

REP.# 840941
W.O.# 82833-905

TO: R.E. Nightingale
FROM: F.L. Supry

TITLE: TRIAL AND PILOT EVALUATION; MODEL 700 CLASSIC, 250 SAVAGE
CALIBER

ABSTRACT

On March 8, 1984 a request was received to conduct a Trial and Pilot Evaluation on the Model 700 Classic, 250 Savage caliber rifle. The Trial and Pilot consists of Visual Inspection, Preliminary Measurements, Accuracy, Field Function, and Endurance. Ten (10) rifles were randomly selected from a sample lot of forty (40) rifles.

SCOPE OF TEST

To determine if the production run samples meet Remington Specifications set by the Research Design Section.

TEST RESULTS

Two of the rifles, B6539281 and B6539186, were removed from the test and returned to P.E. & C., due to follow down malfunctions. P.E. & C. determined that the bolt handle was out of position. The test was continued with the remaining eight (8) rifles, and the samples met the specifications set by the Research Design Section.

REPORT TEXT

1. VISUAL INSPECTION:

- A. The visual inspection committee found no major deterrent in the appearance of the ten rifles inspected.
- B. The following general comments were made in overall reference to the rifles:
 - a. The rails appear too wide and too flat.
 - b. All rifles contained some amount of incomplete checkering.
 - c. The grip caps were not very oval.
- C. The rifles used in the visual inspection were as follows:

B6539298	B6539281
B6538390	B6539204 --
B6539186	B6539673
B6539211	B6538385
B6538399	B6538401

- D. Comments recorded for each individual rifle inspected are located in the appendix of this report.

2. PRELIMINARY MEASUREMENTS:

- A. During the Preliminary Measurements, two of the rifles experienced follow down malfunctions. These rifles were returned to P.E. & C. They determined that the bolt handle was out of position. The Trial and Pilot Evaluation was continued using the remaining eight (8) rifles.
- B. The following averages were established for the eight rifles.
 - a. Trigger Pull: 4.0 pounds
 - b. Safe "on" Force: 7.25 pounds
 - c. Safe "off" Force: 6.0 pounds
- C. Preliminary Measurement results per individual rifle are located in the appendix of this report.

REPORT TEXT (continued)

3. ACCURACY:

A. Four (4) rifles were tested for 100 yard accuracy and the following averages were established:

- a. Group Size: 1.2 inches
- b. Vertical Spread: 0.8 inches
- c. Horizontal Spread: 1.0 inches

B. Accuracy results per individual rifle are located in the appendix of this report.

4. Field Function:

A. The eight (8) rifles were subjected to a 90 round per rifle, Field Function Test and the following results were obtained:

- a. It was necessary to oil the bolts, to prevent heavy bolt lift.
- b. There were no malfunctions.

5. ENDURANCE:

A. Two (2) of the eight (8) rifles were subjected to a 2000 round endurance test and the following results were obtained:

- a. There were no malfunctions or part breakages.

TEST PROCEDURE

1. VISUAL INSPECTION:

- A. The Visual Inspection Committee consisted of R.S. Murphy, F.L. Supry, R.A. Jones, (Research); and D.E. Thomas, (Quality Control).
- B. Each rifle was wiped down with a clean white Coyne towel, and examined by each member of the Visual Inspection Committee. All comments were recorded.

2. PRELIMINARY MEASUREMENTS:

- A. Each rifle was checked for magnaflux and proof stamps.
- B. The headspace was checked on each rifle, using min./max. headspace gauges.
- C. The safe "off - on" forces were taken using a ten (10) pound push - pull gauge. Three (3) measurements were taken on each rifle and an average calculated.

3. ACCURACY:

- A. The following four (4) rifles were used in the 100 yard accuracy test:

B6539298	B6538399
B6538401	B6539204

- B. The accuracy test was shot by R. Williams, Research - Test Lab, at the R & D 100 yard range.
- C. Weaver mounts and bases were used in conjunction with a Lyman 20X 1/8 inch dot scope.
- D. Remington ammunition, Index R250SV; code T21H D4099, 100 grain pointed soft point, was used for the 100 yard accuracy test.
- E. Before shooting the 100 yard accuracy test, the bores on each rifle were brushed with Hoppe's No. 9 solvent and patched dry.
- F. A total of three (3), five (5) shot groups were shot with each of the four (4) rifles. The rifles were cooled between each group, and one (1) "warmer" shot was fired before the next group was shot.
- G. The patterns were analyzed for group size, vertical spread, horizontal spread, and averages were calculated for each rifle.

