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MODEL 700 STAINLESS STEEL, TRIAL & PILOT

TO: J.R. Snedeker
FROM: D.R. Thomas

INTRODUCTION:

In June of 1992 the test lab received a ten gun sample of each of the following calibers of M/700 Stainless Steel rifles for Trial & Pilot evaluation:

25-06 Remington
30-06 Springfield
280 Remington
270 Winchester

The trial and pilot evaluation, which consisted of measurements and a function test, was conducted on each gun.

SCOPE OF THE TEST:

To confirm that production can produce the M/700 Stainless Steel rifle to Remington standards.

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TEST RESULTS:**MEASUREMENTS:**

Below are the averages for the forty guns measured for each characteristic.

Trigger pull: 4.3 lbs.

Safe on to off: 6.1 lbs.

Safe off to on: 7.1 lbs.

Firing pin indent: .0202 in.

Bolt opening force: 8.1 lbs.

Headspace: all guns were within specifications.

a complete summary of measurement data can be found in appendix A.

FUNCTION:

Forty rifles were function tested 100 rounds each for a total of 4000 rounds. There were no malfunctions in the 4000 rounds of testing.

REPORT TEXT:**GENERAL:**

The following 40 rifles were used for the Trial and Pilot Evaluation:

SERIAL#	CALIBER	SERIAL#	CALIBER
S6202731	30-06	S6203735	25-06
S6204948	30-06	S6203673	25-06
S6205496	30-06	S6202802	25-06
S6204813	30-06	S6202418	25-06
S6205116	30-06	S6203078	25-06
S6204706	30-06	S6203159	25-06
S6205127	30-06	S6203718	25-06
S6205065	30-06	S6203416	25-06
S6205835	30-06	S6203390	25-06
S6205476	30-06	S6203606	25-06
S6205313	280	S6202130	270
S6204672	280	S6201377	270
S6204806	280	S6202149	270
S6204934	280	S6200393	270
S6204815	280	S6202606	270
S6204870	280	S6202348	270
S6205695	280	S6203285	270
S6205653	280	S6201756	270
S6204799	280	S6201655	270
S6204839	280	S6202106	270

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REPORT TEXT:(cont.)

MEASUREMENTS:

Trigger pull, safety button on/off forces, headspace, bolt opening force and firing pin indent were taken on all forty rifles.

Following is a list of instruments used for measurements:

Trigger pull: Chatillon Model IN-10 spring scale

Safety button forces: Hunter LO-10 spring scale

Bolt opening force: Hunter L-20 spring scale

Headspace: B-73438 Clymer headspace plugs were used for 3006, 2506, and 270 calibers.

B-81578 Clymer headspace plugs were used for 280 caliber.

Firing Pin indent: B-1-82744 crusher holder was used for 280 Rem. caliber.

B-2-54337 crusher holder was used for 3006, 2506, & 270.

FUNCTION:

All forty guns were function tested 100 rounds each.

The function testing was done in the Research shooting room located in building 52-1-A.

The following ammunition types were used in the function test:

CALIBER	ORDER#	DESCRIPTION	ROUNDS
25-06	R25062	Rem. 100gn. Pointed Soft Point Core-Lokt	500
	R25063	Rem. 120gn. Pointed Soft Point Core-Lokt	500
		TOTAL	1000
270 WIN	R270W1	Rem. 100gn. Pointed Soft Point	500
	R270W2	Rem. 130gn. Pointed Soft Point Core-Lokt	500
		TOTAL	1000
280	R280R1	Rem. 150gn. Pointed Soft Point Core-Lokt	1000
		TOTAL	1000
3006	R30062	Rem. 150gn. Pointed Soft Point Core-Lokt	500
	R30065	Rem. 180gn. Pointed Soft Point Core-Lokt	500
		TOTAL	1000

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PROCEDURE:**MEASUREMENTS:**

TRIGGER PULL: The hook of the trigger pull scale is placed at the center of the finger loop on the trigger. The scale is then pulled up and to the rear, two finger widths above the comb. An average of three readings is taken for each rifle.

