

UNCLASSIFIED

AD

492045

DEFENSE DOCUMENTATION CENTER

FOR

SCIENTIFIC AND TECHNICAL INFORMATION

CAMERON STATION ALEXANDRIA, VIRGINIA



UNCLASSIFIED

NOTICE: When government or other drawings, specifications or other data are used for any purpose other than in connection with a definitely related government procurement operation, the U. S. Government thereby incurs no responsibility, nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use or sell any patented invention that may in any way be related thereto.

UNCLASSIFIED

UNCLASSIFIED

492045
10301X

SPRINGFIELD ARMORY

RESEARCH AND DEVELOPMENT



MEMORANDUM REPORT

PROJECT TITLE NONE

PROJECT NO. NONE

REPORT TITLE INVESTIGATION OF

EXTRACTION CHARACTERISTICS OF CALIBER

.30 T6512 CARTRIDGES

SPRINGFIELD, MASSACHUSETTS

ITEM 30 MM DATE 31 JAN 1950 SA-MR 20-2116

DDC
RECORDED
JUL 10 1966
REGISTRY

DOWNLOADED AT 1 YEAR INTERVAL
DECLASSIFIED AFTER 10 YEARS
DOD MFR 6000.00



UNCLASSIFIED

PLEASE RETURN TO
SERIALS ACQUISITION
ORD. SEC. & PER. DIV.

112

SPRINGFIELD ARMORY
RESEARCH AND DEVELOPMENT DIVISION

UNCLASSIFIED

MEMORANDUM REPORT SA-MR20-2116

ABFowler/632/shp

31 January 1950

SUBJECT:

Investigation of Extraction Characteristics of Caliber
.30, T65E2, Cartridges.

OBJECT:

To determine at what point, if any, the force required
to extract the subject ammunition is increased above normal,
due to heating of the barrel.

SUMMARY:

Caliber .30, T65E2, ammunition was fired in two Caliber
.30, M1903A4, U. S. Rifles. The force required to unlock the
bolt was determined before firing, after prolonged firing had
heated the barrels and after the final case had been allowed
to remain in the chamber for varying periods of time. Extrac-
tion was normal in all cases.

REFERENCES:

1. J.O. 1375-7420
2. U. S. Army Specifications 52-1-1A (now obsolete)

MATERIAL:

1. U. S. Rifles, Caliber .30, M1903A4, Serial Nos.
4992645 and 4997210, chambered for Caliber .30 T65E2,
Cartridges.

UNCLASSIFIED

[REDACTED]

PROCEDURE:

UNCLASSIFIED

1. Each rifle, in turn, was installed in the spring-backed recoil mount. A line was led through a pulley suspended above the bolt handle. A spring scale was attached to the line and the scale secured to the bolt handle. When pull was applied to the end of the line, the force required to unlock the bolt was read from the scale.

2. The bolt lift of two caliber .30, M1903A4, U. S. Rifles was determined before firing, when extracting the 65th round after continuous firing, and when extracting the 66th round after allowing the cartridge to remain in the chamber 10 seconds after firing.

The bolt lift of both rifles was again determined and 100 rounds were fired. The next cartridge fired was allowed to remain in the chamber 5 seconds, after which the bolt lift was determined. Successive rounds were left in the chamber with the time interval increased in increments of 5 seconds, until the final round which was left in the chamber 60 seconds. Bolt lift readings were recorded for each round extracted.

RESULTS AND DISCUSSIONS:

1. Table I gives detailed results of all testing.
2. There was no instance of failure to extract.
3. Reference specifications applicable to the U. S. Rifle, Caliber .30, M1903A1, specify in Par. E-14 that bolt lift of a cold rifle, and with chamber empty shall be 15 lbs. maximum and that bolt lift shall be 30 lbs. maximum with a hot rifle and with a cartridge case in the chamber.

The allowable bolt lift was exceeded but twice during the test.

CONCLUSIONS:

It is concluded that the extraction characteristics of Caliber .30, T65R2 ammunition, as tested, are satisfactory.

UNCLASSIFIED

[REDACTED]

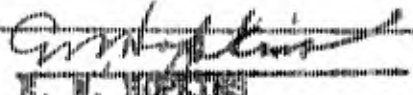
CONFIDENTIAL

REPORT
NO. SA-MR20-2116

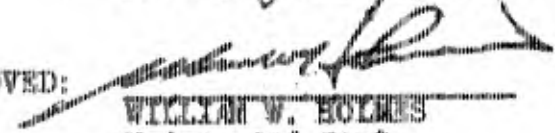
SUBMITTED:


H. V. HAWTHORNE
Ordnance Engineer

REVIEWED:


F. W. HOPKINS
Head Ordnance Engineer

APPROVED:


WILLIAM W. HOLMES
Major, Ord Dept

-3-

CONFIDENTIAL

CONFIDENTIAL

TABLE I

BOLT LIFTS REQUIRED TO EXTRACT THE CAL..30. T65E2.

CARTRIDGE FROM CAL..30. M1903A4. U.S. RIFLES

CONDITIONS	BOLT LIFT - 183	
	Rifle 4992642	Rifle 4997210
Before firing - empty chamber	13	13
65 Rounds Fired	21	18
66 Rounds Fired - case in chamber 10 sec.	26	20

CONFIDENTIAL

Before firing - empty chamber	14	13
Rifles Fired 100 rounds each		
	5 sec.	
	10 "	28
	15 "	31
	20 "	28
	25 "	26
	30 "	25
	35 "	32
	40 "	26
	45 "	19
	50 "	27
	55 "	21
	60 "	20
		24
		24
		27
		25
		24
		27
		23
		23
		19
		25
		23
		20

CONFIDENTIAL

REPORT
NO. SA-MR20-2116

DISTRIBUTION

NO.
COPIES

Chief of Ordnance - ORDTs
Attn: Colonel E. R. Studler

2

-5-

CONFIDENTIAL

UNCLASSIFIED

UNCLASSIFIED