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RESEARCH TEST and MEASUREMENT REPORT - Report No. 822802

M/700 RELIEVED SEAR SAFETY CAM EVALUATION

Prepared by: R. Howe

Date Prepared: 12.15.82

Proofread and Cleared By:

J.H. Hennings, / R.E. Nightingale,
Foreman-Test Lab / Foreman-Measurement Lab

J.H. Hennings
Signature

12-29-82
Date

C.E. Ritchie,
Sr. Supervisor - Testing,
Mess. & Mech. Analysis Lab

C.E. Ritchie
Signature

12/29/82
Date

TEST & MEASUREMENT LAB REPORT

REPORT NUMBER: 822802
REPORT TITLE: M/700 Relieved Sear Safety Cam Evaluation
MODEL(S): 700
GAUGE OR CALIBER:
DATE: 12 - 15 - 82
WORK ORDER NO.: C-1803-000
PART NAME: Sear Safety Cam
DESIGNER/ENGINEER: L. J. Hagen

TEST TYPE:

1. PHOTO LAB
2. STRENGTH TEST - NO. OF GUNS TESTED _____
3. FUNCTION TEST - NO. OF GUNS TESTED _____
4. ACCURACY TEST - NO. OF GUNS TESTED _____
5. MEASUREMENTS - TYPE: _____
6. ENVIRONMENTAL TEST
7. AMMUNITION TESTING & EVALUATION - TYPE: _____
8. VISUAL EVALUATION - _____ OUT OF _____ GUN SAMPLE
9. ENDURANCE - NO. OF GUNS TESTED: _____
NO. OF ROUNDS PER GUN: _____
TOTAL ROUNDS FIRED IN TEST: _____
AMMO TYPE: MAGS. _____; TARGET: _____
RIM FIRE _____ CENTER FIRE _____
10. Dry Cycle No. of samples - 18
Max Cycles Per Sample - 25,000.

December 15, 1982

TO: J. H. HENNINGS

FROM: R. HOWE

REPORT TITLE: M/700 RELIEVED SEAR SAFETY CAM EVALUATION

ABSTRACT

L. J. Hagen requested the Test Lab conduct a Dry Cycle Cock and Fire Lubrication Test on 18 M/700 Fire Control assemblies. Eleven (11) of these having .020" of material relieved from each side of the sear safety cam and 7 having .030" relieved.

SCOPE OF TEST

To compare the performance of the two relieved sear safety cams.

TEST RESULTS

All 18 fire control assemblies went the full 25,000 dry cycles without any failures.

REPORT TEXT

A Trigger Pull, Sear Lift, Sear Engagement, Safe On and Off Measurements were taken on each test component at the start of the test and at every 5,000 cycles. Remington specs, are:

- | | |
|-------------------------|----------------------|
| 1. Trigger Pull | 3.0 Lbs. to 5.0 Lbs. |
| 2. Sear Lift | .005" to .018" |
| 3. Sear Engagement | .015" to .020" |
| 4. Safe "On - Off" Lbs. | — None Established |

Refer to Appendix "A" Data Sheets 1 through 5 for individual results.

TEST PROCEDURE

A. Measurements

1. Trigger Pull

Trigger Pull measurements were taken using a Chatillon Model IN-10 Pull Scale.

2. Sear Lift and Engagement

Sear Lift and Engagement measurements were taken using a Model FC-14 Optical Comparator and Measuring Machine.

3. Safe "On" and "Off" Forces.

Safe On and Off Lb. Forces were taken using a Chatillon DPP-10 or DPP-25 Push Pull Scale.

B. Lubrication

1. DuPont Teflon Wet Lubricant was used for all lubricating.

2. Lubrication Procedure

All Fire Control assemblies tested were lubricated with DuPont Teflon Wet Lubricant, by spraying approximately 1 second burst both into Sear Inspection Hole and directly onto top of Sear Safety Cam with Bolt removed from the gun.

Report No. 822802

" A P P E N D I X " A "

REPORT TITLE: M700 RELIEVED SEAR SAFETY CAM EVALUATION.

DATE: 12-15-82 (020 RELIEVED SEARS)