SAFETY ON/OFF FORCES: The Hunter LO-10 spring scale is used with a six inch extension and a "V" tip. The tip is pressed against the safety button with the extension parallel to the direction of safety arm movement. The peak force is recorded for each cycle of the safety arm. Three readings were taken for each direction of safety arm travel. All measurements were taken with the gun cocked.

HEADSPACE: The min. plug is placed in the chamber. The Bolt is then closed over the plug. If the Bolt fully closes on the plug the next higher plug is tried. The recorded reading is the last plug that the Bolt would fully close on.

FIRING PIN INDENT: Both ends of the copper crusher are burnished to remove any burrs. The crusher is then placed on a dial indicator base and the dial set to zero. The crusher is then placed in the crusher holder and placed into the chamber of a rifle. The rifle is then fired on the crusher. The crusher is then placed back on the dial base and the dial indicator point is placed at the bottom of the firing pin indent in the crusher. The reading on the dial indicator is the firing pin indent. An average of three readings was taken for each gun.

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PROCEDURE:(cont.)

MEASUREMENTS:(cont.)

BOLT OPENING FORCE: The Hunter L-20 spring scale was used with a six inch extension, a hook tip, and a special adapter that fits over the bolt handle. The adapter is slipped over the bolt handle and the spring scale is pulled upward in a direction perpendicular to the bore. Care was taken to pull evenly and not jerk the scale, so that the readings would not be influenced by inertia. The scale is observed as the bolt is cammed open and the highest reading is taken as the bolt opening force. An average of three readings was taken for each rifle.

FUNCTION:

The function testing was conducted in the Research shooting room, located in building 52-1-A.

The rifle was loaded, one round in the chamber and four rounds in the magazine. The rifle was then fired, the bolt cycled, etc. until the rifle was empty. Any malfunctions or observations were recorded. This procedure was then repeated. The rifles were air cooled every twenty rounds.

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APPENDIX A

MEASUREMENTS

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CALIBER	SERIAL#	AVERAGE MEASUREMENT BY RIFLE					BOLT FORCE (lbs.)	HEADSPACE (in.)
		TRIGGER PULL (lbs.)	SAFETY ON/OFF (lbs.)	SAFETY OFF/ON (lbs.)	F.P. INDENT (in.)			
30-06	S6202731	4.1	5.2	7.9	.0182	7.2	Min+.001	
30-06	S6204948	4.5	5.3	7.2	.0195	7.8	Min+.001	
30-06	S6205496	4.6	5.9	6.5	.0187	7.7	Min+.003	
30-06	S6204813	4.4	5.6	8.0	.0187	7.0	Min+.003	
30-06	S6205116	4.9	6.1	7.8	.0185	7.1	Min+.002	
30-06	S6204706	4.5	5.6	7.7	.0182	7.0	Min+.003	
30-06	S6205127	4.3	5.6	7.6	.0185	6.7	Min+.003	
30-06	S6205065	3.8	5.7	6.0	.0178	7.0	Min+.003	
30-06	S6205835	4.5	6.1	6.7	.0183	8.0	Min+.003	
30-06	S6205476	5.0	5.1	5.8	.0183	7.4	Min+.003	
25-06	S6203735	4.3	8.2	10.8	.0215	8.7	Min+.003	
25-06	S6203673	4.1	8.0	7.7	.0200	8.2	Min+.004	
25-06	S6202802	3.6	5.8	7.3	.0205	7.9	Min+.004	
25-06	S6202418	4.5	6.5	7.5	.0205	7.7	Min+.003	
25-06	S6203078	4.8	5.6	6.4	.0213	8.3	Min+.004	
25-06	S6203159	4.4	5.7	6.5	.0213	8.1	Min+.004	
25-06	S6203718	4.7	7.0	7.8	.0197	10.8	Min+.004	
25-06	S6203416	4.6	6.6	7.0	.0197	11.3	Min+.002	
25-06	S6203390	4.3	6.6	6.2	.0192	7.9	Min+.003	
25-06	S6203606	4.6	7.0	6.7	.0193	8.8	Min+.004	
280 Rem	S6205313	4.6	5.2	6.4	.0187	6.7	Min+.005	
280 Rem	S6204672	4.8	5.3	7.1	.0177	6.9	Min+.002	
280 Rem	S6204806	4.7	7.1	8.6	.0182	8.1	Min+.004	
280 Rem	S6204934	3.7	5.2	6.1	.0205	8.6	Min+.003	
280 Rem	S6204815	4.7	5.1	5.9	.0187	7.3	Min+.002	
280 Rem	S6204870	4.8	6.0	5.7	.018	7.0	Min+.002	
280 Rem	S6205695	4.7	7.6	7.7	.0188	7.7	Min+.003	
280 Rem	S6205653	3.7	5.1	5.9	.0208	8.1	Min+.001	
280 Rem	S6204799	5.0	5.7	6.1	.0182	7.7	Min+.003	
280 Rem	S6204839	4.8	6.2	8.1	.0200	7.6	Min+.002	
270 Win	S6202130	3.7	4.5	6.3	.0217	7.8	Min+.003	
270 Win	S6201377	4.5	6.5	8.3	.0237	7.5	Min+.003	
270 Win	S6202149	3.9	6.2	6.8	.0223	9.5	Min+.003	
270 Win	S6200393	3.5	5.8	6.0	.0230	8.1	Min+.004	
270 Win	S6202606	4.0	6.0	7.6	.0230	7.7	Min+.002	
270 Win	S6202348	4.0	6.4	7.2	.0238	7.8	Min+.003	
270 Win	S6203285	4.3	6.1	9.0	.0230	7.4	Min+.007	
270 Win	S6201756	4.7	6.4	7.1	.0215	10.0	Min+.004	
270 Win	S6201655	3.0	7.4	7.5	.0235	12.1	Min+.002	
270 Win	S6202106	4.3	5.7	6.9	.0237	8.3	Min+.002	

