONS:

It is recommended that further study be given to the development of a blank ammunition for the Carbine Cal..30 with a view towards eliminating objectionable powder blow-back.

PREPARED: L. C. SPAULDING
Ordnance Engineer

CONCUR: E. W. HOPKINS
Head Ordnance Engineer

REVIEWED: H. F. HAWTHORNE
Ordnance Engineer

APPROVED: WILLIAM W. HOLMES
Major, Ord Dept

NOTED: STANLEY W. FISH
Project Control Engineer

TABLE I

Carbine Cal..30 Experimental Blank Fire Attachment
Function Record With Various Nozzle Openings

Lot F.A. X30-1237
.160 Nozzle Opening

Total Rounds Fired	Function
15	OK
30	OK
45	OK
60	1 - Failure to eject
75	OK
90	1 - 12 o'clock jam
100	OK

Lot F.A. X30-1238
.160 Nozzle Opening

Total Rounds Fired	Function
15	2 - Failure to eject
30	OK
45	OK
60	1 - Stub
75	1 - 12 o'clock jam 1 - Failure to eject
90	OK
100	1 - Stub

.165 Nozzle Opening

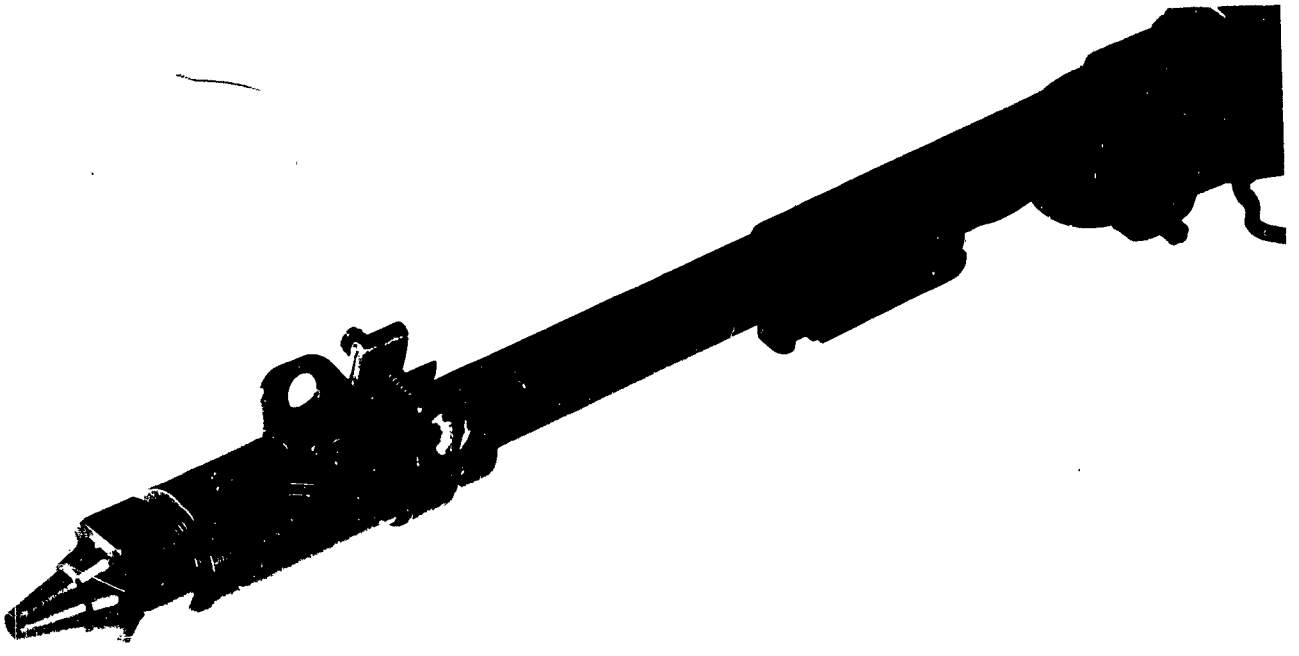
Total Rounds Fired	Function
15	OK
30	OK
45	1 - Failure to feed
60	OK
75	OK
90	OK
100	OK

.165 Nozzle Opening

Total Rounds Fired	Function
15	2 - Failure to open
30	1 - Failure to feed 1 - Failure to open
45	OK
60	2 - Failure to open
75	2 - Failure to open 2 - Failure to feed
90	1 - Failure to open 1 - Stub 1 - Failure to feed
100	1 - Stub

TABLE I (Cont.)

Lot F.A. X30-1237 .170 Nozzle Opening		Lot F.A. X30-1238 .170 Nozzle Opening	
Total Rounds Fired	Function	Total Rounds Fired	Function
15	3 - Short recoils	15	2 - Failures to eject 9 - Short recoils
30	1 - Failure to feed 2 - 12 o'clock jams		3 - Failures to feed
45	2 - Failures to eject 1 - Failure to feed	30	2 - Short recoils 4 - Short recoils
60	1 - Failure to eject	45	1 - Failure to feed
		60	1 - Short recoil 1 - Failure to feed
75	OK	75	2 - Short recoils 2 - Stubs
90	OK	90	2 - Short recoils
100	OK	100	2 - Short recoils 2 - Stubs



6838-SA SPRINGFIELD ARMORY - ORDNANCE DEPT. 17 Feb. 1949

CARBINE, CALIBER .30 M2

Experimental Blank Fire Attachment