TEST PROCEDURE (continued)

4. FIELD FUNCTION:

A. All eight (8) rifles were subjected to the loading and firing of 90 rounds of Remington and competitive ammunition. The round robin method of firing the rifles was utilized. Fifteen (15) rounds were fired; five (5) at a slow feeding cycle speed, five (5) at a medium feeding cycle speed, and five (5) at a fast feeding cycle speed. The rifles were then cooled before the firing of the next ammunition type.

B. The following ammunition was used in the field test:

a. Remington: 100-psp code# T21H D4099

b. Winchester: 87-psp code# 96UA50
100-st code# 79TM40

C. All malfunctions were recorded, per rifle, per ammunition type, per feeding cycle speed, and per shooter.

5. APPENDIX:

A. Contents:

- a. Visual Inspection comments per individual rifle.
- b. Preliminary Measurement results per individual rifle.
- c. Accuracy results per individual rifle.
- d. A copy of the Lab Work Request.

6. Rifle B6539204 was placed in the Research Gun Library, all other rifles were returned to P.E. & C.

APPENDIX

VISUAL INSPECTION COMMENTS PER RIFLE:

GENERAL

A. All rifles inspected showed the following:

- a. Rails appear too wide and too flat.
- b. Some incomplete checkering.
- c. Grip cap sanding not oval.

INDIVIDUAL

- 1. B6539298 - Run in the finish, right rail.
Swivel screws; rear screw not seated, front screw seated too deep.
Mar, right side of fore end, by floor plate.
Sanding dip, in the belly.
Poor finish repair, right side of the stock.
Rear of butt pad, not sanded.
- 2. B6539281 - Dip or ripple in the barrel, poor polish.
Mars in the grip area of the stock.
- 3. B6538399 - Rear swivel screw not seated.
Rings on bolt plug.
Cross grain scratches on both sides of the stock.
Mar on the side of the trigger guard.
Dimple in the right side of the comb cut.
Toe of the butt pad, rough.
- 4. B6538401 - Mar on the left rail.
Mar on the left side of the fore end.
Dip in the belly.
Too much wood margin, left side tang.
- 5. B6539204 - Indentation, right rail.
Open grain, right side of the fore end.
Front swivel screw, too deep, wood marred, caved in.
Wood to tang margin, off center.
Mars on the fore end.

VISUAL INSPECTION COMMENTS PER RIFLE:

INDIVIDUAL (continued)

6. B6539186 - Front swivel screw not seated.
Rough polishing marks on barrel, in front of the fore end.
Sanding breakthrough behind the comb cut.
Poor stain by the ejection port.
Wood broken, by floor plate.
Dent, left side of trigger guard.
Dip in the belly.
Poor fit, floor plate.
7. B6539673 - Run in the finish, right rail.
Wood burr in the bolt handle slot.
Deep mar, right side of the fore end.
Two holes in the wood, by the reinforcing screw.
Sanding scratches left panel.
Mar in the grip area.
Dip in the belly.
Sanding breakthrough, right rail.
Fore end pattern, off center.
8. B6538390 - Mars, left and right side of fore end.
Butt pad to wood match, poor at toe.
Mar, top left rail.
Mars, in the wood, left side of floor plate screws.
Poor wood margin, bottom side of tang.
Mar, front of trigger guard.
Step in the metal, rear of port.
9. B6539211 - Wood burr in the bolt handle slot.
Bright mar, front screw of the floor plate.
Mar, top of barrel, back of the roll mark.
Rear swivel screw, not seated.
Mar in the rail, near receiver.
Glob of fill, near ejection port.
Dip in the belly.
Cross grain scratches, in front of the rear swivel.
10. B6538385 - Mar in the wood, right side, near swivel screw.
Mar in the receiver, where the bolt handle hits.
Sanding breakthrough, right side, by the receiver.
Excessive finish, in front of the ejection port.
Poor steel margin, right side of tang.
Dip in the belly.
Pits in the bolt handle.
Wood burr in the bolt handle slot.
Toe of the butt pad, rough.

PRELIMINARY MEASUREMENTS PER INDIVIDUAL RIFLE:

SERIAL NUMBER	SAFE "ON" (LBS.)	SAFE "OFF" (LBS.)	TRIGGER PULL (LBS.)
B6538390	8.00	6.00	4.75
	8.00	6.00	4.50
	8.00	6.00	4.75
B6539281	7.50	8.00	4.25
	7.50	7.25	4.25
	7.50	7.75	4.25
B6539298	6.00	5.00	4.25
	6.50	5.00	4.25
	7.00	5.00	4.25
B6538385	7.50	6.00	4.25
	7.00	6.00	4.25
	7.00	6.00	4.25
B6539211	7.00	6.00	3.50
	7.00	6.00	3.50
	7.00	6.00	3.50
B6539673	8.00	5.25	3.75
	7.50	5.25	3.50
	7.00	5.25	3.50
B6539186	7.00	7.00	3.75
	7.00	7.00	4.00
	7.00	7.00	4.25
B6539204	7.00	7.00	4.50
	7.00	7.00	4.50
	7.0	7.00	4.50
B6538401	8.00	6.75	4.25
	8.00	6.75	4.00
	8.00	6.75	3.75
B6538399	6.75	6.75	3.50
	7.00	6.25	3.75
	7.00	6.25	3.75

