

September 10, 1982

TO:

J. H. Hanning
R. Williams

FROM:

REPORT TITLE:

NEW DESIGN M/700 TRIGGER/SEAR BLOCK EVALUATION

ABSTRACT:

A total of (5) M /700 Fire control assemblies with the New Design safety assemblies, were delivered to the Test Lab by Fred Martin for testing. This safety assembly blocks the trigger and the sear so that the firing pin won't fall when the trigger is held back while the safety switch is pushed from the safe to fire position. Both dry cycle and live fire endurance tests were used to test the assemblies. A M/700 fire control assembly (Current Production) was used as a control and (4) out of the (5) New Design assemblies were used in the test.

SCOPE OF TEST

To evaluate the functional performance of the New Design safety assembly, in the M/700 Rifle during lab testing.

TEST RESULTS

No functional problems arose during testing. Both the New Design safety and the control functioned normally. There was no significant change in the safe.On/Off forces measured before, during and after testing, on all the assemblies, including the control.

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ORT TEXT

All four (4) new trigger assemblies were subjected to the following trick test:

- o Place Safety Switch in the Safe "On" position.
- o Close the bolt.
- o Put constant pressure on the trigger attempting to fire the rifle.
- o Push the Safety Switch from the "On" position to the "Off" position.
- o Does the firing pin fall?

All four (4) New Design Trigger Assemblies with the trigger /sear blocked passed this test. In all four (4) guns the firing pin did not fall.

NOTE: The measurements recorded for the Safe On/Off forces are questionable. There is no way to determine if they are within Remington Standards, because there are no standards written for these forces with this fire control assembly. The only Remington Standards written for Safe On/Off forces, pertain to the common fire control. That Standard is:

4 - 8 lbs. - One sharp click
Double click not allowed

The Safe On/Off forces measured in this test range from 5.25 lbs to 10.2 lbs. - almost a 5 lb. difference. (Refer to Appendix A, Data Sheets No. 1 - 5 for all Safe On/Off measurements).

TEST PROCEDUREA. MEASUREMENTS

The following measurements were taken on the five rifles used in this test:

- o Headspace
- o Firing Pin Indent
- o Trigger Pull
- o Sear Lift
- o Sear Engagement
- o Safe On/Off Forces

B. TEST CONDITIONS

1. After every 20 rounds fired, the safety was checked. This was done by holding the trigger and pushing the safety switch from safe to fire.
2. After 1,000 rds. of live fire all the rifles were cleaned and they were remeasured. (Jack Shooting).
3. The rifles were then subjected to Safe On/Off dry cycle. Each rifle was cycled for 2,500 cycles, with Safe On/Off measurements taken every 500 cycles and Sear Lift and Engagement at the 2500 cycle level.
4. The rifles were then live-fired to the 2,000 round level. (Jack Shooting) Measurements were

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TEST PROCEDURE - CONT'D.

5. The rifles were then subjected to another Safe On/Off dry cycle test. They were brought to the 5,000 cycle level. (2,500 additional cycles) Safe on/off measurements were taken every 500 cycles and sear lift and engagement wear measured at the 5,000 cycle level.

These same procedures were followed until live fire totaled 2,500 rounds per rifle and safe On/Off dry cycle totaled 7500 cycles per rifle.

C. AMMUNITION

Remington 80 grain Pointed Soft Point.

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1	M-700	Sample No. 1	HEADSPACE	FIRING P.N. INCH	SAFE (lb)		TRIGGER PULL (lb)	SEAR LIFT	SEAR ENGAGEMENT
					ON	OFF			
2		START OF TEST	MIN. + .004"	.025"	6.2	6.0	4.0	.0105"	.035"
3									
4		LIVE FIRE							
5		after 1000 rds.	MIN. + .004"	.025"	6.2	6.8	4.25		
6									
7		DRY CYCLE							
8		500 cyc			5.5	8.6			
9		1000 cyc			5.8	9.7			
10		1500 cyc			5.7	9.5			
11		2000 cyc			5.5	9.7			
12		2500 cyc			5.7	9.8		.0105"	.035"
13									
14		LIVE FIRE							
15		after 2000 rds.	MIN. + .004"	.025"	5.6	7.3	4.0	.0165"	.027"
16									
17		DRY CYCLE							
18		3000 cyc			6.2	9.8			
19		3500 cyc			4.5	10.8			
20		4000 cyc			5.7	9.2			
21		4500 cyc			6.2	9.5			
22		5000 cyc			6.2	9.2		.0165"	.027"
23									
24									
25		LIVE FIRE							
26		after 2500 rds. H	MIN. + .004"	.025"	6.3	8.5	4.5		
27									
28		DRY CYCLE							
29		5500 cyc			6.2	10.5	4.8		
30		6000 cyc			6.2	10.0	4.6		
31		6500 cyc			6.2	8.8	4.6		
32		7000 cyc			6.0	7.8	4.8		
33		7500 cyc			6.2	9.8	4.6		
34									
35									
36									
37									
38									
39									
40									