R. HOWE (1)

M-700	FIRE CONTROL #1-.020	SAFE (AVE. OF 3) ON	LBS. 3 OFF	TRIGGER PULL LBS (AVE. OF 3)	SEAR LIFT	SEAR ENGAGEMENT
	START OF TEST	6.8	8.0	4.3	.009	.020
	DRY CYCLE					
	5,000	9.0	10.4	4.0	.0085	.020
	10,000	7.6	11.3	3.8	.0085	.020
	15,000	7.0	11.0	3.5	.0095	.020
	20,000	6.9	14.0	4.0	.0095	.0205
	25,000	7.4	15.5	3.9	.0095	.021
	FIRE CONTROL #2-.020					
	START OF TEST	6.5	8.1	5.0	.0075	.018
	DRY CYCLE					
	5000	6.8	9.2	4.5	.008	.0175
	10,000	6.7	9.4	4.3	.008	.018
	15,000	6.5	9.0	4.5	.008	.018
	20,000	6.3	9.3	4.6	.008	.0185
	25,000	6.5	9.4	4.2	.008	.0185
	FIRE CONTROL #3-.020					
	START OF TEST	7.6	13.3	4.0	.007	.018
	DRY CYCLE					
	5,000	8.0	13.5	4.1	.007	.0185
	10,000	7.8	13.3	4.3	.0075	.018
	15,000	7.8	9.8	4.0	.007	.0185
	20,000	7.1	9.1	4.0	.007	.018
	25,000	6.6	9.3	4.0	.007	.018
	FIRE CONTROL #4-.020					
	START OF TEST	7.9	7.3	4.0	.006	.018
	DRY CYCLE					
	5,000	8.0	7.4	4.1	.006	.018
	10,000	8.1	7.2	3.9	.006	.018
	15,000	7.6	8.8	4.4	.0065	.0185
	20,000	7.1	9.1	4.3	.006	.0185
	25,000	7.0	9.1	4.5	.006	.0185
	REM. SPECS.	N.A.	N.A.	3.0-5.0	.005-.018	.015-.020

REPORT TITLE: M/700 RELIEVED SEAR SAFETY CAM EVALUATION.

DATE: 12-15-82 (020 RELIEVED SEARS)

R. HOWE (2)

M-700	FIRE CONTROL	SAFE	LBS.	TRIGGER	SEAR	SEAR
	#5-020	(AVG. OF 3)	3)	PULL LBS	LIFT	ENGAGEMENT
		ON	OFF	(AVG. OF 3)		
2	START OF TEST	73	8.0	4.3	.006	.024
3	DRY CYCLE					
4	5,000	74	8.0	4.2	.006	.0235
5	10,000	6.9	8.0	4.2	.0065	.0235
6	15,000	6.5	6.7	4.1	.006	.024
7	20,000	6.4	6.5	4.2	.006	.024
8	25,000	6.0	5.3	4.2	.006	.0245
9						
10	FIRE CONTROL					
11	#6-020					
12	START OF TEST	5.8	7.3	4.6	.007	.020
13	DRY CYCLE					
14	5000	5.7	7.4	4.5	.007	.020
15	10,000	5.5	7.3	4.5	.0065	.020
16	15,000	5.5	6.5	4.2	.007	.020
17	20,000	5.3	6.4	4.2	.007	.021
18	25,000	6.5	8.5	4.2	.006	.020
19						
20	FIRE CONTROL					
21	#7-020					
22	START OF TEST	6.5	7.8	3.6	.0085	.022
23	DRY CYCLE					
24	5,000	6.5	7.8	4.0	.008	.022
25	10,000	6.8	7.6	3.5	.0085	.022
26	15,000	5.8	7.3	3.5	.008	.0215
27	20,000	6.0	7.1	3.6	.008	.022
28	25,000	6.2	7.3	3.5	.008	.022
29						
30	FIRE CONTROL					
31	#8-020					
32	START OF TEST	5.6	6.0	3.2	.0065	.019
33	DRY CYCLE					
34	5,000	5.7	6.1	3.1	.006	.019
35	10,000	5.6	6.2	3.2	.0065	.019
36	15,000	6.3	6.3	4.7	.006	.0195
37	20,000	6.5	6.4	4.5	.006	.019
38	25,000	6.3	6.5	4.5	.007	.019
39						
40	REM. SPECS.	N.A.	N.A.	3.0-5.0	.005-.018	.015-.020

REPORT TITLE: M/700 RELIEVED SEAR SAFETY CAM EVALUATION.

DATE: 12-15-82 (020 RELIEVED SEARS)

R. HOWE (3)

M-700	FIRE CONTROL	SAFE	LBS.	TRIGGER	SEAR	SEAR
	# 9-020	(AVE. OF 3)		PULL LBS	LIFT	ENGAGEMENT
		ON	OFF (AVE. OF 3)			
1	START OF TEST	6.4	9.6	3.2	.007	.0195
2	DRY CYCLE					
3	5,000	6.5	9.5	3.6	.0065	.019
4	10,000	6.3	9.5	3.5	.007	.019
5	15,000	7.5	13.3	4.0	.007	.019
6	20,000	7.5	13.5	4.1	.007	.019
7	25,000	7.6	14.0	3.8	.007	.021
8						
9						
10	FIRE CONTROL					
11	# 10-020					
12	START OF TEST	5.8	2.4	5.5	.006	.019
13	DRY CYCLE					
14	5,000	5.9	2.3	5.3	.006	.019
15	10,000	5.7	2.2	5.4	.006	.0195
16	15,000	5.8	2.3	5.3	.006	.019
17	20,000	5.8	2.2	5.3	.0065	.019
18	25,000	6.2	2.4	4.9	.006	.0195
19						
20						
21	FIRE CONTROL					
22	# 11-020					
23	START OF TEST	6.6	3.8	4.9	.0075	.018
24	DRY CYCLE					
25	5,000	6.5	5.1	4.2	.007	.018
26	10,000	6.5	5.0	4.3	.0075	.018
27	15,000	6.5	5.2	4.4	.0075	.018
28	20,000	6.4	5.1	4.3	.007	.0185
29	25,000	5.5	5.1	3.6	.007	.018
30						
31	FIRE CONTROL					
32	#					
33	START OF TEST					
34	DRY CYCLE					
35	5,000					
36	10,000					
37	15,000					
38	20,000					
39	25,000					
40	REM. SPECS.	N.A.	N.A.	3.0-5.0	.005-.018	.015-.020