ACCURACY RESULTS PER INDIVIDUAL RIFLE:

The following four (4) pages contain the individual accuracy results for the following rifles:

**B6539204
B6538399**

**B6538401
B6539298**

ACCURACY: Minimum of 3 - 5-shot Groups

GUN #8

Ammunition Used REM. CAL. 250 SAVAGE 1006 P.S.P.

B6539204

~~Previous Rounds~~ CODE T21H D4099

INDEX R250SV

	Group Size (in.)	Vertical Spread	Horizontal Spread
1	.9	.5	.8
2	1.1	.5	1.1
3	1.2	.8	1.1
4			
5			

Avg. 1.0

.6

1.0

REM. STDS. 2.2" - 5 SHOT

Tester

R. Williams

Date

3-12-84

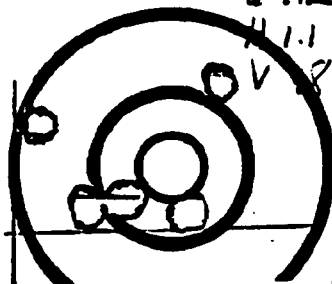
Marksmen

G	.9
H	.8
V	.5

m of 3 - 10-sho

load

	High (in)	
Avg.		
Avg.		



Tester

Date

465

Gun #3

B6539298

ACCURACY: Minimum of 3 - 5-shot Groups

Ammunition Used REM. CAL 250 SAVAGE 100Gr. P.S.P.

Previous Rounds CODE T21H D4099
INDEX R250SV

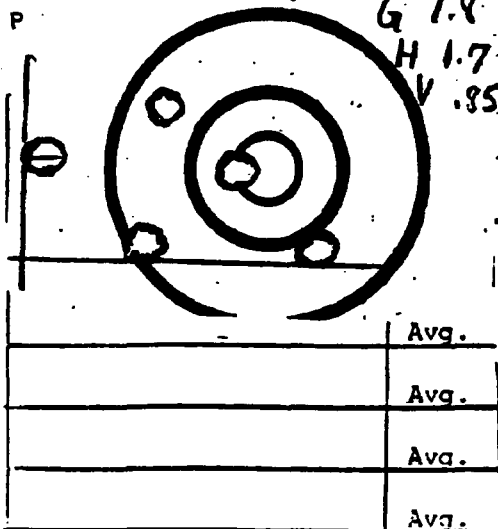
	Group Size (in.)	Vertical Spread	Horizontal Spread
1	1.8	.85	1.7
2	1.2	1.0	1.0
3	1.6	1.3	.8
4			
5			

Avg. 1.5 1.0 1.1

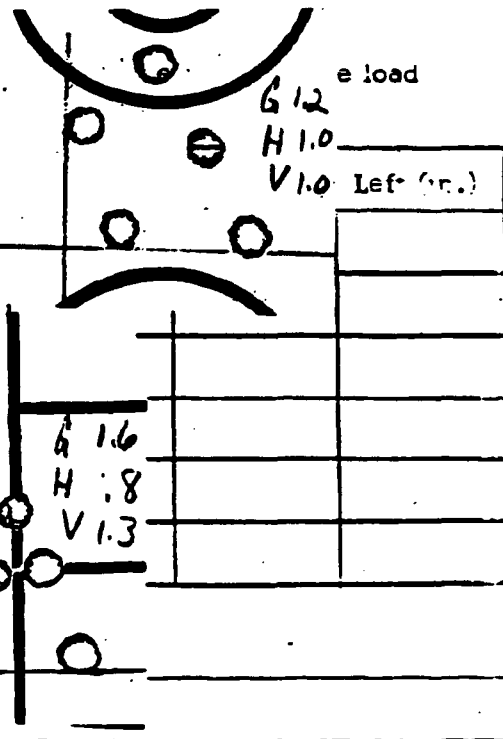
Tester

R.K. Williams

Date

3-12-84
REM. STDS. 2.2" - 5 SHOT


High (1



Date

465

ACCURACY: Minimum of 3 - 5-shot Groups

GUN #10
B6538399

Ammunition Used REM. CAL. 250 SAVAGE 1006 P.S.P.