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M-700	6MM Cal. #A6744619 Sample No. 2	1		2		3		4		5		6	
		HEADSPACE		FIRING PIN INDENT		SAFE (in lbs.)		TRIGGER PULL (in lbs.)		SEAR TET		SEAR ENGAGEMENT	
						ON OFF							
1													
2	START OF TEST	Min. 0.03"		0.23"		6.5	5.3	4.3		0.135"		0.026"	
3													
4	LIVE FIRE												
5	after 1000 cfs	Min. 0.04"		0.24"		6.4	5.2	4.4					
6													
7	DRY CYCLE												
8	500 cfs					5.9	7.8						
9	1000 cfs					6.0	6.7						
10	1500 cfs					6.0	7.0						
11	2000 cfs					5.5	6.7						
12	2500 cfs					5.8	7.7			0.15"		0.025"	
13													
14	LIVE FIRE												
15	after 2000 cfs	Min. 0.04"		0.23"		5.7	4.8	4.2		0.14"		0.029"	
16													
17	DRY CYCLE												
18	3000 cfs					6.5	8.0						
19	3500 cfs					5.5	7.3						
20	4000 cfs					5.8	7.2						
21	4500 cfs					6.2	7.7						
22	5000 cfs					7.8	8.0			0.18"		0.025"	
23													
24	LIVE FIRE												
25	after 2500 cfs	Min. 0.04"		0.23"		5.8	4.5	4.7					
26													
27	DRY CYCLE												
28	5500 cfs					7.0	9.5	4.8					
29	6000 cfs					6.7	8.7	4.5					
30	6500 cfs					6.7	7.8	4.5					
31	7000 cfs					7.2	7.8	4.3					
32	7500 cfs					6.6	8.5	4.5					
33													
34													
35													
36													
37													
38													
39													
40													

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M-700 TRIGGER/SEAR BLOCK EVALUATION

No. 3

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	M-700	6MMmm #A6744915	HEADSPACE	FIRING P.W. INCHES	SAFE (inches)		TRIGGER PULL (lb)	SEAR LIFT	SEAR ENGAGEMENT
					ON	OFF			
1		Sample No. 3							
2		START OF TEST	Min. H. 004"	.025"	9.1	6.4	4.7	.013"	.025"
3									
4		LIVE FIRE							
5		after 1000 cys	Min. H. 004"	.026"	9.9	9.9	4.1		
6									
7		DRY CYCLE							
8		500 cys			8.2	6.9			
9		1000 cys			8.3	7.0			
10		1500 cys			8.8	6.3			
11		2000 cys			9.2	7.0			
12		2500 cys			9.8	6.0		.012"	.032"
13									
14		LIVE FIRE							
15		after 2000 cys	Min. H. 005"	.026"	10.2	6.2		.013"	.030"
16									
17		DRY CYCLE							
18		3000 cys			8.5	8.5			
19		3500 cys			9.2	7.2			
20		4000 cys			9.2	9.0			
21		4500 cys			8.7	9.7			
22		5000 cys			9.5	7.2		.015"	.032"
23									
24							6.0		
25		LIVE FIRE							
26		after 2500 cys	Min. H. 005"	.026"	9.8	5.2			
27									
28		DRY CYCLE							
29		5500 cys			9.3	8.3			
30		6000 cys			9.2	8.8			
31		6500 cys			9.7	9.3			
32		7000 cys			8.5	12.0			
33		7500 cys			9.5	12.0			
34									
35									
36									
37									
38									
39									
40									

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M-700 TRIGGER/SEAR BLOCK EVALUATION No. 4

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M-700	6MM CAL #6745544	Sample No. 4	HEADSPACE	FIRING		SAFE (lbs)		TRIGGER	SEAR	SEAR
				PEN TORQUE						
						ON	OFF			
		START OF TEST	MIN+002	022	83	5.4	38	018	054	
		LIVE FIRE								
		after 1,000 cys	MIN+002	022	68	5.2	40			
		DRY CYCLE								
		500 cys			77	7.7				
		1,000 cys			78	7.5				
		1,500 cys			68	7.3				
		2,000 cys			74	7.2				
		2,500 cys			72	7.7		017	055	
		LIVE FIRE								
		after 2,000 cys	MIN+003	022	73	4.5	38	0155	035	
		DRY CYCLE								
		3,000 cys			67	8.7				
		3,500 cys			75	7.7				
		4,000 cys			77	6.7				
		4,500 cys			75	7.7				
		5,000 cys			77	6.8		017	055	
		LIVE FIRE								
		after 3,500 cys	MIN+003	022	88	4.3	43			
		DRY CYCLE								
		5,500 cys			82	9.0	45			
		6,000 cys			73	9.0	41			
		6,500 cys			78	9.3	42			
		7,000 cys			83	9.2	43			
		7,500 cys			87	8.3	43			
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CHRONOLOGICAL RECORD OF TESTING

	MODEL & DESCRIPTION	700 ADL	Trigger/Scar Block eval
	CALIBER OR GAUGE	6 MM	
DATE	TEST	TESTER	PAGE NO.
12/82	Preliminary Measurement Trigger Pull, F.P. Indent Scar lift, Scar Engagement, Safe Off & ON Forces Head Space		
12-82	Fire 1,000 rounds per Rifle		
12-82	Clean & inspect.		
4-82	Fire another 1,000 rounds per Rifle check safety on-off after every 20 rounds Gun #1 A6752973 extractor failed 1,660 rounds Operate and try Safety after every 20 Round		
11-82	Fire - another 500 Rounds and 2,500 dry cycle, take safe on and off and trigger pull Check safety on-off after 20 rounds Total rounds fired per gun 2,500 Total dry cycle 7,500 per gun. 11/11		

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