REPORT TITLE: M/700 RELIEVED SEAR SAFETY CAM EVALUATION.

DATE: 12-15-82 (030 RELIEVED SEARS)

R. HOWE (4)

M-700	FIRE CONTROL	SAFE	LBS.	TRIGGER	SEAR	SEAR
#1-030		(AVE. OF 3)		PULL LBS	LIFT	ENGAGEMENT
		ON	OFF (AVE. OF 3)			
START OF TEST	7.1	7.9	3.6	.008	.020	
DRY CYCLE						
5,000	7.5	8.2	4.0	.008	.020	
10,000	6.6	6.7	2.7	.0085	.0195	
15,000	6.2	6.8	2.5	.008	.0195	
20,000	6.2	6.6	2.4	.009	.019	
25,000	6.2	6.8	2.4	.009	.019	
FIRE CONTROL						
#2-.030						
START OF TEST	8.0	7.6	4.8	.009	.018	
DRY CYCLE						
5000	7.0	6.7	3.9	.0085	.018	
10,000	7.0	6.9	3.6	.0085	.018	
15,000	6.7	6.8	3.9	.009	.018	
20,000	6.4	7.2	4.0	.009	.0185	
25,000	6.4	7.0	4.0	.009	.018	
FIRE CONTROL						
#3-.030						
START OF TEST	6.5	6.5	4.9	.007	.019	
DRY CYCLE						
5,000	6.5	6.4	5.0	.007	.019	
10,000	7.2	6.5	5.8	.0075	.019	
15,000	6.6	5.8	5.3	.007	.019	
20,000	6.7	5.7	5.2	.007	.0195	
25,000	6.4	5.5	5.4	.007	.019	
FIRE CONTROL						
#4-.030						
START OF TEST	7.4	8.5	5.2	.0065	.020	
DRY CYCLE						
5,000	8.0	8.6	5.3	.006	.020	
10,000	8.0	8.5	4.3	.006	.019	
15,000	7.6	8.1	4.8	.0065	.0195	
20,000	7.5	8.2	4.9	.006	.020	
25,000	7.0	7.6	4.2	.0065	.0205	
REM. SPECS.	N.A.	N.A.	3.0-5.0	.005-.018	.015-.020	

REPORT TITLE: M/700 RELIEVED SEAR SAFETY CAM EVALUATION.

DATE: 12-15-82 (030 RELIEVED SEAR)

R. HOWE (5)

M-700	FIRE CONTROL #5-030	SAFE LBS.		TRIGGER	SEAR	SEAR		
		(AVG. OF 3)		PULL LBS	LIFT	ENGAGEMENT		
		ON	OFF	(AVG. OF 3)				
	START OF TEST	7.1	9.3	3.5	.0065	.022		
	DRY CYCLE							
	5,000	7.1	9.4	3.5	.0065	.022		
	10,000	6.9	9.1	3.4	.0065	.022		
	15,000	7.6	8.0	4.8	.006	.0225		
	20,000	7.5	8.4	5.0	.006	.022		
	25,000	7.7	9.0	5.2	.006	.0215		
	FIRE CONTROL							
	#6-030							
	START OF TEST	6.4	7.1	4.0	.0065	.020		
	DRY CYCLE							
	5000	6.3	7.2	4.2	.006	.020		
	10,000	6.4	7.0	4.1	.006	.020		
	15,000	6.2	6.8	4.0	.0065	.0205		
	20,000	7.5	7.0	4.1	.006	.020		
	25,000	6.5	7.5	4.1	.006	.020		
	FIRE CONTROL							
	#7-030							
	START OF TEST	6.3	9.0	4.9	.007	.018		
	DRY CYCLE							
	5,000	6.5	9.1	5.0	.007	.018		
	10,000	6.3	9.0	4.8	.007	.018		
	15,000	6.8	9.8	4.9	.007	.018		
	20,000	6.9	9.7	4.7	.0065	.018		
	25,000	6.5	10.6	4.3	.0065	.018		
	FIRE CONTROL							
	#							
	START OF TEST							
	DRY CYCLE							
	5,000							
	10,000							
	15,000							
	20,000							
	25,000							
	REM. SPECS.	N.A.	N.A.	3.0-5.0	.005-.014	.015-.020		