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SPRINGFIELD ARMORY

RESEARCH AND DEVELOPMENT



MEMORANDUM REPORT

PROJECT TITLE NONE

PROJECT NO. NONE

REPORT TITLE INVESTIGATION OF
EXTRACTION CHARACTERISTICS OF CALIBER
.30-06512 CARTRIDGE.

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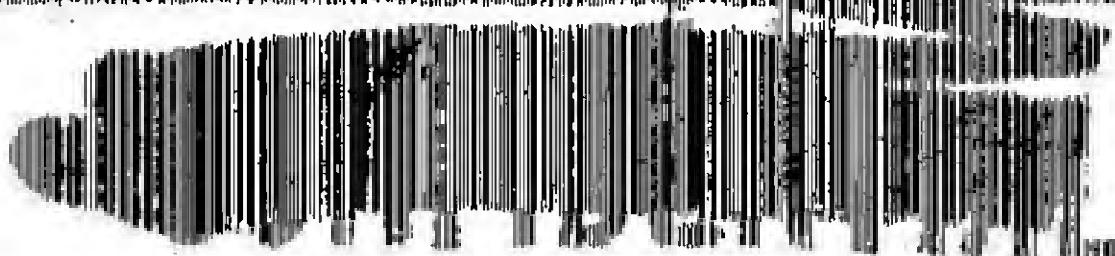
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ITEM 29-A001 DATE 31 JAN 1950 SA-MR 20-2116

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**SPRINGFIELD ARMORY
RESEARCH AND DEVELOPMENT DIVISION**

MEMORANDUM REPORT SA-MR20-2116

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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. Extraction was normal in all cases.

REFERENCES:

1. T.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.

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PROCEDURE:

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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, T65B2 ammunition, as tested, are satisfactory.

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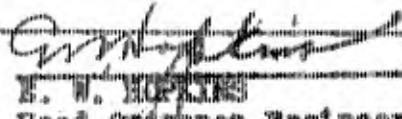
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REPORT
NO. SA-MR20-2116

SUBMITTED:


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Read Ordnance Engineer

APPROVED:


WILLIAM W. HOLMES
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-3-

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TABLE I
BOLT LIFTS REQUIRED TO EXTRACT THE CAL. .30, T65K2,
CARTRIDGE FROM CAL. .30, M1903A4, U.S. RIFLES

CONDITIONS	BOLT LIFTS - 100	
	Rifles 4992642	Rifles 4997210
Before Firing - empty chamber	13	13
65 Rounds Fired	21	18
66 Rounds Fired - case in chamber 10 sec.	26	20
Before Firing - empty chamber	14	13
Rifles Fired 100 rounds each	Fired Case Left In Chamber	
	5 sec.	
	10	
	15	
	20	
	25	
	30	
	35	
	40	
	45	
	50	
	55	
	60	

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