Previous Rounds CODE T21H D4099

INDEX R250SV

	Group Size (in.)	Vertical Spread	Horizontal Spread
1	1.2	1.2	.8
2	1.1	1.1	.4
3	1.2	1.1	.9
4			
5			

Avg. 1.16

1.1

.7

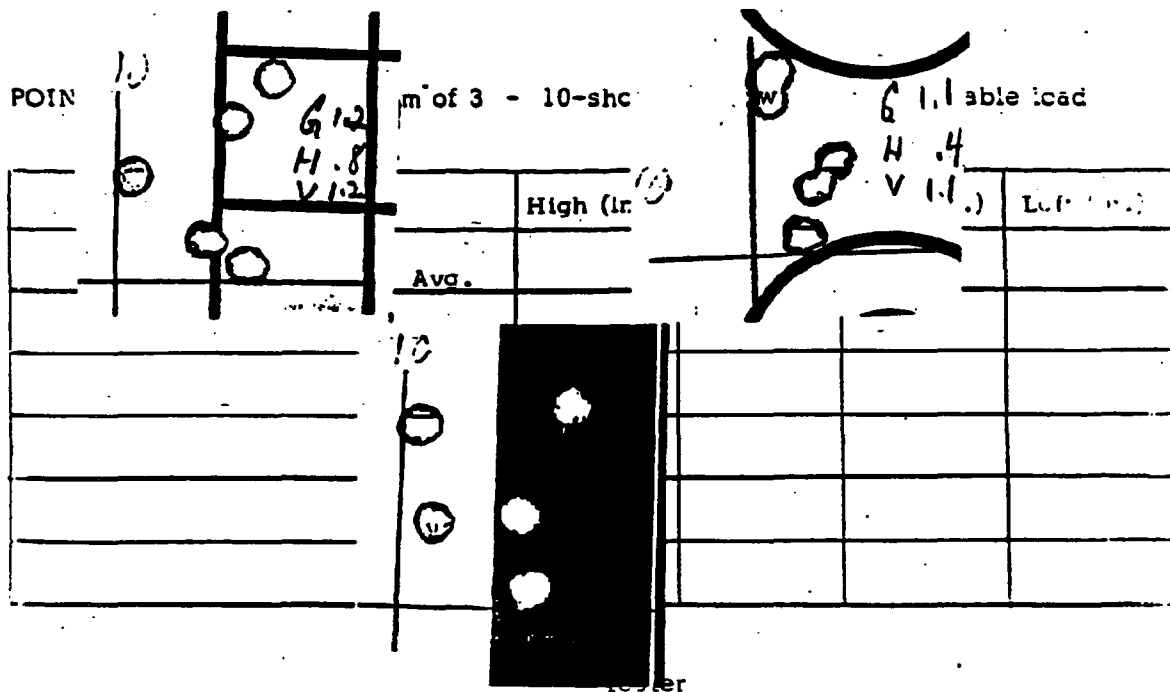
REM. STOS. 2.2" - 5 SHOT

Tester

R. Williams

Date

3-12-84



Date

Gun #9
B6538401

ACCURACY: Minimum of 3 - 5-shot Groups

Ammunition Used REM. CAL. 250 SAVAGE 100Gr. P.S.P.

Previous Rounds CODE T21H D4099

INDEX R250SV

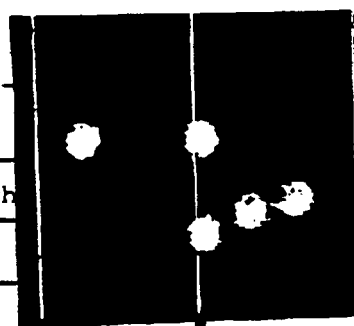
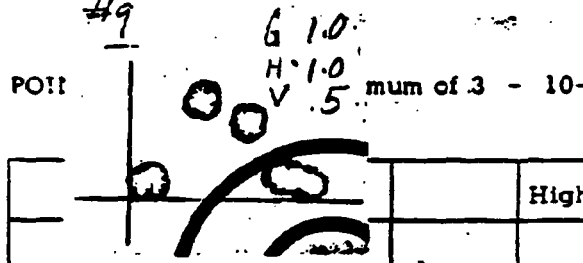
	Group Size (in.)	Vertical Spread	Horizontal Spread
1	1.0	.5	1.0
2	1.4	.6	1.3
3	1.1	.4	1.0
4			
5			

Avg. 1.1 .5 1.1

Tester R. Williams

Date 3-12-84

REM. STDS. 2.2" - 5 SHOT
#9



#9 G 1.4
available loc 3
V .6

	High	(in.)	Left (in.)
Avg.			
#9			

G 1.1
H 1.0
V .4

Tester _____

Date _____