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MINITAB SUMMARY OF MEASUREMENT DATA

	N	MEAN	MEDIAN	TRMEAN	STDEV	SEMEAN
TRIGGER PULL	40	4.3475	4.5000	4.3722	0.4585	0.0725
SAFETY ON TO OFF	40	6.068	5.950	6.025	0.828	0.131
SAFETY OFF TO ON	40	7.135	7.100	7.058	1.024	0.162
FIRING PIN INDENT	40	0.02016	0.01970	0.02010	0.00193	0.00030
BOLT OPENING	40	8.062	7.800	7.936	1.194	0.189
HEADSPACE	40	0.00300	0.00300	0.00294	0.00113	0.00018

	MIN	MAX	Q1	Q3
TRIGGER PULL	3.0000	5.0000	4.0250	4.7000
SAFETY ON TO OFF	4.500	8.200	5.600	6.500
SAFETY OFF TO ON	5.700	10.800	6.325	7.700
FIRING PIN INDENT	0.01770	0.02380	0.01850	0.02150
BOLT OPENING	6.700	12.100	7.325	8.275
HEADSPACE	0.00100	0.00700	0.00200	0.00400

HISTOGRAM OF TRIGGER PULL (lbs.) N = 40

Midpoint	Count	
3.0	1	*
3.2	0	
3.4	0	
3.6	2	**
3.8	4	****
4.0	3	***
4.2	2	**
4.4	7	*****
4.6	9	*****
4.8	9	*****
5.0	3	***

HISTOGRAM OF SAFETY ON TO OFF FORCE (lbs.) N = 40

Midpoint	Count	
4.5	1	*
5.0	6	*****
5.5	10	*****
6.0	10	*****
6.5	6	*****
7.0	3	***
7.5	2	**
8.0	2	**

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MINITAB SUMMARY OF MEASUREMENT DATA

HISTOGRAM OF SAFETY OFF TO ON FORCE (lbs.) N = 40

Midpoint	Count	
5.5	1	*
6.0	8	*****
6.5	7	*****
7.0	7	*****
7.5	8	*****
8.0	5	*****
8.5	2	**
9.0	1	*
9.5	0	
10.0	0	
10.5	0	
11.0	1	*

HISTOGRAM OF FIRING PIN INDENT (in.) N = 40

Midpoint	Count	
0.0175	1	*
0.0180	6	*****
0.0185	8	*****
0.0190	2	**
0.0195	4	****
0.0200	2	**
0.0205	3	***
0.0210	1	*
0.0215	5	*****
0.0220	0	
0.0225	1	*
0.0230	3	***
0.0235	3	***
0.0240	1	*